

# **IIF-NCTS ANNUAL CONFERENCE 2018**

## **Theme: Managing Sustainable Market-Responsive Growth in Foundries**

### **SYNOPSIS OF PROCEEDINGS**

#### **Welcome**

Mr. Rajendra Newadkar, Director-NCTS welcomed the participants and presented the program outline along with brief guidelines for the day's proceedings. He briefly introduced the panel of participating experts, all stalwarts of the foundry and/or allied industry with experience ranging from 20 to 45 years.

#### **Chairman's Address:**

In his opening remarks, Mr. Sham Arjunwadkar, Chairman IIF-NCTS extended his welcome to and briefed the participants about the day's theme. Highlights of his address were as below.

He referred to his keynote address paper where he has enumerated the factors leading to selection of "Managing Sustainable Market-Responsive Growth in Foundries" as the theme. Today, the foundry industry feels a spurt in growth he enumerated the reasons as Government of India's "Make in India" thrust, developed countries sourcing castings globally, more convenient export logistics, economic transparency with GST, India's rating as a high growth rate county, growth in sectors other than auto, and availability of competent managers, engineers and workforce with the recent policy changes in education. While the mood is thus happy, while the worry is about sustainability of growth.

He also indicated that the expected growth in the manufacturing industry in India is 15 to 30% and therefore the mission for the foundry industry in this scenario should be to enhance its capacity to meet this demand by a combination of increasing productivity, application of IT, and upgradation to new and modern plants while at the same time focusing on energy conservation, environment-friendly technology, occupational safety and health, and skill development to create 2 million additional jobs.

Mr. Arjunwadkar further touched upon recent definitions of manufacturing where the new era of manufacturing will mark the highly 'e-jigged' network enterprise that uses information and analytics as keys for employee talent and machinery to deliver products and services to the global market.

In the new environment where product cycle encompasses R&D through Recycle and where the product itself is only a part of a much wider value chain, it is

necessary to effectively and consistently apply cutting edge science and technology, systems thinking, smart services and processes, and supply chain excellence.

He further stated that in order to become a factory of the future, huge changes are needed in terms of process and practices, factory locations, supply chains, goals and metrics, facilities, technology, people, and culture.

He also stressed the need for a foundry to become a connected enterprise, the need to tune up for ISO 2016, as well as the need to become Industry 4.0 ready.

Finally he stated that the role of this Institute is to promote national belief in value creation by our sector of the industry, i.e. the foundry.

### **Panel Presentations:**

Mr. Newadkar then requested the panelists to share their individual thoughts on the day's theme. The eminent panelists proceeded with their individual presentations.

#### **1. Anil Agashe**

Rather than growth in numbers or tonnage, growth must lead to better performance in terms of better contribution to viability of the plant, i.e. contribution towards profits and overheads.

A very good SWOT analysis can help determine the organization's strengths and weaknesses as a basis to identify the areas in which to grow.

To be market responsive, there is a need to identify the customer's expectations beyond the normal quality, cost, delivery parameters.

Sustainability can come by establishing a very clear credibility with the customer because the customer must have faith in the quality and delivery and overall services provided. Sustainability will also come with a very stable process.

The aspect of managing would include a very strong control regime in which all processes are kept under surveillance and control in a top-driven manner. The management has to be strong and hands-on with a dedicated workforce.

#### **2. Madhav Athavale**

Be a smart foundry.

Manufacture to your own specifications rather than to someone else's specifications, even though you may tailor your product to each customer's requirement.

Have smart goals for your team.

Take smart decisions when faced with growth spurt because foundries typically have a downtime every few years.

Carry out a detailed debate in order to identify what are such smart decisions and smart goals.

### **3. A.G. Bam**

Growth can be achieved only by recognizing that the plant needs to earn a rupee every second.

Adaptability and flexibility are the keys to market responsiveness rather than loyalty to customers at the cost of keeping the plant idle. If existing customer does not order the regular product, retune the facility to produce another product for which there is a demand.

Management includes continued training to make manpower smart and flexible along with good process control to ensure quality and to exceed operating efficiencies.

Be loyal to the outcome, i.e. a good casting. This will ensure sustainability regardless of market ups and downs.

### **4. S.S. Bhasin**

Every business is cyclic. For example, Tata Motors faced a situation of a 500 crore loss in the year 2000 and then had to turn around. So the business process should be so defined as to take care of the cyclical nature of the business.

Managing should include addressing the aspect of how to keep afloat during downtimes.

When the upturn comes and demand grows and the plant is trying to ramp things up, usually process weaknesses will come out. Managing should include the aspect of sustaining process discipline and process culture in this situation.

Market responsiveness means aiming for customer delight.

Market responsiveness also means diversifying. For example Kores has customers in various sectors of the market so that even if one sector has a downturn, they are able to adjust their capacity and grow their business in other sectors.

### **5. D. B. Ghate**

Growth is the keyword. Any business which does not grow will sink over time. So there has to be growth every year, year on year.

Automotive industry is growing, so foundries also need to grow. And they can grow because there is a lot of nonutilized capacity which needs to be tapped.

The 4 Ms play a very important role - man, material, method, and money - in sustenance of the foundry.

Continuous training of people based on competency mapping and gap analysis will help, as also monitoring the effectiveness of the training provided.

Foundry needs to be a learning organization. Upgrade the knowledge and skills of the people who are working in a planned manner.

Use several of the new technologies available. For example, SAP with its capability of real-time data capture enabling immediate analysis and corrective action. Other new techniques include solid simulations and core shooting simulations that help cut down the number of trials and thereby the cost.

Continuous effort to save cost without compromising quality year on year, by analysis of non-value-adding activities with an effort to cut down on them.

All the above will create a cost-competitive edge and thereby create value for all the stakeholders - investors, customers, employees, and suppliers - leading to a foundry that can sustain in any competition and can grow.

## **6. R.N. Bhome**

Some of the typical problems faced by Indian foundries include too many items produced in small quantities with no set parameters for individual items, imbalance of capacities in melting, sand systems, moulding, shot blasting, etc., lack of proper line control, faulty sand systems, inconsistent dimensions, no foolproof temperature control during tapping and pouring, manual inoculation during tapping and pouring, manual additions of resins and additives meant for core making, no sand coolers.

Growth means producing more with the same input by improving yields, which is usually possible at least by 5%. For example, dimensional variation leads to weight variation and the foundryman does not know how much he is losing by weight variation because the customer is not going to pay for the additional weight.

Maintenance is an important aspect in a continuous process industry like foundry. Planned preventive maintenance is necessary to make sure that unplanned breakdown maintenance costs are kept down.

Aspects to consider when starting a new project are location of the facility (for example near where sand is available), transportation of raw material by alternative means like by sea, proximity to a port for shipment of finished goods, etc.

Another important consideration is the need to set up one foundry to produce only one or two items rather than a variety of products. For example, Gare Industries had at one time 12 different foundries at 12 different locations, all together producing 40 odd items but each foundry producing one or two items only.

Therefore a change in thinking, change in culture is a basic requirement to have a sustainable growth in the foundry industry.

## **7. R.V. Newadkar**

"In current scenario, foundries need to focus on improvements with respect to PQCDMSM rather than investing to increase capacities to meet increased demand.

Investment increase the fixed cost and reduces the profitability of the foundry. Implementation of LEAN, TPM , Quality management system will help to improve utilisation of all resources and thus reduces cost.

Unfortunately Foundry Management is not willing to adapt this path to enhance capacities to cater increased demand.

Small and Medium foundries must change thinking style and start implementing new manufacturing systems."

## **8. S.G. Khanolkar**

Foundries usually have both smart suppliers and smart customers, and both of them compel the foundry to take not-so-smart decisions. Therefore foundries need to keep the following aspects in mind when planning growth.

Be selective in accepting orders for castings at the development stage itself. Do not accept orders for complex castings just because it appears to be "prestigious" when the order is only for 25 numbers because these 25 will likely require almost a year's concentrated efforts of the entire foundry team.

Focus on the balancing of all the equipment simultaneously - melting, moulding, core shop, fettling, tooling. Do not wait for one area to come up to the mark before the next area gets exposed.

Add high-productivity equipment very selectively. For example, sometimes suppliers supply huge imported machines for core making and only after purchasing such a machine there is realization that the machine is suitable to make only certain type of cores. Therefore, go for high-technology setup very carefully.

Balance processes. Offload processes only as a temporary measure because this never gives a long-term solution. When production is overloaded, the development team is mostly idle and can be used to offload a few castings to smaller foundries.

Foundries most of the time look at the development department as a liability, whereas the truth is that when real growth is needed, the development team is an asset.

## **9. D.N. Navangul**

A number of foundries are dying and a number of new foundries are coming up, so unless and until dying foundries are revived, we cannot say there is sustainable growth in the foundry industry as a whole.

On the one side, the demand for petrochemical industry related steel castings is going down. On the other side, demand for railway castings and mining industry related castings is going up. The adaptability to such change should be looked upon as an opportunity.

In our discussions here, we need to consider the change in technology as very soon electric vehicles will take over, the technology for which is totally different. Also, the aluminium casting of the future is likely to be the whole base of a car, for which dies are already being made in China. Adapting to such change is the real response to market.

## **10. S.G. Pawar**

People's expertise, their inner engineering will play a very vital role in managing foundries.

For sustainability, focus has to be on process, process, and process. Process has to be robust, because people keep on changing but the processes remain.

Market responsiveness will come with innovation. For example, with electric cars coming, foundry technology needs to change and bring in new innovative processes.

For sustainability, carry out kaizen or continuous improvements.

Ensure that the customer is always satisfied, for which employees need to be satisfied. Employee satisfaction index is usually very low in foundries because as is well known, foundries are dark, dangerous, and dirty places to work in.

Analyse data available in the foundry and convert it to useful information and knowledge. This combined with vision will help a foundry grow.

## **11. R.S. Sabnis**

Present Operations:

- Be lean, meaning more for less. Review present usage of area, of manpower, of material, and of energy. Invariably it is found that reduction is straightaway possible in each of these factors.
- Save on material cost by negotiating for favourable payment terms with suppliers, appropriate grouping of items with a supplier, reviewing packing and transportation of raw materials, removing godowns and reducing inventory, and reducing wastage.
- Reduce manufacturing cycle times by for example synchronizing moulding and fettling cycles. Consider time as a cost element and dream of a target cycle time.
- Other factors to look into include having a customer-centric approach, building capability for process R&D, inculcating a continuous improvement culture, total employee involvement, and digitization.

#### New Growth:

- Before making any new investment, market study is important. Take the help of experts in marketing to determining the market outlook both present and future.
- SWOT analysis is necessary to determine the areas in which to invest.
- Invest in appropriate technology only which holds a future, not any technology as a matter of trend or fashion.
- Study of concessions, subsidies, taxes, duties, and exemptions is very important.
- Maintain strict control as per the time and cost budget.
- Additional aspects to keep in mind are process control and flexibility, maintenance including preventive maintenance, and training of employees.

#### Other Aspects:

- Create and maintain an image of your company and maintain quality of your product such that your customer will not buy from anyone else unless your capacity is full.
- Participate with your customer from his design stage in order to understand his needs.
- Focus on marketing skills.
- Maintain zero defect at every stage of your manufacturing cycle. Work towards zero effect on the environment as well.
- Stress communication, communication, and communication, including even with the latest techniques such as WhatsApp.
- Employee skill development, responsiveness, and customer focus are other important factors to keep in mind.

## 12. Balraj Seth

Though the Chairman has indicated a growth of 30% in the foundry industry, deliberations last month in the MMR Seminar in Jalandhar indicated figures different from that. The automobile industry in the financial year 2018 is expected to grow by about 11-12%, the tractor industry by about 12-13%, and after sales marketing of auto components by about 10-12%. Therefore the question arises as to whether this gap of about 12% arises from the Indian foundry industry eating into the quantum of China's foundry business because of environmental concerns in China. If so, Indian foundry sector also needs to be concerned as we live today in a global village and if China has imposed environmental restrictions today, then India is not very far off.

Consideration could be given to creating a common facility centre for sand reclamation. However, there are many road blocks, there are mental blocks to this because even though one foundry in Coimbatore has created a sand reclamation plant by investing about 25 crores of rupees, it appears that the reclaimed sand has no acceptability in the market.

Another idea to consider is lost foam castings. Even though the raw material is expensive with lost foam castings, they are in effect more economical. There is weight reduction, there is machining allowance reduction, the finish is very good. Therefore considering sand is going to be scarce, there is a need to look into lost foam castings. There are around 220 units in China already producing lost foam castings.

### **13. S Subramanian**

Unique set of challenges arise during market upswing:

- I have the capacity to absorb, but I don't have the technology to support new markets.
- I have the money to upgrade my process, but I don't get the skill set to match the needs.
- I am willing to add machinery for scaling up, but I am skeptical about this uptrend now.
- Demand swings are resilient (government policies and global markets).

These challenges have always been there, but foundrymen need not go overboard nor be timid and shun an opportunity.

The decision to respond to upswing should be tactical:

- Assess your capacity and technology available within and the ability to sustain when strained to extremes (24x7x365, raw materials, manpower, Takt time protocols, etc). Evaluate your strength operating at 16x7 or 24x5 or whatever.
- If you want to invest now, forecast your P/L against a possible downturn.
- Rise in demand sometimes comes with comforted quality (not poor quality). Watch out for periods of low off take and frivolous constraints.
- Stick to your SOPs for sustained quality and remain insulated from the effects of demand swings.

### **14. Vishwas Kale**

Consider automation of existing foundry equipment:

- Continuous temperature measurement and level measurement that can be connected to controls.
- Pneumatic tube system for automatic spectrometer sample preparation.
- Wireless transmitters for temperature, pressure, or any other measurable parameter.
- Automated heat treatment system where everything can be recorded including operator ID, load parameters, process parameters, temperature and time of the



furnace when load was placed into working zone, temperature and time of beginning of process, temperature and time of end of process, quench delay and quenching temperature, requirements for testing, etc.

- Travelling dataloggers.
- Gas combustion auto systems.

Consider use of software platform which securely connects to a network of integrated sensors on a furnace to gather data, analyse it, and provide real-time diagnostics that will ultimately help achieve optimal equipment efficiency, improve product quality, reduce process variability, optimize maintenance plans, predict future equipment failure, increase return on investment.

Consider use of robots and artificial intelligence.

Be Industry 4.0 ready and also use Industrial Internet of Things.

Invest in training.

Be open and a good listener as most effective suggestions come from those who actually put hands on the process. Invite outsiders like suppliers of equipment, instrumentation and process control, etc. Let them have a look at your process. They may think and see it from a totally different perspective. Unthinkable automation or mechanization can happen!!

Welcome customer complaints, be grateful to them, and set up complaint compliance system to ensure that these are not repeated.

Go global, but be aware of the challenges involved including getting the right business partners, getting the product through testing and certification requirements, getting branding and marketing approach approved in the different culture of the foreign market, and getting people trained in export documentation and logistics.

## **15. Sanjay Karkhanis**

The foundry industry has a number of challenges:

- Foundry is not a product industry, it is always perceived as a service industry.
- Foundry is a hazardous industry, and safety issues are there.
- Foundry is a polluting industry.
- Foundry is a power-intensive industry.
- Foundry is usually very weak in marketing.
- Business cycle of foundry is very short because technology is changing very fast.
- Foundry is a people-centric industry, but good quality manpower is not available because unfortunately even training courses for foundry industry are not available.
- Foundry has ecological challenges, for example it is going to be unacceptable to throw away used sand as we are doing today.
- Foundry is not seen as an acceptable profession by the newer generation.
- Foundrymen usually do not have enough financial awareness.

- Foundry industry is experiencing a continuously changing context of business. For example, today electric vehicles are going to be the major challenge to the foundry industry.
- Lost foam process will become the alternative at some point or the other and once the lost foam process comes into picture, many of the established foundries here will have the biggest challenge of survival.
- Foundry industry usually has a poor asset-to-turnover ratio.

In order to be sustainable:

- Foundry industry has to be growing and has to be profit making. Therefore institutes like the NCTS need to include the business management perspective as part of the technical services provided.
- HR is very important in order to promote more leadership, more ownership.
- Foundry needs to have the right strategy or sense of marketing.
- Foundry needs world class processes for good predictability.
- All foundry staff from top down need to have good finance awareness.

### **Words by Sham Arjunwadkar:**

Mr. Arjunwadkar thanked all the panelists for sharing their individual views and appreciated their contribution towards the day's theme.

Some of the points that he reiterated included:

- Stress on process.
- Real-time data capture, analysis, and response to the analysis.
- Lean organization.
- Analysis of business process.
- Return on investment.

### **Special presentation by Dr. Gnanamurthy:**

Today's challenges for the foundry industry:

- The younger generation does not want to enter the foundry business.
- The only reason why people put up foundries are either because they are not happy with the quality and delivery of supplier foundries (so they set up captive foundries) or in the noncaptive scenario frankly because no other business avenue was available.
- Indian foundry industry has faced too many ups and downs in the past 40 years, more downs than ups.
- On the technical level, it is difficult to find trained people. No institutes are even teaching foundry technology these days, not only in India but elsewhere in the world as well.
- On the working level, people do not want to work in foundries because of the poor working conditions.

Always ensure if orders are worthwhile before deciding on expanding or setting up a new foundry.

For example, when the customer asks for a four-fold production ramp-up like GE did, one needs to move with caution because what happens when there is a rejection after a shipment reaches its destination and meanwhile production is running four-fold?

There are a number of examples all over the world where foundries have become enamoured with a predicted market surge and have gone and drowned themselves.

Remove unprofitable products. Several foundries have made profits after removing unprofitable orders.

Ask the question does the increased demand call for more technology input or more capital input or more labour input.

On the technology front, do not go for change in technology for the sake of it. For example, Jyoti Foundries in Baroda was doing iron, ductile iron, copper-based alloys, aluminium, you name it all in one foundry, and eventually the foundry had to close. Be cautious treading uncharted waters.

If the demand is capital intensive, consider setting up a new foundry in place of expanding the existing one as it is easier to manage a smaller setup. The communication, everything becomes very difficult beyond a certain size.

Usually it takes between 3 and 5 years before even a small return on investment is realized in a foundry. Be very cautious and do all calculations properly before any new investment.

On the labour front, keep in mind the labour laws and the fact that they may change any time, consider the attitude of international buyers towards working conditions prevalent in India, and have a humanitarian approach towards labour.

### **Product Presentations:**

Presentations were made by two technologists on their latest innovative products and how they are relevant to the foundry industry.

Mr. Amar Kulkarni, Vice President PolyWorks India made a presentation on PolyWorks' Universal 3D Metrology Software Platform.

Mr. Ram, Prescient Technologies talked about Prescient Technologies which is a CAD Company offering technologies, software development, and engineering services with core competence in algorithmic, mathematical, and engineering software development.

### **Introduction of Chief Guest:**

Mr. Rajendra Newadkar introduced the chief guest for the day:

Mr. SJR Kutty is the Head of Vehicle Attributes & Technical Services, ERC at Tata Motors Ltd. Pune and is responsible for management of definition and delivery of vehicle targets of refinement, climate control, environment and safety across cars and commercial vehicles. He is also responsible for leading digital simulations, managing prototype planning, purchasing and testing, intellectual property governance, material science innovation, development, tear-down and benchmarking. In addition, he also heads the PV Impact program to enhance in-depth understanding of costs. As head of Strategic Projects, he was responsible for significant VAVE-led cost down initiatives while also leading projects of strategic nature to bring about significant transformation.

### **Valedictory Address by Chief Guest Mr. SJR Kutty:**

Mr. Kutty mainly talked about the electric vehicle and the impact it is going to have not only on the industry but also more so, socially.

There are three principal arguments in favour of electric vehicles in India:

- The strategic decision that India should move towards less dependency on external agencies and should shift to other technologies for its power needs.
- The need to address the pollution question.
- The more easily available resource of solar energy.

But the story of the electric vehicle is actually not about the traditional business model of buying and selling vehicles. The entire model is shifting from a buying and selling model to one which is on lease. In view of the current trend of several services (like mobile, e-mail, social media, etc.) being data-capturing media, the electric vehicle also is likely to really only be a medium of capturing data. As the electric vehicle will be entirely e-powered, it is getting into a zone of e-mobility combined with connectivity and will therefore become the most potent medium of commerce. So we are on the cusp of not just a technological revolution, which actually is immaterial, but a scientific revolution and more importantly a social revolution.

Therefore electric vehicles are here to stay, and here is a subtle message for the foundry industry. Unlike mechanical engineering vehicles, the most complicated electric vehicle would have less than 18 moving parts and would not require a lot of castings. So here is a call for diversification in a manner that was unthinkable so far.

Further, even the bigger vehicles may become completely uneconomical in the future to transport the way we transport today. Therefore the concept of drones must be talked about. And the relationship between drones as a technology, the electric vehicle as a technology, connectivity as a technology, and more importantly autonomous cars all coming together is going to change our lives in many ways.

The way to deal with this is not denial, but how do we make ourselves ready to face this? The best way to be competitive is to remain relevant, and the best way to be

relevant is to get out of what is not relevant today and to get into what is relevant. This is about our willingness to engage in even things that we do not know and our willingness to be relevant.

**Vote of Thanks:**

The program concluded with a vote of thanks proposed by Mr. Vishwas Kale.