

OEM UPDATE

For Efficient Manufacturing



Inside :

- ⚙ Metal Forming: Tech Trends
- ⚙ Industry 4.0: A game changer for metal forming
- ⚙ IMTEX brings the best of metal forming

MAPPING THE GROWTH OF METAL FORMING

*Happy
New Year
2018*

**IMTEX
special**

Mapping the growth of metal forming



An analysis on how metal forming industry is contributing to country's growth.

Metal forming industry is huge in India. Some of researches and studies indicated the size of metal forming machinery manufacturing industry in India was around \$643 million in 2010. The report in statistics estimates this industry to touch revenue of about \$1063 million in 2018. Because there are many small to medium players in this industry that are widely scattered geographically, besides the well-known big names, it is difficult to estimate the exact size of this market. Here we present an in-depth analysis on how metal forming industry is contributing to country's growth:

Largely caters to the automotive segment in India

Dr. Laxminarayan.K, Regional Manager Technical, DesignTech Systems Ltd, says, "Metal forming sector is largely unorganised and caters to various industries, however, predominantly and largely they work with industries such as automotive, industrial machinery, railways and defense."

He adds, "As per the KPMG's report for IBEF in 2005-2006, out of the entire machine tools industry, the

estimated share of metal cutting CNC was about 66 per cent, metal cutting conventional was about 21 per cent and metal forming conventional was 9 per cent and metal forming CNC was about 4 per cent. Automotive industry in India is quite big with many of the big global brands having established engineering and manufacturing operations here. They have built multi-layered and wide spread suppliers network and metal forming industry largely caters to the automotive segment in India besides others."

Global metal forming machine tools market 2016-2020

Sameer Kelkar, CEO and R&D Head, Grind Master Machines Pvt Ltd, says, "As per the research published on 'Global Metal Forming Machine Tools Market 2016-2020', the global metal forming machine tools market will grow with a CAGR of 4 per cent during the 2016-2020 period and India is definitely in-line with these projections rather we should surpass the estimates. Associations and organisations worldwide are undertaking initiatives to enhance the quality and standard of metal forming machine tools."



Metal forming industry largely caters to the automotive segment in India besides others.



Dr. Laxminarayan.K,
Regional Manager
Technical, DesignTech
Systems Ltd



Metal forming technologies are one of the core manufacturing technologies that influence the growth of the automotive and aerospace industry.



**Sameer Kelkar, CEO and
R&D Head, Grind Master
Machines Pvt Ltd**

Continued to 14 →

Automotive is the biggest gainer of metal forming industry and beneficiary too, its market size can be seen from entire growth of industrial sector.



Beng Chieh Quah, Head of Marketing-Asia Pacific, FARO

Kelkar feels that metal forming technologies are one of the core manufacturing technologies that influence the growth of the automotive and aerospace industry.

Kelkar informs, "Grind Master is sole Indian company to offer various technologies involving sheet metal deburring and surface finishing and flow forming technologies. We are the frontrunners when it comes to robotic automation technologies for various grinding, surface finishing technologies as well as fettling applications for forging components. Flow forming technology is not used to full extent by Indian metal forming industry however it would gain more importance as aerospace and defence sectors grow over the period of time."

Automotive: The biggest gainer of metal forming industry

Beng Chieh Quah, Head of Marketing-Asia Pacific, FARO, says, "The metal forming industry is growing in India by each passing year, since government's initiative to make India as the second largest automotive hub for the world. As automotive is the biggest gainer of metal forming industry and beneficiary too, its market size can be seen from entire growth of industrial sector."

FARO has always believed in innovation. Customer's feedback to FARO is very crucial, as they constantly keep tab on what's trending in the manufacturing set

The 'Make in India' campaign is making a big difference for small to medium size industries which involves substantial number of segments and sub segments of the metal forming industry.



Maulik Patel, Executive Director, Sahajanand Laser Technology Ltd

– ups region specific. The market share in India is also going up at a rapid rate as local players also supplying their fixtures, components and parts to global established firms. In such scenarios time becomes crucial and that is where FARO is supporting market and gaining confidence from market.

Strengthening automobile and engineering sector

Maulik Patel, Executive Director, Sahajanand Laser Technology Ltd, says, "Metal forming industry in India is at earlier phase as compared to developed nations. In India, the automobile sector is largest consumer of metal forming industry, in which the automobile sector itself merely 20 years old. However, the metal forming sector is gradually strengthening the automobile and engineering sector."

As per the recent stats, there is scope of growth in terms of investment and R&D to fulfil the need of majority of industrial verticals, where manufacturing of small and micro components plays a very crucial role.

'Make in India' campaign

Patel informs, "The 'Make in India' campaign is making a big difference for small to medium size industries which involves substantial number of segments and sub segments of the metal forming industry. The year 2018 seems significantly optimistic for the metal industry."

"Make in India" and "Smart City" initiatives that are driving investments in infrastructure are all positives which are supportive of the growth for metal forming industry.



Pradeep Patil, Managing Director, TRUMPF India (P) Ltd

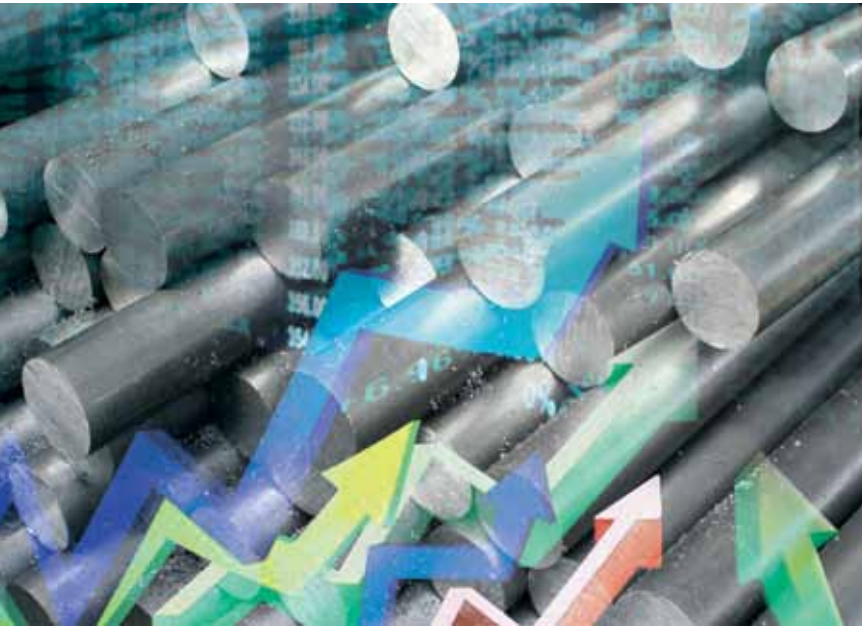
India to be major contributor in coming years

Pradeep Patil, Managing Director, TRUMPF India (P) Ltd, says, "India sheet metal forming industry is still evolving with low single digit share in the global market place. But, today, with positive policies being put in place we think India to be major contributor in coming years to provide impetus to the growth of this segment of machinery."

Market research indicates that the India has a market growing at low double digit growth, largely dominated by imported machinery but including Indian manufacturers large and small.

Key potential growth areas for metal forming industry in India:

Continued to 16 →



Space, defence, automotive and allied industries might reduce

One of the major challenges for the metal forming industry is that, in order to make vehicles fuel efficient the companies are researching on ways to reduce metal usage in favour of alternate lighter weight materials such as plastics, composites and others, believes, Dr. Laxminarayan from DesignTech. He adds, "The applications for metals in industries such as space, defence, automotive and allied industries might reduce. Especially in aerospace, the usage of metal has reduced drastically and majority of the components are now developed in composites and plastics. While no one can replace metal altogether, however, the use and applications could certainly reduce."

In such scenarios, the metal forming industry could focus on other industries that have huge growth potential in India, such as civil engineering and construction, heavy engineering, and process industry. With the government focusing majorly on infrastructure development, Dr. Laxminarayan feels that these sectors are going to experience huge surge in the upcoming years. He adds "So the companies in metal forming need to diversify their operations to cater to varied and multiple cross vertical industries rather than relying singularly on automotive, aerospace, defense and space."

Also with government promoting 'Make-in-India' campaign heavily, making policy decisions to facilitate ease of doing business to attract overseas companies to set-up their operations in India and encourage indigenous entrepreneurship, and also expecting India's economy to grow beyond 6 per cent towards which manufacturing sector is a major contributor, metal forming industry would receive encouraging thrust to grow exponentially in the years to come.

Spotlight: Automotive and aerospace industries

Kelkar from Grind Master feels, Automotive and



In coming years, this industry will have huge potential in areas like infrastructure, rapid transport system, energy, telecom, vending machines etc.



**Niraj Seth, President,
Amada (India) Pvt Ltd**

aerospace industries are major sectors, where light-weighting, efficiency and enhanced functionality are demanded by end users. Kelkar adds, "The major thrust in aerospace is on precision fabrication. Aerospace industry is in nascent stage in India, however if metal forming industry thrust on adding specific technologies to their basket like waterjet cutting, metal flow-forming, precision deburring and surface finishing, aerospace industry would be frontrunner to increase market size of metal forming industry."

The automotive industry is the key end-user of the metal forming machine tools market and holds more than 40 per cent of the overall market share. Kelkar believes that Light-weighting along with increased strength is the key result area for metal forming industry to be delivered to both automotive as well as aerospace sectors. He informs, "In addition to many other engineering sectors, architectural fabrication is major area where Indian metal forming sector should focus on. As current government is putting more emphasis on creating better infrastructure, there will be many new opportunities coming in the market in this space."

Automotive: The biggest earner

According to Quah from FARO, Automotive will always be the biggest earner, following machine tools and heavy machinery components making its way too. He informs, "Now with 'Make in India' campaign, enthusiasm of the industry must be high. That means new expectations to see how this transition will help Indian manufacturers who are eager to accept latest technology to excel."

Infrastructure, transport system, energy and telecom

Niraj Seth, President, Amada (India) Pvt Ltd says, "India is an emerging market; the demand for sheet metal is growing rapidly. In coming years, this industry will have huge potential in areas like infrastructure, rapid transport system, energy, telecom, vending machines etc."

Amada have been supplying to various business segments like switch gear, silent diesel gensets, refrigeration, machine tool, construction machines, food processing

Continued to 18 →



The growth of the metal forming industry is driven largely by automobile sector followed by electronics, packaging, white goods, power, etc.



Vivek Nanivadekar, Executive Director, FIBRO India Precision Products Pvt Ltd

machinery, railways, aerospace, modular furniture and several other industries. Amada have been a key supplier to most of the leading companies in these business sectors.

Since infrastructure expenditure is the highest, maximum volume generation is by switchgear, silent diesel gensets, construction machines, railways and modular furniture sector.

Driven largely by automobile sector

Vivek Nanivadekar, Executive Director, FIBRO India Precision Products Pvt Ltd, says, "The growth of the metal forming industry is driven largely by automobile sector followed by electronics, packaging, white goods, power, etc. The growth in the export of engineering goods from these sectors will drive the growth of metal forming industry. Aerospace industry also will drive the growth of metal forming industry indirectly. But it is too early to speculate the impact."

He adds, "We need to identify the areas for import substitute in engineering especially in metal forming sector which would also contribute to the growth in metal forming industry."

3D printing and additive manufacturing

By the end of 2017 infrastructure sector is about to get an investment up to USD 1 trillion in which 45 per cent of investment will be channelised into construction sector. Government is intensively planning huge projects to enhance the infrastructure in tier 2 cities and this development just cannot be undertaken without involvement of metal forming industries. Along with that heavy machinery as well as equipment manufacturing industries has initiated the reformation with collaborative efforts of private sectors and governments. Speaking of electronics, 'Power to all' initiative of government is looking forward to provide power to all over India by the year 2019. Patel from Sahajanand Laser says, "The current emphasise of the numerous industries is shifting towards capacity enhancements, as government is incentivising capacity building. The government has announced to support the direct exports to the neighbour countries. So

this gist of 'Make in India' indicates opportunities in abundance."


Though the industry is growing, there is clear instability in the demands and on observing closely, one can find out that there are only a few growth drivers and majority of the sub-segments are under performer. The fall back in making capabilities enhancement has been hindering the productivity and largely, the performance. Now that one have identified the opportunities, it becomes necessary to understand the challenges the metal forming sector is facing. The fall back in making capabilities enhancement has been hindering the productivity and largely, the performance. The acceptance of cutting-edge tools which potentially push the productivity to the next level is significantly low. For instance, the laser technology is one such machine that possess the features to enhance the metal forming process substantially, in terms of quantity as well as with up to the mark quality. Though the laser machine promises definite improvement, the problem with the technology is lack of knowledge and manufacturers' perception regarding Indian technology. Patel comments, "The awareness about the laser technology is yet to find its way to all those concerned entities. Thus, the production cost of the laser machines is very high at the moment consequently the pricing also goes higher and that is a crucial point to make many of prospect turn down the buying decision. To tackle those issues, all the laser technology requires is appropriate awareness amongst target audience. Than after systematic education regarding its usability and its advantage must be employed."

In metal forming sector, the trend shifts towards 3D printing and additive manufacturing, Internet of Things and smart manufacturing. Patel feels that these trends can be executed exquisitely with laser cutting and welding solutions.

IMTEX forming holds the remarkable importance in the metal forming sector and each year it turns out to be one of the biggest gathering of the people connected with technological sectors. That reflects the phenomenal potentiality for any company deals with metal forming tools and systems. So, at this time of year many of them schedule to introduce their latest offerings and if that is not the case, at least they prepare to portray their best offerings to utilise this opportunity optimally.

"Make in India" and "Smart City" initiatives

Patil from TRUMPF India says, "With low single digit share in the world market, we have the potential to grow in every industry segment in India as far as sheet metal forming is concerned."

"Make in India" and "Smart City" initiatives that are driving investments in infrastructure are all positives which are supportive of the growth for metal forming industry. Needless to say the incremental disposable incomes and growing younger population are going to be the foundation of same. 

IMTEX brings the best of metal forming

The six-day exhibition serves as an important platform for the machine tool industry by showcasing the latest technologies in metal forming. A sneak peek



Indian Machine Tool Manufacturers' Association (IMTMA) is organising 'IMTEX FORMING 2018 and Tooltech 2018', a B2B exhibition of metal forming technologies at Bangalore International Exhibition Centre (BIEC), Bengaluru from 25th to 30th January 2018.

Innovations in metal forming technologies, robotics and automation, welding and joining, wire-forming and drawing, presses, die casting, hydro forming, sheet metal forming machines, presses for special applications, dies and moulds, hydraulic and pneumatic systems and elements, testing machines, and so on will be at display.

The exhibition will feature several companies introducing new technologies to suit many user industries such as aerospace, defence, automobiles, auto components, capital goods, electrical and electronics, earth moving and construction, food

processing and dairy equipment, and many others. High level delegations from public and private sector industries will be present as trade delegations.

Excellent platform to educate, communicate and explore

Tushar Pawar, National Head, Ampco Metal India Pvt Ltd, says, "This is our 4th consecutive participation in IMTEX forming exhibition. IMTEX forming has always been an excellent platform for Ampco Metal's products and applications."

Ampco Metal has special proprietary materials like AMPCO 18, AMPCO 21, AMPCO 25, AMPCO M4 which works fantastic against stainless steel and titanium forming, bending and deep drawings applications.

He adds, "As we have the best materials and solutions for forming, bending and deep drawing application, we enjoy this opportunity to educate, communicate and explore with our potential customers."

IMTEX forming helps Ampco Metal to demonstrate the solutions to the potential users and also to find opportunities in the applications which are new and challenging which the company always love to explore.

The company will continue to participate in IMTEX forming exhibition in future too.

Advanced CAE solutions

Dr. Laxminarayan.K, Regional Manager Technical, DesignTech Systems Ltd, says, "We have been a loyal participant in the IMTEX shows since past many years. At DesignTech, ever since our inception in 1998, we

Continued to 26 →



State-of-art facility of 20000 Sq.ft in Chakan Pune Maharashtra

Precision
Deburring
Machine



have been working closely with the mechanical engineering industry in India, helping them make a transition from traditional processes of yesterday to adopt the latest technologies to match the global standards of engineering excellence."

This year the company would be showcasing some of the advanced CAE solutions, 3D-Printing or additive manufacturing technologies, latest CAD, digital manufacturing and PLM solutions from the global leaders. Laxminarayan feels that these technologies would help the companies attain their goals of product design and manufacturing excellence through efficient processes and systems that augment productivity, generate greater ROI and enable them achieve higher cost effectiveness.

He adds, "These technologies would help them remain competitive and relevant in the fast changing market space. Visit our booth D 111 - Hall no 3A at IMTEX."

CF Series machine for heavy deburring

Grind Master is having widest range of metal finishing and deburring machines in the world. Grind Master

Sheet Metal
Deburring
Machine



would be showcasing CF Series machine for heavy deburring and fine edge radiusing of flat parts. Sameer Kelkar, CEO and R&D Head, Grind Master Machines Pvt Ltd, says, "These machines use combination coated abrasive belt heads and planetary deburring heads which gives precisely deburred output parts."

He adds, "Grind Master has delivered over 100 such conveyorised deburring spms worldwide. The wide belt grinding machines from Timesavers Holland will be key product showcased for sheet metal fabricators as well as aerospace industries. IMTEX forming is also key exhibition for foundry and forging industry."

Company's robotic fettling, grinding, deburring solutions will be for sure centre of attraction for foundry industry which has revolutionised the entire foundry sector in India. Their recent collaboration



LCG-3015AJ

with MJC Engineering from USA has also added flow forming machines in their product portfolio. The expert team from MJC will be available over there at IMTEX to discuss various flow forming requirements from defence, aerospace and other engineering sectors.

Focuses on automation for customer's success

Niraj Seth, President, Amada (India) Pvt Ltd, says, "During IMTEX our focus will be automation for customer's success. We will showcase our latest automation solutions."

A win-win situation for both local and global participants

Beng Chieh Quah, Head of Marketing-Asia Pacific, FARO, says, "IMTEX is an established platform in metal forming and tooling industry. It is a platform for manufacturers to see new trends in the market. This platform is a win-win situation for both local and global participants and see opportunities in the market."

Complete range of standard parts and rotary table

Vivek Nanivadekar, Executive Director, FIBRO India Precision Products Pvt Ltd, says, "IMTEX has never failed to impress its visitors by showcasing technologically innovative manufacturing and engineering products along with their applications. This year it will feature all aspects of forming technologies, predominantly sheet metal forming. And we will be upright to give warm welcome to all visitors with complete range of standard parts and rotary table."

Company's emphasis is mainly on 'Making in India' and "German Precision Crafted in India". In accordance to

Continued to 28 →



Fibrotor

that the company will be displaying the wide-range of locally manufactured products such as oilless guide elements, wide-range of cam units, gas springs, compression springs, lifting and clamping elements and standard parts with competitive prices for dies and mould making industries.

FIBROTOR RT

From rotary table division, FIBRO India will be introducing its new product FIBROTOR RT in this show. The ring stylerotary table, FIBROTOR RT.0750, offering more power with less cost, is specifically designed to offer economical, precise and process safe drive components required by modern, high performance assembly plants from automotive, electronics and consumer goods industries.

Nanivadekar adds, "To know more about our new products, kindly visit our stall D104 at Hall No 3A."

Expecting 200 per cent growth in 2018

Shailesh Mehta, Director, Mehta Cad Cam Systems Pvt Ltd, says, "We feel very happy and pride for having a leadership in the manufacturing and selling of fiber laser cutting system, right now up to 3.3 kw."

He adds, "We have already sold more than 50 units in different parts of India in this last 2 and half years and we are expecting 200 per cent growth in 2018 and 50 per cent growth in following two years."

Innovative technology and enhanced service support

Pradeep Patil, Managing Director, TRUMPF India (P) Ltd, informs, "This is the golden jubilee i.e., 50th year of

IMTEX. Over the years, the event has not only catered to the business needs of national and international exhibitors but also witnessed many decision makers and business heads from across the spectrum of Indian metal working industry at one location."

He adds, "We would be participating in this edition of the exhibition to bring to our customers what we are known for that is Innovative Technology and to introduce Enhanced Service Support."




Precision deburring of punched parts

Laser solutions with futuristic smart manufacturing capabilities

This exhibition has always been close to the company, as they launched its new invention, world's 1st fiber laser machine in IMTEX 2008. From there on, the company tend to unveil new laser machines every year at the time of IMTEX exhibition and the momentum is going to remain intact this year as well. For this time, the company have emphasised on segment-oriented enhancement and try to delivery integrity with cutting -edge system and latest features at each level. To be specific, material handling and storage solutions are being added keeping sheet metal industry in account. To enhance the productivity and reducing human efforts are some elements they have focused more for latest laser systems. Maulik Patel, Executive Director, Sahajanand Laser Technology Ltd, says, "Our aim is to extend our offering, to get into various categories which can be suitable to larger clientele base. On the other hand, high caliber machines are made even flexible to operate in complex set ups."

He adds, "For this time, we are demonstrating around 10 solutions mix of cutting, marking, welding and automations needs. Besides, running with the latest technologies, we are bringing some of our laser solutions with futuristic smart manufacturing capabilities."

Lastly, Patel informs, "Ultimately, what we have endeavoured for this year is, to extend something which was long due desired from the laser machine user around the globe. We have set those aspects as our millstone, and marched into that direction. Thus, we are looking forward to meet the expectation of laser machine users." 

Robotic Fetting Automation



Metal Forming: Tech Trends



Here's a report on how mature is the metal forming industry in India in terms of technology adoption.

An extremely price sensitive sector

Dr. Laxminarayan.K, Regional Manager Technical, DesignTech Systems Ltd, says, "Metal forming industry in India is yet an unorganised sector, relying mostly on their experience driven knowledge and trial and error approach or methodology towards work. They are not technology enthusiasts and it is an extremely price sensitive sector."

He adds, "Being averse to or hesitant towards adopting technology, they need to see and realise the value that the advanced solutions or systems would bring to their area of work, contemplate the cost of ownership, and evaluate the ROI. If they perceive any tangible advantages that at they might stand to gain from investing in the new technology, they would go for it. But if they are convinced that their experience driven knowledge is serving them well, then they wouldn't be too open to evaluating new approaches of conducting their work."


Laxminarayan feels as the young generation is taking over the charges from the baby boomers, we are seeing

transition in the working methodology as they are more open to experimenting and also eager to learn about new ways and means of doing work. He informs, "They understand the need to adopt with the changing times and are hence constantly working towards redefining their practices to bring in more innovation, agility, speed to their processes while attaining robust product quality."

The metal forming sector is a part of core mechanical industry and in India they still largely rely on the traditional processes. Nonetheless, winds of change can be sensed. Especially with the government promoting 'Make-in-India' campaign overseas; they all will have to

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Current prediction is that in the next 3 years there will be greater use of aluminium and composites with almost no steel in metal forming machines.



Dr. Laxminarayan.K,
Regional Manager Technical,
DesignTech Systems Ltd

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Increase in awareness is very much essential to uplift the metal forming industry to next level.



Sameer Kelkar, CEO and R&D Head, Grind Master Machines Pvt Ltd

adopt the advanced technologies and systems to stay competitive and relevant in today's time to achieve engineering excellence.

Increase in awareness: Essential to uplift the metal forming industry to next level
Sameer Kelkar, CEO and R&D Head, Grind Master Machines Pvt Ltd, says, "Metal forming industry in



A complete market for fiber laser cutting technology. 1.5 kw and 2 kw fiber laser cutting machine will get more popular to cut thick material and to cut thin material at a high speed.



Shailesh Mehta,
Director, Mehta Cad Cam Systems Pvt Ltd

to the 45 per cent of the sheet metal dies in the country which are non critical dies. Due to the cost pressures or lack of exposure to the latest trends in the field, many of these toolrooms do not opt for the new techniques such as standardisation or better tool design or better machining methods etc. As such FIBRO India supplies standard parts to large and medium size toolrooms with few exceptions of small scale of toolrooms. The company keep on educating the customers on use of standard parts and recent advancement in the field.

In this limited market size FIBRO India share is estimated to be around 35-40 per cent. However Nanivadekar believes that gradually the small scale toolrooms also will be aware of the benefits of using standard parts and its market will grow over the time.

The Expansion of industry

Shailesh Mehta, Director, Mehta Cad Cam Systems Pvt Ltd, says, "As you know that laser cutting is already very popular in metal forming industries for sheet metal cutting since many years and all the people who are old in this industries have very expensive CO2 laser cutting machines from big brands and they are still not adopting low cost fiber laser technology."

Mehta informs, "Many new players are buying our manufactured fiber laser cutting machine and entering into metal forming industries. So we would say that this



The focus of 'Make in India' campaign is going to be the proliferation of small to medium size industries and that involves substantial amount of segments and sub segments of the metal forming industry.



Maulik Patel, Executive Director,
Sahajanand Laser Technology Ltd

industry is getting expanding but in coming time it will increase in multiple forces."

The 'Make in India' campaign

Maulik Patel, Executive Director, Sahajanand Laser Technology Ltd, says, "Indian metal forming sector is rapidly hiking towards the peak since last few years gaining new height. Amidst the favourable conditions started making way for metal forming tool industry, Indian government gave the progress much needed momentum by 'Make in India' initiative. What the campaign has been essentially doing is distributing the progress in more balancing way. Prior to the aforementioned program, the metal shaping sector was facing the inharmonious growth and the gap amongst the high performing sections and low performing sections were tremendously high, so in larger picture it used to hamper the growth of entire sector."

Patel informs, "The focus of 'Make in India' campaign is going to be the proliferation of small to medium size industries and that involves substantial amount of segments and sub segments of the metal forming industry. It reflects that, the drive is all set to revolutionise the face of all the Indian industry as, the government



The demand for machines is depended on 3 major parameters, productivity, sustainability and safety with security.



Pradeep Patil, Managing Director,
TRUMPF India (P) Ltd

has determined to transform the ecosystem across the industry right from small extending to big enterprises."

Financing - One major attribute that drives the adoption rate

Pradeep Patil, Managing Director, TRUMPF India (P) Ltd, says, "The environment is getting conducive for the manufacturing segment in India to adopt innovative technology."

He adds, "While even today majority customers are investing in the 'entry' level technology we do see some established manufacturers exploring the high end solutions and choices for scaling the investments to meet needs of tomorrow."

Patil informs, "Financing is one major attribute that drives the adoption rate for our customers and making

Continued to 34 →

appropriate financing schemes to encourage the manufacturers at competitive rate of interest should be the corner stone in rate of maturity."

Technology trends that will drive the metal forming machines demand

Greater use of aluminium

Dr. Laxminarayan.K, from DesignTech, says, "Current prediction is that in the next 3 years there will be greater use of aluminium and composites with almost no steel in metal forming machines. This trend is particularly noticeable in the automotive and aerospace industries, where light-weighting; efficiency and enhanced functionality are demanded by end users. This is because of the increasing demand for environment-friendly vehicles requiring reduced fuel consumption and weight."

Many analyses have also shown that further significant weight reduction can be achieved in automobiles and aerospace using fibre-reinforced composite materials. Carbon-fibre reinforced polyamide seems to be particularly suitable for this purpose: it satisfies the requirements of production in large series together with good mechanical strength and shape stability.

3D Printing

One of the latest ranges in the products development technologies arena is 3D Printing. It has radically transformed the way products are built. Metal 3D Printing is also fast picking up and has huge applications in the fields like tooling, dental labs and research areas. It is ideal for producing or developing small batch of customised products. Metal forming industry on the other hand works on the volume business. E.g. Sheet metal components for cars are manufactured in large numbers. Hence these technologies are non-competing but in fact are complementary. Metal 3D Printing can in some cases replace CNC machining requirement but not forming.

Product design analysis and simulation solutions

The CAE technologies, such as product design analysis and simulation solutions would be the next big technological trend that is already fast catching on in the metal forming industry. These technologies help companies evaluate product performance and undertake necessary corrective measures such as change in material, design change, process change that would effect in enhancing the overall product quality. He opines, "CAE solutions allows companies to conduct various analysis and tests including structural analysis of the metal components, crash and impact tests for the sheet metal of the cars, durability and strength tests, and many more."

Not single, but many aspects will drive the demand

Nanivadekar from FIBRO India, feels it's not anyone technology trend that will drive the demand for metal forming machines. But the combined effect of many aspects will drive the demand. To name few – drive for 'Make in India', developing India as manufacturing hub, domestic demand for automobiles etc.



He explains, "These aspects in turn depend upon many factors such as government industrial policies, development of Infrastructure such as transportation by roads, sea and air, improving skills of the people and improving the availability of skilled manpower, improving 'ease of doing business', etc. Therefore, it is long way to go. But certainly, now we are on the right path."

Fiber laser cutting technology


Mehta from Mehta Cad Cam says, "Of course for sheet metal cutting fiber laser technology has taken over CO2 technology and CO2 laser technology is losing its presence in these industries. There is a complete market for fiber laser cutting technology. 1.5 kw and 2 kw fiber laser cutting machine will get more popular to cut thick material and to cut thin material at a high speed."

He informs, "Now our company have adopted world class plasma source 'Kjellberg' Germany through which one can get better quantity of thick sheet cutting with low cost plasma cutting machine and we believe that the market for plasma cutting machine will also increase a lot in this coming time."

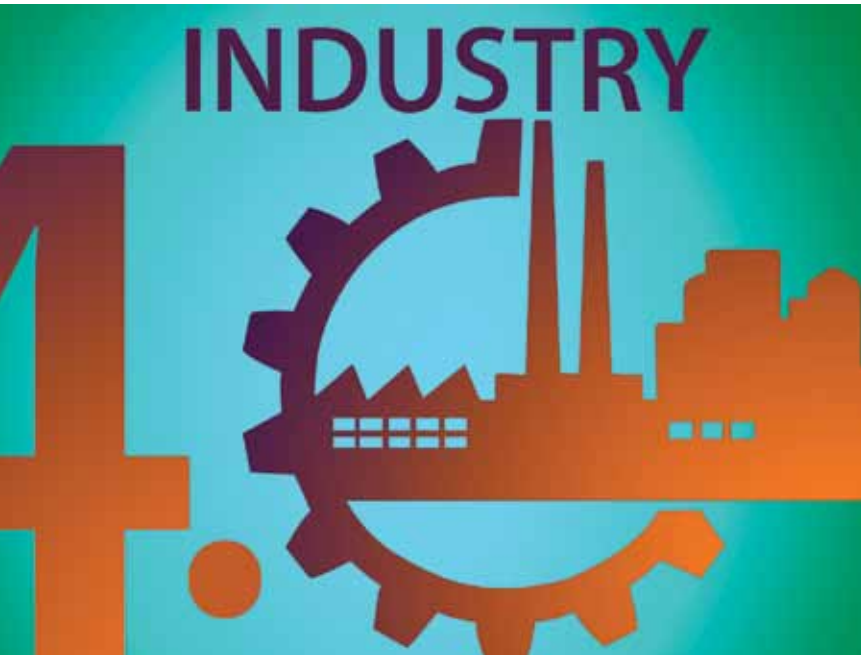
Productivity, sustainability and safety with security

According to Patil from TRUMPF India, The demand for machines is depended on 3 major parameters, productivity, sustainability (energy efficiency is viewed as one major sustainability parameter) and safety with security.

He adds, "More often we see for the manufacturers, productivity and sustainability are prime focus area."

While innovative technology in basic design itself will continue to be critical, it is digitisation readiness which will be immediate need for the manufacturers to maintain their competitive edge in global market thus digital readiness will be critical for growth in coming years. 

Industry 4.0: A game changer for Metal Forming



Discussing the impact of Industry 4.0 on metal forming:

Industry 4.0 basically means smart factories, integration between inter-disciplinary departments and processes, and highly advanced artificial intelligence system that can self-correct, trouble shoot and even redefines or re-configures processes and systems for seamless manufacturing. Metal forming industry wouldn't be largely impacted by this. Traditional metal forming processes such as forging, rolling, stamping, extrusion, bending, deep drawing and shearing would continue as they are.

The radical transformation will happen at the OEM or multifunctional and large sized Tier 1 level. Metal forming companies are the suppliers or Tier 2s. They will have to manufacture based on the demands and requirements of the OEMs.

According to Dr. Laxminarayan.K, Regional Manager Technical, DesignTech Systems Ltd, There would be



The human interface would be minimum as regular processes would be largely governed, managed, and executed through artificial intelligence.



Dr. Laxminarayan.K,
Regional Manager Technical,
DesignTech Systems Ltd

transition in the data and knowledge sharing mechanism. He adds, "Everything would be integrated in the suppliers' management systems, which even today some of the companies follow and practice with PLM software, based on which deliveries and commercial settlements are managed. The entire products assembly, quality check, inventory management, data and resources management and integrated communications with the suppliers and vendors would be managed digitally."

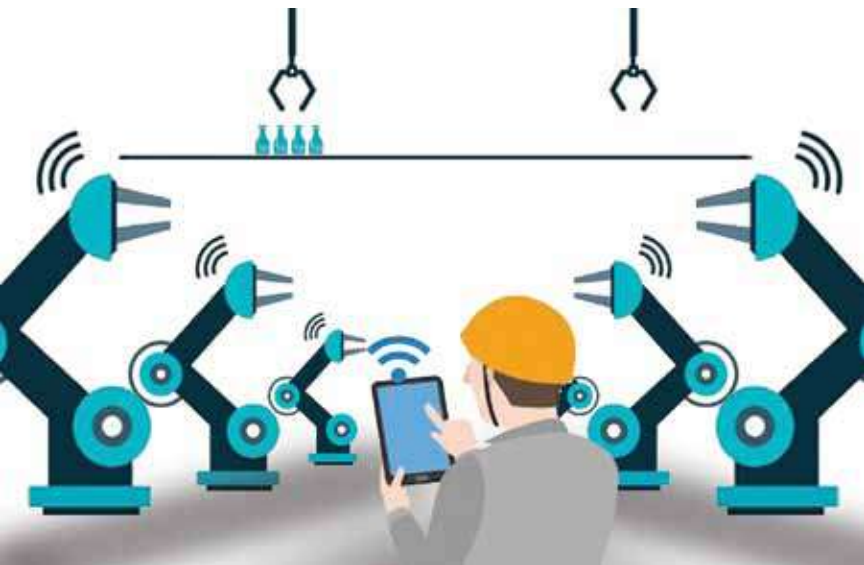
Industry 4.0: The next big Industrial Revolution

Industry 4.0 basically is complete digitalisation of processes, advanced automation and robotics, self-monitored and guided systems through artificial intelligence that would manage the day-to-day working of the factories. This is predicted to be the next big Industrial Revolution. Laxminarayan feels that the human interface would be minimum as regular processes would be largely governed, managed, and executed through artificial intelligence.

The human interface component would be limited up to defining standards, providing logics and deciding the key boundaries and parameters within which the artificial intelligence subsystems would operate and would be allowed or given liberty to make independent decisions.

Industry 4.0: Helps in making decentralised decisions

Sameer Kelkar, CEO and R&D Head, Grind Master Machines Pvt Ltd says, "Industry 4.0 or the fourth Industrial Revolution is the current trend of automation and data exchange in manufacturing technologies. It uses cyber-physical systems and cloud computing. Machines are meant to improve quality productivity and cost efficiency."



alignment of jobs, skilling, perfect supply chain and innovation to benefit the economy holistically.

Industry 4.0 or the fourth industrial revolution integrates the digital and manufacturing world. Technologies moving from electrified to automated, to digitalised manufacturing, such as big data and analytics, autonomous robots, IoT, cyber security and augmented reality are transforming the manufacturing landscape.

However, Patel informs, "This can be the fulcrum to catapult Indian manufacturing to make India a truly global hub. The transmission will require significant economic and social change along with political and institutional frame work."

Right product to right people, at right price

Pradeep Patil, Managing Director, TRUMPF India (P) Ltd, says, "The industry has been evolving. It has been responding to the challenge of ensuring the delivery of right products at the right price to the right person through a process of improved sophistication."

In this context, Industry 4.0 is the buzzword being talked about in manufacturing industry for couple of years now together with "smart" controls and sensors, "connecting" the devices.

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Industry 4.0 is a significant step closer to reality, paving the way to profitable plants with high availability.



Maulik Patel, Executive Director, Sahajanand Laser Technology Ltd

large data like characteristics of each and every component used in the system and then derive the characteristics of the complete unit as a single piece."

Nanivadekar comments, "In the first place we need to answer whether we really need Industry 4.0? And can we afford it? If yes, then we think of 2nd step."

Secondly, he opines, "We need to upgrade our technology and be at a par with the global practices. Then only we can think of Industry 4.0 for metal forming. It is more relevant when we adopt the total automation using transfer press and allied technology. As such it is too early to foresee the impact of Industry 4.0 on Metal forming industry in India."

Industry 4.0: A step closer to reality

Maulik Patel, Executive Director, Sahajanand Laser Technology Ltd, says, "Technology is transforming business models. As challenges for the manufacturing industry are growing, manufacturers need to transform. Industry 4.0 is a significant step closer to reality, paving the way to profitable plants with high availability. It takes transformation - digitalisation solutions to realise innovation, performance, thereby realising their own digital enterprise."

He adds, "Industry 4.0 is leveraging for efficiency, adaptability and productivity. There are other areas that need special focus including good quality products,

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Ensuring the delivery of right products at the right price to the right person through a process of improved sophistication.



Pradeep Patil, Managing Director, TRUMPF India (P) Ltd

He adds, "In matured markets, where the infrastructure required for leveraging the benefits of technology are in place, we see that the benefits have already being reaped, but the share is still in single digit."

Patil observes, "For us, here in India, we have begun to adopt the machine technologies, but the infrastructure and knowledge that overlaps manufacturing and digital world are yet to reach the levels where we see the implementation of digitalisation in full effect. "

Digital transformation is rapidly recognised to be driving change in the manufacturing industry, and no geography can afford to ignore its merits. The company feels that India is uniquely poised in this aspect and believe the adoption rate would be much faster than the rest of the world. 