(Volume 2: Case Study Report)

Project Completion Report

Assessment of Research & Development & Innovation Practices in Micro, Small & Medium Manufacturing Enterprises (MSMEs) in India

Implemented by

Shri Sanjay Nagi
(Principal Investigator)
Market Insight Consultants,
B-3, Sector-2, NOIDA – 201301 (UP)

DST PROJECT NO. DST/NSTMIS/05/164/2014-15

Sponsored by:

National Science & Technology Management Information System (NSTMIS)
Department of Science and Technology
Government of India

January 2017

Project Completion Report

Assessment of Research & Development & Innovation Practices in Micro, Small & Medium Manufacturing Enterprises (MSMEs) in India

Implemented by

Shri Sanjay Nagi
(Principal Investigator)
Market Insight Consultants,
B-3, Sector-2, NOIDA – 201301 (UP)

DST PROJECT NO. DST/NSTMIS/05/164/2014-15

Sponsored by:
National Science & Technology Management Information System (NSTMIS)
Department of Science and Technology
Government of India

January 2017

Table of Contents

Executive Summary

This case study compilation report has been developed as a volume 2 of the report: **Assessment of Research & Development & Innovation Practices in Micro, Small & Medium Manufacturing Enterprises (MSMEs) in India**. It covers anecdotal information of 20 MSMEs in various states and sectors in India.

While the main report covers the quantitative research findings and policy implications, the objective of this report is to determine the innovation and R&D practices among MSMEs in detail and have a deeper understanding of the drivers and barriers the MSMEs are encountering.

The firms responded to the survey giving a background as to why the innovation was needed and the reason it was created, role of various factors like industry, competition, location, environment for innovation and the point of origination of the idea.

The respondents provided description of their innovation and R&D activities outlining the domain in which they work and ways they are innovative.

The MSMEs were encouraged to share the risks they had taken to promote R&D and Innovation, problems and barriers that they had encountered during the process and ways they are overcoming those.

The respondents shared details of their Process of innovation, their current stage at which the innovation is and what remains do be done along with the role of R&D in innovation.

Some of these MSMEs have benefitted from their innovation and R&D practices and have duly shared the lessons learned during this whole activity paving a way to the future – where their innovation would be headed.
In view of the changing MSME landscape in India, this report brings about the necessary voice of the innovators of our country.

Basis of Selection

A three-step process was adopted to select the firms for case study developments:

Step 1- Qualification based on Level of Interest: The main study covered over 8000 respondents and in the last section of the study, they were asked whether they would be willing to participate in the anecdotal research project as well. 12% of the firms were interested to participate in sharing information.

Step 2- State and Sector Allocation: State wise, the confirmations provided in the first phase was majorly from the South Indian and Western States. Maharashtra had the highest affirmations (31%), followed by Tamil Nadu (24%) and Gujarat (17%). The southern states of Karnataka (16%), Andhra Pradesh (16%) and Kerala (12%) too had good number of firms willing to participate. The qualified firms were then approached with a framework for data collection.

During data collection for case studies, there were some fall outs due to:

a) Confidentiality of their practices,

b) Complexity of the structure of the data capture instrument,

c) Disinterest of participation due to low confidence on positive outputs from this activity.

Therefore, it became necessary to make alterations of the basis of data capture. States/ Sectors of higher innovation index combined with higher novelty were given priority. This combined with qualifications based on level of interest (Step 1) yielded results.

Step 3- Data Quality Checks: The preliminary data shared by the firms were analyzed based on the critical responses pertaining to R&D and Innovation. Firms that provided adequate information that were critical in nature were then further interviewed as per the framework. Firms that provided generic information were not probed further. The other factor was timeliness of response.

The final cut off list of 20 firms was prepared for the development of this case study report.

List of participants' state and sector wise:

Sl. No	Company	State	Sector
1	Aqualite	Maharashtra	Mineral Based
2	Bois Tech	Tamil Nadu	Engineering
3	Chakara Seed	West Bengal	Agro & Food
4	Chetran	Maharashtra	Agro & Food
5	Comsat System	Andhra Pradesh	Radio & Communication
6	Dhopeshwar	Andhra Pradesh	Engineering
7	Excel Impex	Kerala	Glass & Ceramics
8	Faze Three	Gujarat	Textile
9	Hi-Tech Packaging	Kerala	Printing & Packaging
10	India Roofing Industries	Tamil Nadu	Construction & Building Material
11	Inspired Control Systems	Maharashtra	Electronics
12	Jayanthi Transformers	Tamil Nadu	Engineering
13	Jopasu	Maharashtra	Automotive
14	Kariwala Industries	West Bengal	Textile & Leather
15	PC Process	Karnataka	Electronics
16	PG Industries	Madhya Pradesh	Misc
17	Pilotsmith Process	Kerala	Food Processing
18	Reliance Fire and Safety	Andhra Pradesh	Machinery & equipments
19	Sertel Electronics	Tamil Nadu	Electronics
20	Sre Senthil	Tamil Nadu	Engineering Units

Sate wise distribution:

States	Firm Count
Andhra Pradesh	3
Gujarat	1
Karnataka	1
Kerala	3
Madhya Pradesh	1
Maharashtra	4
Tamil Nadu	5
West Bengal	2
Grand Total	**20**

Sector wise distribution:

Sectors	Firm Count
Automotive	1
Construction & Building Material	1
Electronics	3
Engineering	4
Glass & Ceramics	1
Machinery & equipments	1
Mineral Based	1
Misc	1
Printing & Packaging	1
Radio & Communication	1
Textile	1
Textile & Leather	1
Agro & Food Processing	3
Grand Total	**20**

The South Indian states of Andhra Pradesh, Tamil Nadu, Kerala and Karnataka are high to medium on innovation and R&D index combined with higher novelty factors. So is the case of Maharashtra. West Bengal despite low on innovation index, 1 of the firms (agro based) participated.

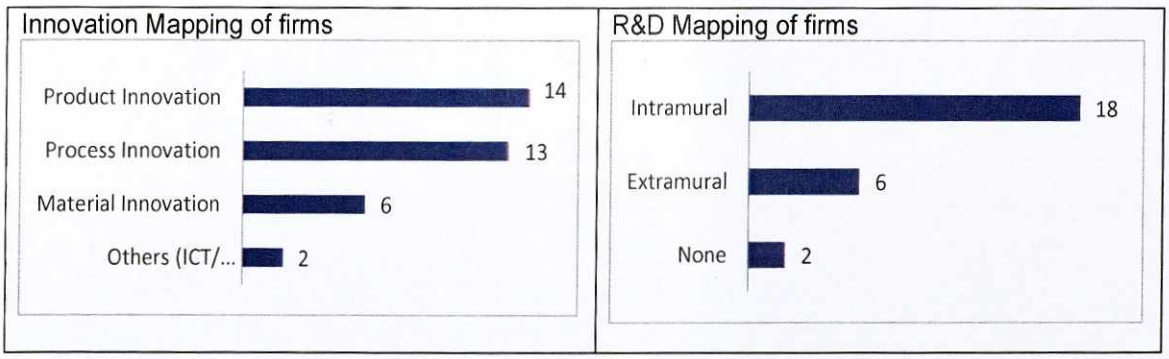
Sectors of high innovation index are engineering and electronics and machinery equipment. Agro based and food processing sector had the highest number of samples in the survey.

Summary of Innovation & R&D Practices

The surveyed firms are showcasing clearly that R&D is an important aspect of innovation. The firms, though restricted to performing R&D in-house at this point of time, have a strong inclination to perform continuous R&D in order to be competitive with the changing market trends.

Innovation is something that these firms are continuously striving to perform. Firms are putting efforts in promoting product and process innovation. Firms working in the food processing and agro based sector have been involved in product and process innovation to cut down the cost of food and come out with products of higher nutrition value. Engineering firms are finding ways to reduce cost of production through R&D led process innovation. Specialty firms like chemicals, glass etc. are coming up with newer products that are changing the B2B trade. Electronics as a sector itself is a sector promoted by high innovation firms, The MSMEs working in this sector too are highly innovative both in product and process.

A summary of Innovation and R&D of the selected firms are given below:

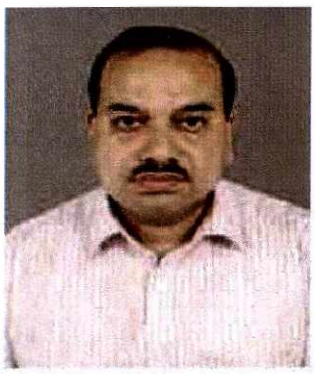


Summary of Impediments

The firms had to undergo a vigorous task of remaining competitive in the market. During the course, these firms faced a number of challenges, some of them are listed as below:

- Provision of adequate materials to conduct research.
- Presence of higher technological products/ brands in the market already offering cost competitive product. Involvement of MNC with strong sales and distribution network.
- Complicated tax structures and fewer means for simplifications.
- Weak R&D support for promoting Innovation. Firms are highly dependent of internal strengths to promote R&D and innovation, there is little scope to gather information or perform R&D outside the firm.
- Lack of knowledge among common people of alternate usage of daily materials that can boost innovation holistically.
- Inconsistency of availability of skilled/ trained manpower as it one of the most critical factor to promote innovation and boost R&D.
- Competition is strong in some sectors making life for innovative firms difficult.
- High gestation period for R&D to yield results – which proves very expensive for MSMEs to outlay that much amount of working capital.
- Fear of change: People in the organization do not want to change the way of their existing working style. People have an attitude – 'Why fix something which is not broken'. People also have a fear of losing job if the organization is adopting automation in system processes. It takes good amount of efforts to gradually make them understand the need for change and training them with any complexities involved. The mentors need to make their employee realize the need for change and benefits of that change for people and the organization.
- Inadequate use of alternate renewable energy that can prove as a strong mean of infrastructure support.
- Lack of knowledge – knowing ways to innovate is half the battle won. The problem is there is limited knowledge floating around that can help enterprises, many of which is lost due to ill communication among peers and weak information platforms.
- Commercialization of innovation and marketing/ reaching out to customers and making them aware of products is one of the common problems faced by firms.
- Recognition of efforts is almost zero. It is still the mind-set that foreign made products are better that Indian made goods. The efforts of innovation does not necessarily breaks the mind-set of people.
- Availability of loans and other means of external funds purely for R&D and innovation is a rare scenario.

Case 1



Bharat Nursery Pvt. Ltd.

Company address	16/1B, Ramkanta Bose Street, Kolkata- 700003
Respondent name	Dr. Asish Ghosh
Respondent designation	Executive R&D
Email id	asishhorti@gmail.com
Contact no	9830021229
Product	Nursery
Industry	Agro Based and Food
State	West Bengal

Company Profile

Bharat Nursery Pvt. Ltd. Company was founded by late Maniklal Ghosh in 1918. It is one of the oldest company in their field in Eastern India. Under the brand **Chakra** we look after Research, production, export, import and marketing of seeds. Our seeds have access to almost all regions of India because of their quality and productivity. Our **Jute seeds** have made their place in foreign soil. The band is one of the most popular brands in Bangladesh.

Bharat Nursery has its own research & development wing at Village- Paikpari, Sri Rampur, Panskura, P.S.- Debra in the district of Midnapore West, West Bengal. Our R&D unit at Panskura is recognized by **Department of Scientific and Industrial Research (DSIR) Govt. Of India, New Delhi, India**. A team of able scientists and workers are carrying on intensive research that has resulted in the development of number of hybrid varieties of **brinjal, okra, tomato, ridge gourd** etc. **Jyoti Biotech Pvt. Ltd**., a sister concern of Bharat Nursery Pvt. Ltd, is also engaged in research and development work and production of seeds of paddy. The processing plant unit of JBT is situated at Illambazar, village- Sunmuni, district- Birbhum, and West Bengal.

We import seeds from a number of reputed foreign companies of Japan, Korea and Thailand. The company is having a strong marketing network which spread over different states of eastern India namely West Bengal, Assam, Arunachal Pradesh and other states like Bihar, Jharkhand and Orissa.

Keeping pace with the demands of time, the company has diversified itself into several other concerns doing specific jobs in the field of agriculture. **National Laboratories** produces micronutrients, bio pesticides, bio fertilizers and fish feed supplement. **Ananda Agency** publishes books on agriculture in Bengali and Oriya language.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
The innovation was needed for the development of new F1 Hybrid variety of seeds.
Hybrid variety are generally higher yielder than normal variety. So farmers could get a high return from our new hybrid along with good quality produce.

The variety is also tolerant to biotic stress like disease, so in stress situation also its performance would be better.

Role of industry and competitors in the innovation.
In seed market, it was shown from our market study that quality Improvement was needed to introduce our new variety in the market. Our varieties are having better quality characters like color, size, disease tolerance and organoleptic quality than other competitive products in the market.

Role of location and environment in the innovation.
Location- Village- Paikpari, Sri Rampur, Panskura, Dist- West Midnapore.
Environment- Tropical
The location and environment is very good for seed production of Tropical vegetable.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)
Director- For overall management
Executive R&D- Research planning and execution
Agronomist- Looking after cultural practices of different crops
Botanist- Looking after biology of the plants
Chemist- Looking after biochemical research
Farmers- Given quality attributes required for the development of the variety
Dealer or Distributor- Given market demand

Where did you get the idea?
From Academic Institute and International symposium

How did it originate - It originates from the idea of Heterosis breeding.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

The idea of the innovation is common, it originates from the idea of Heterosis but its manifestation is different. As we have combined two or more characters into a single hybrid it adaptability is more than the normal OP variety.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

In Eastern India- For vegetable research we are in First position.

3. Description

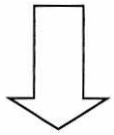
Describe the innovation and the domain in which it is an innovation.

Considering the theoretical back ground of F1, we planned hybridization programme to develop F1 hybrids after studying the character of parental lines. Then those hybrids were selected in different environment and the best one being selected for marketing.

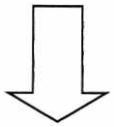
We have developed new hybrids for open pollinated dominated market where the hybrids have shown excellent performance with respect to yield parameters and quality parameters in comparison with OP and other competitive varieties in the market.

Outline the way(s) in which it is innovative.

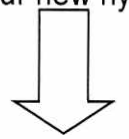
Open pollinated dominated market



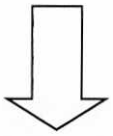
Low yield with poor quality characters



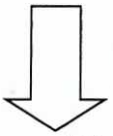
Introduction of our new hybrids (F1)



Very high yield with excellent quality attributes and organoleptic quality



OP market start changing from OP to Hybrid (F1)



Now Farmers demand the varieties from dealers and distributors

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

Germplasm reserve is not adequate at Gene Bank like NBPGR for various Vegetables. Sometimes if germplasm is available but information regarding characterization is poor. Modern breeding tools like molecular marker aided selection could reduce the time required for completing breeding cycles. But it needs sophisticated modern lab with machineries which required high cost of initial capital investment.
Environmental risks like high rainfall or drought are always there.

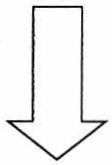
How/were these overcome?

We have imported germplasm of tomato, chili from international institute like AVRDC. Still we are doing research through conventional breeding only.

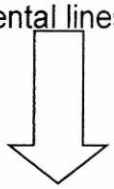
5. The Process

What was the pathway that leads to creation of the innovation?

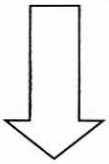
Germplasm collection and characterization



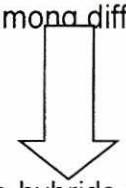
Selection of parental lines by studying characters



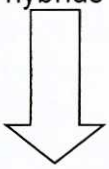
Selection of mating design



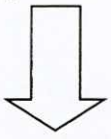
Hybridization among different lines and study its parameters



Selection of the hybrids depending on GCA and SCA parameters



Evaluation of the selected hybrids for multi location trial with market dominated open pollinated variety as check variety



Release of the new Hybrid for marketing

What was the role of R&D and how we co-relate R&D with innovation?
R&D was indispensible for innovative Research. Our new innovation (here new variety or hybrid) was achieved only after a couple of years of rigorous research in a systematic way. As the volume of research increase it will lead to develop and evaluate more F1 hybrids. So, R&D and innovation are positively correlated.

At what stage is the innovation currently.
We have produced new hybrid varieties of brinjal, okra, tomato and ridge gourd.

What remains to be done?
Still we need to develop new hybrids for Rice and other vegetable like bitter gourd, bottle gourd, pumpkin, capsicum and chilli.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?
Farmers will get the maximum benefit from our innovation. They will get a new hybrid with very high yield in comparison with OP variety. Stress tolerant hybrid like drought tolerant or disease tolerant hybrid could give them high return in off season cultivation.
We would participate in AICVIP project to check out the performance of our new variety at All India trial and it could be a state or central release variety. Thus, it could be an asset of State Government and Central Government.

If the demand of the variety comes from the Farmer's level, then Dealer of the seeds also could get a substantial return.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.
The availability of germplasm for conducting research should be adequate and proper characterization of the passport data should be maintained.
We need Govt. Support for set up of molecular lab as initial cost for marker research is very high.

8. The Future

Where is the innovation likely headed?

The innovation is having a very bright future as the hybrids will give high returns to the farmers as well as other stakeholders.

The hybrids are having high quality attributes as well as high yield parameters and disease tolerance, so it would be more economical to cultivate those hybrids in near future.

Case 2

Bois Technologies (P) Ltd

Company address	Plot No.2/A Othavadai Street, Mathirvedu, Vellappanchavadi, Chennai. 600077
Respondent name	Mani Janardhan
Respondent designation	Owner
Email id	indchincorp@gmail.com
Contact no	9380865447
Product	Welding Machines
Industry	Engineering
State	Tamil Nadu

Company Profile

We are manufacturing welding machine inverters (ARC, Tig, Mig, Submersible arc welding and plasma 100 importers are in the field now more than 100000 welding machine are in the Indian market the resultant power saving is more than 10000 MW power generation for which the full credit goes to us. Our brand name BOIS is well known in Indian market and by our effort totally eliminated high power saving latest IGBT Technology. We have done R&D work and improve the design and manufacturing our self competing Chinese imported machines inspired by our governments make in India campaign. Cutting machines) which have been procured and sold in India for5 million dollar. These machines are now endogenously manufactured by the result of our own R&D work. When we started marketing these machines it has been sold by multinational companies at a very high unaffordable price in India. We have combined our hard work in marketing and after sales service with Chinese low cost high volume production method to cut down and penetrated In Indian market with a large network of dealers in India. These inverter welding machines reduced the power consumption of old

Welding machines at affordable price. The power saving in the welding machines are 35-40% of the conventional machines with a very low wt. We have sold around 40000 such machines and each of these machines are running well even after 5 years.

After we have marketed these welding machine it has started a chain reaction.

In addition to these welding machines now we have added one more lock high production CNC cutting machines with Chinese Collaboration. 50% of the parts will be imported initially 50% will be made in India.

We wish our government assistance to extend for further R & D work and recognizes our hard work.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

In our country, most of the industries are using manual cutting for plates using shearing machine for stainless steel plates as stainless steel cannot be cut by gas. Manual cutting productivity is low. For increasing the productivity multinational companies have developed CNC cutting machine for gas and also, they have developed a plasma source, the cost of which is exorbitantly high making it difficult for small and medium scales industries.

Role of industry and competitors in the innovation.

For increasing the productivity multinational companies have developed CNC cutting machine for gas and also they have developed a plasma source, cost of which is exorbitantly high making it difficult for small medium scales industries. China has developed these technologies and marketed these machines at a very low price. Associating with China and frequent visit enlightened me a lot.

Role of location and environment in the innovation.

To manufacture CNC cantilever cutting machine and gantry cutting machines as per their design with mentioned condition around 30% of the products will be procured from the near industries and balance 70% will be indigenously manufactured in our factory as per their design and technical assistance.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

We have combined our hard work in marketing and after sales service with Chinese low cost high volume production method to cut down and penetrated in Indian market with a large network of dealers in India.

Where did you get the idea?

Chinese company with the aid of their government copied the technology and made improvements and by way of mass production but there accuracy is not very important for the job.

How did it originate.

China has developed these technologies and marketed these machines.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

We have started our company 8 years before tied up with a china company called riland industries (no 1 welding machine manufacture in china) imported around 6 million dollars and distributed all over India and tied up with another Chinese company Delian NC machinery ltd. Leishough, Uindaoindao province for CNC cutting machine. We have got a very high reputation in the Indian Market for Rilon welding machines and CNC cutting machines. We have supplied over 30000 machines of various type welding machine Arc,

Tig, Submersible arc welding of various current capacities. Our machines are working well for the past 6 year in some major industries and also almost 70% of BHEL ancillary estate thuvakudi. CNC cutting machines we have imported around 50 nos and they are also working very well. We marketed both welding machines and cutting machines there a very big dealer network in i8ndiaa we had around 65 dealers in various states of India .We have also a TIIC approved dealer for these machines and supplied several machines to various industries around 1.5 crores.

Identify whether your group was first, second, third, etc. to adopt in Region/ India/ worldwide if you can.

We had slowed down the business for some time since rupee has substantially depreciated against dollar. For example, in 2007 dollar was 39 Indian rupees now dollar is 68 and also more no people have entered into this field making the profit margin reduced. It is worth mentioning that we had never borrowed any money from any bank for 8 years and done a turnover of 35 crores since the profit was good and by proper reinvesting the profit and prudent cash flow managements we were able to achieve. The competition by large no of importers and their way of doing business did not suit us. We do business adhering to strict statutory obligation of sales tax and customs and excise duty.

3. Description

Describe the innovation and the domain in which it is an innovation.

We are manufacturing welding machine inverters (ARC, Tig, Mig, submersible arc welding and plasma cutting machines) which have been procured. These machines are now endogenously manufactured by the result of our own R& D work. when we started marketing these machines it has been sold by multinational companies at a very high unaffordable price in India These inverter welding machines reduced the power consumption of old welding machines at affordable price. The power saving in the welding machines are 35-40% of the conventional machines with a very low wt.

Outline the way(s) in which it is innovative.

The power saving in the welding machines are 35-40% of the conventional machines with a very low wt.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

10 years before we were using conventional machines like welding transformer, thrystror control machines for stainless steel and alloy steel welding. By improved technologies of

inverter IGBT TECHNOLOGY small inverters machines were developed by Germany. But initially they have exploited the Indian market putting technology reason at a very high cost so that small and medium enterprises cannot afford these machines. Chinese have done some copy and lot of research for improvement and by mass production and support from the government incentives reduced the prices to 1/5 of these multinational companies.

How/were these overcome?

We have importer around 30000 welding machines in 5 years(5 million dollar) and through extensive dealer network and direct customers we have slashed the price to 1/3 of the existed prevailing market price enabling enormous of small and medium enterprises have replace all the junk old conventional machines saving enormous power bill and enormous power requirement of our country for welding power for our country to an extent 20000 MW We have participated in several trade fairs throughout the country in all states our machine has got the highest long life and our trade name BOIS is well recognized.

Our machines are approved by Indian railways and all BHEL Ancillary Industries. It is worth mentioning that we have supplied around 1.5 crores valued welding machines till date and we are approved for making welding machines and CNC cutting machine.

5. The Process

What was the pathway that leads to creation of the innovation?

Our marketing has created a chain reaction every big company has reduced their rates and more people went to china and imported so that almost all welding machines in India is now inverter based welding machines. As a true patriotic Indian We are proud of our actions and want to continue our similar efforts in cutting machine to reduce cost increase the productivity

What was the leadership like?

We have collaborated with Delian NC machineries to manufacture CNC cantilever cutting machine and gantry cutting machines as per their design with condition the around 30% of the products will be procured from them and balance 70% will be indigenously manufactured in our factory as per their design and technical assistance. They will send their engineers to our company to train our engineers for assembly, electrical circuits and commissioning etc.

Were there separate inventors, champions, implementers and evaluators.

We were working on ourselves and taking little support from our Government and Chinese Government.

At what stage is the innovation currently?
CNC cutting gives more smooth finish and requires less grinding operation for finishing. A plasma power source of reputed multinational companies like thermal dynamics use and kempe hypotherme is able to solve the problem

What remains to be done?
To start with we wish to manufacture 50 no per month after this we wish to manufacture other light gantry machines. For this purpose, we required factory shed and machineries and working capital.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?
The project is totally environment friendly by replacing gas combustion for cutting with plasma which requires only compressed air and by saving power generation capacity comes down drastically for our country

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.
Patriotism (on the positive side) seeing the enormous scope India has with huge population (big market within motivated me) and IFMSME groomed well can conquer the world.

Negative: Desperate in seeing the government irregulatives in execution, rules, taxation methods and rampant corruption and the manipulations done by (politicians in nexus with multinational brand companies and corporate companies (running in our country without social conscience)

I have done on enough research on the following topics if I am not going to touch these topics my ideas will got no meaning.

Corruption: Solution is very simple but nobody wants it. Greed is human behavior. Still some honest people are there in India they should be kept in correct positions

Tax reforms is a must (tax as per constitution is to take care of health, infrastructure, education and defense and other essential for under privileged.

1/3 GOES for expenses executive salary to government employees, parliament (no work done for the past 10 days and leaks by way of misappropriation, corruption etc. this fact told and accepted by none other than our past finance Minister and present President and so called financial genius and supposed to be a honest man) ex finance minister, Prime minister for two terms No names who did nothing to stop these leaks.

However, what we see nothing but taxation slab worst income tax department lot of loop holes very big chain of chartered accounts helping / A simple statistics I want to quote there are only 5431 persons in India is paying 1 crore income tax in year. I want to laugh I can count in Tamil nadu alone 1000 s of people who are making more and not paying tax. Donald trump has not paid federal taxes and he cited the reason.

Rules are so stupid with pot holes made by politicians who made them, obligatory to rich and corporate funding, donations for political parties. I believe in scrapping Income Tax act and Department GST can include Income Tax for collection at original manufacturer or service provider n intermediate Taxing or CENVAT, MODVAT all evasive manipulations.

Tax holidays: Nonsense Once Breaking Even tax is a must Incentives on Building Expenses: Another Mistakes

For R&D: Creative Skillful mind is required and not building. Very few Machineries are required for research. I don't find any reason why (companies has to any research when they subcontracts and outsource all his requirements whether it is refinery or telecommunications from western countries and from china R& D in India exists only in Paper. I can challenge any corporate company to prove me wrong.

Remind them that I am very good in accounts my analysis of their books account will be very accurate and critical than done by income tax department.

8. The Future

Where is the innovation likely headed?

In addition to these welding machines now we have added one more lock high production CNC cutting machines with Chinese collaborations.

Our brand name BOIS is well known in Indian market and by our effort totally eliminated high power saving latest IGBT Technology. We have done R&D work and improve the design and manufacturing our self-competing Chinese imported machines inspired by our governments make in India campaign.

Case 3

Chetran Foods Pvt. Ltd.

Company address	25 Chintamani Industrial Estate, Ramtakdi Industria Area , Hadapsar, Pune 411013
Respondent name	Ranjit Pal
Respondent designation	Chairman
Email id	ranjitlucypal@ gmail .com
Contact no	9225825437
Product	Food products
Industry	Agro based & Food Processing
State	Maharashtra

Company Profile

Our company, Chetran Foods Private Limited, offers **GREAT TASTING** Tofu and soya milk based foods specifically tweaked to suit the Indian palette and Indian cuisine. Softer, juicier tofu! Non beany soymilk! Light soya bread spreads!

MEETS INTERNATIONAL HYGEINE – Using state-of-the-art equipment from Takai Tofu and Soymilk Company of Japan (the world's pioneer –has supplied over 60 % of the fully automated Soymilk/Tofu plants used in the developed world) and Prosoya Incorporated of Canada as well as Thermax/ Ingersoll Rand /Blue Star of India, along with the practical teachings of Tofu Masters over the ages, our soya milk manufacturing process is completely untouched by human hand. The systems are 100% CIP (clean in place). A unique blend of art and science.

AND INTERNATIONAL DIGESTIBILITY STANDARDS – The advanced Japanese automation systems enable perfect digestion by destroying the STI in soybeans, yet without hurting (denaturing) the fabulous soya protein. Adjusted to Japanese standards of product digestibility. **OUR FRESHNESS FRENZY** – To get you as close to "FACTORY FRESH" tofu as possible, we supply all outlets in Pune daily or every alternate day. (2- 7 times/week) Maintaining "COLD CHAIN" strictly. And UV sterilized water, quick cooling systems, etc. in production... And replace tofu within 7 days (maximum) of manufacture from all outlets in Pune city. We do this with advanced production planning, Just-in-time delivery systems... **HENCE NO PRESERVATIVES** – in our Soyamilk, Tofu (soya paneer) and Soya Dahee. **YET OUR PRICES** – are reasonable; on an average. Chetrans products are half their branded dairy equivalent's prices. **FINALLY OUR TEAM** – The company is run by senior professionals – a father who produced India's first frozen food distribution system, and sons who are IIT/IIM graduates and an MBA – Chetran's was set up with the objective of providing healthy protein at a lower cost to the Indian consumer learning from Japan and China.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
The innovation essentially involved producing soymilk from the soybean and then using the soymilk as a base for producing products normally produces from cow and buffalo milk like paneer, dahi, etc. Producing soymilk as such was hardly an innovation since it was based on practices followed for centuries in China, Japan etc. The innovation was in producing products aimed at meeting Indian consumer habits and tastes normally based on animal milk.

The advantages of using soybean include the following:

- Healthy—cholesterol free, low fat, high protein, fit for lactose intolerant children etc.
- Lower cost of production and provides possibly the cheapest source of high quality protein in India.
- Can in fact improve the nutritional standards of the poor.

Role of industry and competitors in the innovation.
Production of soymilk started in Pantnagar university in the <70s. As an Industrial unit, we essentially Indianized the product and commercially distributed in Pune.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)
Frankly I personally was responsible for the innovations. Having spent much of my life in Food as an I.A.S officer with the Maharashtra Government and with GOI, I got very interested in soybean. GOI sent me to Japan to study the food industry in 1982. Having failed to persuade the NDDB to look at it when I was working there between 1986-89, I tried my hand at producing tofu and soymilk from my mixy at my residence and sold it. Convinced that it would work I purchased my first machine for about Rs. 70,000 and began producing and selling soymilk and Tofu in about 1996 from my residence. I had a few helpers one of whom is still with me and now a supervisor.

I personally sampled Tofu and soymilk at various stores in Pune.

My elder son who is an IIT, IIM graduate joined me in about 2000 and gave a major push to product packaging, distribution and manufacture. We moved into Industrial premises in about 2006. And clearly became an industrial unit.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

The innovation was based on a mental commitment to provide a low cost protein based on what I has seen in China and Japan. It was also linked to my widespread knowledge of poverty and lack of nutrition from what I had seen particularly in rural and tribal India. I anticipate a day will come when soymilk will be produced and sold loose in villages at possibly as little as Rs. 10/l.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

We were probably the first to develop items aimed at Indian tastes (a Tofu based Paneer) etc. We are probable the first to develop a soy based product similar to srikhand worldwide. Soymilk based dahi was first developed and sold in Kerala. Ludhiana has done a great deal of pioneering work in selling packeted soymilk. I understand one can buy rasgullas made from soymilk in West Bengal—our efforts have failed.

3. Description

Describe the innovation and the domain in which it is an innovation.

The innovation was essentially in developing products meting Indian usages and tastes from soymilk. These included products similar to paneer, a masala paneer, a product similar to srikhand etc.

Outline the way(s) in which it is innovative.

The innovation was essentially in developing soymilk based products that meet Indian tastes and are normally made from milk. We failed in making a good mithai, or a rasgullas. I believe in Calcutta one can buy soybean milk base rasgullas. The Government Catering Institute helped us to some extent.

4. Problems, Barriers & Risks

What challenges were faced in creating the innovation?

The challenge was personal—to create acceptable products and market them. We were not permitted by the PFA to call these by the Indian names—paneer, etc. Had we been permitted to call "Tofu" by the name soy Paneer it would have eased our marketing problems. Had we named it as Soy Paneer the consumer would have understood the

product and its usage. Soymilk Tofu (Paneer) can be uses as a Paneer and is half the Price of Paneer in Pune.

How/were these overcome?
Hard work, effort and sampling. No major investment as I did not have the resources. I was sampling personally 5 days a week in the evening outside shops. People who had known me as a Secretary to the Maharashtra Government were very surprised.

5. Process

What was the pathway that leads to creation of the innovation?
Commitment, interest, involvement

What was the role of R&D and how we co-relate R&D with innovation?
No views: Much of my product development and usage was done by women with limited education who essentially cooked food for their families ps my personal trials and failures.

At what stage is the innovation currently?
We successfully market a range of soymilk based products in Pune including Tofu (Paneer), a soymilk based Dahi, various spreads, a Masala Tofu etc. We are continuously attempting to widen the range and develop our products to meet Indian consumer needs. A number of products are in the development stage.

What remains to be done.
Continuous expansion of the market, improvement of existing products and developing new product.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?
The main beneficiary is the following:
Consumers who get a high quality protein based on soymilk in the form of normal Paneer at half the price of milk based product.
Lactose intolerant children can drink soymilk but are unable to drink normal milk
Diabetics etc. who wish to minimize fat but enjoy dairy products.
In a small way the farmer who supplies us material and our employees also benefit.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

Our greatest difficulties are distribution and promotion, Can the PFA be persuaded to permit us to call our products by their Indian names with the word Soy added— Soy Paneer, Soy dahi etc. That would help a great deal. A promotional government grant would have helped in accelerating the process.

8. The Future

Where the innovation is likely headed?

Continuous growth for us. I however dream of a day when every village will make soymik and producers will sell it without packaging to other villagers as in china high protein low fat milk at possible 1/3 the cost of normal milk aimed at improving nutritional standards in rural India. Incidentally we provide free milk to Young children in a slum school near our factory.

Can government assist in the following?

Enable me to visit China, see the village production units and work with a group to replicate in tribal and poor areas of Pune.

Finance my son Chetan Pal to visit Japan and seen the processes and equipment for manufacture of certain products—tofu/paneer, dahi, cheese, etc.

Case 4

Dhopeshwar Engineering Pvt. Ltd.

Company address	A-16, Co-operative Industrial Estate, Balanagar, Hyderabad – 500037.
Respondent name	Mr. Varun Dhopeshwarkar
Respondent designation	Marketing Executive
Email id	varun.dhopeshwarkar@gmail.com/ sales@dhopeshwar.in
Contact no	+91 96521 58908
Product	Development and supply of Integrated Processing Plants
Industry	Engineering
State	Andhra Pradesh

Company Profile

Established in 1963 by Technocrat (Late) S.G. Dhopeshwarkar as a Chemical Engineering company, Dhopeshwar Engineering has built its reputation as an Engineering company specializing in development and supply of Integrated Processing Plants.

Initial Years:

In its initial years, from 1963 to 1973, our company catered to Chemical & Paint industries and supplied Stainless Steel Reactors, Condensers etc. By 1977, we had established ourselves as a Reliable & Quality conscious supplier. This success in development & supply of individual equipment helped us develop our range of integrated processing plants in the coming years.

2nd phase from 1977 till 2000:

In 1977, the company baton was passed on to the founder's son, Mr. Shirish Dhopeshwarkar who consolidated the reputation of our company for high quality & strong business ethics thereby continuing his father's legacy. In the early 80's, the focus was laid on the development of new Processing Plants and this enabled our company to expand our range of plants from the Chemical sector to Agriculture Processing (Essential oil Distillation plants in early 90's) and Poultry Processing sector (in late 90's). The company's practical experience and Engineering expertise, skilled manpower, and committed workforce enabled it to supply integrated plants on a Turn-Key basis to 3 different sectors.

2000 – Present:

The range of our Processing plants & Equipment reflect our rich experience and industrial expertise. Our expertise in supplying fully integrated plants, knowledge of projects, quality of supply & expertise has helped us win the trust and approval of our clients in India & overseas. As of December 2016, we have successfully completed Exports to 17 countries extending from Papua New Guinea to El Salvador.

Developing New Process Plants:

A total of 8 different Processing Plants & Technologies were developed in last 7 years under Mr. Shirish Dhopeshwar's leadership. He is presently the Chairman of the company and has already completed 35 years in this Industry.

The company which started as a proprietary unit in 1963 is now (a family owned) private limited company. The corporate entity was incorporated in 2003.

The respondent Mr. Varun Dhopeshwarkar is the son of Mr. Shirish and will eventually take over the baton from his father. Mr. Varun currently handles the marketing for the company.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

Poultry Layer Manure is a by-product of poultry layer farms as a part of their breeding operations. On a daily basis, manure is collected under the cages in a pit which contains high moisture which becomes a breeding ground for flies and spreading diseases to nearby areas. As of today, there is no solution to the problems of layer manure in India. This manure is collected and sold to agricultural farmers at dirt cheap price as an affordable organic fertilizer to be used on their food crops. This is a practice all over India. Untreated layer manure as a fertilizer is toxic in nature. Reduces soil fertility over a period and contaminates the underground water table because of the high amount of nitrogen it carried. This when used as a fertilizer, comes back in our food which is then eaten by us and can have long term disastrous effects including rise of cancer. A primary reason as to why poultry farms are so nonchalant about manure disposal is because there is NO LAW that states the proper sanitary disposal of such waste. Which makes it a grey area as it is disastrous and detrimental but technically not illegal. We at Dhopeshwar Engineering have developed a solution for treated, removing excess moisture, sterilizing the product, removing odor from manure with the option of pelletizing the end product which can be used an organic fertilizer without any harmful effects.

Calculation – a 1 lakh layer bird farm produces up to 10 tonnes of manure per day. There are more than thousands of such farms within such a range of 50,000 – 3,00,000 bird farms in India which requires such technology of treating their waste manure which presents the huge market potential and the need for a policy / Law / framework for providing an impetus to the acceptance for this technology.

Role of industry and competitors in the innovation.

The poultry industry is vast in the breadth of the sub sectors the industry comprises of. Be it poultry cages, feeds, vaccines, processing, rendering, waste disposal, etc. Factors affecting manure are – environment. Meaning housing systems of poultry farms which requires the role of poultry cage and house manufacturers. The manure of the bird differs from farm to farm as the feed dictates the nutrients that will be found in the manure and each farm has its own feed ratio of nutrients. Thirdly, the storage and handling, collection of the waste also affects the manure.

Role of location and environment in the innovation

Hyderabad is a strategically located city for this innovation as the major Poultry operations in India are in Andhra and Tamil Nadu within the southern region and Hyderabad falls under Telangana which is in close proximity to both states.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

The innovation was a combined effort of the management of Dhopeshwar Engineering. The Managing Director, Mr. Shirish Dhopeshwar has been working in the poultry sector since the past 25 years and has built a wide network from industrialists to academicians to farmers. Mr. Shirish has been working with waste rendering plants for poultry since 1994 and had come across this issue of layer manure disposal from several farmers and decided to build a solution for it. We also had a consultant, Dr. Bhogle who is a microbiologist who helped in developing enzymatic solutions for the layer manure process. Mr. Varun Dhopeshwar, the marketing executive of the company has achieved his Master's degree in Innovation and Entrepreneurship from University of Warwick on the thesis topic "Potential of Poultry Layer Manure as an organic fertilizer in India" in the year 2016 which comprises of a detailed research of the problem in India in this matter with interviews held with different players in the Indian farming sector from academicians, to veterinary doctors, to biogas consultants, poultry cage manufacturers, experts in the field of fertilizers in India, etc.

Where did you get the idea?

Already mentioned for the first question

How did it originate.

Already mentioned for the first question.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

This is a fairly new innovation. The processing of layer manure developed by Dhopeshwar Engineering is batch process with two capacities offered at the moment. In a span of 24 hours, you can process:

- 10 tonnes of layer manure and,
- 20 tonnes of layer manure

The other alternatives to use layer manure are –Incineration – Burning of the manure. The manure has high moisture content which makes it difficult in its natural state and also prolongs the duration of the process. There is no return on investment or revenue generated in this process and is expensive to burn the manure on a regular basis.

Biogas – The high amount of nitrogen in the poultry manure (which is the highest of all livestock manure) retards the methane generation process in Biogas plants. The calorific value generated is also considerably lower and hence is not a suitable option for the large amounts of poultry manure generated in poultry farms. Post the biogas process, there are still effluents generated as a by-product of the process which have to be disposed-off and cannot be re-used. It would take another treatment process before discharging these effluents. Hence, Biogas is a wasted expenditure.

Composting – Composting is a slow and time consuming process which takes a month to several months depending on the manure and material. In such a case, the manure that is produced on a daily basis accumulates and attracts flies and aids in spreading diseases while the previous day's material is still being composted. It does not fully sterilize the manure of the pathogens it contains and cannot alter the ratio of nutrient which an enzymatic solution gives us.

Direct application of manure on land – High amount of nitrogen burns the crops. The nitrates leech into the soil and ultimately the underground water table contaminating both as they are in excess quantities. The fresh manure or semi-dried manure is difficult to handle and apply due to the wetness.

For the above limitations of the alternatives mentioned, Dhopeshwar Engineering has developed a solution for drying, sterilizing and making the manure ready for direct application on land without harming the soil. In order to alter the chemical composition of the manure to suit soil and crop requirements, enzymatic solutions can be provided as well as the end product of dry poultry manure (in powder form) can be pelletized for broadcasting applications.

Identify whether your group was first, second, third, etc. to adopt in Region/ India/ worldwide if you can.

From the innovations seen from around the globe, ours is a first of its kind to develop a systematic batch process for treatment of layer manure within a single day for the output ready to be used in agriculture as well as the assistance of enzymatic solutions if need be. In India, there is currently no one that offers drying the manure with removing excess moisture, sterilizing the product, removing odor from manure with the option of pelletizing the end product.

3. Description

Describe the innovation and the domain in which it is an innovation.

The innovation is a turn-key solution for drying, sterilizing, odor removal and pelletized fertilizer. The raw material is fresh layer manure found at layer poultry farms. It is an innovation in the poultry sector under the waste management category for creation of a revenue generating product of an organic fertilizer from a waste by-product of layer manure.

Outline the way(s) in which it is innovative.

It is the only kind of solution which dries the layer manure of excess moisture. The solution also offers a conveyor and silo system with vacuum for easy loading of
the manure onto the plant which reduces handling of this waste. It is a timely batch process which makes it easier to utilize the manure that is generated on a daily basis. Saves storage space as once the manure if dried, the volume is reduced by 50% or more. The process removes odour from the manure once it is dried and sterilizes the product completely of any pathogens. The innovation also offers the opportunity to alter chemical composition of the dried manure to be used as a fertilizer using enzymatic solutions.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

The innovation has no support. The most common reason is resistance to accept such a technology because there is not much literature available in the Indian context of using treated organic layer manure as a fertilizer. The poultry farms that are facing this issue of disposal, simply throw it away in landfill rather than investing in its sanitary disposal as the current alternatives are an expensive investment and not feasible. There is no law / policy / framework for sanitary disposal of poultry layer manure and this loophole allows poultry farmers to simply dump the waste and let it rot, create odour issues in the surrounding areas. It becomes a breeding ground for flies and rodents to carry bacteria and spread diseases and the manure in its untreated form leads to land degradation over time as well as soil contamination.

How/were these overcome?

Dhopeshwar Engineering as started offering this solution to poultry farms in mid 2016 and while there are a lot of enquiries for this solution as it is in high demand, the idea of sanitary disposal of manure isn't very common and unless there is a mandate for it, the resistance will take time. The big farms are already approaching us to install the unit. We have already supplied and installed one such unit and Nepal's biggest hatchery farm.

5. The Process

What was the role of R&D and how we co-relate R&D with innovation?

The research for this project stemmed from the repeated enquiries for waste management solutions for poultry farm manure. Senior management at Dhopeshwar Engineering started gathering information on the topic and the joint experience of Mr. Shirish and Dr. Bhogle in their respective fields laid the foundation for the innovation while Mr. Varun's contribution in terms of his thesis really adds value to the whole idea of this project and makes it more substantial.

Were there separate inventors, champions, implementers and evaluators.

This innovation is solely produced by the efforts of Dhopeshwar Engineering with Dr. Bhogle as a consultant to the project. In terms of implementation, our client in Nepal has helped as he set up our very first manure drying plant for which the results will be put for further evaluation.

At what stage is the innovation currently?

The innovation is ready and the results of our first supply of plant and machinery are yet to be evaluated.

What remains to be done?

Marketing this product in the poultry farming community at the ground level and spreading awareness of such an innovation and solution for this burgeoning problem of sanitary disposal of layer manure.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

The client has a poultry layer farm of 3, 00,000 birds for which his layer manure problem of disposal will be solved.

The product has yet to be supplied to more people for them to reap the benefits of the solution.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

The initial research for this project took more than a year for developing the solution. While interviewing people, most people were not willing to talk about their disposal methods as they were throwing is away or didn't want to disclose the fact that they were selling untreated manure for agricultural purposes. Although the solution developed is only for poultry layer manure, it required a complex study of different aspects – biogas and alternatives, poultry manure composition and characteristic in India, farmer perception of the problem, fertilizer market in India, collection, handling and disposal practices of manure, the legal frameworks in place for these, adverse effects of the untreated manure on land and underground water, etc.

8. The Future

Where the innovation is likely headed?

We see the innovation helping thousands of farmers not only in India but also internationally for poultry farms facing the same problem of layer manure disposal as this is a global problem and not limited to India. Dhopeshwar Engineering plans to evolve the innovative solution with time making it more effective and relevant to the customer who will be using it and benefitting it, helping us conserve the environment around us by sanitary disposal of this waste.

Case 5

Excel Impex (An ISO9001:2008 Certified Co.)

Company address	Excel Tower 138/B Puranattukara, Kerala 680551
Respondent name	Pauly Thomas
Respondent designation	Proprietor
Email id	excel@excelglassarts.com
Contact no	04872308832 /0487 2309417
Products	Glass
Industry	Glass and Ceramics
State	Kerala

Company Profile

The company's basic philosophy and guiding objectives are to provide research based qualitative products to the needy customer from a single roof at affordable price. We distribute a wide range of value added products especially for beveling, etching, and stained glass, and sandblasting, polishing, grinding, engraving, architectural and artistic solution in glass industry. Moreover, we provide customer oriented Diamond Coated Products manufactured by our sister concern Excel Abrasives (excelabrasives.com). Our wings spread out through the country only due to recurring quality, pre and after sale service and special care to listen customer with more than 30 years of experience in professional field work. Our ISO Quality Certification guarantees consistent and quality performance every time. We pride ourselves on the long-term relationships we have established with our clients. We are committed to provide continual service and maintaining the highest quality in each dealing with unparalleled customer service, and quality performance, our team work to ensure success. As a service oriented company, we always have our client's best interest in mind.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

However small in this wide open big world we wanted to create our own ways in manufacturing, marketing, service and maintenance to continuously improve and setting the quality standards which taunts us every day. We Excel Impex believe in healthy competition and room for everyone, pushing us to the limits growing every day.

Role of industry and competitors in the innovation.

As stated earlier we enhance healthy competition and welcome it. We see those who are on the same peer not as enemies but as opportunities to keep pushing us forward. In this market which is growing in 8% GDP on an average we are working tirelessly to meet the needs of good customers.

Role of location and environment in the innovation.

In this digital world the role of location is merely a concept to us. However the lab of Excel Abrasives who manufacture our 70% of the products is always an important location.
Excel Impex (An ISO 9001:2008 Certified Company) Excel Tower 138/B, Puranattukara (PO) Thrissur, Kerala-680551

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

We are a small industry and we do not hold strong organizational structure. We believe in teamwork over individual contributions. We do not differentiate on the position of the employee and look to modify each and every positive contributing idea to get the most out of it. However the research and developments in manufacturing sector is mostly done by our director and the production engineers mostly.

The General Manager - Our sole leader, the last word before implementing any changes to the system.

Accounts Manager - As per the growing needs of the market, we are responsible to sell the product at reasonable charges. However it is almost a herculean task to see both ends of cost and quality without compromising on both.

Marketing Manager - To lay a constant foothold in this dynamic industry is always a difficult task. It is the responsibility to create new trends, find new products and apprehend new customers in the tides and storms of the market.

Purchase Manager - To get every right as a customer including cost, quality and consistency in the products that we buy is one of the most important tasks. Providing new trade routes, supply chain management and often money management is daunting task.

Where did you get the idea?

Mostly from our employees and director.

How did it originate

Seed is always random.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

We are always the number one firm to provide a change and innovate new ideas to the market.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

Honestly we do not know about the position of the world, We are certainly the first one in India in our own ways.

3. Description

Describe the innovation and the domain in which it is an innovation.

As per the new trends in marketing we have constantly adapted to the market. We have introduced an E- commerce wing as well as we have constantly targeted our customers according to their need. We have introduced new products to the market studying the need of existing requirement. Exploring the market outside India is been our focal point lately and had conducted various countries like Germany, China and Italy.

We have introduced new analysis systems instead of previous brainstorming and group discussion, PERT, BEP analysis, Fish bone diagrams and some of the new management tools and hired professionals to expand our growth one of the top priority. We would like to introduce the new ERP software's and hire more professionals that would catalyze our growth in the coming years.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

Eliminating risk has always been our top priority. Our experience of more than 25 years in our sector has provided with vast knowledge and the risk has always been assessed and countered many times than not. We can honestly say that negating Risk is our greatest innovations. The problems we face now would be inconsistency of Human resource, especially trained/professional personnel. The competition has made us stronger and we had continued to work on narrow margins, however the increase in life expectancy and wages as well as unhealthy competition without ethics is the major barrier we face now.

The initiative skill and motivation to set up a business to make dynamic changes in the production process, introduce innovation and to find out new other challenges included developing vision and idea raising capital

5. The Process

What was the pathway that leads to creation of the innovation.
This would be lead to an increased understand of the knowledge bases and innovation capacity with potential to promote

What was the role of R&D and how we co-relate R&D with innovation?
Research on new products and services has always been the focal point of our firm. We find new products/ customers then we create new trends in the market and promote it by innovative yet prospectus ways.

At what stage is the innovation currently?
All our innovations are never ending progressive stages.

What remains to be done?
We are committed to provide continual service and maintaining the highest quality of products in each dealing with unparalleled customer

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?
The employee are getting that desire benefit from the management. We always generate awareness about government related document such as Company Registration certificates, Employee welfare, Taxes etc...
We are keeping always good relationship with the team work and our main aim Safe & Quality. At present we are getting lot of requirement from the various valued customers and also we are providing the good quality of product as per their requirement on time.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.
Our practical experience is making good safe & quality team work and learns more difficulties lesson and analysis /discuss about that specified error and making good efforts to solve them.

8. The Future

Where is the innovation likely headed?

Our main ambitions are that we make more and more high quality of products and our business to expand all over in India and Abroad.

Case 6

Faze Three Ltd

Company address	Plot No 71, Opp. GTBL, 1st Phase, J Type Indl. Area, GIDC, Vapi- 396 195.
Respondent name	Bheemanna B Chikkerur
Respondent designation	Executive Director
Email id	b.chikkerur@vpi.fazethree.com
Contact no	9909905254
Products	Home furnishings
Industry	Textile
State	Gujarat

Company Profile

Faze Three Exp is in the Textiles - Spinning - Cotton Blended sector.

Quality assurance and quality Control-Our lab is well equipped with latest and most modern instruments.

Colour matching-We have one of the finest computer colour matching system which is a revolutionary non-contact digital imaging system that captures the total colour and appearance of 2D and 3D objects in a unique controlled lighting environment. This software helps us check the colour difference & to take the recipe for all types of dyeing for lab as well as for bulk.

Metal Detection machine-As our products are also for babies, our quality system also ensures very careful for not to have any sharp metal edges or metal parts in our product by passing through most modern metal detection machine.

Dimensional stability of product-An important characteristics in our range of products. We perform dimensional stability test for number of washing & ensure usability of the product will not effect. We are also having all the facilities for in-house checking like yarn for it's appearance, strength, TPI, color fastness / dimensional stability. We do Receipt, In-process & Final stage inspections to ensure product quality at each & every stage of production. We believe in prevention rather than detection by quality assurance methods.

We articulate a vision appropriate to the Global context. The Vision requires each of the Faze Three businesses to attain leadership of international competitiveness, whilst not forgetting its obligation to the Indian Society.

The company will uphold its values so as to remember that profit is a means rather than a end in itself. It will have unwavering commitment to integrity, ethical conduct and teamwork.

It will continue to identify vitality as a driving force by strengthening competitive capability, deepening consumer insights, breakthrough innovations in the product and process. The company will continuously increase its ability to rapidly absorb knowledge and harness technology along with leveraging market opportunity.

Faze Three is therefore committed to stay on course of a challenging strategic path and is willing to go the distance in its quest for enduring value for its shareholders.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

Innovation is the route to economic growth. Innovation is the creation and transformation of new knowledge into new products, processes, or services that meet market needs. As such, innovation creates new businesses and is the fundamental source of growth in business and industry. With costs reaching bottom and few opportunities to reduce them further, companies can turn to increasing sales. Marketing innovations come to mind here and do well to sell more of what you have to sell. But new products and services bring in new revenues too.

Role of industry and competitors in the innovation?

Textiles industry is facing stiff competition from foreign textile industry including our neighboring countries, especially from Bangladesh, Pakistan and Sri Lanka as these countries are taking advantage of unilateral tariff preference scheme granted to developing countries.

Competitive analysis plays an important role in shaping the marketing strategies of many brands. Your brand's rank in your market helps reveal your strengths and shortcomings. For many companies, however, competitive intelligence is, at best, incomplete.
Role of location and environment in the innovation.

Stiff competition forces down costs while working conditions, more often than not in developing countries, are far from ideal. The environment pays a heavy price too. To improve conditions for workers and stem pollution, textile producers, manufacturers and distributors are launching the first initiatives built around sustainable development who knows, ecology may be the next new trend.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

The company assigns responsibilities that each team must accomplish in order to keep the company running and to produce profits.

1) **Executive officers** are responsible for keeping the ship afloat - They work with all of the teams to create synergy and hold them accountable

2) The **research and development team** has the responsibility of being innovative and keeping up with the latest trends and developments in whatever field the company is in.

3) The **operations and production team** is responsible for bringing the product to life. They receive the product's vision from the research team and then bring the product into its finished stage.

4) The **sales and marketing team** are responsible for bringing the product to market
5) The **accounting and finance** team is the group that calculates the sales and reports back to everyone in regards to numbers.

They bring everything full circle because the sales numbers this will trigger whether or not if new developments or improvements need to be made, production needs to increase or decrease, or if sales and marketing teams need to refocus their direction.

Where did you get the idea?
Looking into the present changing environment and thirst to innovation the internal team came with the idea.

2. Description

Describe the innovation and the domain in which it is an innovation.
China's manufacturing base in Textiles is larger than India both in terms of Yarn and fabric providing opportunities for higher garment manufacturing and exports. China has large and strong Infrastructure to meet global demand of Textiles and Clothing.

The Government has undertaken research and studies on various facets of Textile industry including estimating the domestic household market size of Textiles, export competitiveness analysis of the Indian textiles in different export destinations of the world.

3. Risks, Problems, Barriers

What challenges were faced in creating the innovation?
Business-as-usual in organizations presents a series of business challenges faced on both short and long terms where innovation is paramount.
1. Short-term focus
2. Lack of time, resources or staff.
3. Leadership expects payoff sooner than is realistic.
4. Management incentives are not structured to reward innovation.
5. Lack of a systematic innovation process.
6. Belief that innovation is inherently risky.

How/were these overcome?
Barriers to creativity and innovation must be identified and a creative innovation implementation plan set in place.

1. First, it is important to identify such barriers in order to overcome them.
2. Change is constant in today's society, so we must allow ourselves to embrace and accept that change with excitement, readiness, and preparedness.
3. Promote and expect a climate of cooperation and collaboration.
4. Ban comparison. (Comparison is an innovation-killer.) Despite branding experts warning against the precarious position a brand builds by pursuing a 'me-too' mentality, many companies are still searching for 'the next iPhone' or the 'next Steve Jobs.

4. The Process

What was the pathway that leads to creation of the innovation?

1) Recognize issue
2) Find solution
3) Develop & Test
4) Adoption
5) Diffusion

What was the role of R&D and how we co-relate R&D with innovation?

Research and Development plays a critical role in the innovation process. It's essentially an investment in technology and future capabilities which is transformed into new products, processes, and services. There are two ingredients recipe of innovation. One of those ingredients was knowledge, another technology. R&D directly supports the development of both of these things (depending on your industry but certainly the former of the two).

Were there separate inventors, champions, implementers and evaluators.

The innovation team consisted of the internal personnel of the organization accompanied by some outside experts prominent in the field.

At what stage is the innovation currently?

There are five stages to successful innovation:

1) Idea Generation & Mobilization
2) Advocacy & Screening
3) Experimentation
4) Commercialization
5) Diffusion & implementation

What remains to be done?

The final implementation is to be done taking into consideration the economical, financial and social feasibility.

5. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

1) Having more efficient and effective work processes
2) Saving time and money
3) Innovation can be a profit Centre- it can help drive sales and results
4) Business agility
5) Increased customer satisfaction
6) Compliance with legislation and possible tax benefits
7) Encourages and supports diversity
8) May lead to competitive advantage.

6. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

One comes across following lessons in the path of innovation:

1) How to turn failure into a wild success.
2) Recognizing skills and weaknesses.
3) Aligning strategy, leadership style, culture, capabilities and competences is the key to success in building an innovative and sustainable business in today's ever changing market context.

7. The Future

Where the innovation is likely headed

1) Conservative, stodgy, slow to adapt, slow to change.
2) These terms have all been applied to manufacturing companies and the suppliers that provide automation products and services for them. Automation World wanted to start the new year by looking at the ideas and innovations that have driven automation, and at the technologies developing now that will impact automation in the future.

Case 7

HI-TECH PACKAGING

Company address	Plot no. 41, k infra park, Kinfra p.o Pin – 680 309, Thrissur (dt), Kerala, india
Respondent name	P.V NIXON
Respondent designation:	Managing Partner
Email id	hitechkoratty@gmail.com
Contact no	09846337143
Product	Manufactures LDPE Sheet, Film, Embossed Film
Industry	Publishing, Printing and reproduction of Recorded Media
State	Kerala

Company Profile

M/s. Hi – Tech Packaging, an existing manufacturing unit located at KINFRA Small industries Park, Plot No. 41, Koratty, Thirssur, Kerala, India. It was started in the year 2010. We are one of the leading manufacturers of Embossed film & Plain film. Our products are resistant to water, rain dust, humidity etc. and have a prolonged shelf- life.

Semi –embossed films are mainly used by manufactures of adhesive tape, rubber rollers, rubber coated fabric, tread rubber, conveyor belt, etc. It is very much ideal for wrapping printed rubber roller. The diamond shaped embossing in the film helps in the easy removal of air between the film and rubber; while calendaring results in easy and distortion –free removal of air between the films from the rubber.

For your reference We furnish below the list of our few reputed customers in India

MRF Tyres, Pondichery, Trichy - Tamil Nadu . Kottayam -Kerala
Zenith Rubber Pvt. Ltd. Noida
Ankleswar Rubbers, Ankelswar
Polyhose India Rubber Pvt. Ltd. Chennai
Eastern Treads, Kottayam, Kerala
Zahi Tyres, Calicut, Kerala
Midas Treads, Kottaym, Kerala

In our production line, we are having modern technology & equipment's, which were developed and purchased detailed study and physical inspections conducted in various International Exhibitions.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

- To increase productivity and efficiency for profitability.
- Create a new market segment & entirely new industry on market.

Role of industry and competitors in the innovation?

Provision of new technology, new technological process or new production markets.

Role of location and environment in the innovation.

Industial areas

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

The top level management determine the objectives, polices, plans of the organization. They mobilize available resources and they spend more time in planning & organizing.

Middle level management develops morale in the workers. They spend more times in directing & controlling.

Where did you get the idea?

Conducting Seminars, Exhibitions etc.

2. Description

Outline the way(s) in which it is innovative.

- Raw Material
- Processing
- Semi-Finished
- Finished
- Waste

3. Risks, Problems, Barriers

What challenges were faced in creating the innovation?
Creativity & Competitors.

4. The Process

What was the pathway that leads to creation of the innovation?

- Ideas
- Intellectual Property
- market
- Finance
- Clinical Trials
- Evaluation
- Commercialization
- adoption
- Success

Were there separate inventors, champions, implementers and evaluators.
The inventors had focuses on technology and technical development. The champions focused their efforts on people and communication, preferring to work.

At what stage is the innovation currently?
Earlier Stage

5. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

Case 8

Indian Roofing Industries Pvt. Ltd

Company address	S.F. No 117/IA , IB, IC, Agraharaputhur, Mangalam via, Tirupur - 641663 Tamil Nadu, India
Respondent name	Mr. Vinayagamurthy S
Respondent designation	Managing Director
Email id	md@theindiaengg.com
Contact no	+91 9842241278
Product	Roofs
Industry	Construction & Building Materials
State	Tamil Nadu

Company Profile

Indian Roofing Industries Pvt. Ltd. has expertise in designing, manufacturing and installing prefabricated building structure, steel roof sheets, building ventilation systems, roof ventilation systems. Since 1992 the company offers solutions for residential, commercial and industrial structural needs. It has unique capabilities for engineering 500 & 600 mm diameter opening roof ventilator using aluminium and stainless steel in any shape and configuration.

We uses high quality raw materials, i.e., Bare Galvalume and Color Coated Galvalume sourced from the best manufacturers across the world and PPGI, GI, CR and High Tensile Steel for PEB are sourced from the best Indian manufacturers.

We are the prominent manufacturers of Pre-Engineered Building Systems, Color Coated Roofing Sheets, Roof Ventilation Systems, which is designed according to the international quality standards. From the inception of company, we offer solutions for residential, commercial and industrial structural to fulfill their needs. These ventilators are made up with fine grade aluminum and stainless steel that is available in all shapes and sizes.

Steel Roof sheets are manufactured by using high quality Al-Zn alloy coated steel and Pre-Painted Galvanized Steel. In general two grades of steel are used for roof and wall cladding applications, which are 550 Mpa and 240 Mpa respectively. In general 550 Mpa materials are called as "High tensile steel." In general high tensile steel (550 Mpa) is preferred for roof and wall cladding especially in coastal areas because of its inherent properties and benefits. Ventilation is simply the process of supplying continuous supply of air through the attic space. "Proper ventilation" consists of 50% intake, under the eaves, and 50% exhaust near or at the roof peak. To fight heat and moisture, you must ventilate year around. Heat in unventilated attics may cause temperatures to exceed 60 degrees causing damage to shingles, roof sheathing and possibly radiate to the living area. Moisture being the #1 enemy, causes rot, mildew, mold paint blisters, and renders insulation to be ineffective. Proper ventilation reduces energy bills, winter ice buildup and eliminates mold/mildew which can lead to major health problems. By ventilating, you are extending the life of other building components, shingles, insulation, etc.

Our team comprises of experts, highly experienced engineers over 20 year's industry experience. Our in house R&D team consistently works on product innovation and we also offer custom products. We have international standard, well equipped factory with latest machines for manufacturing and we also incorporate the latest technology in our production process.

We are committed and we deliver the best quality, competitively priced Pre-Engineered Building System (PEB System), Color Roof Sheets and Roof Ventilation System. At IETC we have specialized in Design, Engineering, Fabrication and Erection of Pre-Engineered Metal Building Systems.

We are committed to our customer and their trust in our products. We ensure that only the best quality product is sold and these are priced competitively. We have been catering to the unique needs of industrial and architectural market for 20 years plus and built a strong reputation as one-stop-solution for all roofing requirements.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
To provide terrific security and other related functions that makes roofing products excel in features like shape, color and length of the product with high standard of Pre-fabricated Building Products

Role of industry and competitors in the innovation.
The company has been successful to satisfy every clients need that are mostly required in milling, machinery and other related industries and factories

Role of location and environment in the innovation.
The plant where it is located has no issues to get the raw materials we require from the best Indian manufactures, i.e. Bare Galvalume and Color Coated Galvalume. Environment is also friendly to design as per our parameters we needed.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)
Researchers are well focused to design our structures as per low cost products, efficient and well advanced technology.
Directors are focusing on providing high standard of Pre-fabricated Buildings products all over India. Staffs are here to give quality and quantity of the products in timely manner and to make our customers feel special in terms of price, service and product selection.
Governments, Other Indian companies are too supportive to carry our process in adequate manner.

Where did you get the idea,
We have been visiting various companies, international symposium where we discuss the matters and analyze with our experts (researchers and technicians).

How did it originate.

It originates when we discuss our plan with different business people to marked its presence in various industries.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

The company offers modern architectural technology in its roof ventilation system. It makes the atmosphere good and fresh and with ventilation it eliminates the toxic air saving the damage of products in the related industry and also engages in serving various roof sheets like colour coated roofing sheets, steel and aluminium roofing sheets that takes care of the atmosphere of any industry or factory. The industry manufactures the finest products with assurance of customer service and completing satisfying their needs.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

The ultimate motto remains to satisfy mass needs by serving different products and to put up creative, innovative ideas to their product for enhancing to the rise and better market value of it as well.

3. Description

Describe the innovation and the domain in which it is an innovation.

No Power Roof Ventilation System--Ventilation is simply the process of supplying continuous supply of air through the attic space. "Proper ventilation" consists of 50% intake, under the eaves, and 50% exhaust near or at the roof peak.

Outline the way(s) in which it is innovative.

To fight heat and moisture, you must ventilate year around. Heat in unventilated attics may cause temperatures to exceed 60 degrees causing damage to shingles, roof sheathing and possibly radiate to the living area. Moisture being the #1 enemy, causes rot, mildew, mold paint blisters, and renders insulation to be ineffective. Proper ventilation reduces energy bills, winter ice build up and eliminates mold/mildew which can lead to major health problems. By ventilating, you are extending the life of other building components, shingles, insulation, etc.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?
Steel Roof sheets are manufactured by using high quality Al-Zn alloy coated steel and Pre-Painted Galvanized Steel. In general two grades of steel are used for roof and wall cladding applications, which are 550 Mpa and 240 Mpa respectively. In general 550 Mpa materials are called as "High tensile steel." Which are generally difficult to design as per the client requirements and operation for its standardization process.

How/were these overcome?
Our designers are free to choose slope of their choice keeping factors like heat dissipation, operational requirements, energy conservation and environmental factors in mind. Our profile is suitable for adaptation to slope as designed. We have various models to overcome these issues.

5. The Process

What was the pathway that lead to creation of the innovation.
The Pre-engineered Steel Buildings Structures are custom designed, precision engineered with minute detailing so as to ensure the efficiency of the final structure. We at IETC provide these Steel Roof Structures (PEB´s) with a variety of structural and non-structural additions based on the customer´s specific requirements.

What was the role of R&D and how we co-relate R&D with innovation?
R&D play a major role in these sector as with Pre Engineered Buildings they do structural measurement as per Ridge Line and Width Module. They also focus on yield strength for primary build up members as Typical Rafter and Typical Column. Bracing system with high grade steel plate conforming to ASTM A572 grade 50 has been playing a major role in these innovations.

Were there separate inventors, champions, implementers and evaluators.
We have dedicated team experts who plan for specific areas and work accordingly.

At what stage is the innovation currently.
We have achieved what we need to be done.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative.

- Our powerless ventilators are having the following traits:
- No power exhausting
- Saves energy and money
- Anti-erosion
- No noise
- No pollution
- Improves the air quality
- Increases working efficiency
- Assured ventilation for 24 hours for 365 days
- Designed to be fitted easily on asbestos, all kinds of metal roof sheets & RCC roof.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

After extensive research, study and tests, the Metal Building Manufacturers' Association (MBMA) had recommended roof slope of 1:10 as best suited and optimal for steel roofing sheets. Pre-engineered building systems are the best source for construction of a building with the help of roofing sheets, fittings and panels. In pre-engineered systems, the total process consists of a main frame, panels, padding, ceiling, doors, windows and flooring. Main frame of a building works as backbone as it is efficient and plays a vital role in all harsh weather conditions and the entire process depends on it. Panels are the pillars which supports the roof so as to be strong enough and also help in partitioning the area according to business requirement without any extra effort.

8. The Future

Where is the innovation likely headed?

It protects the goods inside the building from all climatic conditions. Doors and windows are also important as they play the role of enter and exit and for ventilation inside the building. The benefits of roof ventilation system are again a reason for its common use. It helps in avoiding rust, corrosion, dust, insects, foul smell in industries like steel industry, glass industry, textile industry, chemical industry and pharmaceutical industry. When it comes to pure benefits of colour roofing sheets, these are easy to install, require low maintenance, attractive in colour, beautiful, avoids rust and corrosion and avoids highly dangerous rays that is UV rays and infrared rays.

Case 9

Inspired Control Systems

INSPIRED CONTROL SYSTEMS PVT LTD

Company address	Survey no. 16, gulve wasti, MIDC Bhosari , Pune 411026
Respondent name	Vijay Dattatraya Walunjkar
Respondent designation	Director
Email id	vijay@inspiredcontrolsystems.com
Contact no	+91 7774035599 / +91 9970957327
Product	Defence Electronics and allied products
Industry	Electronics
State	Maharashtra

Company Profile

We Inspired control systems that have already made High Dynamic Transient Conditioned Air Handling Unit (CAHU) for the first time in India.

This was Tested and installed successfully with very good results in FEV India.

The unit was made with same Bill of material and specifications like European companies and we could deliver it almost half the cost of European companies.

Now we are making High Altitude Simulation unit for Engines. We shall be the first one to make the same in India.

The use of High Altitude Simulation is to simulate the Intake Air conditions to the Engine for the given altitude where the air pressure is very low.

Ex. Ladhakh, Jammu, Kashmir, Sikkim etc. where the air pressure is very low.

This unit should be used by Indian Military organization like CVRDE, DRDO, ARAI, BEML etc. to Test Engine in house

The purpose of the unit is to Test the Engine at different 1) Temperature 2) Pressure 3) Humidity

For Example if we consider our Battle Tank unit. We can simulate the conditions for 1) High & Dry Temperature – Rajasthan 2) Low Temperature - Leh & Ladakh 3)100% Humid Temperature for Marine engine in sea Battle tank or battle ships Engines can be tested in house where you can connect all the sensors and measurement equipment and R&D on the Engines can be done in a faster way. Currently we are building Altitude Simulation Unit for Engine where Engine of jeep, Trucks and Tanks can be tested at very high altitude like ladakh.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
We Inspired Control Systems have made Engine Intake Air conditioning systems and are making High Altitude Simulation unit. The purpose of the unit is to Test the Engine at different 1) Temperature 2) Pressure3) Humidity

For Example if we consider our Battle Tank unit. We can simulate the conditions for:
1) High & Dry Temperature - Rajasthan 2) Low Temperature - Leh & Ladakh 3)100% Humid Temperature for Marine engine in sea

Battle tank or battle ships Engines can be tested in house where you can connect all the sensors and measurement equipment and R&D on the Engines can be done in a faster way.
Currently we are building Altitude Simulation Unit for Engine where Engine of jeep, Trucks and Tanks can be tested at very high altitude like ladakh.

Role of industry and competitors in the innovation.
Up till now there are only Foreign companies who have made these unit its we INSPIRED CONTROL SYSTEMS PVT LTD who have made the units first time in INDIA.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)
Our is a small company with 4 directors. All have played a major role in making the Engine Intake Air Conditioning system. People have even waited for almost 2-3 months for their salary to get credited. They have worked late nights but never asked for any extra benefits.

Where did you get the idea?
This units we have and build (Engine Intake Air Conditioning unit) and the unit we are building currently (High Altitude Simulation unit) are already existing in European countries but the cost is very high. Our Aim is to provide this facility at low cost to our government military organizations like CVRDE, ARAI, BEML etc.

How did it originate.
I want our Indian military Vehicle Engines to get stronger in High Temperature, High Humidity & High Altitude so I want to build this unit. If the units are for Government organizations we shall give it at no profit basis.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

In India as such there is no competition for High Altitude Simulation units and Engine Intake Air Conditioning Systems.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

In India we are the First to build High Altitude Simulation units and Engine Intake Air Conditioning Systems but these units are available Europe and US companies.

3. Description

Describe the innovation and the domain in which it is an innovation.

We shall attach PPT of both 1) Engine Intake Air conditioning Systems 2) High Altitude Simulation unit for explanation.

The innovation is in Automotive Sector for Engine development.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

It took almost 6 months for our team to develop the Engine Intake Air Conditioning System and High Altitude Simulation unit is being built.

We have invested a lot of Manpower and Money in making the units suit the European standards. We have invested almost 16Lac from our company to complete the project.

How/were these overcome?

The unit Engine Intake Air Conditioning System worked fine as per required accuracy and tolerance which was our first achievement.

High Altitude Simulation unit is under building stage. If Automotive companies purchases our product supporting make in India program than our investment in these projects shall be fruitful.

5. The Process

What was the pathway that leads to creation of the innovation?
Need to make the units at low cost suitable to Indian Climatic conditions was the basic need.

What was the role of R&D and how we co-relate R&D with innovation?
Many Ideas had to be implemented and theoretical concepts have to be made working physically. Many parts were rejected and made new for matching the result.

Were there separate inventors, champions, implementers and evaluators.
No, we have made the project with only our team members in house to maintain confidentiality. We have invested our own money.

At what stage is the innovation currently?
Engine Intake Air Conditioning System is already complete High Altitude simulation unit is currently being built.

What remains to be done?
Engine Intake Air Conditioning System is already working in FEV India Altitude Simulation unit is only 50% complete.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?
Absolutely No support from Government. Partners, clients, employees or others have definitely helped without them it would be difficult to complete the project.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.
We have learnt Hundreds of lessons while building and proving the unit. But with expert advice in the fields we could achieve our target.

8. The Future

Where the innovation is likely headed- Definitely this development shall be helpful to all our Indian Automotive to develop strong and reliable vehicles with better emission norms.

Case 10

Jayanthi Transformers Private Limited

Valasaravakkam, Chennai, Tamil Nadu

M/S. JAYANTHI TRANSFORMERS PVT LTD

Company address	No.13, Sridevi nagar (2nd st. Vijaya nagar) Sridevi Garden Main road, Valasaravakkam, Chennai - 600087
Respondent name	Mr. Manoj Dharman
Respondent designation	Director - Operations
Email id	jtpl@email.com / jtplchn@gmail.com
Contact no	044-24866568 / 9841134576
Product	Transformers
Sector	Engineering Units
State	Tamil Nadu

Company Profile

Jayanthi Transformers Private Limited has strengthened itself as the recognized manufacturer of an assortment of Industrial Transformers of different Capacities for Varied Applications.

We have always focused on upgrading our facilities, technologies and range of transformers such as industrial voltage transformers, electrical transformer, energy efficient transformers, single phase transformers, neon sign transformers, shielded isolation transformers, non-linear transformers, isolation transformer, drive isolation transformers, non-ventilated transformers, buck transformers, boost transformers, current transformers, coil transformers and line reactors in order to remain ahead from our competitors. A well-equipped manufacturing facility supported by a qualified and dedicated team of engineers, technicians and skilled workmen assure quality output.

Our dedication has always been towards client satisfaction, through incessant process improvisation. This has enabled us to be competitive world-wide with regards to quality, cost & delivery.

Due to his active policy of reviewing our unit at regular intervals has enhanced our status as a modern production unit. Altogether our prime concern is centered in reliability and complete client satisfaction of our valued clients.

We are one of the Prime OEM companies who are manufacturers of transformers in Chennai.

Our wide range of transformers includes industrial voltage transformers, electrical transformer, energy efficient transformers, single phase transformers, neon sign transformers, shielded isolation transformers, non-linear transformers, drive isolation transformers, non-ventilated transformers, buck transformers, boost transformers, current transformers, coil transformers and line reactors.

To sustain our quality-assurance and to ascertain our product value, we make use of excellent brands of raw materials in our products such as Copper wires and strips as per IS Standards from standard manufacturing Companies. We use CRGO, CRNGO Laminations and standard insulating material from genuine OEM Companies of which some are imported.

Owing to our ethical business practices and highly effective gamut, we have been triumphant in building beneficial relationships with our clients that is spread all over India.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
The innovation was necessary due to the new problems that were arising at the customer end. This needed an immediate solution to be taken.

Role of industry and competitors in the innovation.
The industrial growth in technology helped a lot to guide on getting the correct resources. The competitors were not aware of it, as it was specifically assigned to our company

Role of location and environment in the innovation.
The company's location is on an industrial base where we could procure and get jobs done easily, which initiated the process faster.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)
The Top management, the R& D team was in full co-ordination for the process, the buyers also did co-operate on giving the required inputs which in turn made the process transparent.

Where did you get the idea?
The idea was conceived at the discussion panel with buyers, our R&D team and management.

How did it originate.
It originated with the need for an equipment that would solve the problem and thereby be a solution to further errors

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.
This innovation is a similar process to other innovations, just that a small change that had been made to it which in turn gave the results needed. It was rather a collaboration of one or two process to deliver a whole new process.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

We cannot identify on the position if we are the first or second to adopt as the industry is vast and worldwide, these small innovations do keep coming up when the need occurs.

3. Description

Describe the innovation and the domain in which it is an innovation.

The innovation is about a combination of High Voltage & frequency supported by a harmonic filter which gives a clear output.

The Domain is electrical. This was given to an R&D Lab for their research analysis purpose.

Outline the way(s) in which it is innovative.

The same source was not available by which the research could not move on to the next step. As soon as the same was delivered, the research got back in its pace.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

The Problems mainly faced was time which was very less in getting the results, other problems included the constraint of size, which was discussed and sorted out.

How/were these overcome?

This was overcome with the discussions with the buyer

5. The Process

What was the pathway that leads to creation of the innovation?

The pathway was the NEED that leads to the creation.

What was the role of R&D and how we co-relate R&D with innovation?

R& D played an important role, they had developed miniatures and tested to see if the same was working and then based on the calculation and results, the original product was developed.

Were there separate inventors, champions, implementers and evaluators.

It was a group effort, where in each one of them had given their inputs.

At what stage is the innovation currently?
The product had been delivered and completed and is running successfully.

What remains to be done?
The feedback and regular check on the maintenance has to be done.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?
The client was very much satisfied on the product that they have given more orders on the same.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.
The lesson learned is that regular analysis and research has to be done, it should be a continuous process that will help to keep in pace of the current technology and can initiate more innovations that could serve the society.

8. The Future

Where the innovation is likely headed
The innovation has opened a path to few more innovative areas, which needs attention and thereby creating more products.

The innovation that had been done will be monitored and checked if the same could be made even more compact.

Case 11

JOPASU SYSTEMS PVT LTD

Company address	Building Maitree, S. No. 78/1, Shivane Industrial Area, Shivane, Pune 411023
Respondent name	Bhagyashree Sailwal
Respondent designation	Manager (Operations & Marketing)
Email id	sailwal@jopasu.com
Contact no	+91-8806664537
Product	Car care and accerrories
Industry	Automotive
State	Maharashtra

Company Profile

JOPASU SYSTEMS PVT. LTD (JOPASU) is a leading manufacturer of world class auto care and auto detailing products. Founded in 1996, JOPASU is into manufacturing, application, research & development and distribution. With a goal of providing highest quality auto care products; JOPASU has remained dedicated in providing the clientele exceptional and enduring value auto care products and knowledge.

Through the years we have built a definition of success that includes a strong committed group of employees, quality manufacturing processes, innovative product development and customer satisfaction. JOPASU believes in being recognized as most admired brand in the industry with its vision centered to becoming a major manufacturer of automotive care products and provide sourcing alternatives to both domestic and global markets.

JOPASU's state-of-the- art manufacturing complex is located in Pune, India. JOPASU's core competency dwells in two decades of accumulated experience of industries' pain points, developing cutting edge formulations and production technology to provide apt solutions for auto care industry. JOPASU maintains over 400+ proprietary formulations with multiple offerings in following categories:

Polishes and Waxes
Rubbing Compounds
Degreasers and Cleaners
Car Soaps
Dressings
Protectants
Specialty Products
Super Utility Products

The developmental processes are streamlined and the operations can accommodate manufacturing of multiple batches and batch sizes. We have the know-how to customize the formulations per customer specifications. This has gained us a better understanding of the industries desires and helped us tremendously in attaining a solid insight into our customers. Innovation is engrained in the culture of JOPASU and is showcased by developing a wide range of indigenous products through Advanced Chemistry and Textile Innovations.

In this ever-changing world, as we go forward, JOPASU's goal is to continually improve our products, processes, build customer relationships, outperform customer expectations and preserve the culture of continuous innovations

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

JOPASU Systems Pvt. Ltd (formerly Miracle Systems) was established in 1996. From 1996 to 2005, the company was solely dependent on importing car care products and distributing and providing services to the auto care segment. The innovation was needed to manufacture world class auto care products inIndia for better customer service. There were issues related to product quality, consistency and delivery reliability due to heavy dependency on importing goods. JOPASU's vision of customer satisfaction and building long term relationships by providing them continuous supply of quality material led to creation of product innovation.

JOPASU started manufacturing few of its products that were in high demand and easy for production. This was a paradigm shift for JOPASU, and since then JOPASU has evolved into a complete manufacturing company of world class auto care products and have totally stopped importing of goods. Every product of ours is labeled as "Proudly Made in India". We have created an alternative to other car care companies for sourcing products in India than importing from outside.

Role of industry and competitors in the innovation.

Industry plays a vital role in innovation. Published research findings in automotive industry indicate that the Indian automotive coatings market has witnessed considerable growth over the past few years due to growth of the automotive industry, both in the new and used car segments. The studies also made a note that significant R&D investments are made by coating manufacturers to enhance the performance of coating products and hence will further boost the market. Adding perfection to the auto surfaces and obtaining that radiating shine is a key to customer satisfaction. JOPASU products are endowed with potential to bring that perfect layer of coatings, polishes, protectants, waxes and glazes. As the industry grow, the necessity to innovate, redefine the products and optimize them to the level that industry and market demands became crucial for survival and for being at par or surpassing the competitors.

We had many competitors in the market varying from reputed global players to street local player. JOPASU had to establish their products in the Indian market at optimized cost with no compromise on quality. A detailed study on competitor analysis helped us in determining quality standards and commercializing the products at right price.

Furthermore, this study led R&D team to compare varied products from competitors and helped sales team to place JOPASU products aptly.

Role of location and environment in the innovation.

Indian market needed quality products at a reasonable rate in auto care segment. With significant growth in industry and heavy dependency on imported products, JOPASU envisioned the market environment to be appropriate for manufacturing products in India.

Innovation is engrained in culture of JOPASU and is showcased by developing a wide range of indigenous products through advanced chemistry and textile innovation. JOPASU has the capacity and platform for innovation. JOPASU has a full-fledged laboratory with high end testing tools. Focus on research and development and continual improvement of existing products is prime and products go through stringent internal and external testing before they are out in the market.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

Our Founder and Chief Innovation Head has a major role to play in creating the culture of innovation in JOPASU. He visits all the departments frequently and on ad-hoc basis. He is always cognizant about the departments' existing processes, talks to people, understand their actual way of working and is finding ways to integrate innovation in their strategic-planning efforts. The staff of chemist and technicians works patiently on several iterations of formulation with guidance from Chief Innovation Head. The applicators thoroughly test each sample and give their findings. At every stage the entire team is working closely from strategy to execution to derive the formulations based on market demand.

Citizens play an important role in providing feedback about our products. People who are passionate about their cars and products that are needed to take care of their cars, give genuine feedback. We work seriously on the feedback comments. So our existing range of products is always on continuous optimization and innovation. There are feedbacks of demanding new products in market for specific purpose. We have provided solution for such feasible feedbacks too.

Where did you get the idea?

The idea originates due to necessity of manufacturing world class car care products in India in order to compete with other leading players. It was becoming evident during strategy meetings that there is need to innovate but it took shape when our CIH (Chief Innovation Head) visited many exhibitions in India and key suppliers abroad. He has closely examined the manufacturing process and decided to take up challenge of 'Make in India' a decade back.

How did it originate?

In one of the exhibitions, our CIH observed that personal care products are being manufactured in India by Shahnaz Husain who was among the top brands in cosmetics. This probed him further to step into manufacturing. He shortlisted the products based on their demands and started working on its formulation. Later, he expanded further with bigger R&D team to cover the entire range of product lines. This created a differentiation in the market and built our reputation in the industry.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

Product innovation is most challenging innovation among our innovations. We had to develop hundreds of samples and source quality raw materials across the globe for finalizing few formulations. The product innovation requires support from all directions – commitment from management, dedication of R&D team and target specifications given by product design team. It was more tedious to build patiently in India due to lack of infrastructure, quality raw material suppliers, affordability and technology.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

We are first in this region (Maharashtra) to be the manufacturer of world class auto care products. We got good response from this region and gradually expanded nationwide.

3. Description

Describe the innovation and the domain in which it is an innovation.

Innovation in JOPASU as said earlier is into our culture. Innovation is seen in manufacturing domain at all levels from Strategy to Execution.

Innovation in Strategy involved changing or bringing in new value propositions like advancements in technology and services. JOPASU is aware that change is accelerating and to accommodate change, there should be change in business models.

Innovation in Products involved making new formulations based on market needs. Here we can take an example of a product named "JOPASU DUSTER REJUVENATOR" as recently innovated product. JOPASU DUSTER is #1 best seller in the vehicle care category

in both online market as well as ground market (accessories shops). Whenever JOPASU DUSTER reached the end customer, the feedback was positive and customers always asked questions whether they can wash the duster and reuse it. The duster when washed loses its ability to attract / lift up dust from the vehicle's surface. Mindset of most of the customers is to not put the duster into the bin but buy a new one. Instead they would want to reuse it. Due to heavy demand from the customers to start a product which can give life to duster again, JOPASU put efforts in developing and innovating a product on those lines. With persistent efforts and dedication, JOPASU launched its new product "JOPASU DUSTER REJUVENATOR". This product launch is seeing a new customer database as well as profit from the existing customers. This is how the innovation is commercialized.

Innovation in Execution involved extending the manufacturing base to "Gram Udyog". We have given trainings to people in rural areas and installed stitching machines at their homes. This allowed them to work part time based on their convenience. This strategy helped us in retaining key skills, handling fluctuations in demand and balancing capacity between in-house and extended teams.

Outline the way(s) in which it is innovative.

Innovation is happening through adopting technology, making formulations in advanced chemistry, providing employment flexibility.

Innovation in strategy involved advancements in technology and services.

Innovation in Product: The chemical formulation of the above mentioned product is such that a thick wax is easily sprayable by a sprayer. All the customers are happy and wondering how thick wax can be sprayed.

Innovation in Execution: Employment (part time and full time), flexibility of working from home and job opportunities for people in rural areas.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

Aforementioned, Innovations in JOPASU are in many domain; process optimization, product development, product optimization, reducing lead times etc. Challenges faced in creatingthose innovations and implementing them are:

- Budget Funds/Time for Innovation: Implementing all strategic decisions needs finance; be it finalizing the business plan, prioritizing the innovation initiative and approval from top management to allocate budget and resources for the innovative initiate.
- Fear of change: People in the organization do not want to change the way of their existing working style. People have an attitude – 'Why fix something which is not broken'. People also have a fear of losing job if the organization is adopting automation

in system processes. It takes good amount of efforts to gradually make them understand the need for change and training them with any complexities involved. The mentors need to make their employee realize the need for change and benefits of that change for people and the organization.

- Skills and Technology: Retaining key personnel and staying updated on technology

How/were these overcome?

The R&D initiatives were prioritized by senior management. Extensive training is provided to team and explained how it is going to help company' growth. The key skills were retained with innovation in execution and extensive research is performed to enable the technology in India.

5. The Process

What was the pathway that leads to creation of the innovation?

Market demand and identifying capacity (innovation capacity) lead to creation of innovation

What was the role of R&D and how we co-relate R&D with innovation?

Innovation in JOPASU is typically the ideas, the products, the services, or processes that are perceived as being new and different. The innovations are being implemented as well as commercialized. The role of R&D is to drive product and process differentiations. This can only be achieved by investing in R&D to gain the most useful knowledge that JOPASU can use to further develop its main product lines.

Were there separate inventors, champions, implementers and evaluators.

Yes. Most of the inventions are done by our Chief Innovation Head. Once the base formulation is ready, the derived product formulations were prepared by champions. JOPASU's service arm and channel partners acted as implementers and evaluators and provided their valuable feedback timely.

At what stage is the innovation currently.

Innovation is a continuous process. Some innovations are already commercialized.

What remains to be done.

There are many plans, but only few are enlisted below:

- We would like to build product variations based on market segments. We currently cover end to end portfolio in car care products but only few products have variations that cater to all specific segments.
- We have plans to file patents on our formulations.
- We would like to certify our products based on norms of other countries so that we can ramp up our export process and take our world class products to rest of the world.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

Benefits:

Individuals: Individuals (customers) are benefitted by buying world class products locally at a good rate

Partners: Partners are benefitted by continuous demand of their products and understand various use of their products. This helps them grow in a particular segment.

Government: Government gets benefitted from reducing the imports and increasing exports of such innovative products. This boosts economy and strengthens our currency. The manufacturing in India provides employment opportunities. There are other benefits covering taxes, savings in foreign exchange fee etc.

Clients: Clients are benefitted by consistent supply of quality products. It is very essential to have the right product at the right place and at the right time. The private labeling customers get world class products locally at an economical price and best suited for the Indian market, timely visibility of their orders, shorter lead-times and lesser price fluctuations.

Employees: Employees are benefitted by acquiring new skills. Skill based cross-skill trainings are provided to employees. They understand the importance of innovation and skill advancement. It is always good for their career growth. JOPASU also offers part time employment options, flexibility in working and work from home options for few odd jobs without undermining the quality of the products.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

- Innovation needs top management support and guidance
- Adapt and leverage the ideas of others: Instead of starting from scratch to come up with an innovative idea, it is essential to look what others have done, thought of, produced and start from there.
- Innovation to adapt to change; Letting go of fear to innovate
- No immediate wins – Innovation path is not smooth and there are no quick wins. Determination and patience is important in achieving the final goal.
- Need to keep customer in mind while innovating.

8. The Future

Where the innovation is likely headed

Innovation for us is heading towards Process Optimization, Product Development, and Team-orientation in the organization, and JOPASU products leading to commercialization based on market demand

Case 12

Kariwala Industries Limited

Company address	Sector 1, Falta Special Economic Zone. 24 Parganas South, WB -743504
Respondent name	Ranjit Kumar Singh
Respondent designation	Factory Manager
Email id	ranjit@kariwala.com
Contact no	9874220383
Products	Apparel
Industry	Textile & Leather
State	West Bengal

Company Profile

Founded in 1989, Kariwala Industries Ltd. began as an enterprise to export quality workwear with constant customer satisfaction as a touchstone. Since then, we have grown from a small supplier of work garments to a diversified portfolio of products and services including manufacturing uniforms, workwear, bottomwear, outerwear, corporate clothing, eco-friendly bags, and fashion accessories. With an eye on the future, we have since diversified beyond manufactured goods into new economy businesses that support our geographic and core industry expansion. From its beginning, Kariwala has been dedicated to community engagement, ethical practices, and environmentally responsible business. We pride ourselves on continually updating our processes and policies to uphold these values.

Today, Kariwala Industries Ltd. is a product and services business engaged in a fully integrated portfolio of companies. While we continue to build on the core production and export of quality textiles with a focus on workwear, uniforms, bags, and fashion accessories, with a diverse line of jute, cargo, cotton, canvas, and other green bags, Kariwala proudly also includes new branches that expand beyond textiles â€" into Information Technology, Knowledge Process Outsourcing, and real estate. Bringing our work apparel and goods to 46 countries and counting takes adaptability and vision, so weâ€™ve grown and expanded into new markets organically. We are not only one of the leading exporters of textile goods in India, we offer the highest quality garments and bags with stringent environmental standards at every step of production in our manufacturing. Our products offer a blend of superior craftsmanship with environmental responsibility. The facilities and the people that help bring these products to market are the best in the business. Workplace happiness for our staff is a goal we continually strive to cultivate in our company and our community. We value our people; their story is the fabric of our story.

Kariwala Industries Ltd. has designed a family business around delivering environmentally friendly merchandise and high-tech services to the global market, and its customers now count on this powerhouse to provide clothing, accessories, technology, and process support with a name that continues to stand for quality, environment, health, safety, and commitment.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
The innovation was needed as the electric consumption and the diesel consumption was the highest in finishing department due to use electric and diesel boilers and to limit the use of natural resources for getting the water converted to steam for the purpose of ironing in our finishing department.

Role of industry and competitors in the innovation.
Manufacturing of garments and bags is a very competitive industry.
To be sustainable, uses of natural resource and competitive pricing is very imperative. And to further give competitive pricing one need to control the overhead costs and to make the process and industry sustainable innovation was a boon.

Role of location and environment in the innovation.
Temperature in the West Bengal region is moderate and sunny almost throughout the year, which added to the idea of innovation.

Where did you get the idea?

The idea was mixed of our sustainable approach to avoid use of conventional use of depleting resource over natural (solar) resource and to make it more effective a detailed study was done to make it further effective through encyclopedia and findings of researches.

How did it originate.
Periodic energy consumption monitoring report gave us the figures that our finishing section was consuming the most amount of energy in the department. A conscious decision was then taken by the management to bring the energy consumption down by the department.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.
The innovation gave us convincing results. We could save more than 40% on the energy consumption and also the cost.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.
We are probably the first in the region and India to adopt this innovation.

3. Description

Describe the innovation and the domain in which it is an innovation.
Solar Water heater, to pre-heat the water required for ironing boilers upto 60 degrees, and the remaining is done by conventional power. Heating water for boiler from room temperature would require at least 40% more power and 20% more time.
The water is first treated with resin to decrease the hardness of the water and then pre heated by a solar water heater before feeding it to ironing boilers.

Outline the way(s) in which it is innovative.
The project has been beneficial for us in terms of time taken by the boiler to produce steam and the energy consumption for producing the same amount of steam is way less than using only the conventional method of steam production and this has been possible only by inducting solar water heater and resin treatment of the water and thus it is an innovation for us.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?
The challenges faced in creating this innovation were very less compare to the benefits we have received. The only challenge was the reconnection of the water supply through resin treatment module and solar water heater for feeding soft pre heated water.

How/were these overcome?
The direct line of water to the diesel boiler was changed and resin treatment machine and solar water heater was introduced within the line. To get the desired results

5. The Process

What was the pathway that leads to creation of the innovation?
High usage of energy usage and time taking for getting the operation ready lead to get the innovation done.

What was the role of R&D and how we co-relate R&D with innovation?
The whole idea of reducing the energy usage was dependent on the R&D. We researched the area where the energy is consumed the most and then we deliberated on the ways to reduce the usage of energy with natural resources. The innovation in the finishing section was possible only with research and development done to overcome the high energy usage in ironing boilers.

Were there separate inventors, champions, implementers and evaluators.
Yes the implementation was done by our Engineering department and the outcomes were verified by the operations department

At what stage is the innovation currently?
The innovation has been successfully commissioned.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?
We have already started getting paybacks with this innovation. Not only the energy consumption per piece of production has gone down but also the per piece production cost has gone down, making our products price competitive.
The pollution with the diesel boiler and stack levels have gone further down giving us a better place to work.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.
The innovation was full of benefits. Water hardness should be checked prior to introduce the resin treatment plant. And a free space possibly on terrace or plain area with accessible sunlight for solar plant to give pre heated water.

8. The Future

Where the innovation is likely headed

Our project is successfully commissioned and the energy consumption levels are now consistently lower than pre project consumption levels.

Case 13

M/s. COMSAT SYSTEMS PRIVATE LIMITED

Company address	Plot No: 22, I.D.A, Mallapur Hyderabad – 500 076, Telangana,
Respondent name	Saripally John
Respondent designation	Managing Director
Email id	johns@comsatsystems.co.in
Contact no	040 – 27150484 / 9849717733
Products	Antenna Systems
Industry	Radio & Communication Equipment
State	Andhra Pradesh

Company Profile

Comsat Systems Pvt. Ltd. was established in the year 1982, and is in the line of manufacture of Antenna Systems for Satellite Communications and other Antennas in the UHF / VHF Frequencies. Presently the Company is manufacturing a wide range of Large Steerable Earth Station Antennas with Cassegrain / Gregorian configuration for Hub / Teleports and VSAT Antennas in C / Ext C / Ku / Ka bands both Prime Focus and Off-set types from 11M to 1M in diameter with various configuration in the mount like Fixed / Static / Non Penetrating / Transportable / Mobile applications. The Company manufactures Mobile VSATs for SNG / OB vans.

The Company has taken Technical knowhow (under Technology Transfer agreement) from Space Applications Center, ISRO Ahmedabad for C / Ext C Band feeds & Antennas for 11 M & 7.5M diameter. The company has a full-fledged workshop (about 20,000 Sq. built up area) with the required Mechanical and Electronic test equipment to manufacture Antennas, Mounts & Feed Systems. The company has an office space of 11000 sq. ft.

The Company manufactures Antenna Control Systems, Motor Controllers, Feeds& Control Electronics Systems to suit customer requirements. The Company has the test facilities for Antenna and Feeds up to 40 GHz.

The Company manufactures Antennas, which meet the INTELSAT Technical Standards like ITU R.S 580-6 & is competing with all the reputed international suppliers in our country. Comsatis having requisite infrastructural facilities to manufacture the Satellite Communication Antenna Systems. The top rung officials are all Ex-ISRO/ECIL background, with more than 40 years of experience in the line of Design & Manufacture of Satellite Communication Antenna Systems. Presently the company has 30 graduate engineers in the faculty of Civil, Mechanical, & Electronics and 70 Technicians.

Comsat Antennas are installed all over India, from Jammu & Kashmir to Kanyakumari, Andaman, and Nicobar & Lakshadweep Islands. The total no. of antennas installed in the country is more than 5000& the number is growing every day.

Our main clients are; Defense (SI – Directorate), ISRO, Government Departments viz; DOORDARSHAN, AIR, BECIL, BEL, ECIL, DD, Meteorological Dept., Cabinet Secretariat etc. Network Companies viz; HCLCOMNET, BHARTI AIRTEL, HUGHES, HFCL etc. Teleport Operators viz; NSTPL, ORTEL, LAMHAS, RAJ TV, MEGA TV, ESSELSHYAM, INDIA SIGN, INDIA NEWS and many TV broadcasting channels operators etc.

Presently, the company is manufacturing 11 mtrs Antennas for SI Directorate DEFENSE, and MASTER CONTROL FACILITY, HASSAN ISRO, Honeywell Technologies USA. Earlier exported11 mtrs Antenna to Rhode &Schwartz Germany,

The Present Annual Turnover of the company is Rs. 20 crore.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
There is no technologically competent indigenous industry in the private sector in the line of manufacture of Satellite Communication Antennas in the Country. (ECIL is the Public Sector Company in this sector). This industry has many foreign players, and from whom the requirements are imported even today.

Role of Industry and competitors in the innovation.
To design the products (Satellite Communication Antenna Systems) to Develop & meet the end, user specifications / requirements, which also meet International Standards like ITU 580-6. (International Telecom Union Specs 580- Revision 6)

Role of location and environment in the innovation
To some extent relevant, but Hyderabad being a Technical Hub for Defense R & D and PSUs like ECIL, BEL etc. are an advantage.

What was the role of various member of your organization (top managers, middle managers, front- line staff, etc) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)
The top officials are all drawn from the PSUs (retirees), who have extensive experience in this line of Satellite Communications in CIVIL, Structural, Mechanical & Electronics faculties. The other Engineering staffs were all fresher's but trained in the Satellite Communications line, and being utilized in the Company.

The stake- holders – of course the Govt., and Industry are benefited by Our Company as most of their requirements in the Satellite Communication Antenna Systems are met by Our Company.

Where did you get the idea?
While working in PSU (ECIL-Dy.General Manager). I have seen an Opportunity – for establishing a Company in a Pvt. Sector, as the county needs such enterprise to meet the increasing demand for Satellite Communication Antenna Systems not only to meet the demand, but also to conserve the Valuable Foreign Exchange spent on import of Antenna Systems from other countries.

In the Satellite Communications Chain, all other subsystems in UP/ DOWN Link equipments like LNAs, HPAs, BUCs etc are imported. Why importing Antennas, which can be manufacture in India (Which meet International Standards) and pay in Foreign Exchange draining our resources?

How did it originate?

I planned for it in 1982, and registered my Company "Comsat Systems Pvt. Ltd", with my resources; I took a Plot in APIIC, Mallapur in 1985 / 86. I took Voluntary Retirement from ECIL in 1991, and started operations – manufacture of Antenna Systems, with Term Loan from APSFC, about Rs.16.0 Lacs. As the Company grew, I ploughed back all the profits into the Company (and not taken any money out of the Company) and used the RESERVES, to increase the Company operations by acquiring Electronic Test Equipments, Factory Machines, Jigs & Fixtures etc, and made self- sufficient to manufacture Antenna Systems in-house, as far as possible.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators, who have adopted this program/policy/process,

The request for Innovation (for Antenna System) came from the users. We utilized our Expertise to meet the technical specifications / Design / Develop / Manufacture / Supply / Installation and Commissioning are the sequential steps undertaken by us.

Identify whether your group was first, second, third, etc. to adopt in Region / India/ Worldwide if you can.

As far as the products ordered on us against Purchase Orders. We are the first to develop and supply the products.

3. Description

Description the innovation and the domain in which it is an innovation.

The Antenna Systems Design Comprises in the Design of the Optics, Control Systems Mounts etc. The Design ultimately meets all the specifications, including ITU 580-6. Thereafter, the product is manufactured and installed in the User's site.

Outline the ways in which it is innovative.

Each request for Antenna Systems differ in the Various Applications like Telecom / Broadcast / Hub Station / Earth Station / VSAT / Mobile / Transportable etc in the Frequency bands of L, S, C, Ext. C, X Ku, and Ka Bands. The other variable or in Velocity/ Acceleration of Azimuth / Elevation Drives etc.

4. Risks, Problems, Barriers

What Challenges were faced in creating the innovation?
Design, Implementation, Manufacture, Installation and Maintaining the Antenna Systems for a number of years (beyond 10 years) is a challenge.

How / were these overcome?
Basically, the Design has to take care of the future perceived problems / snags. Regular maintenance of Antenna Systems keeps them in good health throughout their serviceable life.

5. The Process

What was the pathway that leads to creation of the innovation.
User specs- Preliminary Design – Critical Design – Final Review of Design while manufacturing (attempt any changes required to improve the Design).

While the product is in operation – critically examine for future improvements – modify and continue the improvements.

What was the role of R &D and how we co-relate R&D with innovation?
R & D is the foundation for any innovation. The available R & D in any particular field forms the basis for Innovation of products. In the case of Satellite Communication Products much of the basics are derived from the Text books / R & D Journals / published papers. Today, it is SOFTWARES that are available for the Design of Antenna Optics.

Were there separate inventors, champions, implementers and evaluators.
Yes. But in our case, We Invent, and implement the Invention – (i.e.) manufacture. But, evaluation is mostly done by the external agencies like Satellite Operators, NOCC (Dept. of Telecom / W.P.C).

At what stage is the innovation currently?
It is a continuous activity – in our case.

What remains to be done?
Quite a lot- as it is Comsat Up gradation of the Products.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

USERS: Government Departments, DEFENSE, ISRO, Doordarshan, ISRO, Meteorological Dept., Govt. PSUs-BEL, I.T.I etc
Network Companies – Bharti Airtel, HUGHES, HCL Comnet etc.
TELEPORTS, Broadcasting Companies etc.

Employees - About 120 employees now. They depend on the Company.

Banks - Get their interest payments.

Taxes - We pay Excise, Sales Tax, Service Tax, and Customs Duty.

We buy - Steel, Aluminum, and pay to other industries like Galvanizing, Machining etc.

7. Lessons Learned

Depend on In house expertise; sometimes on R&D institutions like it is.

FIIRST: Don't count on Government, and Banks to come to your rescue when in Financial difficulties.

SECOND: You will not get your 'Receivables' on time. So, you should have other sources of Supply (like borrowings from money lenders etc) to run your factory.

THIRD: Some rogue Company's do not pay the bills. So- write off their debt.

I made errors in investing in setting up a TV Channel for Health. I didn't get support I Envisages from the Hospitals / Doctors. Even, Government didn't help.

8. THE FUTURE

Where the innovation is likely headed - It is a continuous activity. Meeting the Demands of the users for the products.

Case 14

P.G.Industries *An ISO 9001 - 2008 Certified Company*

Manufacturers of BOPP Self Adhesive Tapes & Laminators, Printers, Job Workers

P. G. Industries

Company address	i-9, Industrial area, Malanpur, District Bhind, Gwalior, M.P
Respondent name	V V S Prabhakar
Respondent designation	Head of Operations
Email id	pgindustries@rediffmail.com
Contact no	9425109313
Product	self adhesive tapes
Industry	Miscellaneous including stationery items
State	Madhya Pradesh

Company Profile

An Excise oriented proprietary SSI unit Established in 1997, we, M/s. P.G INDUSTRIES, are an ISO 9001-2008 Certified Company, and we are pioneers and the leading manufacturers of high quality, industrial grade BOPP self-adhesive tapes in M.P. We are situated at Malanpur, which is an industrial area near Gwalior.

We are experts in making "Single color printed" tapes which add to brand value. We have an in-house printing facility to be able to maintain, monitor and deliver excellent quality and print consistency. We have all the necessary testing equipment to maintain our quality.

Other than BOPP, we also experts in release coating and can coat on various surfaces like PE foam, PU foam, Cross link foam, paper rolls, and many other surfaces.

These tapes are also made using high tack adhesives and are of hi sheer and peel strength. Our BOPP tapes come in **standard guaranteed lengths** and fixed widths as per company standards. These tapes are ideally used in the industry due to their high quality. These tapes come in **widths** from **18mm, 24mm, 38mm, 48mm, 60mm, 72mm, 90mm and other widths** as specified or required by the customer. Out tapes come in standard lengths of **65 mtrs as well as in 100 mtrs, 650 mtrs** . We have an **in-house single color printing facility** with a web width of 980mm. We also provide **single color printed branded tapes as per the customer specifications**. We also make colored tapes in various colors. All our tapes are of high tack and high quality.

We, at PGI try to keep everything very simple and transparent.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
The innovation was needed for enhancement of further business opportunities. There is growth in change; one cannot rely on only one source of business. We needed to be more diverse in our practices.

Role of industry and competitors in the innovation.
Without competition, there is no growth. We had done a lot of survey in the market and have tried to stand apart from the competition, keeping the new industry trend in mind. The only way to achieve that was through constant upgrade and innovation.

Role of location and environment in the innovation.
Environment plays an important role in innovation. If the climate is too extreme, labor tends to be under constant pressure and the worker will always tend to perform less as

compared. Same is the case for location as well. Accessibility is a must for any business. Be it for trade or for logistics purpose. If an industry is very far located, the logistics will be a big hurdle. So, the company will have to compromise with costs which intern will effect quality.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

We are a simple organization, all the people working with us are multitasking. This is the call of the day now. One person should be able to multitask so that one can save on operational costs.

Where did you get the idea?

There is a lot of power in information. A lot of research and searching was done to come up with new and unique ideas.

How did it originate?

"Necessity is the mother of invention" they say. Constant competition from the market led us to try to explore new avenues in the business that we are in.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

Nothing unique was done by us. Just that we realized that if someone abroad can do it with the same resources, so could we. So, though we are not so much apart from the rest we still stand to be unique enough.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

Don't know can't say

3. Description

Describe the innovation and the domain in which it is an innovation.

The innovation is in the field of pressure sensitive tapes. By improving old practices and devising new techniques with new integrated technologies, we are able to provide a new range of products that are a cut above the already existing materials in the market.

Outline the way(s) in which it is innovative.

Our newly developed products have

- Better performance
- Better sheer and tack values
- Better shelf life
- Better in terms of ease of application
- They are user friendly where the process is labor intensive
- Consistent

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

Material loss was the main factor as we had to experiment a lot with various kinds of materials at hand. The other factor was loss of production time. We had to figure out a time slot that did not hamper our current production process.

How/were these overcome?

We came up with proper time management and proper machine optimization so that the necessary results were obtained with the least amount of iterations and within as little time as possible.

5. The Process

What was the pathway that leads to creation of the innovation?

Constant vigilance on the market and new needs of the industry kept us on the path of innovation.

What was the role of R&D and how we co-relate R&D with innovation?

There is no growth without R&D. R&D is the mother of innovation in the industry. For us, if it wouldn't have been for the R&D, we would not have come up with the innovations that were done at our end.

Were there separate inventors, champions, implementers and evaluators.

No

At what stage is the innovation currently?

We are at the final stage.

What remains to be done?

Figuring out the taxation issues and commercial aspects, as the government needs to be more open and elaborate with respect to its new tax regime which is yet to be implemented, which is also a key factor in launching the product.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

We benefited by getting to know more of the process and new markets, and the market or the customers benefited by getting good quality material and saved on pilferage and material damage.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

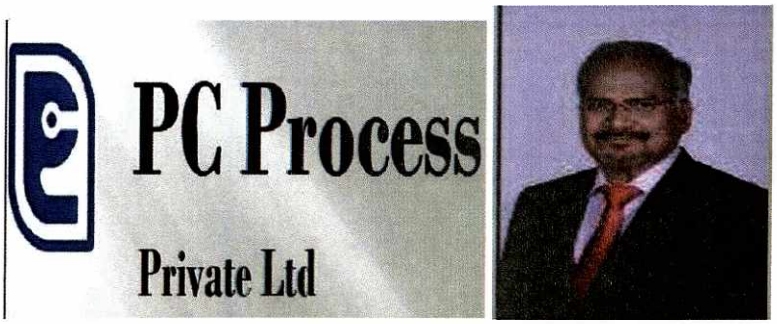
We learnt that what we think always may not actually be the right direction. Once the material is applied in a process, it comes out with its own fresh set of results, which intern lead to new process innovations. It was also understood that what one customer or competitor says may not entirely be the fact of the pulse of the market but on the other hand an aggregate of information should always give you a clear vision.

8. The Future

Where is the innovation likely headed?

Trying to diversify into other products that could be linked if not related to the same product that we have innovated, would probably be the next step for us.

Case 15



PC PROCESS PRIVATE LIMITED

Company address	V3C 14th Cross, KSSIDC Indl Estate, Peenya 2nd stage, Bangalore
Respondent name	K. Sridhar
Respondent designation	General Manager
Email id	Sridhar@pcprocess.in
Contact no	09740573388
Product	PCBs
Industry	Electronics
State	Karnataka

Company Profile

We at PC Process believe there is always scope for improvement and we would like to see you along with us while we keep climbing up the ladder of success with your regular feedback about our service and product.

We are Leading Manufacturer of Prototype Multi Layer Printed Circuit Boards having Complete in House Facilities and Gainer of Customer Confidence with High Quality PCBs delivered on time.

We have various facilities as for Pre Engineering parts we use Machines such as U-cam, View Master Plus, Gerb Tool, Polar Software, Laser Plotter, for Mechanical Finishing we uses Posullux Drilling/Routing Machine, for Imaging we uses U-V Exposure, Dry Film Developing Machine, Solder Mask Developing Machine, Screen Drier, Screen Developer, for wet processing we uses Semi-Automatic PTH Line, Brushing Machine, Dry Film Stripper, Etching Line, Tin Lead Stripping Machine, for QA/Test we uses AOI, Fly Probe Tester, Polar TDR for Impedance Measurement, CMI PTH Thickness Measurement Guage, Micro sectioning Equipment with Microscope and Monitor, Digital Vernier Callipers & Micro Meters, Magnifiers, for Finishing facilities we uses Screen Stretching Equipment, Emersion ENiG Plating Line, Hot Air Level – Tin-Lead and we have Multilayer Facilities.

We are also known for High Dense & High Resolution PCBs, **Custom** Specific PCBs, **Prototype** & Small Batch, **On-Time** Delivery, **Express** Delivery, Quick & Most **Competitive Quotes and Customer Support.**

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
To achieve continuous success. To be in line with new and modern technologies

Role of industry and competitors in the innovation.
Think of advanced activities. More efficient work at very less investments

Role of location and environment in the innovation.
Environments with more gardens, no pollution is crucial for any activities of innovation

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)
Planning and executing all the activities that increases the satisfaction level of Customers, suppliers, employees and management

Where did you get the idea?
From brain storming, from other industries and from employees

How did it originate.
By more and more studying of latest technologies and interactions with various team members.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.
Keeping the best achievers as a role model and their results as bench mark and working towards achieving the same or enhanced result by innovation

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.
Aim at present is to be first in our region, second in India and third in worldwide and future aim is to best in the world

3. Description

Describe the innovation and the domain in which it is an innovation.
Innovation is the application of better solutions that meet new requirements, unarticulated needs, or existing market needs.

Outline the way(s) in which it is innovative.

1. Believing that existing system needs more improvements
2. Changing the mind to accept the changes.
3. Collect new ideas and set a new goal
4. Work towards achieving the Goal.
5. Enjoy the success
6. Stop not

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

1. Teams unwillingness to change
2. Difficult in finding time due to routines
3. Lack of knowledge

How/were these overcome?

1. Convincing the team members on the effective results of new changes
2. Simplifying the activities and better time plan to a lot the time for innovation
3. Participating in more technical seminars, reading technical magazines and going through new technologies adapted by government or any other industries

5. The Process

What was the pathway that lead to creation of the innovation.

- Believing that existing system needs more improvements
- Changing the mind to accept the changes.
- Collect new ideas and set a new goal
- Work towards achieving the Goal.
- Enjoy the success
- Stop not

What was the role of R&D and how we co-relate R&D with innovation?

R&D is physically isolated but mentally linked with any organization and its improvements. As it is physically isolated it has more opportunity for innovation and developmental activities. It is free body that can plan and execute any changes that they think would yield better result.

Were there separate inventors, champions, implementers and evaluators.

Yes. The complete and successful team needs better planning, innovative thinking, willingness to implement and monitor the results of improvement.

At what stage is the innovation currently?

Collection of data on the bottlenecks that needs an improvement to provide excellent results. And planning continues.

What remains to be done?

Better planning, execution and monitoring

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

The result of properly planned and implemented innovations increases the customer satisfaction and market share. This in turn increases the revenue of an organization that increases the satisfaction level of all others related.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

Yes. Any mistake that is properly understood is the key for an improvement.
Getting convinced on the mistake is the first step to open our eyes for analysis and planning for improvements to overcome that.

8. The Future

Where the innovation is likely headed

Firstly, by Government by motivating the organizations
Secondly, by the organization by motivating the team members
Thirdly, by team members by keeping their mind open for any new changes.

Case 16

Pilotsmith India Pvt. Ltd.

Company address	Kallettumkara near Irinjalakuda Railway Station Thrissur 680683 Kerala
Respondent name	Garima Kapoor
Respondent designation	Project Manager (Incubation)
Email id	projectincubation@pilotsmithindia.com
Contact no	09562911114
Product	Food and Spices Processing equipment's
Industry	Food Processing
State	Kerala

Company Profile

We Pilotsmith (India) Pvt. Ltd. laid its cornerstone in 1985 in Kerala as pioneers in and Spices Processing equipment's Manufacturers. During the tenure of its operatio Pilotsmith (India) Pvt. Ltd. has executed some prestigious projects in India and abroad have strong commitments to our clients and offer product quality at competitive prices

With the ever hardworking force and trust of our clients, we are aiming for new realms We have a dynamic Research and Development team creating futuristic products a supporting customization. We are glad to convey that our company had developed different types of processing equipments and their 80 variants. Our team is capable manufacturing and commissioning of rice flour, spices, ayurvedic and fruit processir equipment's up to their packaging needs. We have exclusive units for manufacturir stainless steel processing vessels, storage tanks, collection silos, etc and for packagin machinery. Our sister concerns:

Pilotsmith (India) Pvt. Ltd.: Engaged in Research and Development, Technical Consultancy and Trading of equipments.

Pacific Tanks Pvt. Ltd. : Engaged in production of Stainless steel tanks, Pressure vessels and Stainless steel equipments.

Packlock Machines Pvt. Ltd.: Engaged in Manufacturing of Packaging Machines.

Pilotsmith India Kallettumkara: Technical Consultants.

Infrastructure: We have an elaborate Production Unit to manufacture good quality of machineries to cater consumer demands. We are well equipped with the latest and technologically advanced manufacturing and testing facilities. These machines assist in smooth flow of our production and regularly serviced from time to time. We also owe an in-house design and CAD-Cam Unit due to which we are able to design all machineries as per the specifications of our consumers.

Our Panel of R&D experts works round the clock to find cost effective ways to ease out our Production Process.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

Kerala has a history of spicing up the world's cuisines in the tales have King Solomon's trade agents collecting pepper and other spices from Kochi. Today Kerala's Spices Processing Industry serves two markets- the fast-emerging domestic market and the steady growing export market. So, as the food processing Industry grew, the need for Food Processing Machineries /Equipment's was felt.

Role of industry and competitors in the innovation.

The key area of products of the company is in the field of Food Processing machines. Food processing industry has many things in common with Ayurvedic medicine manufacturing, filling and Packaging. So, the expertise of the company took it to these fields gainfully.

Role of location and environment in the innovation.

Pilotsmith India is located in the midst of Kerala- Thrissur

Role of location:

1. Agricultural Resources (Spices, cocoa etc.)- unique varieties.
2. Well Connected and Integrated road network within the state.
3. Urban-rural divides very thin.
4. Facilitates easier penetration into the market.
5. Availability of skilled and trained manpower.
6. Availability of high quality water and power.
7. Highest per capita expenditure on food in the country.
8. High purchasing power.
9. Supermarket Culture.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

Top Managers: Determine organizational objectives (profit, survival, business growth, widening sales operations, maintaining good relations to employees), set market Policy, set financial policy, operational control.

Middle Managers: accountable to Top Management for their department's function. They provide guidance to lower level managers and inspire them to perform better.

Front line staff: Interaction with customers on the public, key goal is consistency not innovation.

Role of main stakeholders:

1. Levels of Govt. – providing financial support
2. Media- Advertisement
3. Companies- Competitors
4. Citizens- for their trust and consistent purchasing.

Where did you get the idea?
We got the idea according to customer requirement.

How did it originate?
It originated according to customer requirements.

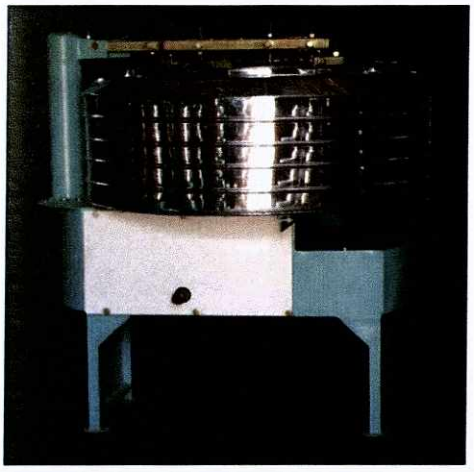
2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.
Innovations done by Pilotsmith India Pvt. Ltd.
1. Uruli Roaste
2. Sautiner
3. Heating Vessels.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.
Pilotsmith India Pvt. Ltd. is the first group to adopt this innovation.
Pilotsmith India Pvt. Ltd. Innovation- Uruli Roaster, Sautiner and Heating Vessels are all certified by Govt. of India. The Patent office- Certification of Registration of Design.

3. Description

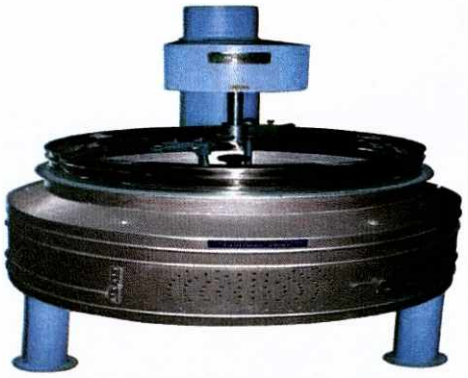
Describe the innovation and the domain in which it is an innovation.
1. **Uruli Roaster**:
a. Roasting of Powders, rawa, spices, pulses, grains and salt.
b. Roasting of whole pulses, grains and spices. Blending or mixing of powders.
c. Oil roasting is possible with leak proofing (optional)
d. This machine is recommended for roasting and drying applications in Food and Ayurvedic units.



This is a mechanized form of Kerala's traditional pan type roasting vessel generally known as Uruli. This machine is recommended for roasting of powders, grains, pulses etc. It is available from 10kg to 60kg per batch. LPG is used as fuel.
2. **Sautiner:**
a. Roasting (desiccating) of pulses, spices, spices powder, rava, grains and salt.

b. Blending of different powders and grains to an extent. c. Roasting of food items in oil. d. Concentrating of liquids.

This is a stainless steel flat bottom jacketed vessel fitted with stirrers which rotates by gear box and motor.



This machine is recommended for roasting or dessicating of powders, pulses,
Seeds, spices. Also suitable for preparation of semi-solids like ayurvedic lehyam, jam, squash and for similar operations.

Sautiner-100Kg LPG

Advantages:

1. In this machine material of contact is SS-304(Food grade Stainless Steel)
2. High Fuel Efficiency when run in electric heater as there is no flue gas loss.
3. Compared to LPG, operational cost is 40% less.
4. All derive units fixed below the vessel which ensures more life for gearbox and motor.
5. It also ensures 0% chance of oil spillage from drive system to the product.

3. **Heating Vessel- Fire Roaster:**

a. PILOT FIRE ROASTER has the similar function of URULI ROASTER. But in this machine firewood is used as the fuel, Stirrer is rotating, vessel is stationary and discharge is through bottom centre discharge hole.

Fire Roaster FR 20

This is ideal for Flour mill job work purpose. It can handle small quantity powders from 5kg to 20 kg/batch. This is average stand-alone pre-moulded machine at factory. Gearbox provided is self lubricated which can run up to 25,000 hrs. on normal conditions. Collection vessel is provided along with the equipment.

Outline the way(s) in which it is innovative.

The working Principle on which it is based is itself innovative.

1**. Uruli roaster** :

Working Principle:

a. Raw material fed to the rotating thick aluminium moulded vessel is heated by LPG direct flame.

b. Simultaneously the material is stirred by the stationary stirrers.

c. After achieving the required roasting the material is discharged to the collection vessel through centre discharge hole by removing the plunger.

2. **Eco Roaster- Electric (Sautiner)**

Working Principle:

a. Raw materials fed into vessel heated by electric heater coil or LPG through a thermic fluid media will be stirred well by stirrers.
b. This ensures even mixing and drying of the raw material.
c. After attaining the required roasting or moisture level product discharged through a discharge door.
d. The product is then collected at the bottom of roasting vessel. Required temperature can set in the digital temperation controller which will automatically cut off the power supply to the electric heater coil and restarts when the temperature become below the set temperature.

3. **Heating Vessel- Fire Roaster**:
Working Principle:
a. Wood/briquette/coconut husk or any agro waste can be fired inside the oven constructed in fire brick and cladded with sheet metal.
b. Smoke is exhausted through smoke pipe. Fuel cost calculated as 1/8th of LPG fired Uruli Roaster. Machine is supplied with motor, collection vessel and trolley (for FR35, FR60, FR100)

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?
1. After Commercialization, reaching customer and making them aware about our product is the greatest problem faced in creating the innovation.
2. Other push back is that the Middle management gets upset when their team members gets distracted.
3. One has to do long term commitment in investment as change takes time.

How/were these overcome?
1. Reduce cost of innovation and across lifecycle
2. Lean and efficient Innovation Processes.
3. Differentiation from competitors
4. Fulfilling high customer expectations
5. Establishing an efficient internal structure involved in Innovation Process.
6. Effectively and efficiently managing complex R&D network.
7. Meeting individual customer expectations.
8. Address overall increase in market demand.
9. Address shrinking product lifecycle.

5. The Process

What was the pathway that leads to creation of the innovation?

The Pathway that leads to the creation of the Innovation is our dynamic Research and Development team. For the last 28 years Pilot Group has put forward innovative ideas for the advancement of Food processing and size reduction technology with continuous efforts and time invested in R&D.

What was the role of R&D and how we co-relate R&D with innovation?

We have a very dynamic Research and Development team creating futuristic products and supporting customization. Our panel of R&D experts works round the clock to find out cost effective ways to ease out production process. The in-house R&D department helps us in increasing productivity and improving product quality.

R&D is the pathway that lead to creation of the Innovation.

Were there separate inventors, champions, implementers and evaluators.

No such separate inventors, champions, implements, & Evaluators are there.

At what stage is the innovation currently?

The innovation is on its last stage of Commercialization where it is developed to full-scale operations.

This includes access to production facilities, routes to market, logistics etc.

What remains to be done?

We are reviewing the Innovation process regularly and looking for continuous improvements. Moreover, we are continuously differentiation consumer needs as our products age and forecasting profits.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

1. **Individuals/customers**: Innovation is the development of customer value through solutions that meet new needs, unarticulated needs, or existing market needs in new ways. Uruli Roaster has made the Roasting Process of Powders, Rawa, Spices, Pulses, grains & salt very easy and time efficient.

2. **Employees:** Our Employees increased the productivity by creating and executing new processes which in turn increased competitive advantage & Diferentiation.

3. **Government** – Govt. supports Entrepreneurs/ Innovators because they are good for the economy & employment. The Govt. supports innovative startups and helps them grow. The Govt. supports innovative startups and helps them grow. The Govt. supports innovative enterprise by:

a. Increasing the scope for finance.
b. Promoting cooperation between researchers and the private sectors
c. Reduce the regulatory burden on entrepreneurs.
d. Help entrepreneur's access network.

4. **Partners**: having more efficient and effective work processes, saving time and money, drive sales and results, compliance with legislation & possible tax benefits, competitive advantage.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

SWOT Analysis is a plan evaluation technique employed by businesses to assess their strategic plans. Strengths and weaknesses involve the evaluation of factors related to internal Businesses capabilities. Opportunities and threats evaluate external factors that might affect a business.

We used SWOT analysis to assess our marketing and promotion plans.

Strengths: A business designs a strength assessment to measure competencies, or what the business can do. Here a business can evaluate their marketing and Promotion objectives for their strengths based on the company's internal capabilities.

Weakness: In SWOT Analysis, a business assesses its internal weaknesses to determine what it is not able to do based on existing competencies.

Opportunities: These are external factors that a business evaluates in a SWOT Analysis. This includes evaluating industry trends and competitors data.

Threats: The Fourth stage of a SWOT analysis involves evaluating plans against an unfavorable external environment. It includes marketing strategies a company uses to penetrate a new market.

8. The Future

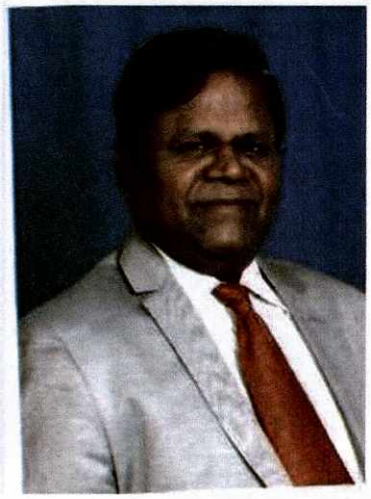
Where the innovation is likely headed

Pilotsmith India Innovation- Uruli Roaster, Sautiner and Heating vessels is heading on a successful path. We are receiving positive feedback from our clients.

We are working continuously on market based strategies so that we can provide more & more customized product. Our front line staff is looking after the communication feedback and interaction with the customers so that we can also bring about the desired changes.

Our Primary focus in case of such Innovations is completely on customer satisfaction.

Case 17



RELIANCE FIRE AND SAFETY LIMITED

Company address	Plot No.5, Syed Jalal Garden, West Marredpally, Secunderabad-26
Respondent name	C. Andrew
Respondent designation	Chairman
Email id	candrews56@gmail.com
Contact No	9391019323
Product	Firefighting equipment
Industry	Machinery and Equipments
State	Andhra Pradesh

Company Profile

We are one of the leading **ISO 9001:2008** certified leading Manufacturing Company in the field of Fire & Safety in India, specialized in Design, Supply and Erection of Fire Protection Systems. A team of well qualified Engineers and technicians manage our Organization with proven ability and experience in the line.

We have Six Divisions

- Manufacturing Division
- System Contract Division
- R&D Department
- Marketing Department
- Fire Audit/Training
- Manpower supply with Equipments

We have Branch offices in various parts of Country to give better after sales Service. We are proud to present ourselves as a growing competent outfit organization in the field of fire protection.

Manufacturing Division

Reliance fabricates all types of fire vehicles such as Water Tender, Foam Tender, Multipurpose Tender, Portable Pump, Trailer Fire Pumps, High Velocity Multipurpose long range Monitor.

All fire vehicles are fabricated as per customer's requirement and conforming all set standards of the governing body.

System Contract Division

System Division under-takes Design, Supply, Erection, testing & Commissioning of Fire Alarm / Fire Hydrant, Medium & High Velocity water spray, Sprinkler & Co2 / FM 200 Flooding System, Gas Detection System, CCTV System. Access Control System & BMS System.

R&D Division

R&D Department develops first of its kind with latest technology products in the field of fire fighting, the following products are developed by the company which is of first in kind which are as follows:

AUTO FIRE FIGHTING EQUIPMENTS: this is a unique product developed by us to detect and operate at the source of fire at the inception stage by way of pressure technique with out power requirement (Without DC supply) from first aid to larger capacity unit.

Automatic skit mounted ABC powder fire fighting 150 kg capacity unit. Wherein the fire fighting chemical can be thrown the distance of 45 mtr. From the cylinder, which is of regulatable, universal application.

ABC/DCP 150 kg Trolley mounted /Self driven large capacity fire extinguishing unit is another unique product developed with diffuser technology to achieve minimum 98% discharge. Used for all classes of fire.

Marketing Division

Reliance Marketing Department supports to procurement of orders for all the divisions. This department is headed by AGM (Marketing) with a vast experience of over 15 years and well qualified team of professionals to support this division to promote the Reliance products in the country. And also have dealers network in various parts in India.

Fire Man Supply

We undertake to provide technical personnel in the field of Fire Brigade to cater to manpower requirement. We have provided similar TEAM OF Fire Fighting Personnel to DRDO- Jagadalpur, Sterlite- Tuticorin, We also provide technically qualified personnel age group between 20 to 40 with qualification along with Fire vehicle to full fill your manpower requirement.

Fire Auditing / Training

We do undertake to provide Auditing / Fire training to your Engineers to use and operate Fire Fighting System. We do undertake specialized job of customers choice in t he field of fire protection.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

Fire is a most important element in our universe which is used by the human race right from the birth to death there are lot of advantages/ disadvantages of fire. To overcome the disadvantage human race found the solution such as firefighting equipment to avoid the damages to life / property and environment. The fire can be classified as various size and types. Such as Small Fire, Medium Fire, Large Fire and A class, B class, C Class, D class respectively.

Causes of Fire Accidents are lack of knowledge, negligence, improper consultancy, planning, budgeting & installation along with low knowledge of standards.

Type of Fire	Cause	Extinguisher	Effectiveness
A Class	Wood, Coal, Paper	Water, Water Co2	Striking, Cooling
B Class	Flammable liquids, diesel, kerosene, benzene, petrol, greeze	- Mech. Foam F/E - Powder Type F/E(DCP, ABC), - Gas Type F/E (Co2)	Smothering
C Class	Inflammable Gas	Co2, DCP / ABC	Blanketing Smothering
D Class	Metallic Dust like Magnesium, sodium, Potassium	Pyromate powder	Blanketing

TYPES OF MEDIA / FIRE PROTECTION

WATER MEDIA CONVENTIONAL o FIRE BUCKET o PORTABLE FIRST AID EXTINGUISHER o HYDRANT SYSTEM o SPRINKLER SYSTEM o EMELSIFIER SYSTEM o WATER TENDER (Fire Vehicle)	**NEW TECHNOLOGY** o WATERMIST SYSTEM
POWDERMEDIA CONVENTIONAL o FIRE BUCKET (Sand) o PORTABLE FIRST AID EXTINGUISHER o POWDER SUPRESSION SYSTEM o DCP TENDER (Fire Vehicle)	**NEW TECHNOLOGY** o DIFFUSER SYSTEM WITH ABC/DCP POWDER o AUTOMATIC SUPRESSION WITH DETECTION TUBE SYSTEM
GAS MEDIA **CONVENTIONAL** o PORTABLE FIRST AID EXTINGUISHER o Co2 FLOODING SYSTEM o NAF PIV / NAF SIII /FM 200 FLOODING SYSTEM	**NEW TECHNOLOGY** o INERGENT System o AUTOMATIC SUPRESSION WITH DETECTION TUBE SYSTEM

Protection fixed systems

- Automatic fire detection/ Extinguishing system
- Automatic high velocity water spray
- Emulsifying system
- Fixed foam installation
- Carbon dioxide fire extinguishing system
- Automatic sprinkler system
- Wet raiser system
- Dry raiser system

The Fire Safety/life safety is most precious wherein the technology will only give better solution. In view of that we invented ABC 150kg trolley to give a better throw of 28 – 30 Mtrs and quantity of discharge of 99% along with other technology like Aerosol suppression system which fights the fire by stabilizing the free radical (O,H, OH) to stable radical to kill the fire.

Role of industry and competitors in the innovation.

We are in the field of fire safety in toto (A to Z), for a longer period. We have produced 44 entrepreneurs who have worked / trained and educated in the field of Fire and Safety. Who have become our competitors. Due to which the market is notch and narrow and difficult for us to survive. Hence, we have started to focus on R&D and innovation of new products in the field of fire and safety.

We also develop new technology for clean environment. There is a product catalyst developed which helps combustion technology into higher standards whereby the environment can be pollution free.

Role of location and environment in the innovation.

For fighting medium and large fire we have various equipments i.e. a fire in a server's room or laboratories the one of the best firefighting system was Halon firefighting system but due to non-environment friendly nature it has been band. And for solvent storage Ware house the only solution is Sprinkler and Hydrant System But water cannot be used in solvent storage areas.

For the above mention environment, our invention is the only solution. For open area firefighting 150 kg Firefighting trolley is the best solution. And for the closed room (server/ Solvent storage area) Aerosol suppression system is the only solution. Which are environment friendly, and user friendly with low cost and no maintenance

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

The Organization Reliance Fire and Safety Limited is family which has top management/ middle managers / front line staff which represent grandparents / parents and children. Since we are in this field for 4 decades we know the challenge that exists. Keeping that in view the solution has been derived.

The Top management represents the Grand parents who are team of well experience with high technical knowledge who have design the idea / model for the innovation from their pass experience and they financially support for the innovation The Middle managers represents the parents who are planners and do a follow up with the front line staff to achieve the finished product.

The frontline staff represents the Children who are the developers who execute and develop the finished product with the help of managers and top management.

Where did you get the idea?

We have originated from identifying the chemicals required to inhibit the chain re-action of fire.

How did it originate?

We got the idea of development of this innovation, when there was a demand for ONGC for the Oil tank storage fire protection system. This innovation helped them in fighting the oil tank fire from longer distance effectively.

The innovation of our Aerosol Suppression system had been done due to the demand of the technology and lack of manufacturer in our country.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

We believe based on our knowledge, we are one of the very few companies who focused this type of technology manufacturing in India suitable for all class of fire.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

The firefighting is commonly being dealt with killing, striking and blanketing, these systems currently available on pressure system which requires maintenance, whereas the new technology what we developed is pressure-less and can be used for all class of fire, less maintenance. and cost effective compared to the similar technology. Regarding the 150kg Firefighting unit we are only innovator to give a better throw of 28 – 30 Mtrs and quantity of discharge of 99%.

With respective to the Aerosol Suppression system we are the only manufacturer in India

3. Description

Describe the innovation and the domain in which it is an innovation.

We also develop product, powder suppression which works in pressure principal and give a throw of 28 to 30 Mtrs. Can be used for all B & C Class of fire.

We also develop catalyst which helps in total combustion Hydro carbon material whereby the environment is kept clean which helps bring down the pollution in environment.

Outline the way(s) in which it is innovative.

Currently there is no fire extinguisher which is can be used to fight medium and large fire from a distance with high discharge efficiency and cost effective with no maintenance.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?

Any innovation has to go through different stages of challenges and we do have gone similar challenges and also our product has been approved, tested by ETDC and live demo has been conducted in various departments. Acceptance of this product in the country is not easy, one should have patience to accept and prove themselves.

How/were these overcome?

We have overcome because we deal A to Z in the field of fire and fire security and also we have Third party auditing unit division through which we have recommend to the client to accept this technology in the market.

5. The Process

What was the pathway that leads to creation of the innovation.

It is based on the need in the market and consciousness to save life and equipment without damages.

What was the role of R&D and how we co-relate R&D with innovation?

Innovation itself is innovative subject which only can make you result field different from market to fulfill safety requirement. And we have keep on working to find solution for all the problems faced in the field of fire and safety which is efficient / effective and cheaper.

Were there separate inventors, champions, implementers and evaluators.

The inventors, champions, are our R&D team, frontline staff and Top management. implementers and evaluators are our certification body such as ETDC, CE and our clients.

At what stage is the innovation currently?

Innovation is over which is required various approvals from Govt. Agencies to fulfill market requirements. And innovation keep continuing on the design of the product depends upon the location we use.

What remains to be done?

We need to set up manufacturing unit with full fledge facilities to cater requirement of our clients. And also, we need to get it approved from various Govt agencies and get approved from BIS and Govt. rate contract

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

The fire can put off at very initial stage itself and get environment and material around will not get spoiled. The safety of our fire fighters and solution to the clients for the Reactor areas, Laboratories, Clean rooms in pharmaceuticals, Electrical control room, Electrical panels, server & data processing room, battery & UPS room, telephonic exchange, basement area, cable tunnels, Information Technology, Machinery compartments, Paint room, Warehouse, Testing facility, Automobiles , Ships, Rail / Metro Rail, Operation theatre, X ray, CT, MRI, Gamma rooms, mammography, ICU, Cath lab in hospitals etc.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

Any innovation product acceptance in market will take time and one should have patience People start adopting this technology based on the Govt. approvals and reference of various units who have used.

8. The Future

Where the innovation is likely headed?

The improvisation of innovation depends upon the location of usage and type of safety. The innovation is an revolution in the field of fire and safety.

Case 18

Sertel Electronics (Pvt.) Limited SERTEL

Sertel Electronics Pvt Ltd

Company address	377, Nehru nagar 1st cross street, OMR, Perungudi Chennai-600096
Respondent name	R. Gopalan
Respondent designation	C.E.O
Email id	sertelgopalan@gmail.com
Contact no	09381033455
Product	embedded system
Industry	Electronics
State	Tamil Nadu

Company Profile

We would introduces our self Sertel has embedded system based R& D company whose capabilities involve product design, manufacturing and supply

We are well know brand for our solution in GPS time sync, alarm annunciator SOE recorders, Isolator Furnace camera in Asia Europe and parts of north America in substation process industries and power generation industries for the last few decades of operation in our market

Our products are EMC\ EMI, certified by M/s. Sameer and M/s. Sertel as ISO9000, 14000, 18000 certified M/S. Sertel has been rated by CRISIAL-NSIC- MSE 4 with operating performance as High and both definition and financial strength Above Average. M/s. Sertel recognize as R&D Company by ministry of science and technology (DSIR)

R. Gopalan's Profile

Electronic engineer in earlier worked by M/S. Sarabhai Company of Radio television manufacturing company in 1972. For 5 years' experienced in various department of QC, industrial engineering, R&D, production, services, marketing with very wide experience in all department finally left has chief engineering 1977

Started a company initially in servicing of televisions and imported televisions with very less investment and graduated has Delar distributor and stock list L& T on instrumentation, this various experience has given me the confidence of manufacturing with R& D facility to develop with very high end technology products for India power sector industries since 1989-1990 onwards.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

In the year 1989 & 1990 Indian industrial sector was going in for automation more particular in power sector. PLC, SCADA, DCS, and other automations.

In each generation plant / substation plant, power being import and export of power happened and cogeneration plant started in big capacity where by power being pumped to the grid of excess power

When the report analyzed there is no sequential time stamping when power failure causing cascading operations creating blackout in region, state, country.

By using time stamping with very high accuracy common time in all the locations with micro second accuracy whereby analyzing will be easy to identify the problem by saving of time and money by using satellite based time synchronization.

Role of industry and competitors in the innovation.

Global passion satellite (GPS) as lot of applications such as positioning, survey, mapping, vehicle tracking, marine and power sector. M/S.Sertel being an industrial and had good contact with the industry chosen to power sector in the year 1989 &1990 only imported and the to only three to four manufacturers and supplying with huge cost of approximately 45 to 50 Lakhs for generation and power grid 10 to 12 Lakhs based on qty.

Role of location and environment in the innovation.

Since no body in India manufactured taken this as an opportunity. So that Sertel can make in Indian we can manufacture this product. During that period in India NPL has the know-how for receiver as STFS receiver in door instruments only, outdoor instruments to receive signal form satellite of INSAT very experience. Sertel took the knowhow and future development in Indian satellite and foreign satellite for GPS.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

Being a small company M/S.Sertel myself (R.Gopalan) being the top managers, middle managers, front line staff decision was easier to plunging to the risk of in opportunity to the fight in Indian as a GPS manufacture.

STAKEHOLDER: Power sector- generation-/ Transmission / Distribution and sub stations and Cogeneration plants.

Where did you get the idea?

From NPL Dr.Senguptha, various technical people working power grid/ NTPC /and power product manufactures like English electric, Siemens, ABB and other consultant interaction with all of them.

How did it originate?

As Sertel being the product manufacturer unique in design indigenously without anybody's help so that product availability to the sector of power.

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

The basic concepts of satellite, time is receiving in common time throughout Indian with very high accuracy in nanosecond.

M/s.NPL with Indian satellite of INSAT on 'S' BAND one satellite with very low BANDWIDTH with signal propagation on receiving the signal and the receiver.

GPS as the global satellite with 24/ 32 satellite throughout the world orbiting the earth. in India concept was very new not many people understand and correspondingly educated and on personal visit to using this products. nobody was ready to use this concept in initial days. In India the concept was very new, not many people understood this concept and made them to peruse to use this product. Sertel sold in one instrument in two to three years and solely educated and made them to accept.

Sertel gave as demo instrument install and commission at customer site for the period of one year to prove them advantages on saving cost and money to prove the concepts.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.

M/S.Sertel is the first in India to use these concepts as time synchronization as the product manufacturer

3. Description

Describe the innovation and the domain in which it is an innovation.

To receive the signal from satellite without any loss of signal on receiving the signal to convert to utility of various protocol and multiplexing the protocol and transmit the signal to long distance, receiving the signal without any noise and work continuously for 24x7 and 365 days throughout the year without any failure for continuous time synchronization the events throughout the plant.

Sertel has the track record of system function continuity for many years even today. Without any break and no AMC from customer of generation plants and others. Approximated over 5000 insulations Supplied in working.

Outline the way (s) in which it is innovative.
Design and development both hardware and software on embedded controller with no failure of high MTBF in harsh Indian environmental condition acceptable to Indian industrial like NTPC- Power grid etc, etc...

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?
Lot of risk- No money support battle lonely on these developments no acceptance from customers for Indian made products with notional thinking not good only imported is good.

How were these overcome?
Not ready to face the challenge by the customer no encouragement only by perseverance Sertel succeeded the product development.

Supply the instrument free of cost for the period of two to three years to see the working capability heave penalty to the Sertel by the customers.

Sertel hopping one day will be the green light because the concept of this application is very very essential more particular in power sector to eliminate the blackout (Approximated over 5000 insulations Supplied in working).

5. The Process

What was the pathway that leads to creation of the innovation?
Only perseverance and passion of working.
M/S.Sertel staunch believer of concept of the product.

What was the role of R&D and how we co-relate R&D with innovation?
Design and development on both hardware / software develop from zero without any foreign help or joint venture on technology.

Were there separate inventors, champions, implementers and evaluators.
Not in India when Sertel started in the year 1989 and 1990.

At what stage is the innovation currently?
From year 2000 onward s supplying to public sector continuous and sole manufacturers of product and received tender as repeat orders without any tendering process, because of product high quality and high technology design.
What remains to be done.-

Now new development and standards are upgraded internationally for which Sertel is seeking high cooperation for this developments.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

- Low cost –MADE IN INDIA, MAKE IN INDIA
- Employment to our people
- Savings on foreign exchange
- Technology up gradation

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

It is in this process we learned for time to time. And implement on our design, customers requirement and always more expectation to meet. And where by sustainability is very important.

Sertel has achieved on this process since 1989 even till today our customer in India and abroad are extremely happy.

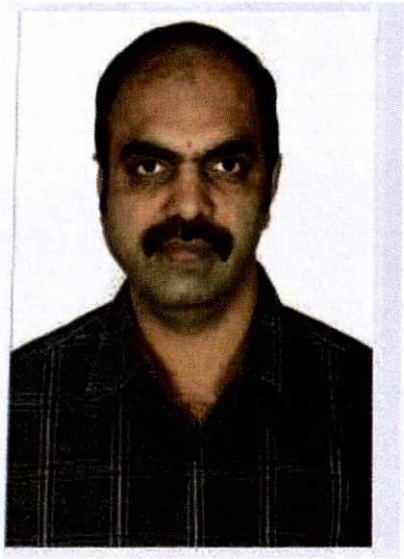
8. The Future

Where the innovation is likely headed

Now the international standards are upgraded for this product to meet the requirement

This technology further leading to international standards for achieving these time synchronization not only in power sector and further moving to all sectors of different type of all industries , Banking, Stock marketing in legal documents and media security, agriculture, weather, defense in all the sectors very high accuracy of time stamp for traceability.

Case 19



Sre Senthil Engineering Company

Company address	A-12, Coimbatore (P) Industrial Estate, Coimbatore – 641021.
Respondent name	P. Senthilnathan
Respondent designation	Proprietor
Email id	senco797@yahoo.co.in
Contact no	94430 67784
Product	Silver Ionization Water Disinfection System
Industry	Engineering Units
State	Tamil Nadu

Company Profile

Sre Senthil Engineering Company is more than 2 decades old Company, presently manufacturing drinking water and waste water purification equipments, situated in the industrial area of Coimbatore in Tamil Nadu.

The company is managed by Technocrat Shri P. Senthilnathan an Engineering Graduate from College of Engineering, Anna University, Chennai, and has more than 15 years of experience in the water related field.

He has innovated Senco Silver Ionization water disinfection equipment used for domestic purifier, industrial purifier, Public water supply and community water supply. The feasibility of disinfection of this product has been tested by NEERI• CSIR-Nagpur. We request the government to encourage use of these latest disinfection equipments in all their projects.

This company has also innovated on CATRAD Technology based compact STP (Sewage Treatment Plant) for domestic application, Community application, village application and Municipal application.

They are looking for opportunities from the government to implement those in Lake rejuneration schemes, river rejuneration schemes, STP's and much more.

The Company plans to market this products PAN INDIA and to export to different countries.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.

This innovation was made in the field of **drinking water and sewage treatment plant.**

The present domestic and commercial water purifiers use ultra violet for disinfection of water, which disinfects the water at point of contact and does not protect the stored water. Even in the best of water purifiers in the market, **bio film and bacteria** can be found when the treated water is stored for a couple of days. The consumers drinking this water are unaware that their water can get microbial contamination when stored and are affected by the common water borne diseases like cholera, Dysentery, Typhoid.

So the market needed an innovative product that can keep the water and container free from Bio film and microbes when stored and improve the health conditions of the consumer, hence the need for innovation and creation.

The commonly available Sewage treatment plants all are depended on biological reaction for treatment which is time consuming and takes minimum a day for treatment and also needs larger space and dedicated maintenance. We found that lot of money was spent for making sewer lines to take the sewage to the treatment plant at one end of the town, by damaging the roads and causing inconvenience to the public.

We wanted a system which will be compact, treat the sewage immediately without producing sludge, without using chemicals and producing better quality treated water and also a plant which can be fixed anywhere for any capacity. Hence the innovation

Role of industry and competitors in the innovation.

Our both the products are unique and are more advantageous than the existing technologies in terms of quality of water, cost of treatment, capital cost, hence can overcome the competition.

Role of location and environment in the innovation.

Being in a water purification industry may have initiated this innovation.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)

All the innovation was carried out by our company staffs and Engineers only. As a main stake holder we had spent lots of money in this innovation.

Where did you get the idea?

Silver has been used in ayurveda which triggered my idea in to making silver ionization water disinfection equipment.

An idea by my colleague is the reason to innovate modern ONLINE STP

How did it originate?

Silver has been used in ayurveda which triggered my idea in to making silver ionization water disinfection equipment.

An idea by my colleague is the reason to innovate modern ONLINE STP

2. Position the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.

Our silver ionization water disinfection equipment innovation has been done and a patent has been filed in Chennai bearing No: 2345/CHE/2010. The patent are taking too long time for approvals. This is a major hindrance to us as the products are liable to be copied. No other product is similar to our innovative product.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.
We are the first ones worldwide to produce these equipments.

3. Description

Describe the innovation and the domain in which it is an innovation.

SILVER IONIZATION
Silver Ions Ag2+ is produced from pure Silver Electrodes by passing a calculated amount of current. This is produced according to the setup in the control panel, which in turn is as per actual flow.

Concentrated solution of Silver ions in water is produced in the water chamber and is made to mix with the flow of water in the pumping main and then in turn we get the required concentration.

HOW IT WORKS?
Silver ions produced in our system are positively charged and micro-organisms are negatively charged. There is an attraction among the silver ions and the micro organisms. The silver ions disable the enzymes that micro organisms depend on to breathe and thus kills them. Silver is effective because of its capabilities of interfering with DNA production and accelerating the death phase of bacteria and viruses.

Because of the charge in the ions they repel each other and are always in suspension. As their size is small they have a large surface area of silver per unit volume of silver. This small size with its large surface area to volume ratio enables the surface chemistry of silver.

UNIQUE FEATURES

- Silver ionization for drinking water
- Silver-copper ionization for recycled water
- Fool proof and reliable
- Stainless steel water chambers
- Light weight and compact
- Wall mountable
- Kills all bacteria, virus and algae
- No smell
- No change in taste
- Dosage well within WHO, EPA and BIS limits
- No corrosion, hence longer life
- Cheap running cost
- Longer residual effect
- Space craft technology
- Instant dosage checks using field test kits.

This method of disinfection is found to be very advantageous compared to the Conventional process of Chlorination. **National Environmental Engineering Research Institute (CSIR NEERI)** has conducted an evaluation of efficacy of Drinking Water Disinfection by Silver Ionization. This system is fast replacing the conventional chlorination as this is proved to be much effective and is not harmful to health like chlorination. **Chlorination produces Disinfection Bye Products which are proved to be Carcinogenic (Cancer Producing).**

CATRAD Technology compact STP

We oxidize the sewage water by using a novel process called CATRAD Technology to produce treated water immediately online without using chemicals, without producing smell and without sludge formation by using only a small foot print and can be custom built for small capacities to larger capacities, can be decentralized easy to adopt, can reduce the pipe line/ sewer line cost for taking the sewage to the STP.

Outline the way(s) in which it is innovative.

Silver ionization is innovative in providing good residual protection compared to UV.

- Fool proof and reliable
- Stainless steel water chambers
- Light weight and compact
- Wall mountable
- Kills all bacteria, virus and algae
- No smell
- No change in taste
- Dosage well within WHO, EPA and BIS limits
- No corrosion, hence longer life

- Cheap running cost
- Longer residual effect
- Space craft technology
- Instant dosage checks using field test kits

CATRAD Technology produces treated water immediately online without using chemicals, without producing smell and without sludge formation by using only a small foot print and can be custom built for small capacities to larger capacities, can be decentralized easy to adopt, can reduce the pipe line/ sewer line cost for taking the sewage to the STP.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?
The main challenge faced were funds, we had to borrow, sell and make up funds for the people working, for buying raw materials for testing the water samples.
The salary portion for 2-3 years of innovation was very huge.
The government standards for silver content was not available initially.
Testing of water and silver content in Labs were time consuming and costly

How/were these overcome?
By own funds, borrowing, selling of movable and immovable assets.

5. The Process

What was the pathway that leads to creation of the innovation.
The urge to do something new.

What was the role of R&D and how we co-relate R&D with innovation?
R&D and Innovation are always hand in glove; when we want to give a better product to the client we have to have some unique selling proportion (USP) in our product

Were there separate inventors, champions, implementers and evaluators.
Silver ionization was developed separately CATRAD was developed as a group

At what stage is the innovation currently?
Silver ionization has been trial tested and is already in the market.
Regarding CATRAD Sewage Treatment Plant the trial testing is complete and are waiting for confirmed orders.

What remains to be done?

We need to market these products in the country for domestic purifier applications and in community purification applications.

The Government has to make sure that all domestic water purifiers are fitted with disinfection equipments with good residual effect to keep the water free from bacteria, bio film and algae in all the storage models.

Moreover these should be incorporated in Public water supply to provide bacteria free drinking water without the carcinogenic harmful effects of chlorine.

The feasibility of this silver ionization has been studied and recommended by **NEERI, CSIR (National Environmental Engineer research Institute) Nagpur.**

Regarding CATRAD compact STP, the trials are completed and we require the Government to encourage us by providing us a couple of pilot plants for compact STP, Lake Water rejuvenation, River water rejuvenation, Swach Bharat etc.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?

We have not reaped the benefits so far. The government has to help us innovators by implement these innovative products in some location and giving us an opportunity to prove ourselves. In return the Government can save a lot of money, time and inconvenience to public by implementing our technologies. and this must be made mandatory by government to be used in all water purifier having storage tanks whether it is domestic, Industrial or Public water supply. The health condition of the general public can be improved.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

It is very difficult for the people to fund for innovation and development. The government has to help the innovators by all means.

8. The Future

Where the innovation is likely headed

The innovative product is ready to be marketed. We are looking for manufacturers of domestic water purifiers to shake hands with us and collaborate with us as original equipment suppliers.

I. Request the government to speedup up the patent process, (reserved patent number: 2345/CHE/2010). The patent is valid for 10 yrs from the date of filing, now it is already 6 yrs passed and we have not received patent. We have only 4 yrs left for patent protection. There is no use in filing the patent and having no coverage.

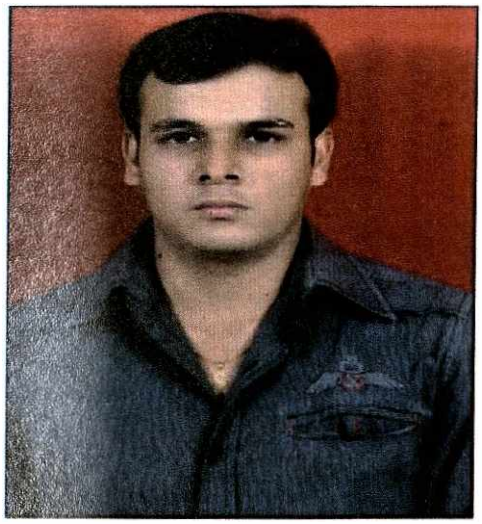
II. Million of domestic water purification are made in India under several brand names. All these equipment come with a storage tank of 5 liters. to 15 liters. We have studied at several cases and we have found that the water when stored for some time is prone to bio film formation, bacterial infection and algae formation. The present filter manufacturers just incorporate UV disinfection which makes the bacteria dormant at the time of contact but doesn't have protection when storing. So, for protecting the water during storage if this silver ionization is used there will not be any bacterial growth or algae growth.

The Government has to make sure that all domestic water purifiers are fitted with disinfection equipments with good residual effect to keep the water free from bacteria, bio film and algae in all the storage models.Moreover these should be incorporated in Public water supply to provide bacteria free drinking water without the carcinogenic harmful effects of chlorine. The CATRAD technology based sewage treatment plant compact (STP) have been installed on poilt basis on exiting STP's and the results have been outstanding. The advantages of using CATRAD technology compact STP are; Lesser foot print, less capital cost, quick treatment, no Chemicals, No Sludge, can be deceutrolised and fixed ever for small elolnies. Need not transport the sewage by making underground seweline which accounts for the major cost of STP project. The treated water quality will be good and can be used near he treated plant itself. We request the government to implement this in any of their schemes to make the world know that an advantageous innovation product is available.

Case 20

Aqualite Industries

MANUFACTURERS OF PACKAGED DRINKING WATER



AQUALITE INDUSTRIES

Company address	Sr 25/1A, opp Savali Dhaba, Nanded phatam, Sinhagad Road, Pune 411041
Respondent name	MR SANKET PRABHAKAR SATPUTE
Respondent designation	PARTNER
Email id	info@aqualiteindustries.in
Contact no	09011439777
Products:	Mineral water
Industry	Mineral based
State	Maharashtra

Company Profiling

We are the manufactures of PACKAGED DRINKING water since last 5 to 6 years.

We would like to share to that we are the Co-packers for BISLERI INTERNATIONS Pvt. Ltd. from last 4 years and we are on the top position for the same.

We produce 20 liter JAR and 5 Lit jars. We are selling our product in all over MAHARASHTRA like PUNE, PIMPARI, SATARA, MAHABLESHWAR, PACHGANI, WAI, KOLHAPUR, SANGLI, SOLAPUR, PANDHARPUR, TULJAPUR, AHMADNAGAR, SHARADWADI, AKALKOT, and IN SOME PART OF KOKAN.

Also we have our own brand FIGO in the market.

Our main motto is to give quality product to customers.

1. Origins and Rationale

Why the innovation was needed and the reason it was created.
To increase the production capacity as well as production quality.

Role of industry and competitors in the innovation.
We are working for the BISLERI International Pvt. Ltd. this company is pioneers in the mineral water and package drinking manufacturing in India.
So that we are too much competition in the manufacturing division.

Role of location and environment in the innovation
Basically our plant is located very near to city and transport is easy available with us. Also the water level in earth is very good and quality of water is good.

What was the role of various members of your organization (top managers, middle managers, front-line staff, etc.) and its main stakeholders (citizens, other levels of government, companies, NGOs, media, etc.)
Everyone is give their separate work and work area, so that we are getting very good result as well as very one reporting us daily, so there will not be any hide and seek type work. Everyone who is working In our organization having their own right to work properly.

Where did you get the idea?
At the time of beginning, we are producing for our own brand and selling it market. Our quality and workability is cross check by Company and they approach towards us to give Manufacturing franchises for PUNE division to us.

How did it originate.
For this we have got too much support from the BISLERI team and their organization.

2. Position of the Innovation

Position the innovation in relation to other innovations either addressing the same/a similar issue or in relation to other innovators who have adopted this program/policy/process.
We have done innovation in every stage, from manufacturing stage to packaging and storage to dispatch. As per requirement we have done the same.

Identify whether your group was first, second, third, etc. to adopt in Region/India/worldwide if you can.
Our group is working of MAHARASHTRA region.

3. Description of Innovation

Describe the innovation and the domain in which it is an innovation.
We have brought all the machineries from market and assembled it together to make manufacturing plant.
In this mainly 3 stages are there: - 1. Pretreatment 2. Treatment 3. Post treatment.
In every stage, as per requirement and new technology come to market we have adopt to replace the previous system.

Outline the way(s) in which it is innovative.
To outline innovation, we must get the quality product from the system is our main motto, as well as to fulfill the customer's requirement.
For the same, we have increased the capacity of treatment plant. Because of this we have taken care of our pretreatment, so that we have get the best results in production. Then shelf life of produce product is imp, for that we have focused on post treatment, in this stage we have adopt the American technology. We have done research on the same and manufacture the same system in India itself. At this stage we have best product and having highest shelf life with same.
Now, the final stage storage and dispatch. For that we have place EPOXY coting on floor which help us to reduce the human handling and decreases the chances of damage to JAR. Also, we have place conveyor at the dispatch place. It help us to load any kind of vehicle from TATA ACE to 907 TRUCK.

4. Risks, Problems, Barriers

What challenges were faced in creating the innovation?
Initial place is the main problem for us. Due to high cost of LAND we are suffer for 1 year to find the best and suitable place for the plant. Then fund to develop the land and create the required design of plant.

All the machineries and equipment's are brought from market and then main thing comes to us to assembled this things together get the maximum output and quality. As the time goes we get expertise and knowledge in the same, then we have make all the small changes to overcome from the problem.

How/were these overcome?
Today we are increase our production from 500 jars to 3000 jars per day which is 9 to 10 hours.

5. The Process

What was the pathway that leads to creation of the innovation.
Pathway for this innovation is very simple, understand the need of customers and market. Then change the manufacturing process, compare with new technology. Make technology suitable for you and use it properly.

What was the role of R&D and how we co-relate R&D with innovation?
R&D role is imp to understand the requirement as well as comparison with new technology and installation.

At what stage is the innovation currently?
Right now, what the changes we have done up still is sufficient to fulfill the need of customers. But as per growth we have go further as per requirement.

What remains to be done?
Right now, we must increase the production capacity. Which is our next aim and we are working on the same right now.

6. Benefits

How did individuals, the government, partners, clients, employees or others benefit from the initiative?
Because of this our end users are getting very high quality product.

7. Lessons Learned

Will learn most from the difficulties you had and errors you made, combined with an analysis of how they could be overcome.

Firstly, to overcome form the problem, we must know the problem by its route then work on time. Trial and error is the good process. Learn about new technology, new things and compare yourself with competitors.

8. The Future

Where the innovation is likely headed

This innovation likely head in Mineral water manufacturers.

NSTMIS Division

Department of Science & Technology
Ministry of Science & Technology
Technology Bhawan, New Mehrauli Road, New Delhi-110016
Phone: 91-011-26567373

Website: www.nstmis-dst.org/

About NSTMIS:

The National Science and Technology Management Information System (NSTMIS), a division of Department of Science and Technology (DST) has been entrusted with the task of building the information base on a continuous basis on resources devoted to scientific and technological activities for policy planning in the country.

Citation:

The report may be cited as DST/NSTMIS/05/164/2014-15: Report on "Assessment of Research & Development and Innovation Practices in Micro, Small and Medium Manufacturing Enterprises (MSMEs) in India" by Sanjay Nagi, Market Insight Consultants, NOIDA, 2017

Disclaimer:

Every care has been taken to provide the authenticated information. However, the onus of authenticity of data rests with the PI of the project.