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Confederation of Indian Industry

MANUFACTURING PULSE

Brought to you by: CII Naoroji Godrej Centre of Manufacturing Excellence

Towards Intelligent Manufacturing

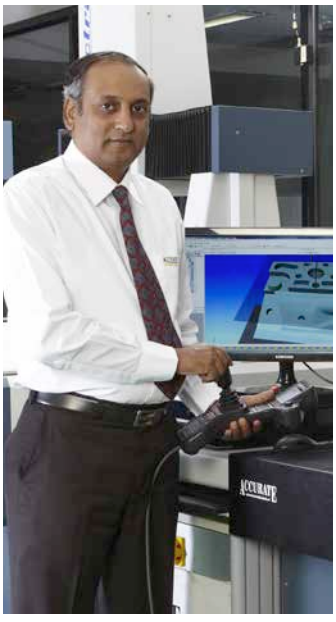
Managing Director, Accurate Gauging & Instruments Pvt Ltd, Vikram Salunke, addresses challenges of the Indian manufacturing sector in terms of talent, technology, and government incentive.

The manufacturing sector is receiving a generous amount of attention from the present government with tax incentives, infrastructure projects and efforts to enhance domestic capabilities. Managing Director, Accurate Gauging & Instruments Pvt Ltd, Vikram Salunke remarks, "The last budget has placed emphasis on increasing the contribution of the manufacturing sector in our GDP. There are several efforts initiated by both central and state governments to attract start-ups to manufacturing."

Challenges faced

External incentives are most welcome for the industry. However, to make the most of the present opportunities, manufacturers need to optimize their own capabilities and take a hard look at legacy processes that might be holding them back. As Salunke puts, "High cost of capital for Indian manufacturing industry often leads to limited capacities and relatively higher costs over Chinese competition. Traditionally we always thought that lower cost of labour was our competitive factor and this has led to many shop floor processes with significant human involvement."

Hence, getting the latest machines is not enough - facilities need to get smarter, more connected. "Today, although we have deployed CNC technology on the shop floor, our overall productivity lacks competitive advantage owing to significant manual interventions," says Salunke, "Considerable information on the shop floor resides in silos and therefore leads to slower response in case of any non-conformities."



Source: Accurate Gauging & Instruments Pvt Ltd

Vikram Salunke
Managing Director,
Accurate Gauging & Instruments Pvt Ltd

Smart factories

So, before the next phase of investments, manufacturers need to evaluate their existing setup. Are the installed facilities yielding their full capability? Connected factories and real time decision making abilities are the key. Internet of Things (IOT) will help optimise the true potential of CNC machines, and together with quality data, will be a key initiative of many progressive organizations.

"Many decision on the factory floor in future will be driven by real time data on the quality, shop floor environment conditions and the overall equipment effectiveness (OEE) of machines connected on a single platform," elaborates Salunkhe: "Big data analytics will arrive on the shop floors in not so distant future."

Nurturing talent

The final piece of the puzzle, and arguably the most critical is human talent. Harping back to the budget, Salunkhe mentions tax incentives for existing manufacturing companies to hire more people at work. There is however, a gap in skills needed by the manufacturing industry and current availability. The industry has a role to play in moulding young talent to fit the requirements of the sector.

To this end, Salunkhe cites industry led initiatives by companies like Bosch, Sona, TVS, in various parts of the country to provide the necessary relevance required by the industry. "One of the most advanced vocational training facility based on Swiss pattern has recently come up in Jaipur by Ursula Joshi foundation," he remarks.

"CII through its various chapters has already taken several initiatives to help Indian industry work on the Industry 4.0 coined as the next big revolution. CII is providing support to various clusters is helping; at first creating awareness about the Industry 4.0 as well as helping companies derive their own implementation strategies," he concludes.

DG's Note

Leveraging New Opportunities

Today, the manufacturing scenario has become even more interesting. The GST legislation is set to act as a game-changer for the industry, and we look forward to its rollout next year. The revised tax structure will reduce the cost of production and make transport of goods faster and more efficient. It will alleviate the cascading effect of taxation, while bringing down the cost of purchase for the consumer. It is a welcome policy to institute the ideal of one nation, one market.

Industries like Automobile, Cement, Consumer Durables and FMCG will reap the benefit of lower taxes and improved logistics. On the part of companies, there is a case for redesigning the supply chain to maximize benefits from the revised tax structure, as well as work in the present landscape of on-ground compliance.

Many industry corridors like the Delhi-Mumbai Industrial Corridor project are also progressing well and will emerge as *Contd... on pg 2*

Contd... from pg 1

Leveraging New Opportunities

major growth instruments for the sector, especially with the introduction of the GST and the forward movement on the Dedicated Rail Freight Corridor. New infrastructure such as roads, ports, and efficient railways add to the exciting opportunities coming up in the manufacturing sector as rural demand picks up.

As always, CII will be with manufacturers every step of the way, enabling, educating and paving the way for the best-run companies.

I am sure that you will find this newsletter pertinent & relevant and would be of use to you.

Chandrajit Banerjee,
Director General, CII

Confederation of Indian Industry

TRAININGS AND WORKSHOPS

Becoming a Skilled Business Communicator	10–11 Nov 2016
Manufacturing Strategies	14–19 Nov 2016
Brand Management for Business Excellence	15–16 Nov 2016
Labour Laws for Corporate Managers	6–7 Dec 2016
Masterclass on World Class Proposals	8–9 Dec 2016
Accident Reporting, Investigation and Analysis	13–14 Dec 2016

HYDRAULICS

Trends in Condition Monitoring

Fluid systems are usually the heaviest, most critical, most combustible and most hazardous; they are also the most powerful. This power is what makes them ideal for controls. Here's an overview of the global trends that are evolving in the field of maintenance with a focus on hydraulic and fluid systems.

Source: Hind Hydraulics & Engineers Pvt Ltd

In the dogged world of maintenance, whether it is a plant, isolated equipment or integrated and complex systems, only the steely and lionhearted endure.

Redundant hydraulic and fuel lines crisscrossing at every juncture are essential to the design of the most sophisticated systems such as airplanes and ships. In fact, the logistics and shipping infrastructure around the globe will come to a halt without fluid control systems.

The self-referential world of maintenance

Maintenance, condition monitoring and diagnostics together epitomize the human condition. It requires thorough investigation of root causes—a practice so important to world progress that all the provisional information we have so far discovered has followed this very scientific method, which involves doubt and deeper exploration in a systematic way.

Focus on key areas

Maintenance should be thought of as embedded deep into any process. By its very definition—process means physical action undertaken that is dynamic and it is that dynamic nature of the process that should be the primary focus of any comprehensive program that involves upkeep. We are in an era where assembly of static structures and control systems is not the primary activity in manufacturing. A dynamic influence of information and technology has made systems smarter and complex.

Unraveling fluid flow

One of the reasons why hydraulic and fluid systems lag behind in this applicability is because it is much easier to calculate the micro-state of each constituent in a current (electromagnetic radiation) traveling through a wire than fluid flowing through a pipe. The current is subject to physical parameters such as temperature and vibration in a much more linear fashion. Fluid flow on the other hand responds in a more unpredictable manner ranging from chemical reactions within the fluid structure to vortexes, back-flow and reaction flows, to name a few. The complex boundary between the whole 'fluid flow' and constituent-particles is hard to study but understanding this interaction is very important.

Source: thinkstockphotos.in

Systems such as hydraulic and fluid controls that are very complex and not completely predictable in terms of future behavior will benefit the most from artificial intelligence.

Artificial Intelligence: an unlikely solution

In the world of a high degree of determinism in natural and man-made systems, why is fluid control and maintenance not up to scratch? The answer is simple—Objectivity. Take the example of artificial intelligence (AI) —In the late 60s, the field boomed with optimism. A computer had been taught to play chess and eventually beat grandmasters. In the subsequent years, AI took a big blow. They could teach robot complex computational techniques to solve the most challenging of problems but they could not teach it to learn how to walk a staircase—an activity we all consider far more mundane than Fourier Transforms.

Future of fluid maintenance

Technology adoption, data-driven management, cloud and mobile technology will together change the outlook of the shop floor when seen from a maintenance perspective. Assets will be more responsive and run at a higher efficiency. The biggest challenge to fluid maintenance however, where dealing with hazardous compounds is all too common and in-fact a requisite constituent of the field will be the introduction of the spheres of regulatory compliance and environmental impact into its realm.

All users of hydraulic and fluid control systems should be encouraged to rethink how they maintain their systems and what would be the ultimate cost of not paying enough attention to an already easy-to-neglect realm of manufacturing".

MEP to widen Nagpur roads

National Highways Authority of India (NHAI) has awarded two projects of four laning of outer ring road in Nagpur to toll road fund MEP Infrastructure Developers. Valued at INR1,170 crore, the projects will be funded by IDBI and India Infrastructure Finance Company (IIFCL). This project will be developed under the new hybrid annuity model, which is a mix of engineering, procurement and construction (EPC) and build operate transfer (BOT) system. The Outer Ring Road from village Jamtha to village Fetri will be widened and cement concrete pavement constructed under Package I, covering a stretch of 33.50 km. Outer Ring Road from Fetri to Dhargaon of 28.05 km will be four laned under Package II.

New steel policy to boost capacity by 2025

Government think tank Niti Aayog has mooted a new and dynamic steel policy to bring the industry back on track as well as meet the target of 300 million tonnes (MT) capacity by 2025. In a paper published on the Niti website by Dr V K Saraswat, former DRDO Chief & Secretary Defence R&D, recipient of Padma Shri & Padma Bhushan and Ripunjaya Bansal, the senior scientist stresses the role of steel in the growth of a developing economy. Valuing the industry at over $100 Bn and its contribution to country's GDP at around two percent, the paper cites the decline in global steel consumption in 2015. In contrast, India has seen a growth of 4.5 percent last year. However, Dr Saraswat expresses concern over challenges faced by the industry by cheap imports from countries such as China, Korea and Japan. Surmising that mere changes in the National Steel Policy, 2012 may not be enough to boost the industry, the paper proposes major policy/legislative changes and a need for an independent regulator.

Capital goods policy to make industry future-read

Considering emerging concepts such as smart manufacturing, automation and Internet of Things (IoT), the Indian government is coming out with an upgraded capital goods policy soon, Additional Secretary, Department of Heavy Industries Anshu Prakash has announced. The present policy is in effect from 2015 to 2025. The revised policy however, will incorporate the new standards of manufacturing such as Industry 4.0 with an objective to increase capital goods from INR 2,30,000 crore in 2014-15 to INR 7,50,000 crore in 2025. The direct and indirect employment, which hovers around 8.4 million at present, is envisioned to rise to 30 million. Niti Aayog CEO Amitabh Kant agreed with Prakash, adding that manufacturing is at the threshold of the next big revolution. Listing the technologies driving it, Kant identified nine main developments: IoT, bots, cloud, automation, bid data, analytics, etc. India needs to embrace these to grow big," he added.

CII Conference on Welding 2016

Theme: Welding Innovation, Challenges and Applications in India
Date: Wednesday, 16 November 2016, Mumbai

CII Naoroji Godrej Centre of Manufacturing Excellence is organising the 1st Conference on Welding 2016 in Mumbai, India. Welding is the core of modern technology and has gone through a complete evolution today, following the utmost precedence that machines have garnered in our lives. There is a rapid development in this industry and new methods are being discovered and added day by day. Welding is an ever-growing discipline which presents challenges and work opportunities for new generations of engineers.

The Conference will provide opportunities to showcase and understand advancements of welding in manufacturing, construction and country-wide infrastructures. Industrial sectors of interest include shipbuilding, transportation, energy, pressure and process equipment, aerospace and many more.

In many industries, application of large and heavy equipment in their processes and procedures is a general occurrence. Many processes of engineering like welding, fabrication which involves cutting, bending, and assembling of metals are integral part of modern manufacturing and better understanding and global knowhow and advancements are the need of the hour.

Sub-themes covered by the Conference include Advancements and Challenges; Future Trends (Internet of Things (IoT), Industry 4.0, Weld Cloud); Evolution of Material Sciences and Challenges faced; Safety and Non Destructive Testing; and Skill development and Training for Welding in India.

For more details, please contact Sangita Das at sangita.das@cii.in

Counter Chinese prices

Expressing concern over India's manufacturing sector, Union Minister for Heavy Industries & Public Enterprises, Anant Geete has urged companies to meet the challenge from cheap Chinese goods with globally competitive prices.

The Nikkei Markit India Manufacturing Purchasing Managers' Index (PMI) -- a gauge of manufacturing performance -- fell to 52.1 in September from 52.6 in August, indicating that growth in the sector lost some momentum.

Speaking on the threat by Chinese industry to domestic manufacturing, Geete cited steel as an example. Chinese companies are selling finished steel products in Indian market at the price Indian manufacturers are paying for raw material. He noted that while Government has tried to bolster domestic steel by fixing minimum price on steel imports, manufacturers here need to meet the competition in global markets.

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The collective strategy

What started with a coffee table meeting in 1997 has today grown into a movement that impacts about 3000 companies pan India across more than 20 sectors. Here's how the cluster movement can benefit your company.

Source: CII Avantha Centre for Competitiveness

The manufacturing sector across the world is evolving fast, and Indian companies need to keep pace to stay competitive. Keeping in mind the larger picture to enhance manufacturing competitiveness for industries, the CII cluster movement was conceived and has been impacting companies across industrial sectors and geographical boundaries.

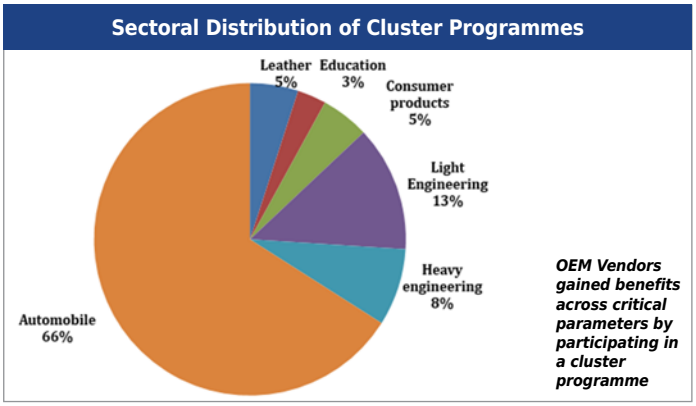
Over the years, the movement has evolved in unique ways to benefit companies across Engineering, Automobile, to Textile, Cycle Parts, FMCG, across 16 states and 3 union territories.

Understanding Cluster

The cluster activity in CII follows a scientific process which brings a group of 6-12 companies together with a common goal, over 12 to 24 months. The principle of this voluntary initiative is to work, learn and improve together. Clusters started in 1998 with Maruti Suppliers in the auto component sector and followed the roadmap prescribed by Prof Tsuda with the aim to pursue exactness for the purpose a company is in business for.

Most companies who started this journey of exactness are today among the large auto component manufacturers in India and many of them are recognized globally as some of the best suppliers to the automobile industry. As shown in the pie chart, at present 66 per cent of the companies participating in clusters are from this industry.

From the first cluster till the most recent Zero Effect and Zero Defect (ZED) cluster, one important unchanging principle has been that all companies must benefit equally.



Source: CII

Source: CII

Changing the paradigm of cluster development.

The ZED Cluster

The ZED cluster was set up by CII in October 2015, inspired by the Independence Day address by Prime Minister Shri Narendra Modi, encouraging Make in India and the achievement of ZED (Zero Defect and Zero Effect).

The product recall especially in the automotive industry has gone up considerably. OEMs in general want to pass on market fluctuations to suppliers and demand zero defect at a lower price. ZED requires technology based improvements, which are customized for a company and developed with a plan for recovering the investments in the duration of the cluster.

The ongoing ZED cluster which has companies from different industries has already shown remarkable progress with 8 companies reporting zero accidents in the last 6 months. Defect levels reduced by about 60% since start of cluster and one model product line already reporting zero defect at final inspection through deskilling, low cost automation and process improvement.

Engineering clusters

Engineering clusters have a very similar process where interventions target transforming old or outdated manufacturing plants to Next Generation plants. Improvements based on technology interventions and changing layouts accordingly results in better space utilisation, jumps in quality, productivity and safety at work place.

Example of an OEM-Vendor Cluster
Total Saving Achieved by Cluster Companies Rs.3.1 Crores

Source: CII

Indicator	Before	After	Improvement
Turnover (Cr)	42.38	61.09	Increased by 44%
VAPCO	3.5	4.8	Increased by 37%
Inventory Turn Over	18	25	Increased by 37%
Customer Return (PPM)	2033	973	Reduced by 52%
Benefits in Space Saving (sq.ft)		38891	
Delivery Schedule Adherence	92	99.7	Improved by 8.2%
Employee Involvement (%)	1.6	77.2	

Table 1: Automobile sector was the first to adopt cluster approach in India, and remains the biggest beneficiary.

CII – Avantha Center for Competitiveness has a team of in-house counselors who create customized roadmaps for individual companies and clusters coming from almost any sector.

Multi-dimensional gains

Table 1 shows the tangible gains for a group of OEM vendor companies. They were able to save INR 3.1 crore, with benefits across critical parameters including inventory turnover, space saving, delivery schedule adherence and customer return rate.

Intangible benefits include a world class plant which is almost 'hospital clean' from inside and garden green from outside, lower attrition, better attendance and accident record and a stronger supplier base for global players and large Indian corporations.

CII continues to innovate and redefine the cluster approach to ensure more and more companies benefit as we move with the changing times"

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