

FORGINGS TODAY

COVER STORY

Profile of a Modern Forge Head

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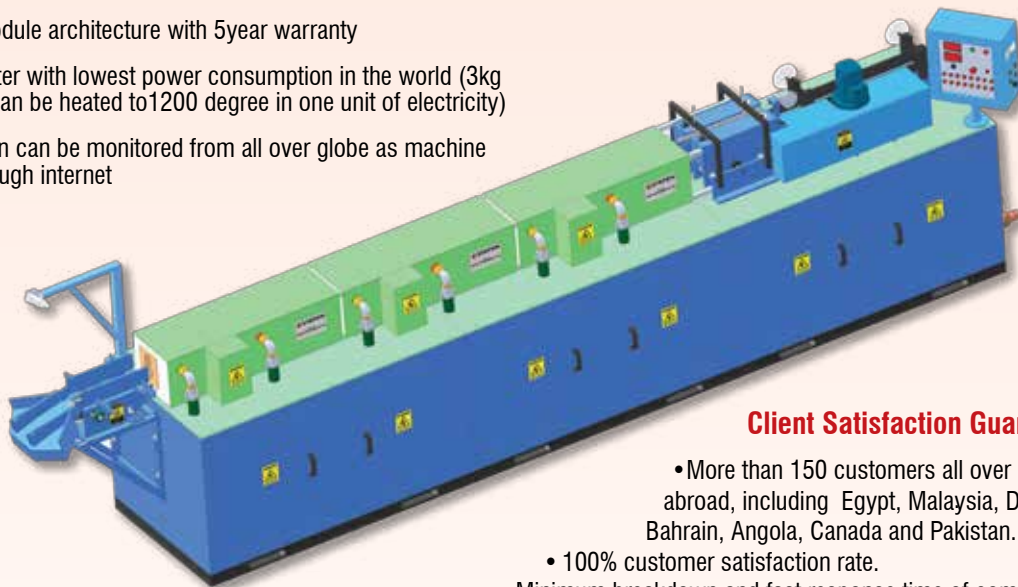
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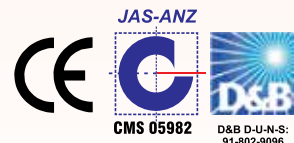
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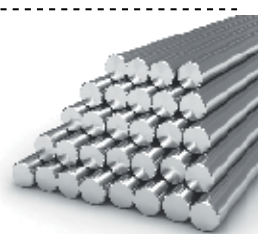


Forged Bars

- Round/Flats
- Machined

Bright Bars

- Peeled
- Cold Drawn

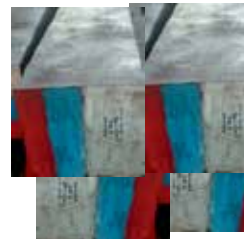


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The Cover Story of this edition, Profile of a Modern Forge Head, is devoted to this topic which is slightly away from past ones carried by Forgings Today.



Forging, as you all are aware, is in the process of a major technological shift. The shift is a result of disruptive end user technologies and stricter emission norms. Light weighting of forging is creating need for more advance materials and alloys, complicated tool design and equipment. Continuous effort on cost reduction and quality improvement is shifting manufacturing from man oriented to automation supported by digitization, IOT.

In such a situation the profile of the person managing such an operation will have a completely different profile compared to what we had in the past. We are not talking of black smiths now but technologists who have a vision of the future manufacturing trends and attitude, aptitude, skills and knowledge to make this transition.

The modern forge head should have one of these core skill and experience, namely metallurgy, maintenance and plant engineering, tool design and tool manufacturing. These needs can be classified as attitude, skill and knowledge. Each attribute would have a sub-set of personality traits.

We take this opportunity to wish all our readers a very happy and prosperous New Year.

Rajendra Kumar Jain
Editor, **Forgings Today**
January 1, 2020

COVER STORY

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Profile of a Modern Forge Head



By Dr. Vasant Khisty, CEO- Sammy Consulting

Forging is in the process of a major technological shift. The shift is a result of disruptive end user technologies and stricter emission norms. Light weighting of forging is creating need for more advance materials and alloys, complicated tool design and equipment and continuous effort on cost reduction and quality improvement is shifting manufacturing from man oriented to automation supported by digitization, IOT etc.

In such a situation the profile of the person managing such an operation will have a completely different profile compared to what we had in the past. We are not talking of black smiths now but technologists who have a vision of the future manufacturing trends and attitude, aptitude, skills and knowledge to make this transition.

The modern forge head should have one of the following core skill and experience.

Metallurgy - as more and more requirements are metallurgical in future. More and more nontraditional steels and alloys are being forged. Aerospace market brings the need to forge Ti,

super alloys, Aluminum and other steels like micro alloys. These forgings are metallurgically controlled throughout the process from heating to post forging and machining operations.

Maintenance and plant engineering - as new advanced robotics and machines are being used. One of the areas which require high hands on skill level is automation. Someone who can integrate the machines with robots and advance tooling is a great asset as this is a skill area least available especially in forging industry. The future also will come with need for automation of inspection and man less corrective actions.

Tool design and tool manufacturing - as more and more complex forgings and design are coming in future. The complexity of forged products are increasing and un imaginable shapes are being manufactured today. Technological changes are making it possible to do multi axial forgings; isothermal forgings etc. and dedicated equipment are replacing general purpose machines. Equipment like radial forging, cross wedge rolling etc. are replacing traditional equipment and design and tooling for these equipment are changing. The designs have to be simulated before manufacturing, then using modeling and cam the dies have to be made on VMCs and the management of tool manufacturing is totally changed. Preset segmental tooling is replacing on the machine tool settings. Short batches and lean manufacturing is making SMED a necessity

These needs can be classified as attitude, skill and knowledge. Each attribute would have a sub-set of personality traits as elaborated here.

Attitude

- Divine dissatisfaction and always challenge the status. - Someone who could walk on the shop floor and keep questioning, is there a better way? Someone who is challenging the status all the time and that is how incremental and drastic improvements come.
- Ability to comprehend organizational needs and translate into an implementable plan. - Someone who scans the future, anticipates



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the organizational need to align to the future and prepares towards it by being ahead of the curve.

- Ability to create an environment which nurtures creativity. - No one can open the bud into flower, only the right environment can do it. The reason why Indians do well in US because it offers the right environment for creativity. A leader needs to create a right environment which facilitates and encourages innovation, creativity. Forging as a process has immense scope for improvement and the right environment can involve employees to come up with implementable ideas.
- Ability to notice hidden contributions and reward performances. - There are two kinds of workers in organization, one is the paper tiger other is a hidden tiger who works hard and actually adds value. Organizations always notice the one with colorful power point presentations and reward the same whereas actual contributors get neglected. A good leader will identify these hidden contributors and reward them.
- Ability to hit self-created stretchable targets. - Ability to stretch targets and reach close to the

targets is an attribute few have. People wish to live in a comfort zone. Today we need leaders who will challenge themselves to reduce the gap Indian forges have with its international counter parts.

- Root cause analysis freak.- There are millions of engineers, but handful of them have the skill to get into root cause and correct the same. We need leaders who keep searching for the root cause to eradicate the cause.
- Integrity in communication/ action. - Most managers hide facts from the management, one of the reasons is that management wishes to listen to good stories not the bad one and that is why bad stories are hidden. A good leader needs to be truthful no matter what and should have high integrity in action, conduct and presentation.

Skills

- Core skill in tool design tool manufacture or maintenance or metallurgy.- With over all exposure to forging manufacturing the leader in the new paradigm needs to have core expertise in Design and development of tools as tooling is shifting from conventional



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tooling to more critical metallurgy led tooling. Or Maintenance as robotics, automation is becoming a compulsion not just for man power cost reduction but for reliability, quality and productive predictability. There is acute shortage of automation coordinators and core skill in forge automation is of advantage. Or metallurgy, as more and more critical materials will be used in forging. Shifting from automotive to say Aerospace, metals like Aluminum, super alloys, Ni, Cobalt based alloys shall be forged and these are pure metallurgical processes.

- Communication skills.
- Quality systems implementation. - There are several systems are integrating with each other and over lapping. Like IATF, ISO 1400, IBR, Lean, TPM, Six sigma and Industry 4 coming ahead. Knowledge of these systems and implementation skills is a critical area for a leader to take the forge to new generation manufacturing business.
- Customer handling skills. - Most customers actually don't know what they want. The designer, the quality engineer all speak different language. Someone who has the knack to wriggle around these inflexible norms of end customers is an added advantage.
- Communication skills, use of all modern tools. - This is required for all managers today in international business scenario. Across the globe communication to different cultures eases a lot of problems.
- Visual factory implementation. - There is no fun watching a cricket match without a score board. Real time visual displays bring the whole organization on one page. Be it targets, production numbers, PPM, these current information helps take timely decision and this happens by displaying performances at relevant places so that relevant people get relevant information at the right time.
- Lean manufacturing ability. A leader needs to be sensitive to waste. Waste of human, effort, material, inventory, energy and all kind of wastages. Money saved is money earned.

- Production planning skills.- This is obvious
- Root cause analysis skills. - This one rare skill is most important as most effort is wasted beating around the bush and wasting time energy in reaching towards the root causes. Common sense is being replaced by tools like design of experiments; however whatever the method being used the skill and knack to find the root cause is irreplaceable.

Knowledge

- Knowledge of modern manufacturing practices.
- Knowledge of new equipment's.
- Knowledge of IOT and digitization concepts.
- Knowledge of human less corrective and preventive actions.
- Knowledge of advance materials/ tool materials.
- Knowledge of seeking right knowledge.
- Knowledge of labor laws.
- Knowledge of factory acts, and regulations like safety, pollution etc.
- Knowledge of taxes, excise steel costs etc.

Industry contacts for quick problem resolutions, emergency handling - Most times in forging industry you need specialists who are service provider. What can machine a spare part, who can make a special die etc? A good rapport with such specialists helps reduce the searching and execution time. If the leader has a good rapport with a motor manufacturer he can replace his burnt motor as fast as possible even without paying the money, as the cumbersome centralized purchasing systems have become reasons for delays. Rapport building takes years of relationship based on a man's integrity.

Conclusion

Technologies are aligning with the new requirements and being disrupted quite often. In this new paradigm conventional leadership will not be relevant, hence leadership with different thought, attitude, skill, and knowledge would be required to take forges ahead.



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Forgings News and Developments

ArcelorMittal expects to close Essar Steel acquisition year end

ArcelorMittal expects to finalize its acquisition of India-based Essar Steel India Ltd. by the end of the year after its plan for the bankrupt company was approved by India's Supreme Court, the final clearance for the deal.

ArcelorMittal said it will jointly own and operate Essar Steel in partnership with Nippon Steel Corp., Japan's largest steel producer and the third largest steel producer in the world, in line with the joint venture formation agreement signed by the two companies.



While ArcelorMittal will have 60% of the share capital of the company and Nippon Steel 40%, both will have equal representation and voting rights on the board of directors. The deal finally gives ArcelorMittal a foothold in the large Indian economy where demand for steel is projected to boom.

According to worldsteel, Indian finished steel demand will grow 5% this year to 101.6 million mt and by 7% to 108.7 million mt in 2020. The forecast for 2019 would make India the world's second-largest steel user behind China, overtaking the US.

Essar Steel is a fully integrated flat carbon steel manufacturer with installed capacity of 10 million mt/year. Its manufacturing facility comprises ore beneficiation, pellet making, iron making, steel making, and downstream facilities including cold rolling mill, galvanizing, pre-coated facility, steel processing facility, extra wide plate mill and a pipe mill, as on their website. Essar Steel is one of the

main worldwide producers of steel coils products used in the auto, construction and appliances sectors.

In its last earnings note, ArcelorMittal said it aimed to increase Essar Steel shipments to 8.5 million mt in the medium term, with a long-term target of 12 million-15 million mt "through additional brownfield capacity expansion."



Joint Venture to be called ArcelorMittal Nippon Steel India Limited with Aditya Mittal as its chairman.

Commenting on the closure of the ₹42,000 crore deal, Lakshmi Mittal, Chairman and CEO of ArcelorMittal, said: "The acquisition of Essar Steel is an important strategic step for ArcelorMittal. India has long been identified as an attractive market for our company and we have been looking at suitable opportunities to build a meaningful production presence in the country for over a decade. Both India and Essar's appeal are enduring. Essar has sizeable, profitable, well-located operations and the long-term growth potential for the Indian economy and therefore Indian steel demand are well known."





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Essar Steel India put itself up for sale in February 2018 after defaulting on a massive debt incurred from investments gone sour. ArcelorMittal and Nippon Steel agreed to pursue the joint purchase a month later.

But the deal was tied up in court by a competing offer from Essar's stakeholders. The National Company Law Tribunal ruled in favour of ArcelorMittal and Nippon Steel in March of this year.

The takeover was later put on hold by India's Supreme Court as it reviewed an appeal by a consortium of creditors, with the distribution of funds serving as the main point of contention. The court eventually green lighted the acquisition last month.

Source: nikkei.com, spglobal.com, The Economic Times, The Hindu

Nikon announces business alliance with DMG Mori



Nikon Corporation (Nikon) and DMG Mori Co., Ltd have concluded a memorandum of understanding for comprehensive business alliance. It will boost establishment of Nikon's material processing business by utilizing the knowledge of DMG Mori, a leading machine tool company.

The two companies will also cooperate to develop more advanced DMG Mori machine tools by applying Nikon's measurement and camera related technologies. In addition, effectively using the global sales network of DMG Mori, Nikon will conduct sales of its proprietary optical processing machines that perform various metal processing with high precision using laser.

This agreement will achieve synergy by effectively combining the mutual resources of the two companies; Nikon, a company that has the advantage of advanced technological capabilities centering on opto-electronics and precision technologies, and DMG Mori, a leading machine tool company.

In recent years, machine tool users have been increasing investments in high-accuracy machines, digitalization, and automation to realize high-mix/low-volume production at their factories. This trend is accompanied by a growing demand for non-contact measurement technology due to advancement in integration of mechanical machining and measurement. Under such circumstances, DMG MORI will be able to take advantage of Nikon's technologies to develop products that facilitate high-accuracy and digitalization.

Source: webwire.com

Heat Treating Society hosts Heat Treat 2019 conference and exposition

Heat Treat 2019, the biennial conference and expo organized by the ASM Heat Treating Society, took place from October 15-17 at the TCF Convention Center in Detroit. Co-located with Motion + Power Technology Expo 2019, the conference and expo attracted more than 2,000 attendees and featured an exciting mix of new technology, exhibits, technical programming and networking events geared toward the heat treating industry.

During Heat Treat 2019, Fluxtrol Inc. sponsored a competition-based award and recognition program for Post-Doctoral Researchers, Lecturers and Professors (Academic Researchers) seeking to encourage increased participation of Academic Institutions in ASM Heat Treating Society (HTS), and to provide attractive offers and opportunities in the worldwide Materials and Thermal Processing communities.

The winner of this year's award was Dr. Richard D. Sisson, Jr., FASM, Director of Manufacturing and Materials Engineering, George F. Fuller Professor Mechanical Engineering, Worcester Polytechnic Institute.

Fluxtrol also sponsored a young innovative scientists/professionals competition-based award and recognition program, seeking to encourage participation of young scientists in ASM HTS, and to provide attractive offers and opportunities in the worldwide Thermal Processing community. This was a two-step competition encompassing a



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poster competition, as well as an oral presentation competition for semi-finalists.

Source: prweb.com

Bharat Forge set for a derating as US truck woes persist

The stock of Bharat had gained over 8% in the past three months on hopes of a recovery in its exports to the US. However, amid the slowing demand overseas as well as in the domestic market, India's largest forging components supplier to automakers has guided for weak earnings in the second half of the current fiscal.

The company's negative outlook surprised analysts since they were building a case that a healthy order backlog for the heavy trucks segment in North America to support Bharat Forge's earnings for FY20, and the impact of a contraction in order inflows for new trucks to reflect only in FY21. But, the recent inventory correction by the US truck makers show that the pain will be visible during the current fiscal.

Bharat Forge has been facing headwinds in its forging component segment meant for the trucks in the domestic and international markets, which accounts for two-thirds of the total standalone revenue. Revenue of the trucks export division dropped by 18% in the September quarter as truck makers reduced their inventory on the expectation of recession in the US market next year.

Bharat Forge has guided for a lower production volume of the Class 8 truck — a gauge of the North American heavy truck market — at 345,000 units in 2019 compared with 325,000 in the previous year. For the next calendar year, the company expects 20% and around 8% decline in the US and European markets respectively.

Back home, the Indian truck industry has been facing a downturn with monthly volumes hitting the lowest in a decade. The company's revenue in the domestic division fell by 67% in the September quarter. It does not expect any major lift in volumes during the coming quarters owing to advance purchases ahead of new emission norms effective April 2020. The revenue from the

domestic truck segment is likely to decline by 35% for the current fiscal.

Source: economictimes.indiatimes.com

DMG Mori launches LASERTEC 125 3D hybrid additive manufacturing machine



DMG Mori, a leading machine tool manufacturer, has launched a new hybrid additive manufacturing system, named the LASERTEC 125 3D hybrid.

Presented at Formnext 2019, the LASERTEC 125 is a 5-axis laser deposition welding (LDW) system designed for the maintenance, repair and production of significantly larger parts, including workpieces up to $\varnothing 1,250 \times 745$ mm and 2,000 kg.

During the 2018 edition of IMTS, 3D Printing Industry spoke with DMG Mori President Dr. Masahiko Mori, who stated his belief that the 2020s will be the decade of Additive Manufacturing. With this in mind DMG Mori is, "spending thousands of millions of Euros on this type of technology," he said.



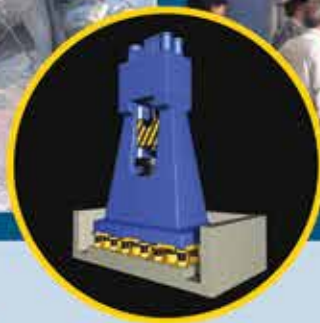
In November the same year the company then announced plans to expand its global presence in metal additive manufacturing by acquiring a 30% stake in INTECH, an India-based developer of 3D printing software. Additive manufacturing was also listed as a leading solution in the company's



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collaboration with Porsche, where DMG Mori acted as the exclusive partner of the Porsche FIA World Endurance Championship team.

The LASERTEC 125 3D hybrid also comes equipped with DMG Mori's AM Assistant software, which allows users to monitor the manufacturing processes including melt pool size, temperature, the clearance between nozzle and component and continuous thermal monitoring. Process parameters can also be observed and adjusted using the software. AM Assistant will additionally display stored 3D process data from the production process for evaluation purposes, and generate reports for quality assurance.

Source: 3dprintingindustry.com

About 45,000 forging sector employees may lose jobs

The forging industry is reeling under the impact of the prolonged slowdown in the automobile sector, with close to 45,000 permanent workers set to lose their jobs if the situation does not improve.

Already, 50 per cent of the forging industry's casual workers have lost their jobs in the last 3-4 months, according to S Muralishankar, President, Association of Indian Forging Industry (AIFI).



If the downturn in the automobile sector continues for another six months, there is also a very high chance that close to 10 per cent of forging companies – around 20-30 companies – may shut down, Muralishankar told BusinessLine.

Seventy per cent of the forging industry's production caters to the automobile sector. AIFI is the apex body of the forging industry in the country and there are close to 200 companies under the AIFI.

On an average, production in the forging industry is down by 20-30 per cent during the June-

November period this year compared with the corresponding period the previous year due to the slowdown in the auto sector, with the impact going up to as much as 50 per cent for those forging companies catering primarily to commercial vehicles, said Muralishankar. The piling up of inventory at dealerships, which the slowdown has triggered, has impacted the production of the forging industry.

Automobile manufacturers reporting a surge of 5-7 per cent in retail sales during this festival season also failed to translate into a positive for the forging industry, said Muralishankar. This is because the automobile manufacturers were liquidating their existing inventory by giving discounts, and the 5-7 per cent increase in sales that they posted came from this inventory and not because they produced 5-7 per cent more units, he explained.

Muralishankar said that unless the government takes measures like GST reduction and the introduction of a scrapping policy, this situation beleaguering the forging industry will continue.

Source: Business Line

Steel and aluminium used as mixed materials in auto industry

It wasn't long ago that auto industry watchers were casting votes for either steel or aluminium in what was to be a big competition in what metals would be used in automotive light weighting.



Would it be the heavy-weight champion steel which was ramping up its development of high-strength, lower-weight steels? Or would the new contender on the block, aluminium, gather more adherents to light weighting in the wake of Ford

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Motor Company choosing aluminium for its F-150 and Super Duty pickup bodies?



"You have to take into account all sorts of factors," said Jay Baron, retired president of the Center for Automotive Research (CAR), Ann Arbor, Michigan. Vibration and stiffness figure into the equation, he said. And there's cost. "It's much more than weight and strength."

Designing and building vehicles with a patchwork quilt approach to materials is how some brands are tackling the light weighting challenge. Most are also exploring advanced technological processes such as a combination of 3D printing and artificial intelligence, friction welding technology, and rethinking other automotive systems, e.g., braking.

Source: heattreattoday.com, SME Media

LMW to make machinery for Japan's DMG Mori

Textile machinery and machine tools manufacturer Lakshmi Machine Works (LMW) has started making vertical machining centre (CMX 600 Vi VMC) for DMG Mori for the Indian market. The machine tool division of LMW will produce about 10 units a month for DMG Mori initially. "The production volume will increase in stages," according to a statement from DMG Mori.



Masahiko Mori, President of DMG Mori, (right) and Sanjay Jayavarthanavelu, Chairman and Managing Director of Lakshmi Machine Works (left) at the production launch of CMX 600 vi VMC in Coimbatore on October 29, 2019

The production is outsourced to LMW in India, "which makes possible a shorter lead time until

delivery than domestic production in Japan," the statement added. India is a market with potential for DMG Mori, Masahiko Mori, its president, informed the media. The company has 14 factories in seven countries with a capacity to produce 12,000 machines a year.

Sanjay Jayavarthanavelu, CMD, LMW, said the entire machinery will be assembled here and supplied. While the critical parts will be imported, LMW will do value addition. The existing facilities have been upgraded in some areas.

In a communication to the stock exchanges, LMW has informed that the activity does not involve any additional capital expenditure for the company.

The machine tool division of LMW makes turning centres, machining centres and turn mill centres currently for domestic and export markets. It makes 3,200 machines a year and a 57,000 square-foot second facility of the division is getting ready, according to sources.

Source: The Hindu

Magnetic shield manufacturer commissions first vacuum furnace



A company that manufactures custom magnetic shields, precision sheet metal fabrication, and Hydroforming recently commissioned its first-ever vacuum furnace to accommodate expansions to better serve the magnetic shielding industry by providing material designed to protect sensitive electronics from magnetic fields.

MuShield Company of Londonderry, New Hampshire, commissioned Solar Manufacturing to design the furnace, built with a SolarVac® Polaris control system, fully compliant to AMS2750E pyrometric specification, operating at a vacuum



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“MuShield was already aware of our excellent reputation in the industry, and they were impressed with our facility when they visited earlier this year,” said Jason Davidson, Solar Manufacturing’s northeast regional sales manager. “They were also impressed with results of testing performed for them by Solar Atmospheres, so we’re pleased they have placed confidence in Solar Manufacturing to provide their first vacuum furnace.”



Jason Davidson, Solar Manufacturing’s northeast regional sales manager

The new vacuum furnace will also allow MuShield to perform stress relief annealing cycles on hydroformed parts made from non-shielding alloys, which is a manufacturing requirement on most materials that the company hydroforms.

Source: heattreattoday.com

Mahindra Electric records historic sales

Mahindra and Mahindra’s (M&M) electric arm, Mahindra Electric has reported the historic retail sales of 2,000 units (eVerito, eAlpha and Electric Treo cumulatively) in October 2019. It is the highest electric vehicle sales in a month till now, Pawan Goenka, Managing Director, M&M tweeted.

Treo has been major contributor of sales, as per the company. Mahesh Babu, CEO of Mahindra Electric, has recently told ET “affordability, convenience to the user and more earning potential to the driver were the reasons for the segment to boom. The unorganised segment was dominated by lead-acid

based e-rickshaws till the e-rickshaw regulation was notified in 2018.”

The company has reported sales when India’s electric vehicle sales are facing challenges of affordability and charging. According to Bloomberg, the segment isn’t making meaningful strides after the government started promoting cleaner vehicles four years ago.



Meanwhile, Geonka congratulated his dealers for highest ever monthly retail volume for Mahindra last month. To this, Anand Mahindra, Chairman, Mahindra Group also emphasised the need of industry to report retail sales for better industry estimates.

Source: ET Auto

Sanghvi Forging & Engineering reports standalone net profit of Rs 2.53 crore

Net profit of Sanghvi Forging & Engineering has been reported to be Rs 2.53 crore in the quarter ended September 2019 as against net loss of Rs 3.44 crore during the previous quarter ended September 2018. Sales rose 85.96% to Rs 18.67 crore in the quarter ended September 2019 as against Rs 10.04 crore during the previous quarter ended September 2018.

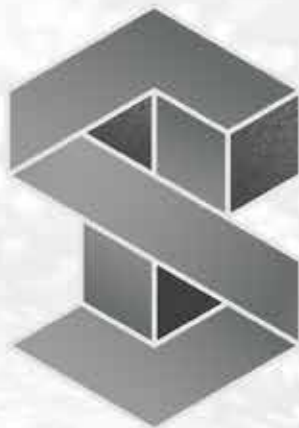
Source: Business Standard, Capital Market-Live News

TAFE Chairman Mallika Srinivasan enters Global Board of US-India Business Council

Mallika Srinivasan, Chairman - Tractors and Farm Equipment Limited (TAFE), has been appointed to the Global Board of the U.S. Chamber of Commerce’s U.S.-India Business Council (USIBC). This appointment takes immediate effect as she joins a prestigious list of CEOs and executives on USIBC’s 35-member board.

On her induction to the board of USIBC, Mallika Srinivasan said: “USIBC has been the premier voice of the industry, forging strong connections between businesses and Governments in India

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and USA. Fostering strong and inclusive growth in trade and investment relations between both the countries, USIBC has been a key catalyst of positive bilateral engagement and transformative reforms.

With TAFE's demonstrated belief in the benefits of a stronger economic cooperation between American and Indian corporates and our focus on mechanization and agricultural development, I look forward to the opportunity of engaging effectively in USIBC's initiatives towards a continuously strengthening eco-system that promotes stronger economic partnership between India and the US."

Mallika Srinivasan, is additionally on the boards of the AGCO Corporation - USA, TATA Steel Limited and TATA Global Beverages Limited. She is a member of the Executive Board of the Indian School of Business, Hyderabad, the Governing Boards of the Indian Institute of Technology, Chennai, and

Formed in 1975 at the request of the U.S. and Indian governments, the U.S.-India Business Council (USIBC) represents top global companies operating across the United States and India. USIBC serves as the premier voice of industry, creating connections between businesses and governments in both countries. The Council works with members to identify, advance and advocate key policy priorities. Through its work, USIBC supports strong and inclusive growth in trade and investment relations between India and the United States.

Source: Equity Bulls, equitybulls.com

Birmingham Innovation Hub boosts global clean energy prospects

British and German experts from industry and academia will create a new 'Innovation Hub' based in Birmingham to deliver new approaches to energy and waste management that will benefit cities and communities in China and around the world.

Energy experts from the University of Birmingham and Fraunhofer UMSICHT have renewed their Joint Research Platform set up in 2016 with plans

to locate collaborative research in a new centre at the city's Tyseley Energy Park.

Set to open in 2021, the Hub will link to the creation of a technology transfer centre in China in partnership with Jiangsu Industrial Technology Research Institute (JITRI), in Nanjing, and funded through Research England's International Investment Initiative (I3) programme.

Birmingham Energy Institute (BEI) and Fraunhofer UMSICHT established the Joint Research Platform to combine academic expertise with industrial capability - addressing the practical challenges around energy and waste to get innovative solutions into action.

The partnership between BEI and Fraunhofer UMSICHT has been cemented through a series of new research programmes and development of a Thermo-Catalytic Reformer plant at Tyseley Energy Park. Thermo-Catalytic Reforming (TCR®) technology has been developed by Professor Andreas Hornung, Chair in Bioenergy at the University of Birmingham and Director of the Institute Branch, Sulzbach-Rosenberg, Fraunhofer UMSICHT.

BEI, Fraunhofer UMSICHT and JITRI recently announced their partnership in China to find global solutions for delivering recycling solutions and low-carbon clean energy and reducing the environmental impact of waste.

A five-year bridge connecting the sister cities of Birmingham and Nanjing with energy and raw materials experts in Germany will see researchers develop new technologies such as energy storage solutions – allowing renewable power to be available 'on tap' – as well as energy sources and biofuels created from waste.

Solar-powered EV with no need of charging

California's Aptera Motors has released details of what they are calling the first prototype automobile that will never require charging. Aptera's



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"Never Charge" system uses solar panels integrated into the car's body that supply a claimed 40 miles of driving per day and up to 11,000 miles per year with no impact on performance.



"The average driver in the US drives 29 miles per day, so now for most American consumers, the Aptera is a vehicle you never have to plug in to the wall to receive any charge," says Chris Anthony, Aptera's co-CEO. "If you put our same solar package on a Prius, you could get maybe six or eight miles of charge range a day, which some people might find compelling, if you have a really short commute. For most people, it wouldn't be worth the expense of the solar. But when you only burn 100 watt-hours per mile, like the Aptera does, the same solar package can get you 40+ miles a day of range."

Those 40 miles of essentially free range are collected by over three square meters of solar

panels, designed to be easily upgradable and replaceable over the car's life. That complements the version capable of 1,000 miles from a single charge obtained via a 110-volt outlet, commonly found in every American household. "Our vehicle is unique in that most electric cars you can never really charge off a 110-volt outlet," says Anthony. "It's not enough power to charge a Tesla or Chevy Bolt. But with our vehicle, the same outlet that you use to charge your cell phone can charge 130 miles of range per hour."



The three-wheel Aptera uses individual wheel-mounted electric motors to propel a chassis with only 10 key structural components, with the base model a claimed 1,800 pounds.

Source: <https://robbreport.com>

V. Anbu is UFI's Incoming President for 2021

UFI, the global association of the exhibition industry held the 86th UFI Congress from 6th to 9th November 2019 at Bangkok, Thailand. UFI members from more than 50 countries with over 550 registered participants attended this year's event which was the largest in UFI's history, matching the record number of attendees drawn at the Shanghai (China) Congress in 2016.



V. Anbu along with Craig Newman and Mary Larkin

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Chaired by UFI's 2019 President, Craig Newman, the General Assembly highlighted an array of new initiatives supporting UFI's global membership in around 90 countries.

Bangalore International Exhibition Centre (BIEC) has been the dinner sponsor for UFI Congress over the last 10 years. The 86th UFI Congress featured 21 delegates from India including exhibition organizing venues and service providing companies from the Indian exhibition industry.



At this UFI Congress, V. Anbu, Director General & CEO of Indian Machine Tool Manufacturers' Association (IMTMA) and BIEC took over as the Incoming President of UFI for 2020 - 2021. Earlier

this year the UFI board of directors had elected V. Anbu as its President for 2020-2021. The decision was taken at the board meeting, which marked the start of the annual UFI European Conference in Birmingham (UK).

V. Anbu with the Indian delegation at the 86th UFI Congress in Bangkok

V. Anbu has been active in UFI for many years, supporting its mission and driving developments. He has been serving on the UFI Board of Directors since 2011 and was further appointed to the UFI Executive Committee in 2017. Anbu is also the first UFI president from India in the history of the association.

Expressing delight in his new role V. Anbu said, "It is indeed a privilege to be associated with the apex international body for exhibitions in such an important role. I am thankful to UFI for reposing their faith and trust in me and I am confident of discharging my duties at the highest levels. I believe that BIEC and the Indian exhibition industry will now get wider recognition and this will also enhance their positioning in the global map."

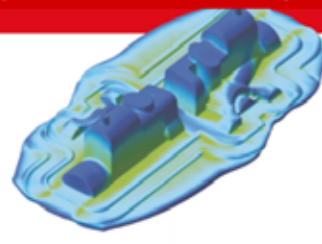
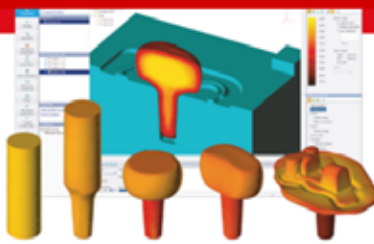
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Technology And Innovations

Importance of Automation in Current Forging Industry



By Mr. Amit Kalariya

Managing Director, Super Auto Industries, Rajkot

The art of forging dates back to at least 4000 BC and even earlier. These methods began in the land of Mesopotamia. With time numerous different varieties of forging processes evolved to suit the needs of mankind. One should select the kind of forging process based on the design of the part which is to be produced. It will help in not only simplifying the process but also getting the most output from the process which is followed.

Glimpse into Automation for Forging Facility

We are observing automation over a number of manufacturing facilities. When we automate the process, it will not only improve the output product quantity but also the quality of the same. Large numbers of parameters are computerized when considering the automation which reduces the human intervention. This will also likely reduce the human errors which are commonly encountered over a number of manufacturing facilities.

There are a number of tasks that were handled manually are now getting automated. This would include moving heavy steel rods, pipes, and other stock. By doing this, one will not only save time but also improve upon the safety of their workers. Large numbers of manual tasks are now getting replaced with integrated servo's which can insert, lift or even deposit materials. With safety, this will

also benefit from improving the productivity of the manufacturing facility.

A number of equipment is also in place where the robotic arm can perform the operation with the desired accuracy. By doing this, it also benefited the industry by means of making the operator capable enough to run not only one press but two simultaneously. It is evident that one will suffer from downtime while changing over a forging die and trimming die or punch.

Reduction of downtime and inspection period

This downtime is measured from the last good forging part completed till the first acceptable forging of the second run. Numbers of solutions are now getting formulated with a simple tool changing system. Now customers are even expecting to move for a certain amount of automation. With that, they will have the right selection of downtime based on their likely budget and need to meet standards.

Automation is not only limited to material handling and operating the machines, a number of equipment are also available to check over the quality of the equipment. It is likely difficult to check all the components which are manufactured when component size is too small and the quantity is high. For that, dimensional and profile scanners are also getting popular to cope up with the rapid checking of the products. This will help in getting all the parts inspected effectively with an automated process in place.

Some of the popular technologies in place include Laser Scanning, White Light Scanning, Photogrammetry, CMM. This equipment will not only help in controlling on the profile and dimensions but also the size and form factor requirements.

Discussion

Thus, we can say that there has been a substantial amount of development in the forging industry. It is helping the people involved with forging to automate their processes. Automation is the key tool to bring out desired productivity and quality from the current manufacturing facility. This will



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be helpful in maximizing the overall profit of the industry.

DMG Mori introduces larger hybrid 5-axis machining centre

Machine tool manufacturer DMG Mori has introduced a new 5-axis machining centre with integrated additive manufacturing capabilities.

The LASERTEC 125 3D hybrid system, which incorporates machining with laser deposition welding, builds on the smaller LASERTEC 65 3D hybrid launched back in 2013, to support the manufacture, maintenance and repair of workpieces up to 1,250 mm (diameter) x 745 mm (height) and weighing up to 2,000 kg.

The machine is said to offer rapid build rates and reduced processing times due to an automatic changeover between laser deposition welding and simultaneous 5-axis milling in a single set-up. The need to heat treat parts has also been eliminated by the machine's ability to deposit material with a hardness of up to 63 HRC.

A key feature is the ability to quickly change between two welding materials under CNC. This can be particularly useful for delivering parts with different properties in particular areas or controlling a part's cooling characteristics to dissipate heat more effectively.



Application areas include the manufacture of parts with complex geometries such as closed impellers, or in the repair of hot and cold forming and forging dies. DMG Mori says the service life of repaired inserts for a die casting mould, for example, is three times longer than if it had been repaired by manual welding.

The machine is supported by CAM software for powder nozzle technology, developed by Siemens NX, to enable end-to-end programming of repairs and seamless changes between machining and laser deposition welding. An AM Assistant tool with thermal imaging camera is also included to provide continuous monitoring of the build, while threshold values for parameters such as powder volume, working distance or inert gas volume can be stored using the input window AM Guard. Finally, AM Evaluator software offers downstream evaluation of 3D process data on melt pool, powder flow and laser power, which can be displayed graphically for analysis.

Source: tctmagazine.com

Schuler captures Indian market with Yadon

Schuler's affiliate Yadon is a success story also in India: In the last two years, more than 80 presses from the Chinese manufacturer have been sold in the country. About half of them with a press force ranging from 60 to 1,000 metric tons have already been installed at various metal forming companies. The complete product portfolio will be on exhibit at IMTEX Forming 2020 in Bangalore from January 23 to 28 (stand G82, hall 27).



"Our customers are convinced not only by the attractive price-performance ratio of Yadon's presses, but also by Schuler's closely-knit service network", says Managing Director Nitin Kulkarni. "This means that our employees are always close to our customers and can provide quick assistance for high plant productivity."

Yadon has also signed the largest contract with a foreign country in India: An Indian company



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bought presses with a total value of almost five million euros. „Thanks to the support of Schuler India and the Yadon sales managers, who are Indian nationals, we were able to get this order with an very important and well known tier-1 supplier to the Indian automotive industry“, adds Yadon Vice General Manager Liang Cheng.



Schuler acquired a majority shareholding in Yadon four years ago. At its three facilities in China, the manufacturer produces C-frame, blanking and tie rod presses, among others, for the medium and lower price segments. The portfolio also includes high speed and hot forging presses. Yadon's biggest machine, a 2.500 ton transfer press, is based on Schuler technology.

Source: www.schulergroup.com

Robotic arm can lend a helping hand with repairs



By: Courtney Linder

Two researchers at the University of Bristol have gotten society a step closer a robo-reality, though the experiment is still in its early stages. It's a handheld robotic arm that just may be the answer to some pretty tough maintenance, guidance, and diagnosis-based tasks that involve remote instruction.

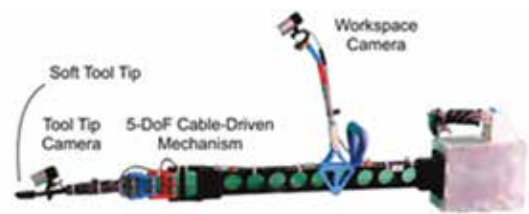
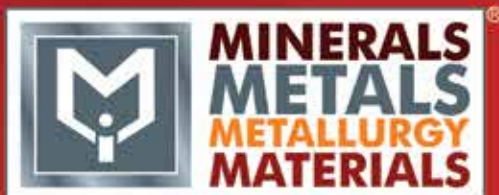


Fig. 2: Handheld Robot with remote-controlled 5-DoF tooltip and equipped cameras and a tooltip for sensor simulation.

To understand how this robot works, it's vital to understand the problem that Janis Stolzenwald and Walterio W. Mayol-Cuevas, the authors of the study, were looking to solve. In situations where collaborative remote assistance is used, the local worker (the one learning or the one who is less experienced) must fully understand directives from another remote worker who has the expertise. To train young doctors in invasive surgery, for instance, a more experienced physician may train the novice remotely, while describing how to manipulate a tool.

Remote assistance will be particularly useful in industrial applications, like in modern, complex plants, the authors say. It takes a high level



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of expertise to diagnose or solve an issue or it may be expensive to get an expert on-the-ground to fix a problem, like a machine in the manufacturing process going offline or a blockage in a pipeline. While augmented reality systems and telemanipulation processes are already in use, these methods are lacking, the researchers said. That's mainly because problem-solving is difficult between the remote and local workers, despite the robustness of current methods of communication.

Source: popularmechanics.com

Transverse shaft drive system with ServoDirect technology



Schuler has developed a forging press with Hirschvogel, a completely new drive concept, which ensures quieter operation due to lower vibrations: Automotive supplier Hirschvogel draws this conclusion around one year after the start of production on a servo press in a compact design which was newly developed in collaboration with Schuler. In comparison with the previous installed presses at Hirschvogel, this faster working press is the first one with transverse instead of longitudinal shaft drive. Two counter-rotating eccentric gears in the head of the press balance the mass forces which improve quietness and precision.

The ServoDirect technology of the new press type allows individual adaptation to the respective forming process and can therefore guarantee optimal output. At the same time, the power management system saves energy at each stroke, as it is only supplied when it is needed. The table ejectors of the system also have an independent servo motor and are no longer mechanically coupled to the main drive, as in previous presses. This increases the flexibility for the parts transport with the highly dynamic two-bar transfer and additionally accelerates the production process.

Source: schulergroup.com

Siemens accelerates electromagnetics simulation processes

Siemens Digital Industries Software has announced the latest version of Simcenter™ 3D software, with major enhancements for low- and high-frequency electromagnetic solutions to help accelerate electromagnetics simulation processes. The latest version advances simulation capabilities with increased multidisciplinary integration capabilities, faster CAE process, increased openness and scalability, and enhanced capabilities to integrate with the digital thread.

As more electronics are included in products, it is extremely important for engineers to understand how electromagnetic performance can potentially affect and interfere with product performance. Electrical motors, sensors and antennas are all examples of common products or components where electromagnetic simulation plays a big part in the development process.

The latest release of Simcenter 3D introduces a new physics discipline for low- and high-frequency electromagnetics simulation to the Simcenter 3D environment. By including electromagnetic simulation into Simcenter 3D, engineers can take advantage of the integrated environment to perform electromagnetic simulation faster than with traditional simulation tools and streamline multiphysics workflows between electromagnetic and other physical simulations.

Source: cncetimes.com

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Exhibitions and Conferences

IMTEX Forming 2020 & Tooltech 2020

Asia's leading exhibition on metal forming and manufacturing technologies is being organized by Indian Machine Tool Manufacturers' Association (IMTMA) at Bangalore International Exhibition Centre (BIEC), Bengaluru, from 23rd to 28th January 2020. This will be the largest IMTEX Forming exhibition held so far. A few glimpses of this event held in 2018 are here.



The 6th edition of the exhibition will span over 33,000 square metres with more than 500 exhibitors from over 22 countries including India. It will once again bring diverse groups and stakeholders on a common platform for knowledge sharing and transacting business. Technologies in metal forming such as high speed laser cutting machine, sheet metal working, welding and joining, presses, metrology, and CAD/CAM essential for Indian manufacturing will be exhibited 'live' enabling business visitors to take informed decisions.



Expressing his thoughts on the upcoming show, Indradev Babu, who took over as IMTMA President from September 2019 onwards said, "Technology

enthusiasts will have a lot to unearth especially in additive manufacturing which is being showcased at IMTEX Forming besides Industry 4.0 which is highly relevant for the manufacturing industry."

Sharing his views on IMTEX FORMING, V. Anbu, Director General & CEO, IMTMA, said, "It is incredibly inspiring to see the growth of a brand. IMTEX Forming 2020, now counted as Asia's leading exhibition, is highly relevant given the prevailing tough market conditions."

The highlights of the show include:

- 500+ exhibitors
- Exhibitors from 22+ countries
- 500+ live demos
- Focus on additive manufacturing and Industry 4.0
- Over 33,000 square metres of exhibition space
- International Seminar on Forming Technology
- i2 Academia Pavilion (an event for academia and industry to interact and explore possibilities for tie-ups)
- Connect (an awareness programme on machine tool industry)
- Reverse International Buyer-Seller Meet (an interaction platform for machine tool manufacturers and international buyers)
- 40,000 + business visitor footfall expected

Coinciding with IMTEX Forming 2020 & Tooltech 2020, IMTMA will also organize an International Seminar on Forming Technology (for discussing the trends in metal forming) on 22nd January 2020.

New Records set at 2019 iMT

With record-breaking numbers of visitors, the fifth International Metal Technology Taiwan (iMT Taiwan) concluded with resounding success on November 10 at the Taichung International Exhibition Center. This year marks the second year that the event was held in Taichung, known as the city of metal and machinery in Taiwan. As a platform connecting metal businesses in Taiwan, the event



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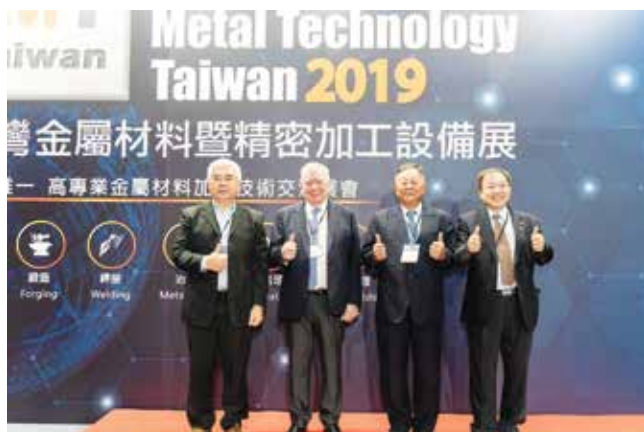
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From metal materials, foundry, forging, to welding, metallurgy and heat treatment, iMT Taiwan is the only trade show that covers a host of sectors in machining processes and precision machining equipment, exhibiting Taiwan's metal industry value chain to its fullest. Since its inception, iMT Taiwan, which is held annually, has become one of the most popular trade shows on metal technology in the Asia-Pacific region.



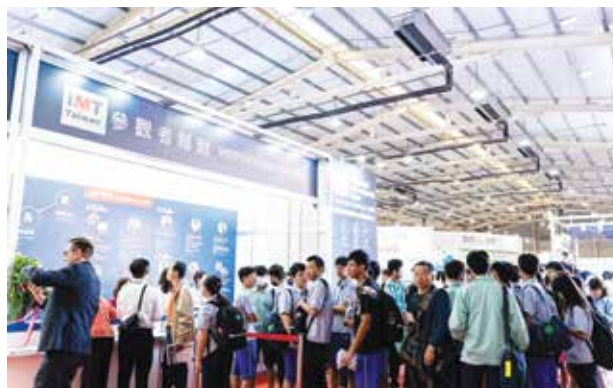
The event this year hosted 142 exhibitors from 13 countries, and a total of 5,982 specialist visitors. Most of professional buyers come from advanced



industrial countries such as Germany, Japan, the UK and the US, as well as emerging markets worldwide. In fact, a delegation of 25 purchase representatives from India, in addition to placing an order right at the event venue, made a direct visit to the exhibitor's factory to finalize details on delivery, an example that demonstrates the event's goal as a one-stop sourcing platform.



Furthermore, this year the event had invited official media partners namely Thomas Schneidewind, Managing Editor of Heat Processing, Srikar Shenoy,



Senior Consultant of India's Forgings Today, as well as Daniel Chirtes, Key Account Management from HAPTIC R&D Consulting, Romania, whose insights and in-depth coverage of the event are expected to help improve iMT Taiwan's global visibility, promote "Made in Taiwan" products to the world and expand their global business footprint.



Joined by leading suppliers from home and abroad and experts from the industry and academia, the Metal Industry Forum this year features innovative thinking in metal technology, covering a variety of topics such as green casting, Industry 4.0 and robotics and discrete automation business. A few highlights from the forum include a presentation from Da Shiang Automation Industrial Corporation, titled Application of Foundry & Processing's Smart Automation, a sharing session from ABB on the application of industrial robots in metal manufacturing and processing in Europe, as well as an introduction from Japan's Ishikawa Lite Industry on their approach to reducing dust in the industrial facility via auto-manufacturing processes.



In response to the needs of the industry, the sixth iMT Taiwan will be held at an earlier time next year from June 12 to 15 in 2020 at the Taichung

International Exhibition Center. The trade show will cover 13 sectors in the industry, including metal materials science and engineering, heat treatment, metallurgy, foundry, forging, metal moulding technology, finishing, welding and cutting, casting, pipe making machine and equipment, wire machinery and equipment, whole plant equipment, as well as miscellaneous spare parts. Next year's event will continue to set new records with a high-quality program and reach wider global business audience.

Symposium on Smart Automation by IMTMA

Indian Machine Tool Manufacturers' Association (IMTMA) organized "Symposium on Smart Automation 2019" on 21st November 2019 at Bangalore International Exhibition Centre (BIEC), Bengaluru.

The Symposium featured presentations and discussions on various facets of automation with case studies and panel discussions. Over 300 delegates from around 125 companies participated in the Symposium.



Symposium on Smart Automation 2019 was inaugurated by Mr. Easwaran Subramanian, Partner, Deloitte Touche Tohmatsu India LLP. In his keynote address on "Smart Automation in the Indian Context", Mr. Subramanian called upon industries to capitalize on new technologies for targeting self-steering production systems. He said industries should think big, start small, act fast for deploying smart automation solutions and for achieving rapid results. He said, "Smart factories enable companies to be more responsive to customer demands, achieve greater operational

efficiency, and speed up product innovation. Setting the vision for smart automation, he said that today's factories need to adopt smart automation to become factories of the future."



Highlighting the importance of automation, Mr. Indradev Babu, President, IMTMA said, "The path for realising the Vision of 'Make in India', calls for a paradigm shift in our manufacturing process. This necessitates the adoption of automation and

smart technologies not only in our respective manufacturing facility but also across the entire manufacturing value chain."

The sessions were divided into parallel tracks: Robotics & Automation, and Digitalisation, which ran concurrently, followed by a panel discussion on Overcoming Obstacles in the Journey to Smart Automation.

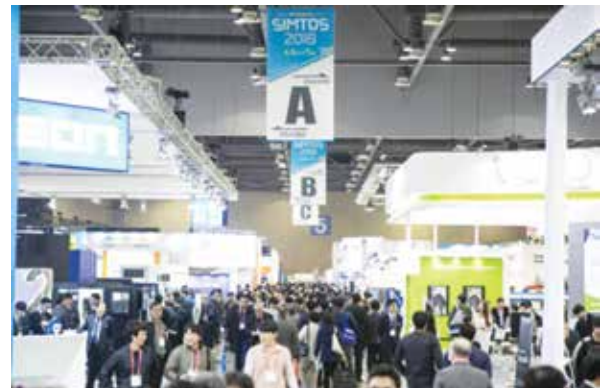
Thought-provoking presentations made by technocrats at the Symposium covered subjects such as workplace automation, smart automation in assembly and testing, using augmented reality for maintenance and operation, smart automation in tool and work holding, gantry and robot-based automation, digitisation of 3D measurement, smart sensors, automated information capture and analysis, machine transparency, collaborative robot, affordable smart automation including MSMEs, case studies and applications - sustainable high performance sorting system and fully automatic faucet grinding system.

IMTMA also organized technical tours for delegates to witness automation on the shopfloor of leading manufacturing companies, a day before the Symposium on 20th November 2019. Delegates

visited Sansera Engineering, SKF India, TVS Motor Company and Titan Engineering and Automation.

The largest manufacturing technology show in Korea-SIMTOS

SIMTOS 2020 (Seoul International Manufacturing Technology Show 2020), Korea's biggest manufacturing technology exhibition hosted by the Korea Machine Tool Manufacturers' Association(KOMMA), will be held at KINTEX in Korea from March 31 to April 4 in 2020 under the slogan of "Capture the Future: 4th Industrial Revolution."



About 1,300 companies from 35 countries will exhibit some 7,000 products. Visitors to SIMTOS 2020 can find emerging manufacturing technologies fitting the trends of smart manufacturing and digital processing, such as CAD/CAM, 3D printers, automation solutions and robotics, in addition to traditional manufacturing technologies centered on metal processing, such as cutting tools, parts, measuring instruments, laser and cutting machines. The photo shows SIMTOS 2018 provided by Business Wire are as follows:



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SIMTOS is a manufacturing technology exhibition to show paradigm shifts in manufacturing such as the development of smart manufacturing in the era of 4th Industrial Revolution. Launched in 1984, it has grown into the biggest manufacturing technology exhibition in Korea attracting more than 100,000 visitors.



All about manufacturing technology will be on display on the total area of 102,431 square meters of 10 halls in KINTEX 1 and 2. The exhibition space is divided into six major pavilions for metal cutting & die mould working; manufacturing automation, CAD/CAM, measuring systems & robotics; metal cutting-off, press & welding; cutting tools & related equipment; parts, materials & motion controls; 3D printing & related equipment.

During the exhibition, conferences on the future of manufacturing technology will take place for the exchange of information on the latest trends of smart manufacturing industry and business in the age of the 4th Industrial Revolution.



About 70 programs will progress as part of the International Manufacturing Innovation Conference. Foreigners can take the conference free. Also, all programs of the conference are

nominally held in Korea, but they are translated simultaneously into English.

SIMTOS 2020 will also hold “Matchmaking4U,” a business meeting program under the motto of “Open Korea” to help companies find new buyers at home and abroad and have business meetings with exhibitors. It will offer participants a chance to establish global networks needed to open up markets and make deals. It is noteworthy that the secretariat of SIMTOS plans to invite many Indian buyers in a bid to help exhibitors enter the Indian market.



SIMTOS 2020 is hosted by the Korea Machine Tool Manufacturers’ Association and supported by Ministry of Trade, Industry and Energy, Gyeonggi Provincial Government, Goyang City Government, the Korea Trade-Investment Promotion Agency, the Korea Chamber of Commerce and Industry, the Korea International Trade Association, and the Korea Federation of SMEs.

Source: simtos.org

International Seminar on Forming Technology

R&D, innovations, trends and best practices in manufacturing will be discussed at the ‘International Seminar of Forming Technology 2020’ (ISFT), to be organized by Indian Machine Tool Manufacturers’ Association (IMTMA) on 22nd January 2020 at Bangalore International Exhibition Centre (BIEC), Bengaluru, coinciding with IMTEX Forming 2020 & Tooltech 2020.

The theme of the seminar is “Shaping the Future of Manufacturing”.



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Over 300 delegates from various segments of the manufacturing industry such as automotive, aerospace, defense, railway establishments, consumer durables, general engineering, and so on, are expected to participate in the seminar to explore the rapid technology transitions in the forming industry.

Some moments of learning can be recapitulated from the snaps of similar earlier seminar given here.



Experts from Germany, Italy, Switzerland, the UK, India, and other countries will facilitate sessions at this International Seminar. Spread over 3 concurrent sessions and 6 technology tracks focusing on forming processes, cutting and bending processes, equipment, innovative solutions, software, and emerging trends in forming technology, this seminar will cover key technology areas and their application related to metal forming.



Speaking about the objective of the seminar, Mr. Indradev Babu, President, IMTMA said, "The international seminar has been structured and designed to bring emerging needs in forming technology to users and manufacturers through a range of value-added solutions in manufacturing."

Concurring with Mr. Babu's views, Mr. V. Anbu, Director General & CEO, IMTMA, opined, "ISFT 2020 will bring together the fraternity of forming technology users and manufacturers on a common platform to discuss related issues. By addressing the significant developments in forming technology and processes, the seminar will throw new light on the challenges and opportunities in store for the industry. Participants can explore more on how to tackle them and move on to excel in manufacturing."

Heat Treat Mexico 2020 moves to March

The ASM Heat Treating Society recently announced that Heat Treat Mexico 2020, scheduled for March 3-5, 2020, at the Fiesta Americana in Queretaro, Mexico, is crafted to provide a bridge for relevant new technology for thermal processing and how it is applied to the production environment in Mexico.



The conference is designed to attract maintenance supervisors, metallurgists, and production engineering staff and will focus on the following topics:

- Origin of CQI-9 Standard applied to automotive manufacturing
- Origin of NADCAP for the Aerospace industry
- Carburizing Furnace – Keeping the process going
- Vacuum Furnace / Autoclave
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Treat North America, showcases heat treating resources and technology for emerging markets in Mexico.

Source: asminternational.org



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