



PLASTINDIA FOUNDATION®

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MAKE IN INDIA



PLASTINDIA FOUNDATION®

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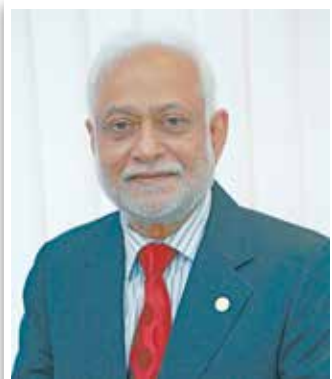
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Subhash K. Kadakia

Dear Member,

The success of "Make in India" depends on good quality plastic products. It is a big challenge for the Plastics Industry to gear up to produce world class products and make India the sourcing hub not only for domestic market, but for the world market as well. Today, we are at the cross roads to prove our capability and take the challenges which the present Government of India has so loudly declared in "Make in India" program. The roadmap for achieving the desired goals in line with the Mission & Vision of Plastindia Foundation is as under:

GOAL:

- The goal of the Indian Plastics Industry is to become Resourceful for the Global players

PURPOSE :

- India to become a Sourcing Hub for Plastic and Plastics Products for the Global Plastic Industry

CONCEPT PLAN FOR ACHIEVING THE GOAL:

- To produce good quality plastics at competitive rates as per global standards thereby enhancing the growth of the plastic industry
- Manpower development
- Technological development
- Exchange of technology know-how, technology transfer, Joint Ventures, B2B meetings, collaborations etc and creating profitable business opportunities for all
- To create positive image for Plastics

ACTION PLAN FOR ACHIEVING THE GOAL OF PLASTINDIA FOUNDATION THROUGH THE FOLLOWING ACTIVITIES:

1. Exhibition Activity:

Plastindia Foundation organizes Global level Plastics Exhibitions & Conference every 3 years under "Plastindia" brand, to showcase the developments made by the Indian Plastics Industry at a global stage as well as projecting India to become a SOURCING HUB for plastics and related products.

Plastindia 2018 is announced from 7th-12th February 2018 at Gandhinagar, Gujarat. Promotional activity is already initiated at the national and international level to popularize the new venue, which has achieved a grand success in Plastindia 2015.

2. Educational Activity:

The Foundation has initiated various educational activities for the upgradation of trained manpower, to meet the industry's needs which will directly contribute to the overall growth of

the Plastics Industry. Plastindia International University will be first of its kind initiative which will encompass fundamentals, practical knowledge, hands on training, research and innovations and Right to intellectual properties. The Empowerment Committee, in charge of establishing Plastindia International University has been reconstituted under the able chairmanship of Mr. Arvind Mehta and Co-Chairmanship of Mr. Achal Thakkar.

Smt. Anandiben Patel, Hon. CM of Gujarat has announced during the inauguration of Plastindia 2015, 9th International Plastics Exhibition and Conference on 5th Feb 2015, the coming up of this university and promised GOG support as may be needed by the foundation.

3. Social Project – Plastindia Plasticulture

The Foundation has embarked upon an ambitious social project in the country by promoting the use of Plastics in Agriculture – Plasticulture across the country, which will save not only scarce natural resources like water, but also increase yield substantially. This will benefit the marginalized farmers.

The Prestigious Demo-project at Kotagiri in Ooty, Tamil Nadu has been proposed by Mr. Surjit K. Choudhary, Secretary, Department of Chemicals & Petrochemicals (DCPC), Government of India for drip irrigation project and Plastindia Plasticulture Committee is to spearhead this project. The project will be headed by Dr. Y. B. Vasudeo, Chairman, PPC and the District Collector, Nilgiris.

4. Environment & Plastics Image related activities:

Plastindia Foundation has already undertaken various efforts to offset the negative image of Plastics and its products across the country and to educate the public at large regarding Plastic Waste - Recycling. The key issue is to improve the perception of Plastics through Utility, Conservation, Resource & Enriching for responsible use and recycling of Plastics.

On the above basis, we had initiated activities in Ahmedabad in association with Rotary Club and Sambhav Group between 2nd October, 2014 to 11th January, 2015 and selected about four (04) Locations in various part of city. We organized awareness program for keeping waste in segregated form (DRY & WET) and providing two (02) waste bins to keep the waste. There were rallies organized for general public awareness as well as make people understand the importance of waste segregation and anti-littering.

The Environment activity is done under the Chairmanship of Mr. Atul Kanuga.

5. Global Partnerships Programmes: (Plastwin & Wiintech)

For creating long term global business opportunities for both the Indian and Overseas entrepreneurs, which will be beneficial to all, Plastindia Foundation has initiated a program – Plastwin jointly with Wiintech of Europe to facilitate and promote trade relationships, partnerships, Alliance, Joint Ventures, collaborations between Indian companies and foreign companies globally.

The main objective of this Initiative is to explore & provide opportunities for business development between European countries and other cluster partners with India. On this basis, Plastindia is working towards collecting huge data for making the project feasible and facilitate the interest of Exhibitors interested in Joint Ventures and Technology Transfer.

We are featuring articles from those companies of Indian Plastics Industry who have been felicitated with Awards for Technology & Process Development, to blend with the theme “MAKE IN INDIA” of this issue of our Journal.



**Best Regards,
Subhash K. Kadakia
President
Plastindia Foundation**

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From the Editor's Desk



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The "Make in India" is an initiative program of the Government of India to encourage companies to manufacture their products in India. It was launched by Prime Minister Narendra Modi on 25 September 2014, urging companies to invest in India. Through this launch, the PM plans to roll out a red carpet to industrialists, both domestic and international, inviting them to make India a manufacturing hub that will help boost jobs and growth. The idea behind this campaign was to increase the contribution of the manufacturing sector to India's GDP, along with job creation. India's small and medium-sized industries can play a big role in making the country take the next big leap in manufacturing. India should be more focused towards novelty and innovation for these sectors. To further boost plastics processing in the country and encourage exports, the Union Government has initiated several measures as part of the campaign, staying committed to minimize the gap between net imports and net exports.

In this edition, we appreciate manufacturing excellence and innovation with the development of value added, quality plastic products using eco-friendly processes and technologies with a focus on sustainable development. The technologies featured comprise of characteristics such as better energy consumption, better plastic waste management, increase in product life cycle, development of innovative new products, quality standards, recycling and other emerging areas. Several of the featured companies have won awards this year. Recognition of innovations will continue to encourage the Industry players to increasingly focus on evolving cost effective systems & solutions and to develop environment friendly process technologies.

Kavita Shah

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Plastindia Foundation



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Make in India - Speciality Multi Layer Films

Make in India is one of the key projects of our Prime Minister. If implemented well, it is capable of changing the face of the country. To bring manufacturing to the country in a big way, Indian companies will have to work hard towards managing perceptions vis-à-vis quality of the products manufactured and technology & innovation associated with the process. Cosmo Films, starting from being pioneer of BOPP films in the country has a lot of other innovations to its credit. Way back in 2001, it developed the first film which could take extrusion coating without the primer. Thereafter, it developed a range of thermal lamination products which not only went into conventional publishing industry but luxury packaging as well. One of the major success stories here is that of velvet product. Another breakthrough product was a direct thermal printable film which multitude of applications like Information Labeling (airport baggage tags etc.), manufacturing tracking, weight and price labeling. It is the only BOPP film manufacturer which does coating for direct thermal printing.

Let's look at some of these films:

Direct Thermal Printable Film

The film has a proprietary coating which enables image/impression formation upon contact with the print head of the thermal printer. A protective layer is generally applied to protect the coated surface from mechanical abrasion, climatic factors, chemical products etc. The film thus offers good scuff & water resistance. The film also lends an excellent paper like matte finish and produces a dark image on printing. The film is available in thickness varieties of 50 and 75 microns in single layer structure and 100 microns and above in laminated structures. The direct thermal printing method generally used for short term indoor use is being extensively used because of its ease of use, low cost and tamper proof nature.

We have won two prestigious awards for this film.

India Star 2015 by Indian Institute of packaging Mumbai.

Plasticon 2015 Gold Award

(Innovative finished product) by Plast India Foundation.



High Barrier Metalized Film

As barrier properties get increasingly important for packaged food products, flexible players in the space seem to be gearing up for the development. Cosmo Films, known for its speciality films offers multiple barrier products. One such product is a highly effective high barrier metallized BOPP film. The film generally used as part of a duplex/triplex laminate structure with OPP/PET/PE offers good lamination bond. The end-pack can be used for all food/personal care applications where moisture barrier is of utmost importance. The film also offers optimum gas barrier properties.

In Mould Label Film

In Mould Labeling may be the latest addition to the labeling techniques, but it is definitely here to stay. Affordability and durability are the two main reasons working in favor of this labeling type.



Affordability stems from the reduction in an additional step of labeling the container as label fuses with the container during the moulding process. Durability is a function of permanency of the label.

The method has clear advantages over other existing techniques utilized for decorating/labeling the container which includes glue cut and stack labeling, self-adhesive labeling, shrink sleeving and dry offset printing. Some of the advantages could be listed down as follows:

- More surface area for brand presentation
- Photographic quality graphics
- Light weight of containers
- Significant reduction in label defects by application
- Resistance to product staining
- Improvement of side wall strength of a container
- No hassle of label peeling/curling during flexing or squeezing of container
- 100% recyclable either directly during the manufacturing process or after consumer use if PP container is used

In Mould Label Films are of the speciality products being offered by Cosmo Films. Its low static charge offers better dust resistance, better stacking for robotic arm pick up and good machinability.

About Cosmo Films Limited

Established in 1981, Cosmo Films Limited is one of the global leaders and manufacturers of BOPP Films. It is the largest exporters of BOPP films from India and largest manufacturer of thermal lamination films in the world. The films make their way into flexible packaging, labels and lamination industry. For more information, write to enquiry@cosmofilms.com.



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Single
Screw

Twin
Screw

RPVC
Screw
Barrel

Twin
Barrel

Bimetallic
Barrel

Make in India - Water Conservation & Purification

Vestergaard is an international company dedicated to improving the health of vulnerable people, most of whom live in developing countries. Our game-changing solutions contribute to a healthier, more sustainable planet by fighting malaria, HIV/AIDS, diarrheal diseases and neglected tropical diseases.

Vestergaard is the largest producer of long-lasting insecticidal bed nets. Our PermaNet® bed nets have played a significant role in last decade's highly successful fight against malaria.

Breakthrough solutions also include the award-winning LifeStraw® water filter, which was named "One of Ten Things that Will Change the Way we Live" by Forbes magazine. The portable version of LifeStraw® has been deployed following almost every natural disaster since 2005, and the family version is the backbone of the LifeStraw® Carbon for Water™ campaign in Kenya. This is the world's largest privately funded household water program, providing more than 4.5 million Kenyans with sustainable access to clean and safe drinking water.

LifeStraw® water filters convert contaminated water into clean, safe drinking water. The easy-to-use filters are a vital tool for some of the 780 million people who don't have ready access to safe drinking water. This leaves them at risk for diarrheal disease, which kills more than 1.5 million people every year. Safe drinking water is especially important for vulnerable groups, such as children under five, pregnant women and people living with HIV. LifeStraw® water filters also prevent cryptosporidiosis, a major cause of diarrheal illness in people living with HIV and children under five. LifeStraw® water filters comply with US Environmental Protection (EPA) 1987 Guide Standard and Protocol for Testing Microbiological Water Purifiers. Each product in the LifeStraw® portfolio is designed for a specific situation where safe water is needed but not readily available.

Currently, LifeStraw® is being manufactured outside India and it is imported into the country. LifeStraw® is manufactured and exported in large quantities across the globe. Since India has domestic potential for providing solutions for safe drinking water and coupled with our beloved Prime Minister Shri. Narendra Modi's vision of Make India. It is our endeavor to explore the opportunity of manufacturing this unique intervention tool in India. However, evaluating the pros and cons of Make India, we are here by listing out the capabilities and the challenges which needs to be taken into account and suitable solutions to be provided for this grand vision to be successful.

India's capability for "MAKE IN INDIA"

The country's leadership thought process of developing MAKE IN INDIA concept is a welcome move as it is harnessing India's capability to turn it into a major international manufacturing hub for various industries. The reasons for these are innumerable and is yet unexplored. The following are some of the major factors that can make this vision come true.

- *Cheap and readily available young workforce*
India has huge young work force willing to work at globally competitive price
- *Labor intensive manpower available*
People of India willing to work hard and have successfully demonstrated it
- *Good and Ambitious people*
The workforce in India is quote ambitious in making a mark and are also keen to improve the standard of living
- *Large number technical personnel available*
Technical manpower is readily available with large number of engineering/management graduates and graduates with technical expertise
- *Developing infrastructure*
India has lot of infrastructure projects under development to cater to "Make in India" concept
- *Language skills*
Every Indian person, at least, knows 3 languages including English which is the key strength for our people
- *Emerging governmental support*
Government is planning to tax reliefs and infrastructure development and generally encouraging foreign companies to invest in India
- *Pricing*
 - Cost of Raw material is high due to the excess taxes
 - Delivery is also questionable as the road conditions are bad and excessive toll taxes are levied on the transporters

Challenges for MAKE IN INDIA

Though several factors are in favor of MAKE IN INDIA there are of course several teething and deep rooted issues that need to be addressed before India can become a true international destination for manufacturing in various sectors.

- *Lack of quality consciousness in all sectors (Awareness in the employees are very low / consumer)*
Indians have "Chalta hain" attitude when it comes to Quality, when the question between quality and price, majority of the people choose price over quality. This has to be changed when we are inviting the MNC's for manufacturing
- *Raw material availability (Steel, Packaging boxes)*
Improvement needed for the quality of the packing material and the available raw material

- *High and non-uniform taxation policies*
Though the government is working on the GST bill, the current situation of taxes in India are quite high and non-uniform across the country
- *Lack of power and fuel*
Erratic power supplies, non-availability of fuels, high fuel prices lead to lot of down time and loss of productivity
- *Port clearance time is very high as compared to other regional manufacturing superpowers*
Clearing process in the customs are lengthy and complicated if you compare with developing economies like China and Korea
- *Lack of global standards mindset*
 - We lack in our own standards/specifications for creating world class goods and it needs to be revamped
 - Major lacuna is the lack of revised standards and quality testing
- *Lack of proper sanitation standards for operators – esp. in food industry*
 - Hygiene standards in India generally should be improved significantly to match with the international requirements for producing.
 - Implementation and adoption of standards by local manufacturers' not easy
 - Laws a plenty but execution / implementation is a major problem
- *Lack of facilities*
Facilities catering to all strata of living is not available
- *Proximity of sub suppliers for industries other than automobiles*
We should focus to creating industry wise manufacturing zones and accordingly it must be ensured that specific raw materials will be available.
- *Practical issues in MGNREGA*
 - Shortage of manpower due to this scheme, we should stop/modify this scheme so the industries can empower the workers by providing job and food and government can provide tax benefits to them
 - Skill set of personnel can be increased by providing genuine work and thereby improving standard of living and elevation



LifeStraw® variants – Product Images

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Make in India - Plastics offer Green Solution for Organic Wastes

ECOPOTS – GARBAGE GARDENS - GREEN SOLUTION FOR ORGANIC WASTES

India's cities are creating huge tons of garbage. The garbage is spread out in our streets often with stench & diseases. For decades unclean cities are accepted as our way of life. The health, disease, death costs are huge, but no stress on total always clean cities. Swachh Bharat has woken the country & ignited minds to attempt a clean up. Cleanliness is a habit that must be accepted, practiced, monitored by all for an always clean city. We have eradicated small pox, polio, we can eradicate filth too. The technologies of the past are irrelevant to present & future high urban population. New technologies are needed for home garbage elimination. Also keep in mind global warming, climate change are reducing Indian food production. CO₂ & air pollution are damaging millions earnings of future agriculture. We have no answers in short or long term, ONLY technologists can wake up the nation for green low cost, non-polluting answers. Any non-green, high energy (fossil fuel) technologies will be sidelined by lower energy non-polluting technologies in the market globally. Ecopot is a green technology for organic wastes.

Garbage Economy

India spends ₹ 15000 crores on its garbage collection, transport, land dumps. The costs are increasing year on year. The garbage left in streets is also increasing. Garbage management needs study of the garbage creator, the collecting & disposing team, monitoring team watching the scene. More garbage, more funds, more labour, more landfills & more pollution. The centralized collection as practiced in all cities is to increase garbage collection. The cleanup always fails in perfection. Indian garbage is organics, paper, glass and plastics forms 90-95%. Eliminating organics @ home decreases waste loads by 60%, transferring paper, plastic, glass to scrap trade is another 35%. Building, hospital, industrial & abattoir wastes are different class.

It is time we move from centralized garbage to home elimination. Garbage economy needs new green solutions. No nation has this approach. Can India do a better job? Rag pickers can be trained for garbage garden jobs. Don't make them exposed for life in garbage. India cannot be proud of its rag pickers. We have no right & necessity to flood our streets, landfills with garbage.

India garbage composition

We create 200000 tons of wastes everyday. Only 70%-80% of this is collected. Only 10% is treated properly. Organics form 50-60% paper, plastics, glass, wood are rest. Medical, Industrial wastes are not included as they need tailored steps. On rainy days, it is more watery, more toxic too. Each home generates 0.5-3 kgs/ day -average 1.5 kg nearly 0.5-1 ton/ year. Multiply this by number of families in cities & towns is the annual load. India's population is increasing, needing more manpower, trucks, landfill sites or incinerators by 5% year on year. This trend can be stopped if we eliminate wastes from home!

Limitations of existing technologies

1. Land dumps. India has no sanitary landfills which need an impermeable floor (preventing soil leachate pollution) with methane pipes. The cost of creating a sanitary landfill will run into crores. Use of landfill is also costly & needs huge manpower to monitor all parameters for years to come. India has land dumps with soil, air, water pollution. There are many rag pickers

living on these dumps too! Landfills, if full, must be stopped & enter a closure phase lasting 40 or more years!

2. Incinerators for hot India are bad. All incinerators have failed & closed. Our wastes are too wet & more in rains. CO₂ will add to Himalayan warming & floods.
3. Composting for 5000 years is unchanged & very slow (months). Daily dump pots take weeks to form compost. Then you pot it. Industrial composters are costly, need energy (electricity), leachates from wastes has to be treated and not let into sewage drains.

Ecopots

This is the world's first bioactive composting & plant growing pot. Our patent is the world's first patent for composting & plant growing garden pots.

The pot converts all organic wastes into fertilizer for new plants with no smell. It has a separator that divides pot into plant part & waste part. There is an insert for stem support poles. The pot is coated with bioactive composting materials that attack the organic wastes and form safe plant fertilizer. To use fit the separator inside the grooves on the bottom and top. Keep a 3/4 inch plastic pipe in the insert for climbers like bitter melon, beans, etc. In waste part dump the wastes and cover with 1 inch of soil.

In plant part, fill with soil, add seed /sapling. Water plant part. In 3-5 weeks you can get flowers and vegetables depending on plant. We advise 10-20 pots for a flat. Each pot can have 2 plants. Use 3-4 plants of same type for more pollination. You now have a minimal garbage garden just to tackle wastes or use more number for a full garden. For summer, a greenhouse can be used. In cold Himalayan places too pots are effective. Warm houses can be made from plastic films.

Advantages:

Ecological benefits for a Global Warming in India.

1. CO₂ use: Plants convert CO₂ to Oxygen. Artificial trees in USA were a high cost failure.
2. O₂ generation: Each leaf gives 5 ml/hour of sunlight. With 20 pot, 40 plants with each 10 leaves gives 400*5ml= 2 liters/hr., or 16 liters for a day of 8 sunshine hours or 4800 liters/year. Millions of Indian city homes can then generate huge volumes of Oxygen that can reduce Himalayan floods.
3. Carbon Trapping: Seeds have milligram weight, but grow into kilos in few months. This is silent Carbon Trapping. India can tell the world about this massive city home trapping. A home can grow 2-3 vegetable crops, total plants weight can be 30-60 kgs. depending on plant's type. If all city homes have a compulsory Ecopot garbage garden, carbon trappings will be millions of tons. Old plants are recomposted for fertilizer for next crop. No organics goes to streets.
4. Clean air plants trap VOC (volatile organics), dust & reduce air pollution- a simple low cost solution for, Indian air pollution.
5. Roof gardens bring back birds & bees too.
6. Economic advantages are low garbage collection costs, less disease cost, less man-days lost, pollution & vegetable import costs.
7. Food cancers: Our vegetables are pesticides, weedicides loaded. Ecopot vegetables are organic. Using home veggies reduces food cancers in near future.

8. Garden gives health, happiness, and reduces BP, heart attacks, keeps mind young.

9. Garbage Disposed: An eye sore is a food & O₂ giving cool garden.

Plant care

Correct watering organic pesticides, good seed quality, correct season plants for those area, green houses reduce low yields. We have all forgotten to grow plants, we can learn now, in few hours. After one season, we will be all masters. Metro agriculture in Eco pot garbage garden can give a bounty of vegetables. This is true for all flats, complexes.

Conclusion

India is blessed with high organic waste content garbage and a good recycling scarce material trade for plastics, paper, glass, etc. If organics are used up in homes, India can be 90% garbage free. We don't have a movement for garbage gardens .Why not start one to save earth, your families health? Swachh Bharat has SWM component too. Ecopot Garbage gardens can be good for eternity. India can teach other nations to be garbage free, healthy, clean forever. Use your wastes, preserve environment, eat healthy & be happy. Nation will be healthy, clean too. Plastindia can spread the message.

This is one of the technologies listed for Swachh Bharat. www.mdws.gov.in innovation practices.



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Disclaimer: Plastindia Foundation does not certify/verify the claims of the author.



Waste Dumped No plastics in wastes



Waste covered with soil 1 inch



Waste level decreased - after 5 Days



Seeded - small plant



3 Weeks old



6 Weeks Flowers

GARBAGE ELIMINATOR

ECO POTS
Make Food, O₂ from Wastes

POT -2 CHAMBER

WASTE DUMPED

PLANTED

Just 2 min/Day

4 IN 1 TECHNOLOGY - NO ORGANIC WASTES, ↓CO₂, O₂↑, SAFE VEGETABLES

USE WASTE, PLANT AND SAVE EARTH



Pot Top & Side views

Make in India - Processing Machinery & Equipments

Kabra Extrusiontechnik (KET) awarded the prestigious "National Award for Technology Innovation"

With over 5 decades of experience in extrusion technology, Kabra Extrusiontechnik (KET) continues to be the leader in manufacturing & export of plastic extrusion machinery. It has been benchmarking in plastics extrusion industry by modern R & D techniques and various processes to cater the market requirements for low power consumption, high output, maintenance free and user friendly plastics extrusion plants.

In recognition of KET's efforts in technology innovation, it has been awarded with the prestigious National Award by the Department of Chemicals & Petrochemicals (Government of India) and CIPET. Award was given under the Industry Category of "Innovation of Polymer Processing Machinery & Equipments" for its flagship product – High Speed Inline Flat Drip Tube Extrusion Line. Award was presented by Shri Ananth Kumar (Hon'ble Minister for Chemicals & Fertilizers, Government of India) during a grand function organized on 21st February, 2015 at Bengaluru.



Mr. P. M. Jariwala, Sr. VP – R&D – Kabra Extrusiontechnik, receiving award at the hands of Shri Ananth Kumar, Hon'ble Minister for Chemicals & Fertilizers, Government of India



Advantages of this technology innovation over known alternatives are as below:

1. High line speed up to 250 MPM against available machine of 20 to 80 MPM.
2. Linear specific output due to spiral groove feed Barrel against non-linear specific out with straight groove feed Barrel.
3. Surge free melt flow which is very essential for the production of thin tube at high line speed.
4. 4-Component Gravimetric dosing & mixing system for very accurate blending & homogeneous mixing. The system is with line control for quick startup and controlled weight / meter and uninterrupted production.
5. Machine configured for wide range of tube thicknesses from 0.15mm to 1.2mm. This enables to produce ISI grade as well as commercial grade product.
6. Partially import substitute.
7. Low energy consumption up to 0.26 unit/kg. This is equivalent to 5 paisa/meter for 16 mm x 0.8 mm tube.
8. High production rate of thin wall tube of 0.15mm, 0.2mm and 0.25mm enables to reduce end product cost.

The citation consists of a trophy, a monetary reward sum of ₹ 1 Lakh and an attractive scroll recognizing KET's technology innovation for irrigation sector.

KET has always offered technologically advanced plastics extrusion machinery to major processors across the globe. Company has been bringing world class solutions for drip irrigation system suppliers. Kabra has introduced many products, mainly inline round and flat drip tubing lines which are extensively used in micro irrigation. These lines are being developed especially for India and other developing countries. This is mainly to pass on maximum benefits to the processors & agriculture sector and thereby support farming techniques required by farmers. KET is also exploring possibilities of new avenues in bringing low cost cylindrical & flat drippers high-end equipments and micro irrigation systems for drip irrigation suppliers at competitive prices to boost yield.

Given the nature of rainfall in Indian subcontinent, drip lines are gaining popularity and acceptance across the country. Kabra continues to be preferred choice of processors for flat and cylindrical drip segment. Kabra's drip lines – both, flat and cylindrical, are widely recognized for their reliability, efficiency and advanced technology.

Team Kabra takes pride in partnering & fulfilling the needs of irrigation system manufacturers to achieve higher productivity with lower cost.

M/s. Kabra Extrusiontechnik Ltd.
www.kolsite.com

Make in India - Speciality PVC Automotive Cloth



Black PVC Leathercloth incorporated with Phase Change Material Technology reduces sweat by controlling microclimate of the body

Black colour is mainly used as a seat cover for 2 wheelers. The main problem encountered in normal Black PVC Leathercloth Seat Covers is that it absorbs very high heat when exposed to sunlight. The temperature of the black leather cloth when ambient temperature is more than 42°C, is 85°C plus which is unbearably hot. When a person rides the 2 wheeler with a very hot seat, he feels very uncomfortable. Moreover, the temperature of the seat cover which is 85°C plus passes on the heat to the rider whose body temperature is 38°C. This results into the transfer of heat from hot seat to the body through the trousers. Once the body becomes hot then it develops sweat. It is very difficult to clean the sweat from the groin area while riding. The seat becomes little slippery because of sweat. Due to this, when a rider applies the brake, he slips as the seat has become slippery. This is most dangerous. The presently used black leather cloth also cracks from the surface and also opens up at the stitches. Due to water seepage, water seeps into the seat and there is a fungal growth which is harmful to the body. Normal seat cover also has problems of wrinkles, stitches opening up, cracking / tearing of the seat. It needs replacement at least 1-2 times a year and it is not easy to re-cycle / re-use as the PVC Leather Cloth is laminated with fabric.

Joyride – A Technical Development

In line with the "Make in India" initiative, we have in-house developed a special Black PVC Leathercloth which is our pride "Joyride".

- Our Product "Joyride" is developed after extensive R&D and is incorporated with Phase Change Material Technology which reduces the sweat by controlling the microclimate of the body.
- "Joyride" Seat Covers go through a series of tests for Heat Reduction, Tensile, Tear and Stitch Strength, Scratch Resistance and Flexibility resulting in longer life and value for money.
- It has special Heat Reflecting Additives which reflects the heat resulting into the reduction in temperature of the exposed Leather Cloth. It absorbs less heat and keeps the seat around 12°C cooler in high summer with ambient temperature above 40°C, depending on temperature and humidity conditions.
- The product also has other special Additives and Lacquers which makes the Seat Cover scratch & damage resistant.
- Because of the materials used and its texture, the "Joyride" Seat Covers offer excellent seat grip, thus enhancing riding safety. It also has an aesthetic look and feel.
- It comes with 3 years warranty making it very cost effective.

Current State of Affairs

"Joyride" has received the prestigious Plasticon 2015 Silver Award – "Indian Innovative Awards" (**Innovative Finished Product/ Process – National**) Category.

We have sold more than 300000 Seat Covers. The present price of a normal leather cloth is ₹ 125.00 per linear metre while the product Joyride costs ₹ 550.00 per linear metre plus taxes.

The product is well evaluated by TVS and they have introduced this product first time in India. After various trials, this product was cleared to be introduced as an Original Equipment. Beginning 2015, this product was introduced under the name "Duracool" for a special

edition of Jupiter for initial 20000 two wheelers. The response of the product was so good, that they have decided to regularize this product. At present, we have on hand order of Joyride Leather Cloth for 30000 two wheelers and they have also planned to introduce it in the other versions of Jupiter and new models.

The product is also introduced in accessories by Honda, TVS and it is under finalisation with Bajaj and we hope to start the same in July 2015. The product is under active consideration at Hero Motocorp.

Comfort Ride for 4 Wheelers

- We have also developed a in-house product "Comfort Ride" for 4 Wheelers with similar characteristics as that of Joyride.
- Being parked outside, the PVC Seat Covers absorbs very high heat and therefore PVC Car Seat Covers exposed to sunlight becomes very hot (temperatures as high as 85 – 90°C) whereas the ambient temperature is around 42 - 45°C.



Honda



TVS Jupiter

- Generally in Air Conditioned Cars also, people first sit and then start the AC but when the person sits and the body touches the hot PVC Leather Cloth, the heat of PVC Leather Cloth is transferred to the body and sweat starts forming even in AC Cars.
- Due to the special heat reflecting pigments which absorbs the heat, there is a reduction in the temperature of the exposed Leather Cloth.
- At present, this product is under evaluation by leading car manufacturer.

Uniqueness of our Product

- Aesthetic look.
- Cost Benefit as the present normal leather cloth is changed many times in 3 years and also season to season. The user uses PVC cover in monsoon and textile cover in summer. Our calculation shows that in 3 years, he spends nearly ₹ 1000.00.
- The first product for 2 Wheeler Industry in India with 3 years warranty.
- Health, Safety Benefits and Comfort to the Rider / Driver.
- Environment friendly - Less plastic waste generated as normal leather cloth seat covers needs to be changed regularly.

By,
M/s. Natroyal Group
www.natroyalgroup.com

Make in India - Speciality Medical Membrane and Films

I. SCIENTIFIC AND TECHNICAL DESCRIPTION OF THE TECHNOLOGICAL INNOVATION

1.1 Technology Innovation in Product/Process

Technology Innovation:

(i) Process:

A process to make a chemical solution and casting the same on a non woven polyester fabric & manufacturing the membranes for high flux, high bacteria & Virus Rejection is developed by CSIR/CSMCRI & the same is transferred to M/s. Uniqflux Membranes LLP.

A process to make the RO Membranes by the interfacial polymerization of MPD & TMC which results in high salt rejection & flux is developed by CSIR/CSMCRI & the same is transferred to M/s. Uniqflux Membranes LLP

(ii) Product:

A) Thin Film Composite (TFC) Reverse Osmosis Membrane Salient Features of the Technology:

- Developed knowhow for making polyamide Thin Film Composite (TFC) reverse osmosis membrane suitable for desalination of brackish water and sea water
- Low fouling membranes with antifouling coating and high product water recovery
- Removes salinity (94-96%) and other harmful contaminants like hardness, fluoride, nitrate, arsenic, etc., from water
- Potable water having < 500 ppm TDS can be obtained from brackish water (up to 7000 ppm salinity) and sea water (30000-40000 ppm salinity)

B) Flat Sheet Ultrafiltration Membranes Salient Features of the Technology

- Developed knowhow for making flat sheet UF membranes (1m wide x 100m long in a batch) having cut off values of 75-90 KDa using indigenous raw materials
- Developed submersible UF membrane system for water purification
- Low fouling membranes and longer membrane life
- Removes harmful pathogens, turbidity and colloidal materials from drinking water
- Can operate at very low pressure (<25 psi)
- Low energy requirement with very high recovery (up to 90%)
- Easy cleaning & maintenance
- Niche applications like Paint Concentration, Dairy, Protein concentration
- Technology Transfer for Making UF-MF Membranes inclusive in the RO License

1.2 Detailed technology description:

Water is one of the most important resources for human existence, whether it be for human consumption, agriculture and industry. Ensuring access to safe drinking water is emerging as one of the important challenges of the

present century because of steady decrease in the available water resources, industrialization, urbanization, etc. Water in several pockets of the country contains high salinity, and/or harmful contaminants. Desalination of brackish and sea water and water refinement are the major requirements for solving this challenge.

Membrane separation processes such as Reverse Osmosis (RO), Nanofiltration (NF) and Ultrafiltration (UF) have emerged as an effective solution to produce safe drinking water. CSMCRI has pioneered the membrane research and development in the country for desalination of brackish and sea water, and for water refinement i.e., removal of harmful contaminants like pathogens, hardness, arsenic, fluoride, etc., present in water.

TFC RO Membrane Development

Thin Film Composite (TFC) membrane is the state of the art membrane used worldwide for desalination of brackish water and sea water. CSMCRI has developed technology for producing Polyamide TFC RO membrane of size 1m wide x 100m long in a single batch using continuous casting and coating machines. TFC RO membrane is a three layer composite structure of non-woven fabric (100-120 microns), polysulphone (30-35 microns) and polyamide (150-200 nanometers). TFC membrane preparation consists of two stages:

Stage I : Preparation of a reinforced Polysulfone (PS) ultrafiltration membrane having molecular weight cut off (MWCO) value of about 200 KDa by solution casting process and phase inversion to form Polysulphone layer over non-woven fabric.

Stage II: Synthesis of Polyamide skin layer of about 150-200 nm thickness on the surface of polysulphone ultrafiltration support by in situ interfacial polycondensation of multifunctional diamine namely m-phenylenediamine with a multifunctional acid chloride such as trimesoyl chloride under optimized conditions.

The TFC membrane thus developed exhibits salt rejection of 94-96% with about 65liters/m².hour product water rate under standard brackish water test conditions. TFC membrane of 1 m wide x 500 m long in a batch could also be prepared in a similar way. Uniqflux also has expertise and the necessary facilities for making of spiral modules of the flat sheet membranes.

Flat sheet ultra filtration membranes

UF membranes are useful for the treatment of drinking water for the removal of harmful pathogens, suspended solids and colloidal materials, etc.

CSMCRI has developed a process for the preparation of polysulphone, polyethersulphone and polyacrylonitrile based fouling resistant flat sheet ultrafiltration membranes having different molecular weight cut off values (20, 50, 90, 150 KDa) using microprocessor controlled mechanical casting unit. The process involves the continuous coating of polymer solution of desired composition on a non-woven fabric and effecting the phase inversion. This results in the production of fabric reinforced UF membrane with about 30-35 micron thick polymer layer on non-woven fabric.

The membrane cut off value depends on the polymer composition and other membrane casting conditions. The relationships between membrane preparation conditions and the cut off values have been extensively studied by permeating different molecular weight polymers and determining their rejection values by size exclusion chromatography.

Part of the infrastructure given in Table 1 can be utilized for making 1m wide x 500m long ultrafiltration membranes at the rate of 4^o10 meters/min depending on the specific need.

II. EXTRAORDINARY FEATURES OF THE TECHNOLOGICAL INNOVATION

2.1 What is the specialty / novelty / uniqueness / innovation about the technology:

The Flat Sheet ultrafiltration membranes have the pore sizes in the range of 0.01 to 0.1 microns and are capable of rejecting bacteria, viruses, cyst, colloidal matter and turbidity and hence produce biologically safe drinking water. They can also be sterilized.

The Thin Film Composite (TFC) reverse osmosis (RO) membranes have the pore sizes < 1 nm and are useful for desalination of brackish water (salinity < 10000 ppm) and highly saline/sea water to produce drinking water. They are also used for water reclamation for industrial use.

Innovation

- 1) Casting Machine (For Flat Sheet Micro & Ultrafiltration Membranes)
 - a) 40" Wide Casting Machine
 - b) Dr. Blade Design
 - Adoption of readymade one (1) meter scale as straight edge
 - Critical parts are assembled by bolting & not by welding giving advantage of stress level reduction & ease of cleaning and maintenance, replacement
 - Proper stress releasing at various manufacturing stages to make the system dimensionally stable
 - Higher dead weight is designed to have advantage of reduction in vibration
 - Stoppers to avoid spillage & to adjust different width of dope solution storage within the Dr. Blade assembly
 - Special design to gear box of Dr. Blade Design having 1/400 ratio to set the Dr. Blade gap with maximum precision
 - c) Unwinding mechanism for constant speed unwinding
 - d) Master roller surface flatness below 20 microns over length of 1300mm & diameter of 160 mm
 - e) Housing done is polycarbonate transparent enclosure for effective monitoring of the process
 - f) Tanks Fabricated in PP
 - g) Roller bearings which are in water bath fabricated in PP to have rust free property
 - h) All rollers in SS 316 with surface flatness under 30 microns over length of 1300mm precisely manufactured and are hollow in construction to reduce weight & stress on fabric
 - i) Take up roll with clutch type gearbox, drive & laser distance sensor as servo control for variable speed arrangement
 - j) Path of fabric over the rollers designed to give wrinkle free, jerk less movement and maximum contact time for efficient Phase Inversion
- 2) Coating Machine (For Reverse Osmosis Desalination Membranes)
 - a) Simplified design for ease of assembly & maintenance
 - b) Chemical Holding tanks of equal size adopted with bottom drain
 - c) Suspended bearing systems for height adjustment for the roller inside the chemical tanks, special SS bearings used
 - d) Heating chamber is designed to reach 80 degree centigrade with non conventional method of heating air through halogen lamps system & voltage controller
 - e) Machine is divided in 2 part design for easy transport & assembly
 - f) Diaphragm pump used for chemical contact with the fabric
 - g) Single phase application
 - h) Housing done is polycarbonate transparent enclosure for effective monitoring of the process
 - i) All rollers in SS 316 with surface flatness under 30microns over length of 1300mm precisely manufactured and are hollow in construction to reduce weight & stress on fabric
 - j) Take up roll with clutch type gearbox, drive & laser distance sensor as servo control for variable speed arrangement
- 3) Winding & Trimming Machine (For MF/UF/RO)
 - a) Totally new design adopting readymade abrasive cutters
 - b) Machine bed is fabricated instead of using readymade lathe, with special guide & roller systems for accurate, jerk free movement of movable stations
 - c) Suspended overhang roller system with adjustable load for making a tight winding automatically
 - d) Winding & trimming in single assembly
 - e) Can adopt sizes from 300mm- 1100mm length & diameters of 2inch – 8inches
 - f) Single phase Operation
 - g) Portable machine
 - h) Machine totally enclosed in polycarbonate with dust control mechanism to avoid flying dust & debris

III. FEATURES OF COMPETITIVE TECHNOLOGICAL INNOVATIONS WHETHER IN PRACTICE OR NOT

3.1 Comparative advantages / disadvantages of the proposed technology over the conventional/ emerging technologies and brief comments on competitions / challenges:

Advantages of RO and Flat Sheet technology over other technologies:

Most of the commercial water purification units have the ability to immobilize the bacteria whereas the HF membrane based units are capable of removing the bacteria from water. Hollow fiber membrane water purification units which don't require electricity (they can operate through gravity driven process) can be made for utilization in rural areas where electricity is not available. The Membranes can operate at Low Head pressure of 0.5-2 Bar head

Sea water desalination can also be carried out by thermal processes. However, thermal desalination is highly energy intensive and is economically viable only in places where waste energy is available, for example, power plants, petrochemical plants, etc. Hence, the sea water desalination plants world over including middle east, are based on TFC RO membranes.

For all the desalination plants, TFC RO membrane is like the heart of the system. As the GOI is also looking for desalination of brackish water and sea water to provide safe drinking water to the common man, indigenous production of TFC RO membranes will reduce the plant cost and spread the technology to meet the growing need for safe drinking water.

IV. CHARACTERISTICS OF TECHNOLOGICAL INNOVATION THAT MAKE IT STAND OUT FROM ITS COMPETITORS (COMPARE THE FEATURES)

Uniqflux Membranes	Competitors
Technology: Indigenous	Technology: Foreign
Price: INR 6000.00/ Module BW 4040	Price: INR 9000-13500
Technology developed Indigenously for Recovery of Extremely Fouled Membranes	Use & Throw
Foreign Exchange: Retained	Outward
Export Potential	Nil
Export Revenue Generation	Nil

V. IMPACT OF THE TECHNOLOGICAL INNOVATION INCLUDING THE METHOD OF DETERMINATION ON: (I) INDIA'S COMPETITIVENESS (II) SOCIETY (III) EMPLOYMENT AND (IV) ENVIRONMENT

Sr. No	Levels	Impact
i	India's Competitiveness	Currently the Product is 100% Imported. The Manufacturing of RO Membranes will give India the National water security as well as export opportunity

ii	Society	A budding industrial sector is facing a huge problem of drinking water quality & pollution of Natural water resources. Membrane has a major role to play in tackling the problem. Especially for drinking water where the percentage of Salts, Heavy Metals & Bacteriological contamination is beyond permissible limits. Development of Membranes in India has reduced the cost of the core component, making the technology cheaper for mass use .
iii	Employment	The RO based Plants are being installed on PPP model in various states. The labour required to operate these plants is sourced from the local villages. More than 10000 plants are estimated to be up in the next 2 years in the states of Punjab, Gujarat, Karnataka, Andhra Pradesh, etc, generating employment.
iv	Environment	Membrane have a major role to play in tackling the problem of pollution of Natural water resources due to discharge of waste water. Membranes also have a major role in Water Recycling of Municipal & Industrial waste water which will reduce the consumption of the Natural Resource & build the Vital National Water Security

VI. ALLIANCES AND PARTNERSHIPS THAT FACILITATED THE TECHNOLOGICAL INNOVATION AND THEIR CONTRIBUTIONS

CSIR-CSMCRI Bhavnagar had developed the technology and had a semi commercial facility to produce membranes. This facility helped us to actually learn about the special purpose machinery & their operation & requirements. This also helped us in starting the commercial production of membranes at CSMCRI, Launch the commercial product in the market simultaneously when the machines were in the production stage. This gave us an advantage of almost one year.

VII. Any other significant aspect not highlighted above

The membranes have an application in time of disaster as well. Non Electric Ultrafiltration Systems were installed post disaster namely in the following –

- 20 numbers of UF based Water Filtration Kit were installed post Uttarakhand Flash Floods
- 50 numbers of UF Based Water Filtration Kits were installed Post Cyclone Phailin, Orissa
- 10 numbers of UF Based Water Filtration Kits were installed Post Cyclone Hyain, Philippine

By,
M/s. Uniqflux Membranes LLP
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Disclaimer: Plastindia Foundation does not certify/verify the claims of the author.

Make in India - SSI Initiative in Packaging Machinery



M/s Dave Technical Services, Mumbai are winners of 4th National awards for their "Mini Blow Twin Station Form-Fill-Seal (FFS) Machine" in the Industry category of Innovation of Polymer processing Machinery & Equipments.

The award was presented to Shri Niranjan C. Dave, Proprietor of M/s. Dave Technical Services by Shri Ananth Kumar, Hon'ble Minister for Chemicals & Fertilizers, Government of India and Shri Nihal Chand, Hon'ble Minister of State for Chemicals & Fertilizers, Government of India at the award function held at New Delhi.

Dave Technical Services are manufacturers of Plastic Blow Molding & Injection molding machines and Product Developers based in Mumbai, India since 1982. The Patent Protected Blow Moulding Machine model is specially developed keeping in mind the customer's requirement of low power consumption and smallest floor space utilization, providing efficiency, convenience and high productivity with profitability.

The blow moulding machine comprise two parison station with individual injection units offering for the first time in the world unique flexibility of producing different products of two different polymers having different shapes, size and thickness as required simultaneously at the same time on same machine. Even two products with different colours can be produced concurrently at each station on this machine, as required.

The Blow machine is fully Automatic, Pneumatic (No motor) and works on air pressure using compressor providing considerable power savings and can operate on both single phase as well as three phase power. New blow moulding machine can produce smallest component by volume or weight, products starting from 0.2 ml and thickness as low as 0.2 mm to bigger products.

Blow machine comes fitted with universal platen to accommodate big moulds, possess variable weight adjustment system in head, is very simple to operate & user friendly which eliminates high skilled operators and reduce man power requirements and can handle wide product range to cater to various industry requirements by just changing moulds as required on same set up.

Compact Blow moulding machine best suited for fast production of small blown products, critical items that is not economical on large complex machines.

Machine with Option of Double Head on single or both stations for higher production output also available.

Dave Technical Services also offers the optional choice of getting Filling and Sealing arrangement on the machine i.e. Blow machine provides complete synchronization in forming of plastic product with arrangement for liquid filling for volumetric principle and Sealing it.

DTS also provide complete solutions for development of tailor-made product out of your concept, drawing or samples, from moulds making to final finished product in your hands.

Machine can process Plastic polymers like LDPE, LLDPE, HDPE, PS, HIPS, EVA, TPE, Polypropylene and others blow grades.

The Blow machine model is economical and adapted to be installed even in rural areas aiding rural industry development and support hon. Shri Narendra Modi, Honorable Prime Minister's Campaign of MAKE IN INDIA.

This machine suitable for manufacturing products like bottles & containers, plastic bellows, toy parts, straws, tubes, float ball, cans,

droppers and pipettes, tools handle, others.

Packaging Application: single dose packs for Liquids, Semi Solids, paste for various industries like pharmaceutical, cosmetic, medical, chemicals, oral care, agrochemicals, veterinary products and other industries.

Dave Technical Services have earlier won prestigious PLASTICON Award from Plastindia Foundation for development of Innovative, Pneumatically operated Mini Blow Molding Machine and have also received Recognition of Excellence from Institute of Packaging Machinery Manufacturers of India (IPMMI), in the category of Machinery for Package Conversion.

*(All the intellectual property associated with this fully automatic, pneumatic, single phase, double station Blow moulding machine is rightly protected through patents, design registrations & copyrights. All rights are reserved with Dave Technical Services.)

DAVE TECHNICAL SERVICES

www.davetechnical.com



Patented Fully Automatic, Pneumatic, Single Phase, Double Station Blow Moulding Machine (DSBM Series)

Make in India - Indigenous Autoclave Technology for processing Aerospace Composites

Abstract

NAL has pioneered the development of indigenous aerospace grade autoclaves, which are essential for fabrication of composite parts for aircraft, in a controlled environment. Over the years, NAL has not only mastered the technology, but established a Public Private Partnership (PPP) to market state of the art autoclaves against stiff international competition. The consortium led by NAL has been able to successfully win orders for large size advanced autoclaves, required by our research establishments in Defense and Space sectors, competing against established global majors in the open tenders.

As a societal mission the consortium has jointly developed a lab scale autoclave and is marketing this at a relatively inexpensive price, making these affordable to IITs and other laboratories for their basic research in composites. Such autoclaves have already been delivered to IIT-Kanpur and MIT-Manipal, VSSC - Trivendrum with more in waiting for delivery.

It is believed that this effort led by the NAL consortium along with “**Make in India**” campaign, which our honorable PM is ardently striving for, will enable us to become the world leader in Aerospace grade Autoclaves.

1. Introduction

An autoclave system allows a complex chemical reaction to occur inside a pressure vessel according to a specified schedule in order to process a variety of materials[1]. The materials processed in autoclave range from carbon matrix materials, metal bonding adhesives, reinforced epoxy laminates, thermoplastic laminates, metal, ceramic materials to many other aerospace and electronic components. Generally, the autoclave systems are tailored to meet specific process requirements. The major elements of an autoclave systems and their functions are: a vessel to contain pressure, source to heat the gas stream and circulate it uniformly within the vessel, a sub system to pressurise the gas stream, a system to apply vacuum to parts covered by a vacuum bag, a subsystem to control operating parameters, and a subsystem to load the molds in to the autoclave.

CSIR-NAL has an acknowledged capability in building large, computer controlled, state-of-the-art autoclaves along with the associated subsystems. It has designed and developed a number of autoclaves namely Mark I, Mark II, Mark III and Mark IV autoclave whose operating temperature go up to 350°C and pressure up to 15 barg and working space up to 4.4m dia x 9 m. Apart from building autoclaves for its own use, CSIR-NAL has also revamped a few autoclaves for VSSC. Earlier, CSIR-NAL has developed and supplied an autoclave of working space 4m dia x 8m length to HAL, which is currently in use.

CSIR- NAL's unique advantage in developing autoclaves lies in the fact that it is basically an aerospace laboratory, with superior design capabilities, and is also a user of these autoclaves for aerospace composites. This paper presents CSIR-NAL's aerospace-class autoclave technology and gives an overview of various autoclaves designed, developed or revamped by CSIR-NAL and gives an insight into the innovative techniques embedded in it.

2. The First Indigenous Autoclave (Mark I)

The development of Mark I Autoclave marked the inception of autoclave technology in CSIR-NAL. CSIR-NAL has designed and built this first autoclave (2.4m diameter and 6m length) way back in 1986 for its own use. This one was later upgraded into a computer controlled system, and is still in regular use. There is no doubt that it can serve well for many more years to come. The autoclave's useful diameter and length are 1.8m and 4m respectively. Its maximum pressure and temperature are 7 barg and 200°C respectively. This was the first autoclave made indigenously in the country. Fig.1 shows the Mark I autoclave commissioned during 1986 at CSIR-NAL.



Fig 1 : View of the Mark I autoclave shell commissioned in 1986

3. The First Indigenous Computer controlled autoclave

NAL has designed and developed a computer controlled autoclave (3m x 7m) consisting of PC, PLC, PID controllers and data acquisition systems employing a closed loop control mechanism to control the three basic parameters viz., temperature, pressure and vacuum as per the requirements of the cure cycle. This autoclave was built with its own nitrogen generation unit. This autoclave was commissioned in June 1994. This autoclave has been used extensively, and it has been the work-horse for complete LCA composite product development, including LSP components of LCA.



Fig.2: The first Indigenous computer controlled Autoclave with unique dual door technology

Recently, in 2008, an additional door with 2.5 m depth has been adopted for the purpose of increasing the working length, to cater for certain SARAS components pending the availability of Mark-IV. This dual door technology is the first of its kind in the world. Using this, based on the requirement, the working volume can be optimized. Fig.2 shows the image of the autoclave with dual door.

4. The High temperature and High pressure Autoclave

CSIR-NAL has very recently commissioned the first indigenous high temperature and high pressure autoclave with operating temperature of 350°C and 15 Barg pressure. Several innovative features like advanced sealing technology to cater to the high temperature, provision to reduce the thermal stresses on various inside components have been implemented in this autoclave to make it suitable for demanding applications. Fig 3 shows the image of this autoclave.



Fig.3 First High temperature and High pressure autoclave built in India

5. Largest Indigenous Aerospace Autoclave:

NAL has designed and built the Mark IV Autoclave, which is the largest autoclave in the country, in the aerospace sector and it was commissioned in June 2009. This autoclave possesses the state-of-the-art technologies, such as Davit arm based door handling system with steering mechanism, cost effective lock ring less door locking system, fool proof door lock safety device, PLC based pressure sensitive blower, multi level loading, an advanced dual computer based control algorithm etc. It is used for processing large size airworthy advanced composite components such as wing, fin, empennage, fuselage parts, etc. for civil aircraft, SARAS. It can operate up to a maximum temperature of 250°C and maximum pressure of 7 bar. It has a working space of 9m length × 4.4m diameter. This autoclave also incorporates several safety and reliability enhancement features. The autoclave sub systems such as pressurization system, vacuum system, computer control and instrumentation system, electrical heating system and air circulation system

are highly advanced in terms of capabilities, reliability and maintainability. Fig. 4 shows the image of largest Indigenous Aerospace Autoclave.



Fig 4. Bird's eye view of the 4.4m x 9 m working space Large Autoclave

6. Indigenous Autoclave supplied by CSIR-NAL to HAL, Bangalore complex

NAL supplied an autoclave, which is currently in operation at ARDC, HAL. It was designed, built and commissioned successfully by NAL. Its robustness has been proved in the production environment and it serves as the main work horse at HAL. NAL took up the challenging responsibility of building this large autoclave with several innovative features and completed the task. This autoclave has a working space of 4m diameter and 8m length, with a working pressure and temperature of 10 bar and 300°C respectively. Fig 4 shows, HAL Autoclave.



Fig 5: 4m x 8m Autoclave commissioned in 2002 for HAL, Bangalore complex

7. Revamping of Autoclaves by CSIR-NAL:

Besides building autoclaves for its own use and other organisations, CSIR-NAL has gained significant experience in revamping couple of autoclaves for VSSC, which were otherwise had become non-operational for want of support from the original suppliers.

NAL has revamped, reinstalled and commissioned the Vertical Autoclave (Reaves curing chamber) and Baron Autoclave at composites group of VSSC, Trivandrum. The Reaves curing chamber is of 4m diameter and 1.5 m height and imported from U.K. The Baron Autoclave is a horizontal autoclave with 1.6 meter diameter and 3.7m length. NAL had taken up the challenging task of design, development, installation and commissioning of various subsystems like pressurization, vacuum, heating, cooling, door handling and computer control & instrumentation systems with state-of-the-art features.



Fig.6 Image of Revamped Vertical Autoclave for VSSC

8. Innovative features of CSIR-NAL Autoclaves

CSIR-NAL, with over 25years of experience in developing autoclaves, has introduced several innovative features, to make them truly world class.[2] Some of them are Davit arm type door handling system with an innovative bearing design. Steering mechanism to park the door sideways with the least possible area for the movement and parking[3]. This design eliminates the door crab and complicated guiding system for the door operation. Complete elimination of the door lock ring and associated support system which has reduced the weight of door handling system by more than 50% with a reduced power requirement for locking. An innovative cooling system capable of varying the effective heat transfer area and rate of flow of cooling medium provides the required control on cooling rate. The blower speed is varied as an inverse function of autoclave pressure to optimize the power. Pressurized blower motor that completely eliminates the conventional mechanical seal and its associated problems has been used. Air circulation duct on the entire circumference and length of the autoclave to ensure uniform flow of medium in the working zone.

Fault tolerant and fail-safe design that provides for two independent communication links between the process control equipment and the computers. The system consist of two Computers, Serial Device Servers, PLC (Programmable Logic Controller), Recorders, PID controllers etc[4][5]. This system handles about 85 analog inputs/outputs and about 200 digital inputs/outputs. Two computers provide the SCADA (Supervisory Control and Data Acquisition) functions with the primary computer doing both control and monitoring and the

secondary computer doing only the monitoring function[6]. In the event of a failure in the primary computer, the secondary computer will automatically takeover the plant and perform both control and monitoring tasks. The software is developed in-house using Visual C ++ Compiler.

9. Lab-scale Autoclaves with state of the art features at an affordable cost

Apart from developing large and medium scale autoclaves, CSIR-NAL has developed lab scale autoclave having working space of 900mm diameter and 1000mm working length. These autoclaves are being designed and developed at low-cost to meet the requirements of research laboratories and engineering institutions. These autoclaves are designed with the state of the art features that normal size autoclaves would have. Fig.7 shows the image of Lab - Scale Autoclave.



Fig.7 Image of lab scale autoclave developed by CSIR-NAL lead PPP consortium

10.Public Private Partnership

CSIR-NAL has signed a Memorandum of Understanding (MoU) with M/s.Unique Chemoplant Equipments (UCE), Mumbai, India, for manufacture and marketing of autoclaves. UCE will operate as a work sharing partner for fabrication of electro-mechanical systems. UCE is an ISO 9001:2000, ASME 'U', 'U2' and 'R' stamp certified designer and manufacturer of coded process equipment for a variety of applications. CSIR - NAL has also signed an MoU with M/s. Datasol, Bangalore for fabrication of Electrical, Control and Instrumentation Systems for the Autoclaves. Datasol is an ISO 9001:2000 certified Product realisation company for Aerospace & Industrial automation. This Public Private Partnership started a new era in the manufacturing of high end autoclaves in India, by the industry- CSIR-NAL joining hands together.

This PPP has on today has realised the autoclave orders worth about 10crores of rupees. These include three lab scale autoclaves, one large size autoclave 4m Dia, X 15m length and one medium sized autoclave from various government and private organisations. Another order for large size autoclave worth about 9crores of rupees is in pipe line from VSSC, Trivandrum.



Fig.8 Image of MOU signing with private partners by CSIR-NAL

11. Autoclaves Users Meet

As part of the commercialisation of Autoclave technology, Autoclave Users meet was conducted on 03.09.2013 (Fig. 15) along with Private partners. The meet was very successful and very good response came from user industry both private and government sectors.



Fig 9. Autoclave User's Meet conducted on 03.09.2013 at CSIR-NAL.



Fig.10: Longest Autoclave designed and Developed (Dia 4m, 15 metre Length) for Advanced System Laboratory (ASL) DRDO, Hyderabad

12. Savings in Foreign Exchange:

The imported autoclaves of these specifications in the international market would have costed about 2.0 million dollars. Whereas these indigenous autoclaves have costed about 8 crores. Apart from saving valuable foreign exchange, we have developed Indian industry which can fabricate small lab scale level to large autoclave systems and also avoided the dependency for maintenance on foreign firms.

13. Self Reliance:

The autoclave technology has been developed in such a way that all the sub systems and components can be sourced indigenously. Further, a large number of competent vendors have been developed in the country to carry out the varied tasks of design, manufacture and integration. This enhances the self reliance character.

14. Conclusion:

This paper has given an overview of CSIR-NAL's Indigenous Autoclave Technology with state of art features developed over the years. The successful Indigenous Autoclave story leading to commercialisation through the public private partnership has been presented.

Acknowledgements

Acknowledgments are due to Mr. Shyam Chetty, Director, CSIR-NAL, Dr.A.R.Upadhya Former Director, CSIR-NAL, Mr.M. Subba Rao, Former Head, ACD, NAL, Mr. H. N. Sudheendra, Head, ACD, Dr. Shamsunder, M. D., NALTECH and all players in the NAL led PPP consortium.

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Plastindia Foundation Activities

1. Visit to Chinaplas 2015

Plastindia Foundation was present as an exhibitor at 29th edition of Chinaplas 2015 with a 9 Sq.mt. booth to promote Plastindia 2018 and Plastwin.

Vice President, Mr. Rajeev Chitalia and Hon. Treasurer, Mr. Rajiv Raval of Plastindia Foundation were present to greet the visitors.



GSPMA and PIF Team at Plastindia Foundation Stall in Chinaplas 2015

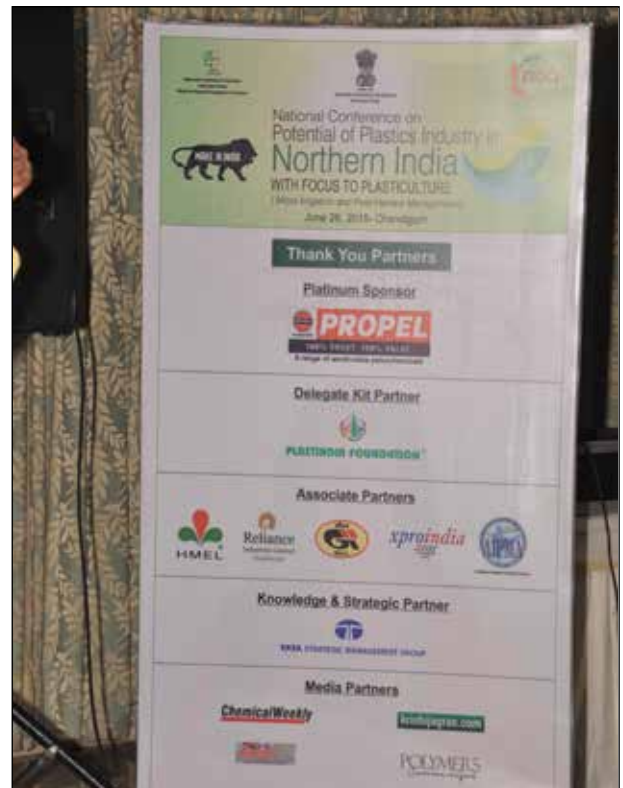


Plastindia Foundation Team with Mr. Stanley Chu, Founder & Chairman , Adsale Group

2. National Conference on "Potential of Plastics Industry in Northern India with focus to Plasticsulture" organized by FICCI

Dated : 26th June 2015 at Chandigarh

Attended by : Mr. Prasanta Misra – Chief Consultant, MIDH, Mr. Rajeshwar Kulkarni – Branch Manager – Plasticsulture, PIF
Promotion of PI 2018 & Plasticsulture activity, an initiative of Plastindia Foundation.



3. 4th edition of KENYA PLAST – International Exhibition on Plastics & Packaging

Dated: 10th-12th June 2015 at Nairobi, KENYA

Promotion of PI 2018 by distributing brochure through support of PLEXCONCIL

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- CNC Milling/Machining Centre, EDM, etc.
- Coating
- Cutting Tools
- Digitizing
- Die/mould polishing/ Die Spotting machines
- Dies & Moulds, Press Tools, Jigs, Fixtures, Gauges
- Heat Treatment
- Hot Runner System
- Machine Tools & Accessories for Dies & Moulds
- Measuring Machines, Quality Assurance
- Mould base & standard parts of Dies & Moulds, Toolings
- Moulding machines/ Die Casting machines, Sheet Metal Presses & ancillaries
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Kisaan Raja - One Acre Miracle

The White Gold



National average for cotton crop is about 2.5 quintals per acre. The world average is 7.5 quintals per hectare. With PlastIndiaPlasticulture, Kisaan Raja initiative with support of NABARD, we could run a pilot exercise for promoting Drip Irrigation in Jalna district of Maharashtra. The crop selected by the farmers was cotton and the average yield of 16 quintals per acre was achieved.

Subsequently with support of NABARD by way of grant and loan the NGO, Savitribai Phule Mahila Ekatma Samaj Mandal, the project entailed distribution of loans to 600 farmers in the project area under the scheme “**UMBRELLA PROJECT IN NATURAL RESOURCES MANAGEMENT (UPNRM)**” of NABARD. This was done during the year 2012 - 2013 and the crop yields achieved so far 13 quintals and extended harvest is yet to happen.

This is ONE ACRE MIRACLE.

During Kisaan Raja pilot, eight leading drip companies participated and created the history. All this was possible because of drip irrigation based on Plastic Materials.

After the pilot exercise there was greater awareness among the farmers of Jalna district as the exhibition was held in eight locations and many farmers could visit the demo plants. This was like “seeing is believing.” Many farmers 8,300 in number did not wait for the loan from NABARD under UPNRM but purchased drip system for their farms and reaped the benefits in subsequent years. The pilot exercise in one district resulted in created better livelihood for many farmers in the Aurangabad and Jalna Districts of Maharashtra.

Kisaan Raja Report Summary 2013-14

Project Started: 2012-13

Phase I Completed: 2012

Phase II Completed: 2013

List of Villages:

1. Pagirwadi, Tal: Ambad & Dist: Jalna
2. Dahigavan, Tal: Ambad & Dist: Jalna

3. Chinchkhed, Tal: Ambad & Dist: Jalna
4. Kingaon, Tal: Ambad & Dist: Jalna
5. Dhoksal, Tal: Badnapur & Dist: Jalna
6. Dhopteshwar, Tal: Badnapur & Dist: Jalna
7. Matrewadi, Tal: Badnapur & Dist: Jalna
8. NajikPangri, Tal: Badnapur & Dist: Jalna
9. Murshidabadwadi, Tal: Phulambri & Dist: Aurangabad
10. Morhira, Tal & Dist: Aurangabad
11. Khamkheda, Tal & Dist: Aurangabad
12. Donwada, Tal & Dist: Aurangabad
13. Anjandoh, Tal & Dist: Aurangabad
14. GeoraiGungi, Tal: Phulambri & Dist: Aurangabad
15. Pophala, Tal: Phulambri & Dist: Aurangabad

Project Activities:

- Kisan Raja Exhibitions & Drip Irrigation Awareness for Cotton Crops (By PlastIndia Plasticulture)
- List of Farmers willing to install Drip Sets (By PlastIndia Plasticulture)
- Screening of the list and Formation of Joint Liability Groups (SPMESM)
- Shortlisting of Drip Manufacturers providing best price band and quality assurance (By PlastIndia Plasticulture)
- Risk Evaluation & Disbursement of Loan to 600 Farmers to purchase Drip Irrigation (NABARD & SPMESM)
- Farmers' Workshops, Exposure Visits, Farm Visits, Technical Advice to optimize the cotton yield (SPMESM)
- Loan Recovery (SPMESM)

2013-14 Highlights:

- Total Loan Disbursed ₹ 1.5 Crore
- Total Farmers 600
- Villages 15
- Farmers Profile: Small & Marginal Farmers
- Villages Profile: Falling in draught prone area, scarcity of irrigation water, main crop cotton
- Loan Amount: ₹ 25000 per farmer
- Repayment Schedule: Yearly instalment after cotton crop sales for 3 years
- Repayment so far (2013-14 instalments): 94%
- SPMESM repayment to NABARD (due till 2013-14): 100%
- Drip Companies involved: Kisan Irrigation, KASTA Irrigation
- Drip Company Selection: By Farmers

2013-14 Outcomes:

After the important awareness work about the vital drip irrigation, by PlastIndiaPlasticulture, SavitribaiPhuleMahilaEkatmaSamajMandal (SPMESM) started working on the project in 2012-13. In the first phase, loan was offered to 150 farmers of 2 villages and 150 drip installations were completed. In spite of a severe draught, the participating farmers could survive because of the newly installed drip irrigation.

2013-14 observed normal rainfall and the initiative also paid off.

The figures (2013 - 14) of the cotton yield this season highlight the impact of the intervention.

	Village	Average Yield of Cotton Quintals/ Acre			
		Before Drip Program	After Drip Program	Average Increase/ Acre	Average Increase in Income/ Acre*
1	Pagirwadi	5.26	12.17	6.91	29022
2	Dahigavan	4.96	12.56	7.6	31920
3	Chinchkhed	6.28	11.46	5.18	21756
4	Kingaon	4.6	9.73	5.13	21546
5	Dhoksal	7.8	15.13	7.33	30786
6	Dhopteshwar	7	14.01	7.01	29442
7	Matrewadi	6.75	13.87	7.12	29904
8	Najik Pangri	7.77	15.08	7.31	30702
9	Murshidabadwadi	5.9	12.03	6.13	25746
10	Morhira	5.95	13.1	7.15	30030
11	Khamkheda	5.72	12.81	7.09	29778
12	Donwada	6.63	14.43	7.8	32760
13	Anjandoh	5.93	13.36	7.43	31206
14	Georai Gungi	6.47	14.8	8.33	34986
15	Pophala	6	11.25	5.25	22050

Meet Our Heroes

Mr. Bandubhau V. Pagire, a progressive farmer at Pagirwadi is very happy with the drip. He confirmed that only because of the drip irrigation, his cotton yield is the highest in the village. Since last 2 years, Pagirwadi observing lesser rainfall. Availability of water for irrigation is much lesser. In spite of that, Pagirwadi farmers are receiving record cotton yields- thanks to the newly installed Drip Irrigation System and Agro extension activities by the program.

Details of his farm yield for this year are as follows:

- Drip Area: 2 Acres
- Crop: Cotton BT
- Used Fertilizers: 1846 DAP (3 times in four months), Organic Manure
- Insecticides Used: Confider, Polo, Profex Super
- Water Sources: Dug-Well & Bore-well
- Yield Per Acre: 15 Quintals. Total 30 Quintals
- Approx. Cultivation Cost: ₹ 25000.00 for two acres
- Cotton Sold @ Rate: 5200/ quintal
- Total Income from Cotton Crop: ₹ 156000.00
- Net Profit From Cotton Crop: ₹ 131000.00 (Over 9 Months)

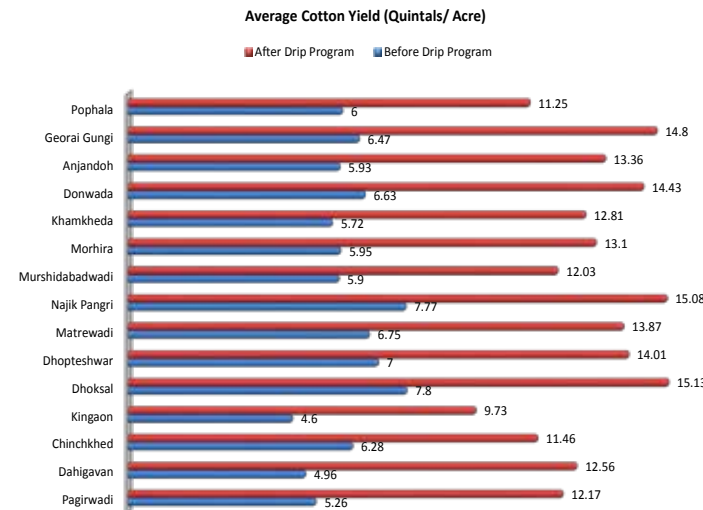
Mr. Vitthal Pagire (Pagirwadi) had two Crops in one Drip. After Cotton, he used the drip for Onion Crop and got good income with both the crops.

- Crop: Cotton & Onion
- Drip Area: 1.5 Acre for Cotton & 1 Acre for Onion
- Total Yield: Cotton- 18 Quintals, Onion- 150 Quintals
- Used Fertilizer: 15-15, 19-19 & 1846 DAP (3 times in four months), Organic Manure.
- Insecticides Used: Confider, Polo, Profex Super
- Water Sources: Well & Bore well
- Total profit: ₹ 1.87 Lakh in 1.5 Acres

Mr. Madanrao Vitthalrao Dahibhate, Dahigavan had 18 Quintals per acre of Cotton yield with Drip Irrigation. Before Drip, his yield was 4 to 5 quintals/ acre. The net profit in 1 acre is ₹ 95400.00.



Mr. Madanrao Vitthalrao Dahibhate



***Average Sales Rate the farmers got this year for Cotton was ₹ 4200/ quintal**

Farmers surveyed

1	Pagirwadi	114
2	Dahigavan	50
3	Chinchkhed	25
4	Kingaon	15
5	Dhoksal	30
6	Dhopteshwar	48
7	Matrewadi	80
8	Najik Pangri	49
9	Murshidabadwadi	51
10	Morhira	20
11	Khamkheda	11
12	Donwada	30
13	Anjandoh	15
14	Georai Gungi	40
15	Pophala	8
	Total	586
	Drip not Installed/ Used for Cotton this year	14
	Total	600

Kisaan Raja - One Acre Miracle



Another Dahigavan farmer **Mr. Balasaheb Narayanrao Dahibhate** got 15 Quintals of Cotton Yield in his 1 acre land, which used to be 4-5 quintals prior to drip installations. He's trying the drip for sugarcane from which he's expecting a profit over ₹ 1 Lakh from 1 acre.

A farmer from Georai-Gungji village tq. Phulambri, **Mr. Punjaram Laxman Tambe** shared his success story that only because of the drip irrigation, he could have a bumper yield of 20 quintals in 1 acre. He got benefitted from the late rains experienced in March and had additional crop of extended season.

After cotton, he used drip for Maize Crop, which was almost dried up to get 80 quintals. Also he's trying to use the drip for Onion Seed Plants for the short period to fetch additional income. The total profit is over ₹ 1.15 Lakh from 1 acre.

"One Acre Miracle" of Plastindia Plasticulture was possible due to enhanced water management in rain-fed and partially irrigated area. Kisaan Raja experiment was targeted towards appropriate use of available water and yielded results. Due to this experiment hundreds of farms got irrigated through drip irrigation. It is estimated that first 8 acres of demo plots gave rise to farmers irrigating 17,000 acres of land through their own initiative. NABARD helped further and 600 farmers irrigated 1,000 acres of land. National average for output of cotton is 5.75 quintals per hectare and farmers in Jalna district are harvesting 13 quintals per acre.

This is "One Acre Miracle"

Plastindia Plasticulture initiated efficient use of water through drip irrigation which resulted in "One Acre Miracle" Three fourth of rural poor depend on mono crop rain-fed farming, a highly uncertain enterprise. Productivity and value of farm output in the rain fed regions are well below sustainable potential and national averages. This causes poverty among the rural poor people.

Role of Plastics Industry in Water Management & Food Security

Plastics industry should look into the possibility of further penetrating the rural market by offering

1. Pond Lining to create farm ponds in rain-fed areas
2. Pond Covers to reduce evaporation loss during summer months

3. Drip and Sprinkler Irrigation systems for efficient use of available water
4. Use of agri films such mulch films, tunnel films, Green House as well as shade nets etc.
5. Packaging for enhancing vegetable based agripreneureship (agri- entrepreneurship) for livelihood security

Path Ahead

Weaker sections of the society are not weak but disadvantaged due to various constraints that are on them. We are not going through the 5000 year old of history of India. We are not going to discuss what Government, policy makers, planners or political leadership is going to do. Role of the Government is to create a frame work, institutions, etc. Plastindia Plasticulture has worked with support one such institute NABARD who supported at the head office, regional office and actually in the field and we could complete the pilot of Kisaan Raja and create a milestone.

It is now the entrepreneurship of plastics industry and agri- entrepreneurship to work together. This is where **"One Acre Miracle"** comes again in lime light. We, at Plastindia Plasticulture, took one step forward and the entrepreneurship of drip manufacturers responded, together we could show to the small farmers how wealth can be created. When we, as plastics industry, took one step forward Government institution such as NABARD responded to our call and extended all out support to us through their Farmer Clubs and field officers at the district level. NABARD also gave financial support to our initiative. Let us not say that it is someone else job such as Government, policy makers and planers. We can definitely be part of the massive food and water security program. Kisaan Raja initiative has become good role model and should take several such small steps and leave it to the "Agripreneureship" of farmers.

I would like to end here with appeal to all who are reading this article to join and support PlastindiaPlasticulture Activities.

Author,
Dr. Yatish B. Vasudeo
Chairman – Plasticulture Committee
yatish@drvasudeo.com

The aim of this committee is to improve the image of plastics through various activities.

Plastics have been most abused in MSW stream where due to lack of awareness as well as Segregation & Littering it has been visible everywhere, though the content in the MSW is lower than 10%.

To take up this, the committee had few basic thought as under to take up this activity:

- Segregation at Source
- Separate container for WET & DRY
- Disciplined Collection & Disposal
- Incentive mechanism
- Involvement of all stake Holders and defining responsibility
- Awareness programmes through road shows, Seminars and media Involvement

On the above basis we had initiated activities in Ahmedabad in association with Rotary Club and Sambhav Group and selected about four (04) locations in various part of city, had organized awareness program for keeping waste in segregated form (DRY & WET) and providing two (02) waste bins to keep waste. There were rallies organized to general public awareness as well as make people understand important of waste segregation and anti-littering.

A seminar was organized in association with like minded people and invited prominent people like Mr. R. S. Sodhi, MD, AMUL, Mr. S. B. Dangayach, MD, Sintex Industries Limited, Mr. Sudhir Nanavati, an eminent lawyer & educationist who talked about Swachhata and cleanliness habits.

With CEE Plastindia Environment committee joined hand for School awareness programs where they had been given idea about Plastic as useful material and how segregation of waste can convert it to wealth proposition. We had also demonstrated how WET waste (especially Kitchen waste) can be efficiently converted to resource by converting it to generate BIOGAS for useful application.

Team had visited Dhoraji a Plastic Recycling Hub located near Junagadh in Gujarat where there are about 300 units processing about 15000 T per month (estimating ₹900 Crore Industry). We tried to understand their modus operand to run the Business and their issues.

In Plastindia 2015, The Environment Committee had set up an awareness stall showcasing various issues of plastic waste generation and its remedial action through audio/video presentation. There were posters to create awareness, live demonstration for usage of plastic waste to resource, Medical waste handling and E-waste handling as well as some student's creative paintings to showcase plastic waste management and creating good Image of Plastics. The whole set up was supported by CEE, ECS Corporation, Mr. D.L. Pandya.

To take up the activity further beyond carious meeting under this committee were held in PIF office Mumbai and it was decided that there is need to take help of local bodies of cities and through them the activity of environment awareness can be effectively taken ahead, and in this regards PIF President had sent letters to various Municipal Corporation for seeking their appointment for Plastindia Environment Committee member to meet and explain the activity.

The Team had also met Mr. Sameer Unhale, Director, Maharashtra Swachh Mission and explained the interest of PIF and it was well

accepted and he assured fullest support in this mission.

The Environment Committee had also proposed the action plan as well as budget to the Plastindia Foundation Governing Council to approve to make these efforts successful.

The Environment activity is done under Chairmanship of Mr. Atul Kanuga and ably supported by Mr. Prashant Trivedi, Dr. Dilip Raiker, Mr. Sameer Joshi, Mr. Hiren Sanghvi, Mr. Arun Pawar and team PIF.



Swachhata Rally



Seminar – Amplify your Thought



Cluster Street at Maninagar

Founder Members Activities



ORGANISATION OF PLASTICS PROCESSORS OF INDIA

Seminar - "Crucial Role of Maintenance in Plastic Processing Industry" - April 29, 2015

The 2nd Edition of the Seminar on – "Crucial Role of Maintenance in Plastic Processing Industry" was held at "GRANDICE", the Deltin, Daman.

Mr. S. Shenoy, CEO, Kabra Extrusiontechnik Ltd. was the Chief Guest at the Inaugural Ceremony.

In his welcome address Mr. Deepak Lawale said – "The Chief Guest Mr. Subhaschandra Shenoy is C.E.O of Kabra Extrusiontechnik Ltd. He has 20+ years of proven experience in Auto, FMCG+CG Industries in Operation, Engineering / Product Development, QA, Maintenance, Sales, HR & Admin, Legal, Finance, Strategy Planning, Implementation of Lean Manufacturing Systems, Kaizen, Just in Time, Toyota Production, Cost Reduction Mechanism with reputed organizations".

Mr. Lawale further informed the participants – "Mr. Subhaschandra Shenoy has hands on experience in FMCG products, compressor industry (Air Condition and Refrigeration), Auto Industry (Skin panels, outer liner panels etc.), Electronic Industry and Commercial Tool Room".

Mr. S. Shenoy, in his inaugural speech made a reference to – "Make in India" Policy of the Government. He mentioned that it was imperative to reduce the cost of production through increasing production uptime for making "Make in India" successful.

During the Seminar the following 7 presentations were made:

"Maintenance of Extrusion Lines" - Mr. P. D. Prasad, Kabra Extrusiontechnik Ltd.

"Selection Of Low Voltage Switchgear For Plastic Processing Industry" – Mr. Kiran Kanhurkar, Manager Marketing Business Development and Mr. Harish Talmale, Senior Executive Business Development, Siemens Ltd.

"Best Practices To Be Followed For Avoiding Break-Downs In Hydraulic Parts" - Mr. Bhargav Joshi, Country Director, Atos Electrohydraulics (India)

"Maintenance of the Injection Moulding Machines" - Mr. Nilesh Jadhav, Manager – Service, Mumbai Region, Ferromatik Milacron India Pvt. Ltd.

"Maintenance of Automation Systems and Robotics" – Mr. Suryamani, Technical Head-North, Wittmann Battenfeld India

"Better Maintenance, Better Productivity With Auxiliaries" – Mr. Jayesh Mehta, Regional Manager, Prasad Group

"Maintenance Strategies Using Automation – Increase Production Uptime" – Mr. Pravin Patel, Service Manager, B & R Automation

In the concluding function the participants and the speakers lauded the arrangements as well the presentations made at the Seminar.



Mr. S. Shenoy , CEO, Kabra Extrusiontechnik Ltd. delivering Inaugural Speech



Mr. Jayesh Mehta, Regional Manager, Prasad Group, lighting the Traditional Lamp



Mr. P. D. Prasad, Kabra Extrusiontechnik Ltd. lighting the Traditional Lamp



Mr. Harish Talmale, Senior Executive Business Development, Siemens Ltd. making a Presentation



Mr. Pravin Patel, Service Manager, B & R Automation making his Presentation



Mr. Bhargav Joshi, ATOS ELECTROHYDRAULICS, (Right) receiving a Memento from Mr. H. R. Mohanty, Wim Plast Limited



Mr. Suryamani, Technical Head North, Wittmann Battenfeld (right) receiving a memento from Mr. N. K. Balgi



Mr. Nilesh Jadhav, Ferromatik Milacron (Right) receiving a Memento from Mr. Atul Kanuga, President, IPI



Mr. Deepak Lawale conducting the proceedings

Founder Members Activities



CENTRAL INSTITUTE OF PLASTICS ENGINEERING & TECHNOLOGY

Important Events & Happenings of CIPET

Inauguration of Academic and Hostel Blocks at CIPET, Imphal



The newly constructed Academic and Hostel Blocks at CIPET Imphal were jointly inaugurated by Shri Ananth Kumar, Hon'ble Union Minister of Chemicals & Fertilizers – Shri Ananth Kumar and Shri Okram Ibobi Singh, Hon'ble Chief Minister of Manipur at a professionally organized function on Friday, June 12, 2015.

In his Presidential Address, Hon'ble Minister of Chemicals & Fertilizers, Govt. of India – Shri Ananth Kumar informed that CIPET Imphal will be further expanded at a cost of ₹13.00 crores which includes creation of additional hostel facility (₹9.00 crores) and enhancing the technical infrastructure facility (₹4.00 crores). He requested the State Govt. to provide 5.00 acres of additional land to CIPET Imphal to initiate expansion of the centre. He further added that such expansion will result in doubling the present intake capacity of students at CIPET Imphal.

Hon'ble Chief Minister of Manipur in his Chief Guest Address appreciated the services rendered by CIPET Imphal in promoting the plastics industries in the State of Manipur as well as enriching the living standards of unemployed youth through gainful employment.

Shri Govindas Konthoujam, Minister of Commerce & Industries, Govt. of Manipur; Dr. Thokchom Meinya, Member of Parliament (Lok Sabha) have participated in the function as Guests of Honour. Shri Surjit K. Chaudhary, I.A.S., Secretary, Department of Chemicals & Petrochemicals, Govt. of India; Shri P. C. Lawnkunga, I.A.S., Chief Secretary, Govt. of Manipur were also present and felicitated the occasion. Prof. (Dr.) S.K. Nayak, Director General, CIPET welcomed the gathering.

Interaction with the Awardees of 5th National Awards for Technology Innovation in Petrochemicals and Downstream Plastics Processing Industry (2014-15)



The 5th National Awards for Technology Innovation in Petrochemicals and Downstream Plastics Processing Industry (2014-15) were awarded by the Hon'ble Minister of Chemicals and Fertilizers, Government of India on 21st February, 2015 at Bengaluru. During the function, the Hon'ble Minister (C&F) stated that a meeting would be convened wherein the awardees would make a presentation about their innovations.

As a follow-up, a meeting was organized on 23rd April, 2015 at New Delhi under the Chairmanship of Shri Hansraj Gangaram Ahir, Hon'ble Minister of State for Chemicals & Fertilizers, Govt. of India wherein the awardees made presentations about their innovations. Based on their presentations a "Move Forward" paper is being formulated for growth and development of the Industry.

Visit to Chinaplas-2015-Asia's No.1 Plastics & Rubber Fair

CIPET officials/faculties visited the Chinaplas 2015 exhibition held between May 20-23, 2015 at China Import & Export Fair Complex, Pazhou, Guangzhou, PR, China. During this visit, officials/faculties get updated knowledge on new materials/machinery, latest industry information, new alternatives, environmental products/solutions etc.



CIPET delegation at Chinaplas 2015

Visit to Kenya Plast 2015- 3rd International Plastics Exhibition

A Team lead by Shri Prannoy Sharma, Director, Department of Chemicals & Petrochemicals-GOI, Director General-CIPET & other officials from CIPET visited Kenya Plast 2015 held on June 09-12, 2015 at Nairobi. Kenya Plast is a trade fair for plastics products. This exhibition is a communication and information platform in the industry and offers the exhibiting companies the opportunity to present to an audience of experts.



CIPET Team at Kenya Plast 2015

Founder Members Activities



ALL INDIA PLASTIC MANUFACTURERS' ASSOCIATION (AIPMA)

THE ALL INDIA PLASTICS MANUFACTURERS' ASSOCIATION **AIPMA JOB-FAIR SEASON 2015**



SUCCESS REPORT



AT AIPMA DELHI OFFICE ON 13-06-2015
VISITING EMPLOYERS - 5
CANDIDATES ATTENDING - 60+
SUCCESSFUL CANDIDATES - 10+



AT AIPMA MUMBAI OFFICE ON 27-06-2015
CHIEF GUEST- Mr. M.K.SHARMA (CGM- SIDBI)
VISITING EMPLOYERS - 10
CANDIDATES ATTENDING - 90+
SUCCESSFUL CANDIDATES - 14+



Reputed Companies Participating In This Season

- Prince Pipes & Fittings Pvt. Ltd.
- Finolex Industries
- Prince Industries
- Samruddhi Industries
- Sunpet
- Pearl Polymers Ltd.
- Varahi Ltd.
- Reifenhauer India
- Expo Machine Tools
- Dalmia Polypro
- Sigma Chemtrade Pvt. Ltd
- Madhu Machines & System Pvt. Ltd.
- DP Polymers
- Vinit Performance Polymers Pvt. Ltd.

Innovations done in this season :

- Priority Interview tokens were issued to all 14 yrs+ experienced candidates and Separate registration counter and waiting area was created for them which resulted in more than 15% attendance from this segment in this season.
- Timing of interview were declared in the job list for candidates to plan their travel arrangements accordingly.



INDIAN PLASTICS INSTITUTE

Mumbai Chapter

BIRTH CENTENARY OF D. M. TRIVEDI CELEBRATED AT ICT WITH THREE ENDOWMENT LECTURES

The inaugural Endowment Lectures established in the memory of late Shri Druman M. Trivedi (1914-1995), a pioneer of Polymer and Chemical Industry in India, was organised on 1st April, 2015 at Institute of Chemical Technology (ICT), Mumbai. The Programme was jointly organised by Institute of Chemical Technology (ICT), Indian Chemical Council (ICC) and Indian Plastics Institute (IPI). Representatives of the two Industry Associations and student & faculty at ICT were present in large numbers to grace the occasion.

Prof. M. A. Shenoy welcomed the dignitaries and guests. Mr. Rajeev Pandia, Former President of Indian Chemical Council (ICC) talked on Shri D. M. Trivedi (popularly known as DMT) and his lasting contribution. He said DMT left strong and pioneering contributions in Plastics, Elastomers and Green Chemistry. With Polychem, first thermoplastics plant in 1950s with synthetics & chemicals, the first Synthetic Rubber (SBR) Plant in 1960s, which used alcohol based styrene and butadiene, with strong entrepreneurial and financial support from Kilachand Group. DMT is therefore rightly regarded as a pioneer in polymer and chemical industries in India.

Prof. M. M. Shar, Padmavibhushan and former Director of UDCT (Now ICT), mentioned that Dhurmanbhai graduated in second batch of UDCT in 1936, the year he himself was born. Drumanbhai was a man of many dimensions and most important was his integrity. He alluded to big scale of operations that are taking place since passing away of Drumanbhai in 1995 in chemical industries.

Mr. Arvind Athalye, Athlye Consultant, gave the First IPI DMT Endowment Lecture on Pioneers in Plastics. Mr. Athalye talked about other pioneers in plastics industry working in 1960s and 1970s, particularly in plastics processing, which helped to usher the changed scenario of later years.

Mr. Virendra Rathod, VP & Head Elastomer Division, Reliance Industries Ltd. and in charge of RIL's SBR, PBR and Butyl rubber plants then gave ICC DMT Endowment lecture and gave a very lucid presentation on current scenario of synthetic rubbers produced in India.

Prof. Dr. G. D. Yadav, Vice Chancellor of ICT then gave ICT DMT Endowment lecture on Green Chemistry. In a broad based sweep. Prof. Yadav talked about a variety of projects conducted by his students in field of modern green Chemistry.

Dr. Prakash Trivedi then proposed a vote of thanks to all three Institute for agreeing to start these endowment lecture in his father's name. He expressed particular gratefulness to Prof. Sharma, Prof. Yadav, Mr. Athalye, Mr. Rathod, Mr. Pandia and Prof. Shenoy for their contribution to this centenary celebrations, to Shri Rao, Manubhai and Mr. Nayak for their affectionate remembering of DMT and to all those, who knew him for gracing the occasion and those who got to know him by attending this Endowment Lecture meeting.



Pune Chapter

INDIAN PLASTICS INSTITUTE PUNE CHAPTER HOSTED AN INTERESTING LECTURE ON 28/5/2015 AT HOTEL CITRUS, PIMPRI PUNE 18. THE TOPIC WAS NYLON6,6: THE HIGH PERFORMANCE AND QUALITY WONDER MATERIAL.

The speaker was Mr. Dharm Valia Global Marketing Director Ascend Performance Polymers from USA.

The program began by welcome speech by IPI Pune Chapter Chairman Dr. S. Radhakrishnan, who gave a brief of IPI activities. He felicitated Mr. Dharm Valia and Mr. Bobbie Grover, Director, Barnet India.

Mr. Bobbie Grover gave an idea of the activities of Barnet. This was followed by a very interesting presentation by Mr. Dharm Valia on Nylon 6,6, its brief history, comparison with Nylon 6 and the immense interesting applications. This was an interactive session, followed by Questions and Answers.

115 persons participated in the program with representation from Volkswagen, Bajaj Auto, Tata Motors, DSM Plastics and Pune Moulders.

Mr. Sameer Joshi compared the event while Mr. Narendra Joshi proposed vote of thanks. Mr. Ranjjit Jadhav efficiently organized the event with support from Mr. K. B. Borkar.

The evening ended with cocktails and dinner. The program was supported by PCPA and sponsored by Ascend Materials and Barnet.



Founder Members Activities

IPF INDIAN PLASTICS FEDERATION

IPF DELEGATION TO CHINAPLAS 2015

IPF organized, once again, a successful trip to Chinaplas'15 held in Guangzhou, P.R. China from 20th to 23rd May, 2015 under Mr. Puneet Tantia and Mr. Swastik Agarwal as Convenor and Co-Convenor. The trip got a good response from IPF members and associates and 54 delegates joined the tour. The trip was successfully organized keeping in mind the comfort of each and every delegate. The delegation left Kolkata on 19th May, 2015 and

return on 24th night with a night at Phuket, Thailand. The members of delegation were pre-registered as VIP delegates and received a warm welcome by the organizers of Chinaplas M/s. Adsale. The exhibition was well organized with 128264 visitors attending the show out of which 35090 were overseas visitors. Exhibitors from all around the world had participated in the exhibition. All our members of the delegation had a very successful trip.



AN INTERACTIVE SESSION WITH SHRI HANSRAJ GANGARAM AHIR, HON'BLE UNION MINISTER OF STATE, GOI

An interactive session of IPF members with Shri Hansraj Gangaram Ahir, Hon'ble Union Minister of State (Chemicals & Fertilisers), Government of India was organized by Indian Plastic Federation at the Hotel Golden Park, Kolkata on 6th July, 2015 at 7.30 p.m. Among those present was Dr. S. K. Nayak, Director General of CIPET and Shri Debasish Bhattacharjee, Chief Manager (Projects), CIPET Haldia.

A lively interaction with the Hon'ble Minister took place. The Hon'ble Minister gave a patient hearing and assured IPF of all the support needed for the development of Plastic Industry in the East. Discussions on IPF Knowledge Centre and Indplas'15 took place with both Dr. S. K. Nayak and the Hon'ble Minister.





IPF ORGANISES INDPLAS'15 - 7TH INTERNATIONAL EXHIBITION ON PLASTICS

Indplas® '15

meet • share • exchange • profit

7th INTERNATIONAL EXHIBITION ON PLASTICS

November 27th - 30th, 2015 | Science City Ground, Kolkata



Turning **Plastics**
into **Wealth**

Indian Plastics Federation is organizing Indplas'15 – the 7th in the series of Plastics Exhibitions in Kolkata from 27th-30th November, 2015 at Kolkata. IPF had the privilege of organizing first Exhibition on Plastics in India way back in the year 1981. Indplas'15 is headed by Mr. Ashok Jajodia as Chairman and Mr. Ramesh Kumar Rateria as Co-Chairman of Organizing Committee.

Indplas'15 will have around 400 exhibitors from domestic and overseas occupying an area of 6500 sq. mtr. The exhibition will be held in 8 air conditioned hangers spread over 40000 sq. mtr. ground area at Science City, Kolkata.

The preparation for the exhibition is going on full swing and more than 75% of the exhibition area has already been booked.

Leading Indian machine manufacturers, raw material producers, master batch producers, mould dies & ancillaries and finished product manufacturers have already confirmed and booked their stall. We have received good response from foreign participants especially from China and Taiwan who will participate in large numbers with their machine. Booking from other countries like Hong Kong, UAE, Singapore, Malaysia has also been received.

Top Indian machine manufacturers like Windsor, Kabra, Rajoo, Mamata, RR Plast, Neoplast, Polymechplast, Neptune, Prasad, etc. are participating with live demonstration of the machines. Visitors from all over India, specially from West Bengal, Bihar, Orissa,

Jharkhand, Chhattisgarh, North Eastern States and neighboring countries like Nepal, Bangladesh, Bhutan and Myanmar will attend Indplas'15 in large numbers.

Indplas'15 aims to promote excellence in the field of plastics, emphasizing the scope for investment in Eastern India's Plastic Industry. The Eastern and North Eastern States are poised for a steady growth in coming years with commission of Brahamaputra Cracker & Petrochemical at Assam and Indian Oil refinery and Petrochemical at Paradeep, Odisha. Easy availability of raw material from these new polymer raw material manufacturers and existing Haldia Petrochemical will boost the growth. It's an excellent opportunity for the exhibitors to participate and explore the limitless opportunities in this region.

For participation, one can reserve the booth online or at our website www.indplas.in and get all the information related to the exhibition.

For further any assistance, please contact :

Mr Ashok Jajodia

Chairman- Indplas'15 Organising Committee

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Founder Members Activities



GUJARAT STATE PLASTIC MANUFACTURERS ASSOCIATION



PLEXPO 2016 kick-off !!!

PLEXPOINDIA 2016 – the 7th Edition of International Plastics Exhibition has kicked off and will take place during 7th to 11th January, 2016 at The Exhibition Centre, Gandhinagar (Gujarat). The event is being supported by Ministry of Chemicals & Fertilizers, Department of Chemicals & Petrochemicals, Government of India along with Plastindia Foundation & other leading associations / institutions connected with Plastic Industry.



The Plexpo fair presents a unique cross-section of the raw material, processing and application technology industries. At tri-annual intervals, companies from all over the country and across the globe use this fair to present their latest technological developments, current and future solutions. Plexpo 2013 with its impressive range of innovations and high number of business deals exceeded even the highest expectations. A total of 400 companies and more than 50,000 business visitors attended this fair. This year, we expect approx. 700 exhibitors from all over the world and

exhibition will be viewed by one lac visitors and envisage generation of business worth ₹ 1,000 crores for exhibitor companies. The exhibition will be spreaded over 25,000 sq. mts. area.



7 8 9 10 11 January, 2016
Exhibition Centre, Near Town Hall,
Gandhinagar-Ahmedabad, Gujarat 382010, India

Plexpoindia 2016 International Plastics Exhibition

Plexpoindia exhibitions are one of the largest National Exhibitions of Plastic Industry and created landmarks and this will be 7th Edition in its series. This time Plexpo Exhibition will be organized at the newly constructed exhibition centre at Gandhinagar, having ultra modern & world-class amenities with good infrastructure. This is the venue where PLASTINDIA 2015 exhibition was organized successfully.

Plexpoindia being organized by Gujarat State Plastic Manufacturers Association (GSPMA), a non-profit established for the development of Plastic Industry and safeguarding the interest of industry & for addressing the waste management & environmental issues. GSPMA is working for the cause of Plastic Industry since last more than four decades. GSPMA is also founder member of PLASTINDIA FOUNDATION.

...Team Plexpoindia

PLEXPOINDIA 2013 – Post-show report

PLEXPOINDIA 2013 – 6th International Plastics & Packaging Exhibition organized by Gujarat State Plastic Manufacturers Association (GSPMA) held during 8th to 13th January, 2013 at Helipad Grand, Gandhinagar (Gujarat) in association with VIBRANT GUJARAT 2013 as a part of VIBRANT TRADE SHOW 2013. More than 400 exhibitors from various countries participated from different segment of industry. Large number of visitors from all over the country including delegations from 18 countries (China,

students of management/engineering faculties and general public at large viewed the exhibition. Business worth ₹500 crores was generated during the show.



Key highlights of PLEXPOINDIA 2013

- No. of exhibitors – more than 400
- Participation from 20 countries across the globe
- Business visitors – more than 50,000
- Delegations from 18 countries visited the show
- Business generated worth ₹ 500 crores for exhibitor companies
- Live Demo of latest Plastic processing machineries
- Area covered – 10,000 sq.mts.
- Event supported by major associations & Government of Gujarat



Taiwan, Sri Lanka, Germany etc.) visited the exhibition. Moreover many dignitaries, VIPs, Government officials, school children,

Our Vision

Plastindia Foundation will be an internationally recognized organization devoted to promoting excellence in the field of plastics, and making India a preferred sourcing base in plastics products for the world.

It will support and encourage development of outstanding institutions committed to education and research, with emphasis on achieving the highest standards of quality in plastics products, and developing effective techniques for their recycling.

It will build an awareness of the significant contribution made by plastics to society and to the environment.

Our Mission

- To enhance the image and the growth of Indian Plastics Industry by holding world-class exhibitions in India, at regular intervals
- To encourage theme-based exhibitions in India
- To provide opportunities to demonstrate the industry's capabilities, and to participate in international exhibitions
- To educate the benefits of plastics to all segments of society, either directly or through associations
- To act as a catalyst of growth for the plastics industry and prepare plans and actions for up-gradation of quality, environment-friendliness and recycling within the plastics industry
- To create a positive policy framework with all the statutory entities, increase per capita consumption of plastics, encourage exports, thereby significantly contributing to national growth
- To be a flexible, vibrant and proactive foundation



Organised by

PLASTINDIA FOUNDATION®

www.plastindiafoundation.org / www.plastindia.org

Endless Business Opportunities For Plastics Industry



PLASTINDIA FOUNDATION[®]

An apex body of major Associations, Organisations, and Institutions connected with plastics, is the epitome of growth opportunities and development for the plastics industry. In that endeavour, it undertakes various activities for the national progress through plastics such as:

PLASTINDIA 2018
GANDHINAGAR, GUJARAT 7-12 FEB, 2018

Plastindia Exhibitions - A triennial event is contributing infinite opportunities since 1990. From 19,600 sq.mtr. area with 486 exhibitors from 15 countries in 1990 has enveloped into 1,25,000 sq.mtr. of space with 1600 exhibitors from 32 countries in 2015 along with concurrent events like Proplast, International Conference, B2B Meets, Plastics Awards.

**PLASTINDIA
PLASTICULTURE**

Plasticulture - A strategic initiative that promotes the use of plastics in agriculture through conservation of water through use of Micro Irrigation Systems and other innovations.

PLASTWIN

Plastwin - A program that brings together various companies of India and other leading companies across Europe/ world under one roof. The program facilitates international linkages, partnerships and trade opportunities for the Indian and global companies.

Plastindia International University - A unique initiative that will churn out trained graduates for the polymer industry armed with the right fundamentals, practical knowledge, hands on training, research and innovations etc.

The next
**big stop
in India**

If you have missed it in 2015, then Plastindia 2018 will be the game changer for your business. It's earmarked to be much more bigger and vibrant.