

# TAGMA TIMES

NEWSLETTER

(Technical Info. on Die, Moulds & Toolroom)

Volume: XXVIII / No. 4

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December 2021





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# VACUUMJET SYSTEM

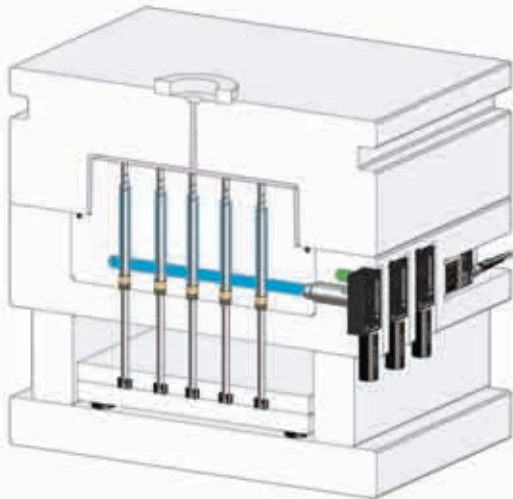
**DO YOU WANT TO IMPROVE THE QUALITY OF YOUR PLASTIC PART?**

**DO YOU WANT TO REDUCE YOUR CYCLE TIME ?**

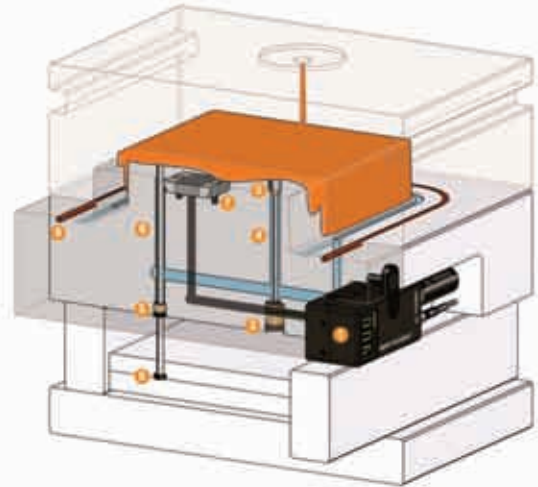
**Old problems...NEW SOLUTIONS!**

## Why we need to vacuum the cavity ?

Before injecting the plastic, there is air trapped inside the cavity. If we can remove this air, the plastic is free to fill the whole cavity and will not find any counter-pressure slowing down its flow.



Application example with Vacuum Control (VM) and 3 Vacuumjet+ (VG) units. The vacuum is produced through the ejectors and sleeves.

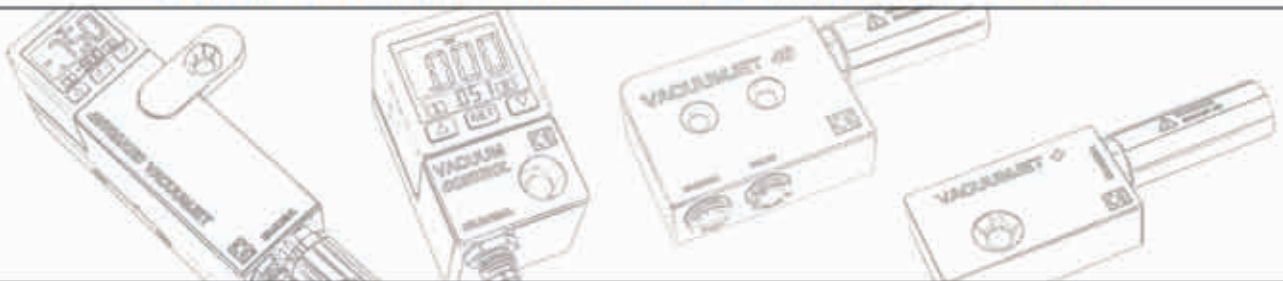


This unit is able to create the Vacuum (60L/min) and blow-off (6bar) through the same channel. 4 different Vacuum levels can be settled (=600 / =700 / =800 / =900mbar). Internal Electrovalve enable opening / closing of CUMSA Vacuum Valva. Allows automatic production.

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- Lower injection temperature and pressure
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# CONTENTS



## In Focus

The Virtual Network

22

## Machining Mantra

Future of Manufacturing - 5 Axis Machines

26

## Rewinding 2021

8 Major Events that Rocked the Indian Manufacturing Industry in 2021

40

## Case Study

PolyWorks® Cuts the Symmetry and Alignment Check Time on Bombardier's CRJ Series by 75%

48

## Techno Focus

New solutions for charging electric Volkswagen models

54

## Tool Talk



**Narendra Brahmkar,**  
IRCA registered QMS Principal Auditor Trainer

34

<b>Editorial</b> .....	06
<b>Tech Update</b> .....	08
<b>Industry Update</b> .....	12
<b>Ad Index</b> .....	58

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◀ **THRUHARD SUPREME HH** ▶

"When designers at BMW-Germany are working on the new design for the 7 series, they also know what is the best mold steel that will meet their high quality requirements-THRUHARD SUPREME HH"



Injection molding tool for the Bumper



Injection molded Bumper part



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**NEW! BV 34 PLUS SPOTTING PRESS**  
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## Moving forward!

In my Editorial in the January 2021 issue, I wrote about resilience and change. After the COVID-19 situation in 2020, we all needed a change.

The industry responded positively to change, especially on the professional front. Companies started opting for more digital solutions, such as social media, to enhance visibility; automated machines to increase efficiency; advanced software for better productivity, and diversification to reduce dependence on one sector.

The Government of India lent its support as well! To attract more foreign direct investments into the country and reduce our dependence on imports, it announced impressive packages and PLI schemes for industries including toy manufacturing, semiconductors, auto components, and textiles, among others. These initiatives aim at helping the Indian manufacturing SMEs and toolmakers.

The year 2021 was full of uncertainties. But, in spite of the uncertainties looming over us, we need to continue doing the good work that we started at the beginning of the year. Let us all remember this year as the year of resilience and change. Read our 'Rewinding 2021' section for a recap of the major happenings of the year.

As we reminisce about the glorious past year, let's not forget the importance of digital marketing to gain visibility and build our brand. The November edition of Tagma Times focused on how digital marketing can help you up your game. The December edition focuses on how to choose the right social media platform for your business. Read our 'In Focus' section to know more.

As I earlier mentioned, 2021 was a year of resilience and change. Let's pledge to ring in 2022 with much more hope and enthusiasm.

Stay safe! Stay healthy!

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**MOULD STUDIO LLP** is backed by technocrats having years of experience in the field of plastic molding, guided by Successful industrialist and innovative tool manufacturing ideas has made it successful in aligning to the demanding requirements of it's customers.

#### OBJECTIVE :

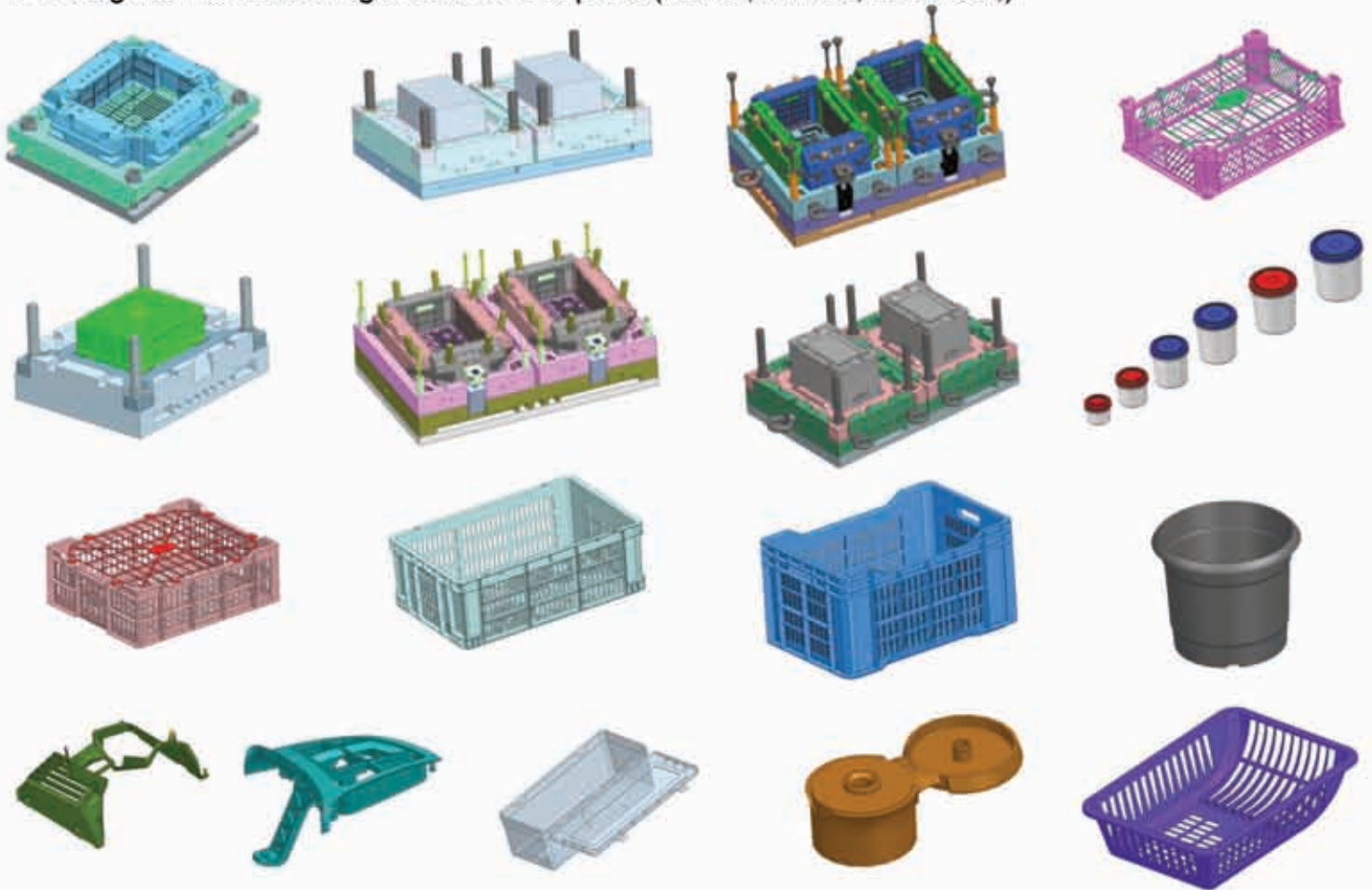
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- Design & manufacturing of automobile parts ( knob , handle, bezel etc,)



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## Have you considered the benefits of bar peeling?

**BAR** peeling is a specialist application, which requires relatively high feed rates and small depth of cut applied to round bars and thick-walled tubes.

Operations include the removal of surface layers of oxides, rolled contaminants and cracks caused by hot forging or rolling. This is mostly done in carbon steel, alloy steel for heat treating, tool steel, stainless steel, and heat-resistant alloys.

The advantages of peeling in comparison with turning are higher productivity, less inserts consumption, excellent roughness quality and high-dimensional accuracy.

Bar peeling inserts are generally mounted in two ways, either using a screw through the centre hole of the indexable insert or via a top clamp mechanism. Using a screw through the insert, distributes the forces in the axial and radial directions at the same time, leaving more room for chip evacuation.

Clamping from the top significantly reduces the time to flip the insert and is more user-friendly. This is because it only takes a few turns of the clamping screw to loosen it, allowing for faster indexing of the cutting edge.

Dormer Pramet provides a range of cutting tools, specifically for bar peeling applications. The inserts, within the Pramet brand, are designed



and manufactured to meet the most demanding machining processes.

The offer includes standard and special tools that ensure high efficiency, optimal surface quality and reliability in a range of peeling operations. Its state-of-the-art production methods for cemented carbide grades and MT-CVD and PVD coating layers, reduce edge wear and increase the tool life.

Bar peeling indexable inserts have different cutting-edge geometries to create chips with the required shape necessary for a smooth removal from the inside of the cutting head. This is one of the most important factors affecting the efficiency of the bar machining process. The wide variety of materials to be machined encourages tool manufacturers to continuously improve both tool geometries and carbide grades.

In a recent addition to the bar peeling inserts, Dormer Pramet now displays on the tool, not only the geometry of the insert (PM), but also the variant of support facet on flank surfaces (S01, S02 or S03) and of course the grade. This helps the customer to recognize the difference between inserts with the same size and geometry, but a different edge preparation.

Also, accurate holding cassettes have a significant impact on the machining process. There are many manufacturers of machine tools for bar peeling around the world. Most of these use different holders in their cutting heads, which are equipped with proprietary cassettes for the inserts.

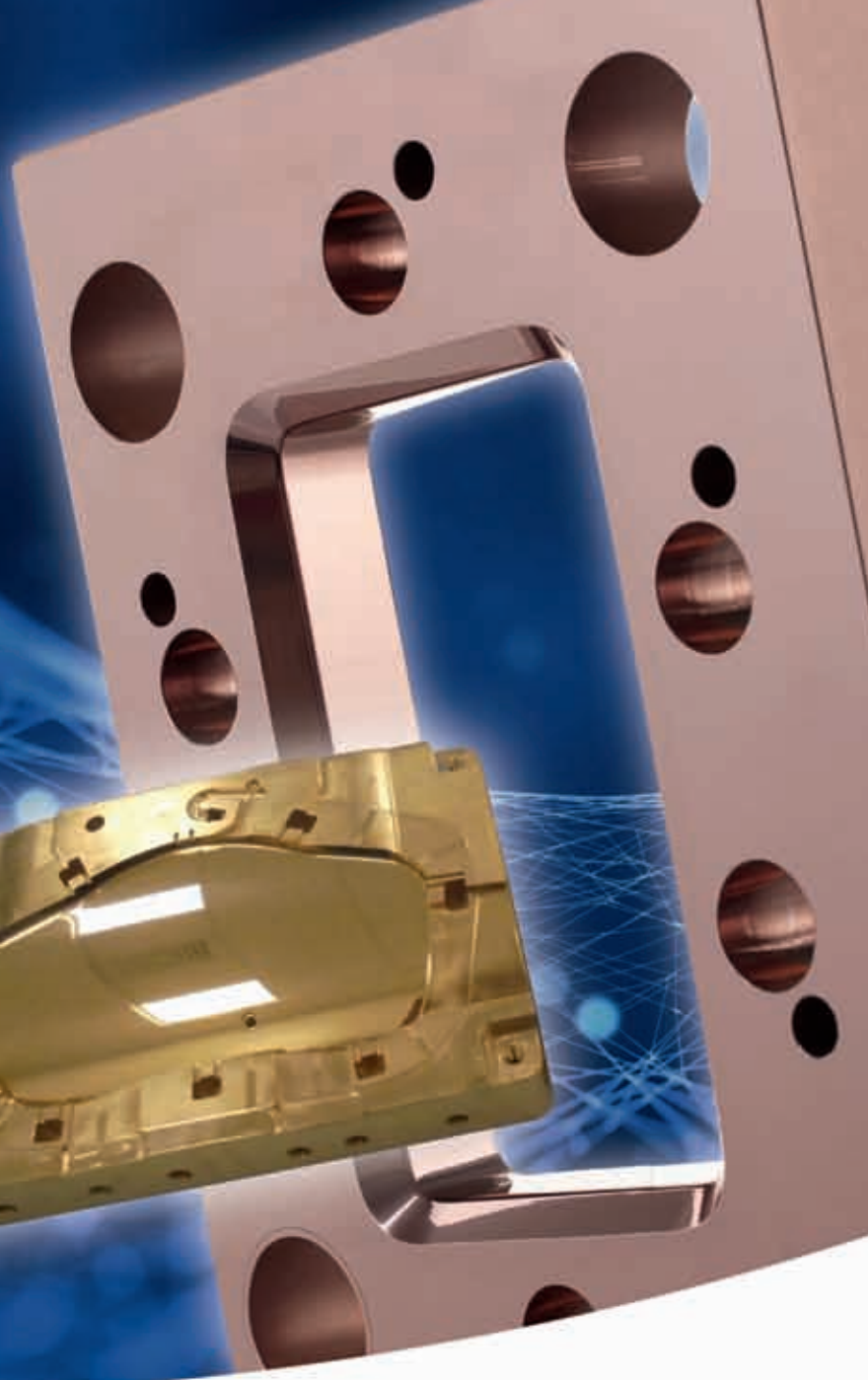
To showcase the wide range of tools for bar peeling, Dormer Pramet has produced a new catalog, which outlines the wide range of indexable inserts and cassettes that are used on machine tools of different manufacturers.

Within the publication is a technical section, which features detailed information about the geometry of cutting tools, materials, calculation of machining parameters, recommended initial cutting speeds and a trouble shooting guide to help respond to the most common problems during machining.



# PVD COATING SOLUTIONS

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<b>Advantages</b>	Protect from early Heat cracks, Erosion & Soldering	Protect from Abrasive & Adhesive Wear	Protect from Corrosion, Abrasive wear, Sticking, Easy Part Release & Reduced Maintenance activity

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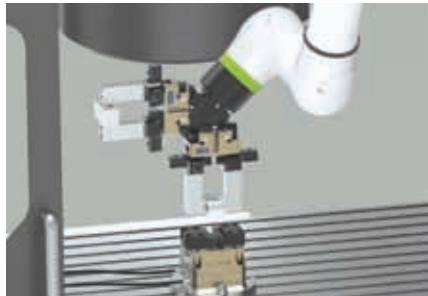
ONE STEP AHEAD.

## High-performance universal gripper

**WITH** the new optimized 2-finger parallel gripper JGP-P, SCHUNK is further expanding its series of universal grippers alongside the SCHUNK flagship PGN-plus-P. The successor of the JGP scores with a higher gripping force, flexibility in application, and a variety of monitoring options. Therefore, the gripping system specialist continues to raise the bar for the category of an optimized price-performance ratio for pneumatic grippers.

For all users, who have criteria such as flexible, strong, and cost-effective on their gripper wish list, a wish comes true with the new JGP-P 2-finger parallel gripper. It supports loading and unloading processes of machine tools, assembly work, and Pick & Place tasks. A whole range of new features makes this possible. This includes the robust T-slot guidance with a longer base jaw guidance: compared to its predecessor, 30 percent longer gripper fingers can be used. The base jaws are fully guided in the housing in any gripping state. This improves its performance and covers a wider range of different applications.

The JGP-P also has an up to 50 percent higher gripping force than



Suitable for many tasks: the SCHUNK JGP-P universal gripper can be relied on for cycle-time-optimized loading and unloading of machine tools, assembly work, and pick & place tasks.

its predecessor at the same gripper size. The increased surface area of the drive piston makes this possible, and the newcomer can easily handle a higher workpiece weight. Users can rely on smaller sizes, additionally save costs and the variety of gripper types reduces. This means that the return on investment is at least 10 percent higher. The change from the old JGP to the new JGP-P is possible at any time, because the grippers are fully compatible.

### Workpiece monitoring made easy

No less than ten matching sensor systems enable a wide range of monitoring options, such as monitoring the stroke position or workpiece

differentiation. Good or bad parts can be sorted quickly and reliably based on the dimensional deviations. From size 64, the JGP-P is also available with inductive sensors with a diameter of 8 mm.

Flexible mounting options on two sides allow the gripper to be mounted universally and flexibly in three screw-on directions. The supply of compressed air is possible both via screw connection and via the hose-free direct connection. An integrated sealing air connection also improves process stability. This is particularly important after machining workpieces, because the gripper inevitably comes into contact with chips and coolant during cleaning. The integrated sealing air connection prevents penetration into the gripper. Failures due to contamination are now a thing of the past.

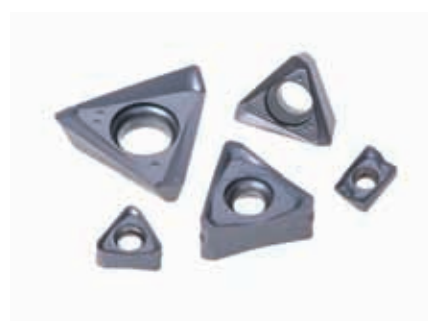
### Forever a benchmark

If you are planning more demanding gripping tasks, the PGN-plus-P gripper from SCHUNK is the ideal choice. With a high power density and a unique variety of options, it is considered to be a benchmark all over the world in the field of universal grippers.

## Tungaloy's AH3225 insert grade further enhances shoulder milling performances

**TUNGALOY'S** square shoulder milling cutter series has been expanded with AH3225 insert grade designed to provide an excellent balance of wear and fracture resistance for superior performance in steel machining.

AH3225 consists of the latest nano multi-layer coating technology with three major properties with excellent coating substrate adhesion for a high level of wear and fracture resistance. Integrating a dedicated carbide substrate with excellent thermal property provides the grade with



increased thermal shock resistance and hardness, reducing thermal crack generation on the cutting edge. This prevents unpredictable insert failure,

significantly extending tool life and reliability for steel machining.

A total of 28 new inserts have been added in this expansion to three lines of Tungaloy's finest square shoulder milling cutters: Tung-Tri boasts smooth cutting and exceptionally tool stability, TungForce-Rec features unique V bottom inserts for maximum productivity, and DoForce-Tri with its double-sided inserts with six cutting edges provides best production economy.



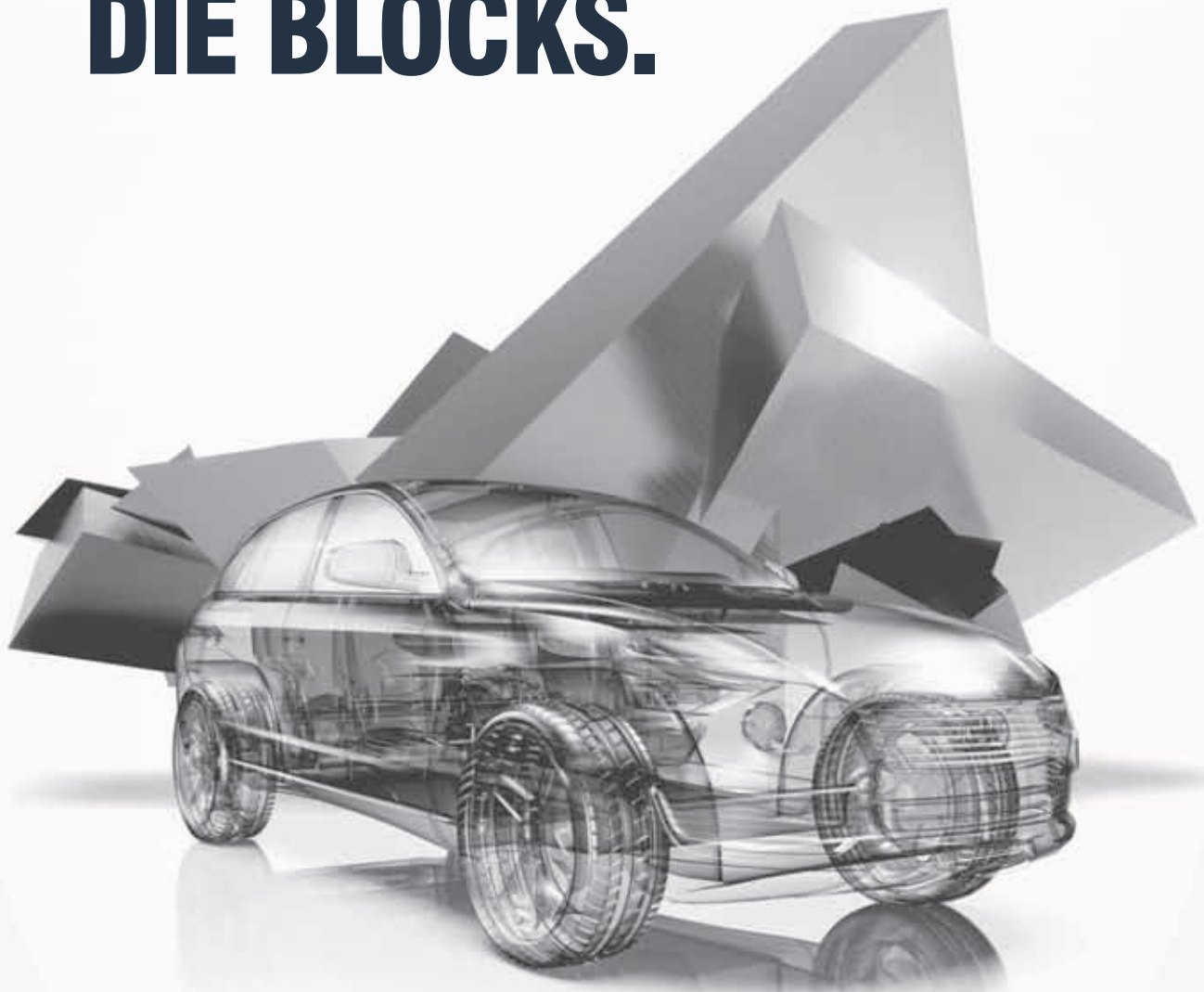
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## Q2 GDP number encouraging; Need to maintain uptick in demand by extending further support: FICCI

**COMMENTING** on the recently announced GDP numbers, Mr. Uday Shankar, President, FICCI, said, "The Q2 2021-22 GDP at 8.4% is within the expected range. The decline in case load and the momentum in vaccination pace over the period July to September kept the economic recovery on track. The incoming lead indicators have been robust, and the optimism witnessed during the just-gone-by festive season was encouraging. Demand has been gaining traction, which is gradually manifesting into an uptick in investment activity."

"However, at this point in time, we

are standing at a turning point. Going forward, it will be important that the uptick in growth is maintained, even if



it implies extending further support. The extension of schemes like ECLGS,

PMGKY is positive. Furthermore, we are hopeful that the Reserve Bank of India will continue to take cognizance of the ground situation in the monetary policy announcement next week and will give some more time for green shoots to firm up," added Mr. Shankar.

"Moreover, in light of the recent developments, it remains important to keep a close watch on the evolving COVID-19 situation. Momentum on the vaccination front needs to continue. Also, we should not fall behind on testing, surveillance and genome sequencing," said Mr. Shankar.

## MSMEs crucial for generating employment; Industry should work towards propelling manufacturing to reduce imports

**SPEAKING** on the Indian economy and GDP, Mr. Amit Shah, Union Minister of Home Affairs and Cooperation, Government of India, said that the post-COVID times have started, and the government has taken various initiatives to counter the effects of COVID by improving the supply side. India has come out of COVID with minimum loss, as compared to other countries. "We are reaching the pre-COVID levels. The July to September GDP number has been at 8.4% and I think in the year 2021-22, India is likely to become [one of] the fastest growing economies in the world. I will not be surprised if we touch double-digit growth," he added.

Addressing the session 'Vision on New India' during FICCI's Annual Convention & 94th AGM, Mr. Shah said that out of the 22 parameters of the economy, India has exceeded in 19 parameters, and this shows that we have come out strong. Both manufacturing and service sectors index have reached the pre-COVID levels. "With the announcements of various packages and relief, our inflation

is in the range of 4-6 percent as set by the government," he added.

Highlighting the potential of the MSME sector, Mr. Shah said that till the time we encourage and strengthen this sector, we cannot address the issue of unemployment in the country. He also emphasized on the need of spending more in the R&D sector.



Mr. Shah further said that FICCI's Annual General Meeting is happening at an important juncture as on the one hand the world is slowly coming out of COVID and on the other hand, India is celebrating 'Azadi ka Amrit Mahostav'. Time has come for FICCI to come forward and play a significant role in India's growth along with

exploring new areas of opportunities, he noted.

He further emphasized the need for FICCI to identify the potential growth areas, collaborate with the government and prepare a roadmap for taking India to new heights of prosperity in the next 25 years.

Mr. Uday Shankar, President, FICCI, said that the all-round development initiatives of the government are transforming India and each step is bringing us closer to 'Aatmanirbhar Bharat'. "Harnessing technology for greater transparency, improved competitiveness, and enhanced efficiency have been the hallmark of multiple reforms we have seen over the last seven years," he added.

Mr. Sanjiv Mehta, President-Elect, FICCI, said that this epidemic has accelerated the nation's digital journey and provided the much-needed impetus. "We should protect privacy, but we should free data as a national asset," he added.

# SHOP PLAN

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## Dassault Systèmes signs MoU with Tamil Nadu Industrial Development Corporation to set up 3DEXPERIENCE Innovation Center for startups and MSMEs

**DASSAULT** Systèmes recently signed a Memorandum of Understanding (MoU) with Tamil Nadu Industrial Development Corporation (TIDCO) to establish The Tamil Nadu Center of Advance Manufacturing (TANCAM) at the TIDEL Park in Chennai. A first of its kind Center of Excellence (CoE) in India, TANCAM will provide a dedicated IT engineering ecosystem to support the Micro, Small & Medium Enterprises (MSME) sector, startups and students across Tamil Nadu, and enable the growth of industries such as aerospace, defence, automotive, and electric vehicles.

As part of the MoU, signed in presence of Thiru M.K. Stalin, Honorable Chief Minister of Tamil Nadu, and Deepak NG, Managing Director, India, Dassault Systèmes, the CoE will have facilities for an engineering digital platform to support product design, composites, simulation and digital manufacturing, along with a 3D printer and a virtual-reality setup.

“Tamil Nadu has a robust manufacturing ecosystem. The

### Opportunities galore

The Tamil Nadu Center of Advance Manufacturing (TANCAM) Center of Excellence (CoE) will provide upskilling opportunities to aspiring students, startups and MSMEs.

As a part of the collaboration, Dassault Systèmes will support TIDCO's plan to focus on precision manufacturing that requires upgrading the skills of MSMEs.

TANCAM will facilitate mentorship and training of the students with dedicated domain-training courses in aerospace, defence, automotive, electric vehicles, and related industries.

The TANCAM Startup Cell along with Dassault Systèmes' 3DEXPERIENCE Lab will fuel an innovation ecosystem for next-generation products and new business models.

collaboration with Dassault Systèmes to set up TANCAM will further equip our state with the latest technologies, such as the 3DEXPERIENCE platform, to drive our commitment in upskilling and future-ready innovation through

modern design and engineering solutions,” said Thiru M.K. Stalin.

Pankaj Kumar Bansal, IAS Chairman and Managing Director of TIDCO, said: “We believe that such initiatives are crucial to nurture and empower the new generation of innovators, across MSMEs, startups, and various core industries.”

“Tamil Nadu is at the helm of the Indian defence corridor and electric vehicle manufacturing ecosystem in India. We are confident that this partnership will elevate the entire ecosystem in the state by adopting 3D design and engineering technologies and will have a long-lasting impact on these industries,” said Deepak NG, Managing Director, India, Dassault Systèmes. “TANCAM is a part of our ongoing endeavors to promote innovation and research and development in the country, under which we have successfully established similar Centers of Excellence in Karnataka and Andhra Pradesh. We are excited to join hands with TIDCO to enable and empower the present and future innovators.”

## ECLGS helped many small businesses sail through financial woes: Survey

**NEARLY** two-thirds of small businesses believe that the government's Emergency Credit Line Guarantee Scheme (ECLGS) has helped them pass through financial troubles, according to a survey.

The survey conducted by credit information company Transunion CIBIL on 756 companies also said that 68 per cent were confident about a future positive outlook.

Public sector banks have played a lead role in helping the scheme reach out to a wider set of MSME

borrowers, the survey said, adding that the very small and micro enterprises having a turnover of up to INR 1 crore are the biggest beneficiaries of the same.

“ECLGS support has significantly helped in revitalizing the MSME sector, which forms the backbone of India's economic engine....timely financial infusion will help MSMEs to revive their businesses and enhance prospects for sustainable growth,” the company's managing director and chief executive Rajesh Kumar said.

*Courtesy: PTI News*

## Toshiba Johnson Elevators secures to supply 168 elevators

**TOSHIBA** Johnson Elevators (India) Pvt Ltd has secured orders to supply 168 elevators at three flagship projects of the celebrated RMZ Corp, one of Asia's largest privately-owned real estate owners, investors, and developers. TJEI will install, maintain, and operate 70 elevators at RMZ Ecoworld 30 in Bengaluru, 63 elevators at Nexity in Hyderabad and 35 elevators at RMZ Spire in Hyderabad.

TJEI will supply its most recent high-end compact machine room ELCOSMO-III-L elevators and machine-room-less SPACEL-III and SPACEL-III-L elevator series that incorporate various energy and time-saving technologies.





# NEW FUNCTIONS

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## Retail auto sales stayed stuck in the slow lane in November: FADA

**AUTOMOBILE** retail sales in the country declined by about 3% in November, as chip shortages and heavy rains in South India impacted sales across various segments including passenger vehicles and two-wheelers, automobile dealers' body FADA recently said.

Total registrations slid 2.7% last month to 18,17,600 units, from 18,68,068 units in November 2020. Passenger vehicle sales, however, slumped a much sharper 19.4% to 2,40,234 units, from 2,98,213 units in the same period last year.

Similarly, two-wheeler sales last month dropped to 14,33,855 units, from 14,44,762 units in the year-earlier period. Tractor sales slid to 45,629 units last month from 50,180 units in November 2020.

Commercial vehicle and three-wheeler registrations, however, increased last month as compared with the year-earlier period.

"Auto retail for the month of November continued to remain in the negative zone despite Diwali as well as marriage season in the same month," FADA president

Vinkesh Gulati said in a statement.

The passenger vehicle segment continues to face the brunt of a shortage of semiconductors, he said.

"While the new launches are keeping customer's interest high, it is only the lack of supply, which is not allowing sales to conclude," Mr. Gulati said.

"The extended waiting period is now starting to make customers jittery, and this may lead to loss of interest in vehicle buying," he added.

*Courtesy: PTI News*

## Tata Motors delivers 60 Ultra Urban 9/9 electric buses to Ahmedabad Janmarg Limited

**STRENGTHENING** its commitment towards promoting sustainable mobility, Tata Motors delivered 60 best-in-class electric buses to Ahmedabad Janmarg Limited (AJL). The Tata Ultra Urban 9/9 AC buses were recently flagged off at the Sabarmati River Front Event Centre, Ahmedabad by Hon'ble Chief Minister of Gujarat, Shri Bhupendra Patel and Shri Kiritkumar Parmar, Hon'ble Mayor of Ahmedabad, in the presence of dignitaries from the Gujarat State Government, AJL and Tata Motors. The 24-seater zero-emission buses have been supplied under the FAME II initiative by means of a Gross Cost Contract (GCC) with AJL and will run on Ahmedabad's Bus Rapid Transit System (BRTS) corridor. Tata Motors will also be setting up the required charging infrastructure and support systems to ensure smooth functioning of the buses.

Tata Ultra Urban 9/9 AC electric buses are powered by full-electric drivetrains, with a maximum power of 328hp and a maximum torque of 3000Nm. Their roomy interiors come with plush interior lighting, and can be customised as per application and regulations. Designed to provide a fatigue-free driving

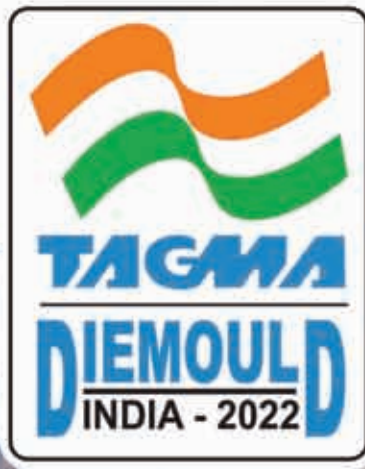


Shri Kiritkumar Parmar, Hon'ble Mayor of Ahmedabad, in the presence of dignitaries from the Gujarat State Government, along with Tata Motors e-bus

experience without clutch and gear shifting, the Ultra Urban 9/9 e-buses also come equipped with regenerative braking system, new-generation telematics, and a high-security Intelligent Transport System (ITS) to offer smooth and efficient operations.

Commenting on the occasion, Mr. Rohit Srivastava, Vice President, Product Line – Buses, Tata Motors, said, "We are delighted to deliver Tata Ultra Urban 9/9 electric buses to AJL. With a steady

commitment towards modernising public transportation and integrating sustainability in the designing of futuristic vehicles, Tata Motors has led the move towards electric mobility in the country. The Ultra Urban 9/9 has been built to provide enhanced comfort, safety and efficiency, with noiseless operations and zero emissions. The delivery of these buses will further cement our fruitful association with AJL and foster eco-friendly mass mobility in Ahmedabad."



# THE WAIT IS OVER

## 12<sup>th</sup> Die & Mould India International Exhibition

**27 28 29 30**  
**APRIL 2022**

Bombay Exhibition Center,  
Goregaon (E), Mumbai, India

Exhibition Timing : 10 am to 6 pm



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	Cutting Tools	Heat Treatment	Machine Tools	Surface Treatment
Coating	Hot Runner System	Mould base	Texturizing	Tool Steel
Die Casting Machines		Precision Machining & Aerospace		

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Vaccination  
certificate



Wear your mask



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## Siemens partners with Hyundai Motor Company and Kia Corporation for Digital Mobility Transformation

**SIEMENS** and Hyundai Motor Company and Kia Corporation (Hyundai and Kia) recently announced a new technology partnership to accelerate their digital transformation and a new future of mobility. Hyundai and Kia selected Siemens as the preferred bidder and strategic partner to provide next-generation engineering and product data management through NX™ software and the Teamcenter® portfolio from Siemens' Xcelerator portfolio of integrated software, services and development platform. Hyundai and Kia has evaluated and assessed various alternatives, including incumbent solutions and selected Siemens' software, embracing the world's most comprehensive digital twin. Hyundai and Kia will cooperate with Siemens as its key trusted partner, to drive the future of mobility.

"Selecting NX software and the Teamcenter portfolio from Siemens' Xcelerator portfolio for our core design and data management platforms will introduce a new working environment for our teams that will pave the way for a leap forward in future car development," said Albert Bierman, Head of R&D Division, Hyundai Motor Company. "This is the beginning of a huge transformation and an important point of change for Hyundai Motor Company and with Siemens as our trusted partner,



Siemens' NX Software and Teamcenter Software from the Xcelerator Portfolio replace incumbent solutions to become standard solutions for Hyundai and Kia next-generation data management and design environment.

we will work together to achieve our goals through mutual cooperation and teamwork."

Hyundai and Kia and Siemens will collaborate to establish design methods and develop custom solutions that consider the lifecycle of all automobiles and associated processes and activities, such as production, purchasing, and partners' research and development. In addition to providing software, Siemens will provide professional and specialized training to help Hyundai and Kia ensure efficient use/operation of Siemens' software across its network of suppliers. "Like so many of our customers, Hyundai and Kia is undergoing major transformations in its business and

Siemens is honoured to have been selected as a strategic partner to provide support and state-of-the-art technologies that will help revolutionize how it develops its next-generation products," said Tony Hemmelgarn, President and Chief Executive Officer, Siemens Digital Industries Software. "The Xcelerator portfolio is delivering the tools and technologies for digital transformation that the future demands and our customers need today, so we look forward to collaborating with Hyundai and Kia on next-generation Engineering and Product Data Management Systems that will speed digital transformation, as we explore the future of mobility, together."

## Hyundai to invest \$530 million to launch six EVs in India by 2028

**SOUTH** Korea's Hyundai Motor Co. recently said that it planned to invest 40 billion rupees (\$530 million) to launch six electric vehicles in India by 2028. Hyundai will launch affordable and premium electric models including sport utility vehicles (SUVs) and sedans, starting with its first electric vehicle (EV) in 2022, said Tarun Garg, director sales and marketing for Hyundai Motor India. "We want to be a key contributor to the EV story in India," Garg told Reuters.

The investment will be sunk into research and development to launch the six vehicles, Hyundai's Indian arm said in a release. Hyundai joins rivals Tata Motors and Mahindra & Mahindra in throwing its weight behind EVs at a time when India is pushing automakers to go electric, as it looks to reduce pollution and fuel imports. The country's top carmaker, Maruti Suzuki, however, is betting on alternate fuels and hybrid technology, and expects to launch EVs starting only in 2025.

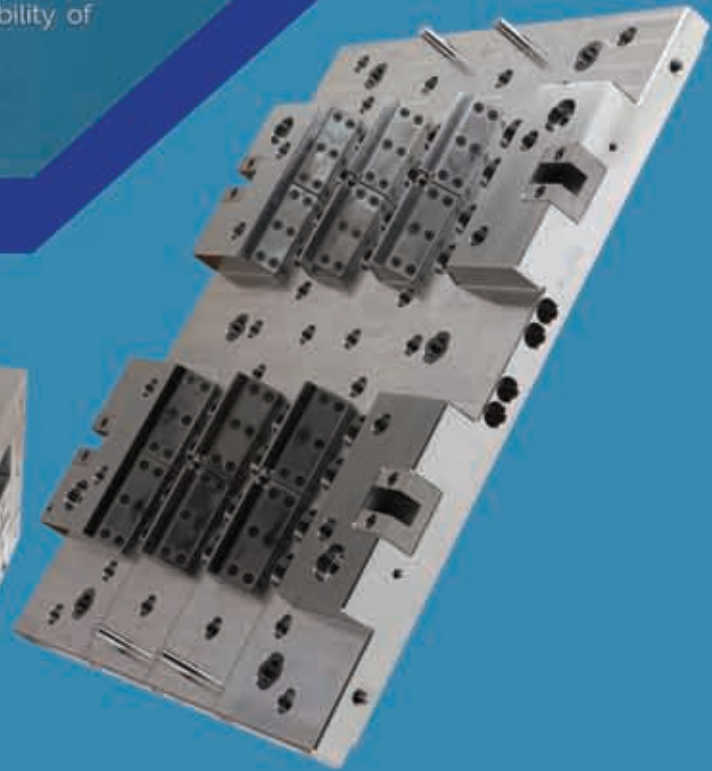
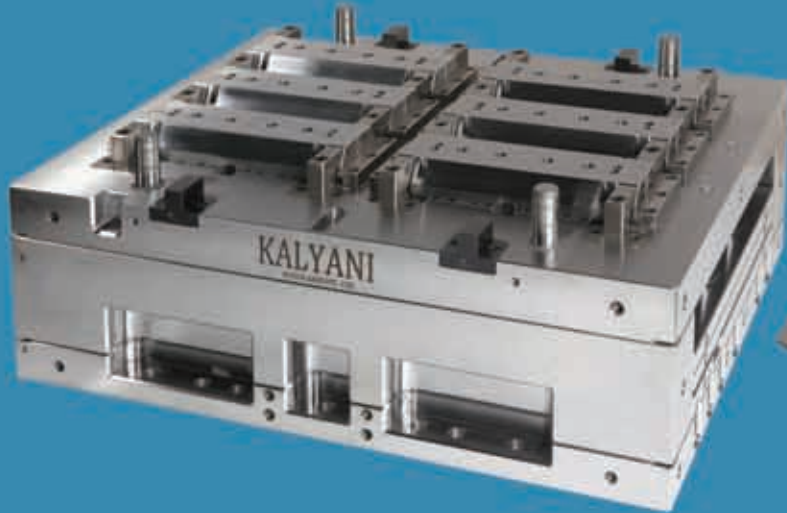
Hyundai's EVs will either be built on its dedicated electric global modular platform (E-GMP), which it plans to bring to India, or on a modified platform on which it currently builds its gasoline cars, Garg said. The cars built on its dedicated electric platform will have a range of up to 800 kilometres, whereas the others will be able to run for 350-400 kilometres on a single charge, he said.

*Courtesy: Reuters*

# KALYANI

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## Government approves INR 76,000-crore plan for semiconductor, display manufacturing

**THE** government recently approved a INR 76,000-crore scheme to boost semiconductor and display manufacturing in the country, in an bid to position India as a global hub for hi-tech production, and attract large chipmakers. The move would further India's ambitions to be self-reliant in electronics manufacturing, bring massive investments and result in 35,000 specialised jobs apart from indirect employment for one lakh people.

In the current geopolitical scenario, trusted sources of semiconductors and displays hold strategic importance and are key to the security of critical information infrastructure. The semiconductor scheme also comes at a time when the world is witnessing a severe crunch of semiconductors, a key component used in cars to electronic devices. The supply has been disrupted as a result of the COVID-19 pandemic, which forced many production centres to close intermittently.

Announcing the decision of the Cabinet, IT and Telecom Minister Ashwini Vaishnaw said the INR 76,000-crore scheme has been approved for development of semiconductors and display manufacturing ecosystem. Incentives have been lined up for companies engaged in silicon semiconductor fabs, display fabs, compound semiconductors, silicon photonics, sensors fabs, semiconductor packaging, and semiconductor design. "Today's historic decision will boost development of complete semiconductor ecosystem, ranging from design, fabrication, packaging, and testing," Vaishnaw said.

With the semiconductor incentive scheme in place, the government expects investments of around INR 1.7 lakh crore and 1.35 lakh jobs in the next four years, he added.



The government is looking at two greenfield semiconductor fabs and two display fabs in the country, while at least 15 units of Compound Semiconductors and Semiconductor Packaging are expected to be established with government support under this scheme.

Under the Design Linked Incentive (DLI) scheme, support will be provided to 100 domestic companies of semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design.

The DLI scheme will offer incentive of up to 50 per cent of eligible expenditure and product deployment linked incentive of 6-4 per cent on net sales for five years.

An independent 'India Semiconductor Mission (ISM)' will be set up to drive the long-term strategies for developing a sustainable semiconductors and display ecosystem in the country.

The new mission will be led by global experts in semiconductor and display industry, and will act as the nodal agency for efficient and smooth implementation of the scheme.

India is looking to push electronics manufacturing to USD 300 billion in the coming six years from USD 75 billion now, and semiconductor chips are a crucial part of that ecosystem.

The scheme charts out a plan for skilling and training of 85,000 high-quality engineers, and works out a roadmap for next 20 years.

Tata Group has already announced its intention to foray into semiconductor manufacturing. Sources told PTI that a Vedanta Group firm will again make investment to set up a semiconductor manufacturing plant in India.

According to the Ministry of Electronics and IT sources, two big electronics chip companies and two display manufacturing units each entailing investments in the range of INR 30,000-50,000 crore are expected to be set up within the next four years.

Further, 20 companies comprising chip packaging firms, compound semiconductors, which make chips for automotive sector, power equipment, etc., are expected to be operational in three years with investments in the range of INR 3,000 crore to INR 5,000 crore.

The scheme for setting up of semiconductor fabs and display fabs in India will extend fiscal support of up to 50 per cent of project cost to eligible applicants.

The Centre will work closely with the state governments on high-tech clusters with requisite infrastructure in terms of land, semiconductor grade water, power, logistics and research ecosystem, to approve applications for setting up at least two greenfield semiconductor fabs and two display fabs in the country.

The IT Ministry will take steps for modernisation and commercialisation of Semi-Conductor Laboratory (SCL). It will explore the possibility for the Joint Venture of SCL with a commercial fab partner to modernise the brownfield fab facility.

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# Standard Parts for Dies & Moulds



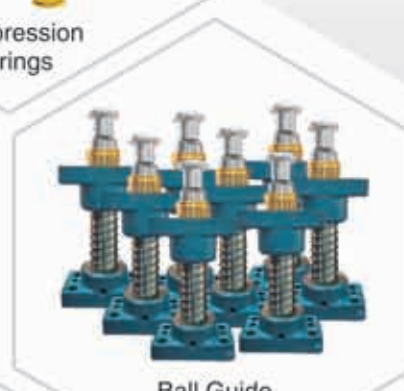
Compression Springs



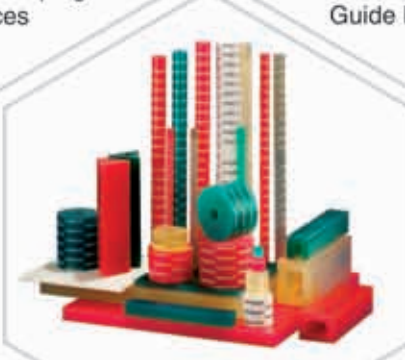
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# The Virtual Network

**In the time of social distancing, social media has come to the rescue and has become a necessary tool for businesses that want to stay relevant and gain exposure online. The technique for choosing the right social media platform for your business is knowing which ones will work best.**

**Kimberley D'Mello**



**N**oted British naturalist Charles Darwin popularized the theory of 'survival of the fittest' to explain the process of evolution. Darwin's theory suggested that organisms best adjusted to their environment are the most successful in surviving and reproducing. Although published around the 1800s, this theory still holds relevance today and is applicable not only to the evolution of organisms but also to the evolution of businesses.

As the world grapples with the COVID-19 pandemic and its variants, businesses in every country are undergoing the process of evolution, wherein they are trying to remain relevant in spite of all the chaos and disruptions being witnessed by global economies. So, in this context, which businesses can be termed the fittest? Which organizations will stand the test of time? The answer is: the ones that succeed in remaining relevant.

### But how does one remain relevant?

The answer to this is by probably transitioning from an offline company to an online one! Let's understand why. The pandemic has kicked in a new process of evolution and created a new normal — social distancing. However, for businesses to thrive and flourish, entrepreneurs need to regularly interact with their clients and potential customers.

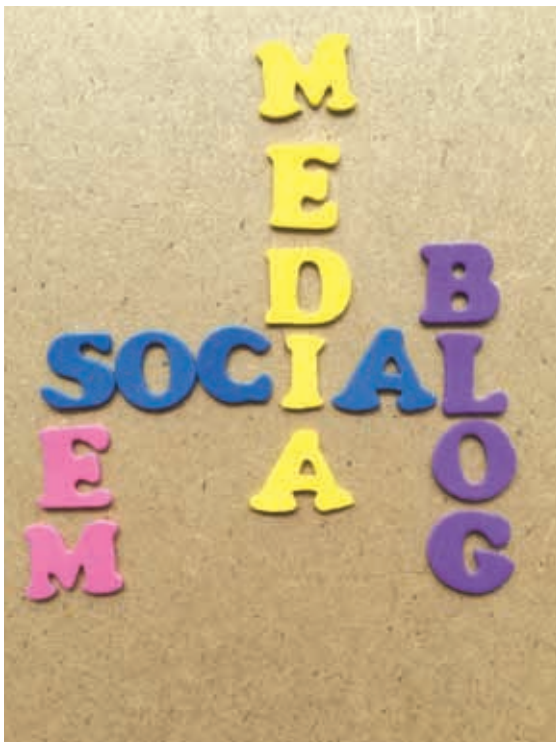


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How else could they share information about the products and services that they offer? The answer lies in one simple fact — every business needs to have social media presence. It doesn't matter if you're a tooling MSME or a large enterprise, you will need social media to remain relevant in today's time. After all, social media is not just a trend with a hashtag, it could actually create a valuable business marketing strategy for your company.

### How to choose a social media platform?

Venturing into the unknown can be intimidating. Owners of most tooling MSMEs have expressed that getting started on a task as simple as choosing a social media platform can seem more complex than it actually is. And, their fears seem logical. After all, there are so many social media networks to choose from and they find it difficult to gauge which social media could be the best fit for them. Fortunately, there's a solution to this dilemma — eliminate the options to arrive at the most popular and extensively used platform.

### However, you need to keep these factors in mind:

- ▶ You need to understand what your priority is. This means that you need to understand and be sure of what goal exactly are you trying to achieve using social media. For instance, are you trying to use social media to generate more leads, or do you want to just make more people aware of your brand, services and products? Once, you understand what you want, it will be easier to make that choice.
- ▶ You need to figure out which social media platform is going to give you the kind of exposure and audience connect you are looking for. For instance, if you want to post videos to demonstrate a particular process, then YouTube would be a good option. If you want to post live updates about an event you're part of, then Twitter would be your go-to platform.

### So, what are your options?

Using social media has several benefits, but to reap the dividends it offers, you must have an idea of the goals you aspire to achieve. This will give you a clearer perspective on how you could formulate a successful social media strategy. After all, your goals will help you figure out what social media platform you should choose, and how the content you create will help you target the right customer base. You can then analyse the various social media platforms to

understand which ones will work the best for you. Some of the social media platforms that you should explore are:

**LinkedIn:** According to reports, this social media platform has more than 250 million monthly active users. It's the most commonly used social media channel for business-to-business (B2B) marketers to share content. Companies, which post weekly on LinkedIn, witness two times rise in engagement on their posts. LinkedIn is also a great platform for your employees to become your brand advocates. Make sure to utilise them and their network to spread your content—this is a great way to get your content on the platform more often without oversharing.

“The best way to promote your business on LinkedIn is by being helpful and adding value - posting content, sharing content on profiles, pages and contributing to group discussions with the aim of sharing insight and demonstrating knowledge and expertise, without a sales pitch. Engaging in conversation is the key to success with any social media platform; on LinkedIn it's particularly professional in style,” informed an article on Marketing Donut, a UK-based website that offers advice on all aspects of marketing and sales.

“LinkedIn does, of course, also offer paid-for advertising opportunities to help you promote your

**Companies, which post weekly on LinkedIn, witness two times rise in engagement on their posts. LinkedIn is also a great platform for your employees to become your brand advocates. Make sure to utilise them and their network to spread your content—this is a great way to get your content on the platform more often without oversharing.**

business - including Sponsored Content, Text Ads and Sponsored InMail,” added the article.

**Facebook:** With more than 2.89 billion monthly active users, Facebook is presently the largest social media platform, revealed reports. Facebook is also a good platform to bond with potential customers and turn your leads into customers. “Engage with your followers. Facebook users love to talk to real people and share their news and views. Reply to queries and respond to comments, including any complaints. You can also encourage discussion and feedback using posts that include a poll - positive user-generated content provides a very powerful endorsement for your business. Direct people to your own website or blog from your Facebook page. Set your blog's RSS feed so that you automatically publish snippets on your Facebook page to encourage followers to visit your website,” suggested an article on Marketing Donut.

Facebook's advertising platform can be customised to target specific customers. “Consider advertising on Facebook if you want to reach specific groups. Facebook allows you to target ads based on everything from location and demographics to behaviour and interests,” it added.

According to reports, 'Facebook Live' videos are also gaining popularity and the trend is likely to gain further momentum in the coming years. However, it's important to exercise caution here. You are going to face competition from everywhere. So, you have to ensure that your content stands out.

**Twitter:** As a social media platform, Twitter can help you leave a positive impact on your business. “If



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you're willing to make a few tweaks, and put a little work in, you can start seeing some serious results for your business on Twitter. You'll raise your profile, you'll attract leads and you'll develop authentic relationships within your market," said an article on Marketing Donut.

Posting multiple times a day will give your tweets a better chance to be seen by your followers and give them more chances to engage with you. Make sure to continue to provide value to your followers. "You only have a few characters to play with. Remember to include the key terms you want your business to be known for, so that you show up in any relevant search results," it added.

"As with any other social platform, Twitter marketing is a continuous process... Twitter has a brilliant in-built analytics platform that you can use to see which of your posts have had the most engagement and which have bombed. Use these insights to refine your approach going forward," suggested the article.

**YouTube:** According to various reports, YouTube is one of the most popular social media networks in the world and the second biggest website in the world. This means that this popular audio-visual social media platform provides tremendous potential to increase awareness of your business, drive more traffic and engagement, and generate more leads.

Creating video content for YouTube can increase the credibility of your brand and drive a lot of engagement. YouTube users are three times more likely to watch a YouTube video to learn how to use a product compared to reading instructions. Reusing existing content from your website in video form is a great way to produce content that will perform well. And, as for length, try to stick to a two-minute video. Further, make sure you are optimising your videos for SEO, using catchy titles, taking advantage of keywords, and tagging your videos correctly.

Paid advertising on YouTube can also be explored, as highly engaged and interested viewers are more likely to get in touch with you after seeing an ad. "YouTube is where your audience is. A good YouTube strategy can help you reach more people and improve your results overall," stated an article on Marketing Insider Group, a blogging, SEO and content marketing website.

**Instagram:** With 1.2 billion users and 500 million active users, Instagram offers different posting formats — short-lived stories and permanent posts. With these options, businesses have the flexibility to build their presence on Instagram while focusing on their business' goals and customer's wants. Posting on Instagram is all about quality and consistency. Some brands post multiple times a day; it all depends on how visual your industry is. Posting stories can be more frequent even on a daily basis.

Live video has also gained popularity on Instagram, particularly during the pandemic, which restricts physical and mandates virtual interactions.

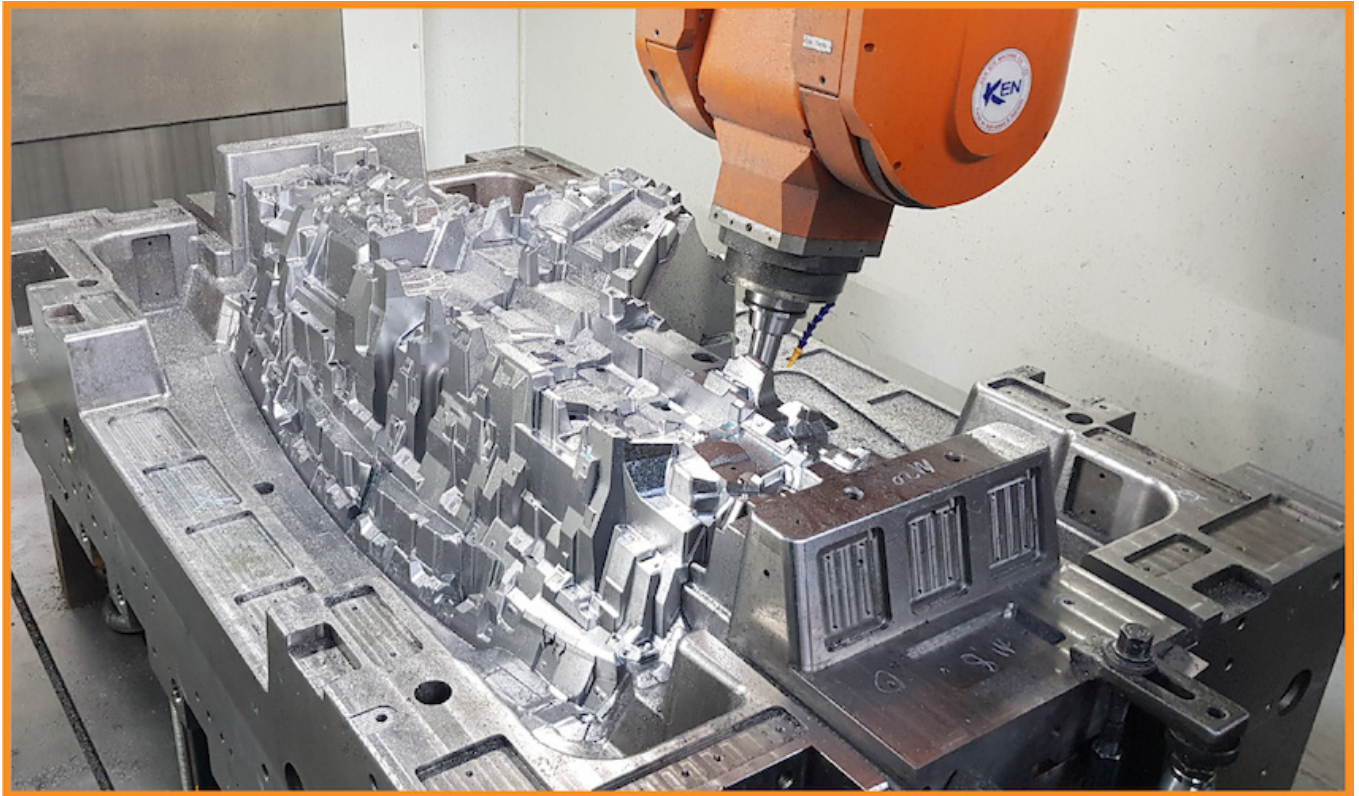
Another Instagram feature — namely Instagram Shops — has enabled purchases on the app, making it easier for brands to make money on the social media platform.

**Creating video content for YouTube can increase the credibility of your brand and drive a lot of engagement. YouTube users are three times more likely to watch a YouTube video to learn how to use a product compared to reading instructions.**

### Expand your horizons

Social media platforms play a crucial role in helping businesses widen their network and broaden their horizons. They can help you connect with potential customers, increase awareness about your brand, products and services, as well as offer a fillip to your leads and sales. However, merely posting on social media platforms is not enough. You need to have a well-planned social media strategy in place. Studies have shown that those who follow the pages of their preferred brands on social media, not only loyally support them but also promote them. This, in turn, raises the authenticity of the brand. Often, those looking for companies to get their jobs done, look for reviews and testimonials written by existing customers. So, businesses will need to focus on updating their social media pages as well as interacting with their customers, if they want to augment their customer base and promote their business within a limited budget by using social media platforms. 🌈

# Future of Manufacturing – 5-Axis Machines



In the traditional mould machining industry, it is common to use 3-axis machines such as vertical machining center and double-column machining center to cut metal. With the advancement of machining technology and mould requirements, some pros and cons have been identified in mould manufacturing.

Recently, with the rapid growth of the economy, the expansion of the manufacturing enterprise and the technology of automation, many developing and developed countries have encouraged the arrangement of smart and intelligent manufacturing. In comparison to the previous decade, manufacturing companies have taken various steps to pursue high-efficiency and lean manufacturing to induce competitiveness in the manufacturing process. In 2021, a well-known German machine builder announced an investment of up to 75 million euros in a digital factory in China. This factory will be highly automated and utilise minimal manpower. The future will be a new era of industrial competition of high-

speed and 5-axis machining.

## Advantages of 5-axis machining

- ▶ **Less manpower:** The shortage of experienced technicians and workers is becoming more common in factories and automation is often overlooked. Due to the COVID-19 pandemic, the requirement to boost production has been without hiring additional workers, to prevent it from spreading from one person to another. This has further spurred investment in automation such as high-speed 5-axis machining centers or flexible manufacturing systems, which are gaining attention in the industry.
- ▶ **Increased efficiency:** In the early days, the preparation and processing of a 5-axis machining center used to take a long time. But now, thanks to technology and upgraded software, the preparation time of the operation has been drastically shortened. Furthermore, the advanced 5-axis machining centers are equipped with

## Using Metal 3D Printing EBM: Making Parts with Highly Alloyed Cold Work Tool Steel

Cold work tool steels are high carbon steels with high hardness, wear resistance and ductility on the cutting tool material while retaining good machinability. Cutting Tools, Cold Forging, Cold Extrusion, Deep Drawing, Blanking and Punching or Powder Pressing are some of the cold work tool steel applications.

Electron Beam Melting (EBM) processes high-crack-prone alloys at high-build temperatures in a vacuum environment to yield complex designs—something neither conventional nor other additive methods can achieve.

### Case Study: Gear Hob

GE use EBM technology to manufacture a highly alloyed tool steel gear hob. It minimized post-processing, saved costs and improved wear resistance and ductility.

- Achieved high hardness of 62-63 Hardness Rockwell C (HRC)
- Built free-floating in sintered powder
- Manufactured in near-net shape



### Additive advantages for highly alloyed tool steel

#### Lower cost per part

Additive with EBM machines increases productivity, reduces post-processing costs and lead time.

#### Create high-quality parts with excellent properties

EBM's high-heat process enables excellent hardness, wear-resistance and ductility.

#### Leverage freedom of design

Consolidate parts into one additive product with complex geometries.

#### Arcam EBM Spectra H system



# Machining Mantra

## Application - Automobile Die & Mould Making

**Injection Mold:** Bumper, Lamp, Dashboard, and many more

**Stamping Mold & Die Casting Dies:** Skin Panels, Engine Cover, Exterior Cover, and many mores



## Application - Aerospace Components

**Aluminum:** Wing Structure, Door Gate, and many more

**Titanium and Nickel-based hard-to-cut materials:** Landing Gear, Turbine Casing, and many more



linear motor to replace the ball screw as the driving mechanism. This increases dynamic capability, acceleration, speed, and machining accuracy while also increasing the production rate. High-speed 5-axis machining centers are already popular in the western industries for the advanced automotive components and aerospace industry from quite a long time. The Indian market is yet to adopt these machines as a necessity.

- ▶▶ **Cost-Cutting:** Due to the increasing demand for 5-axis machining centers, the economies of scale have improved significantly, resulting in reduced production costs. With the advancement of technology, KEN CNC, a Taiwanese manufacturer, has proudly developed a high-speed 5-axis machining center that is technically competitive with European manufacturers. This makes it easy

to link performance and investment budgets to expectations.

- ▶▶ **Done in a single setup:** In conjunction with the growth of the aerospace and automotive industries, 5-axis machining has become more common. The complexity of manufacturing automobile dies & moulds and aerospace components often requires multi-axis, high-accuracy, and high-speed capability to complete the machining task, which is best possible in 5-axis machines.

The further advantage of 5-axis machining is that it is easy to avoid interference, and the workpiece can be finished with just one set-up, which prevents the higher rate of positioning error associated with multiple set-ups. Not only has the set-up time been shortened to one set-up, but also the factory owners can save a lot of money on space utilisation, the jigs and fixtures. Many case studies have proven the superiority of 5-axis machines for cutting complex workpieces. Drilling, milling on certain angle, and complex chamber structures are only a few examples. Multiple machining procedures that were previously required can now be completed faster, better, and in one setup.

## Conclusion

Certainly, the needs of the automobile and aerospace industries are constantly increasing, and high-speed 5-axis machining centres will play an increasingly important role in manufacturing. 🌈

*Article and images courtesy: Stitch Overseas Pvt. Ltd.*

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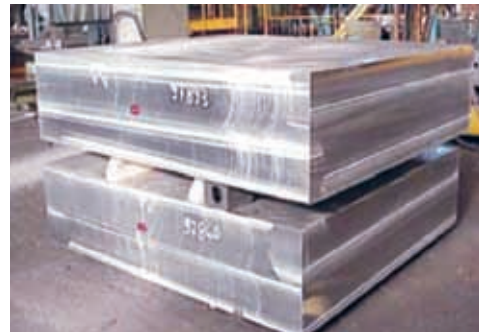
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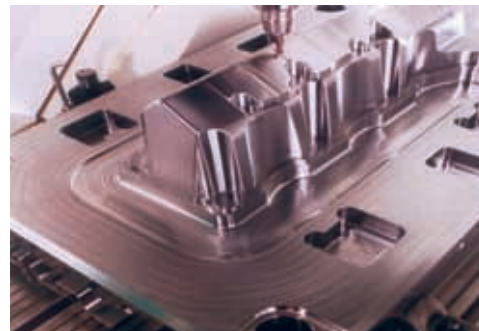
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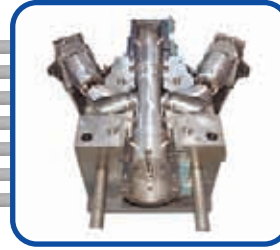
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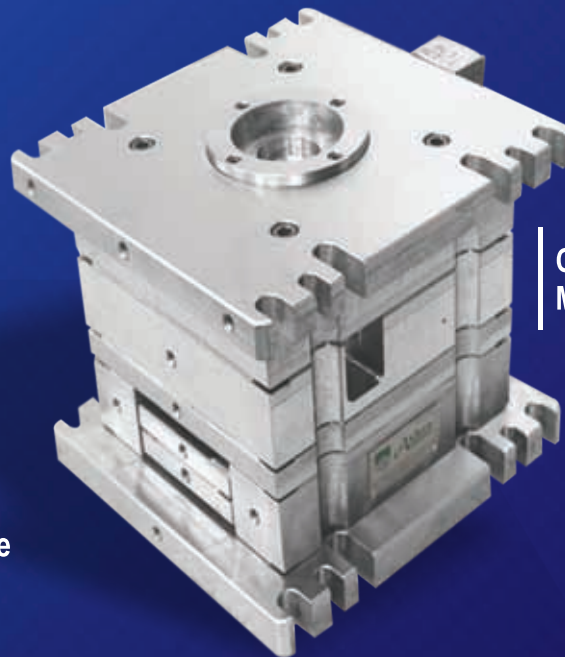
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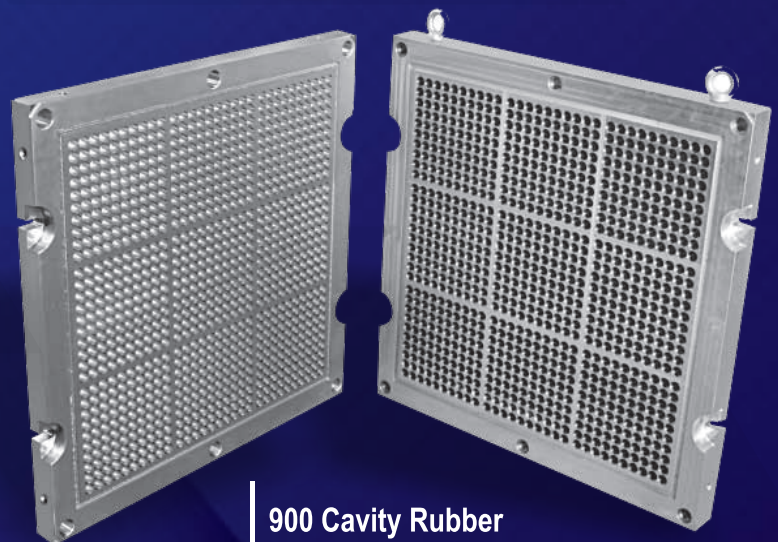
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# ‘Strategy has a positive and significant effect on an organisation’s performance’



**“In the tooling industry, close to 90% of the Entrepreneurs/ Managers spend about 70-80 % of the time in the day-to-day operations (Tactical) and less than 15-20 % of the time in strategic thinking. Those who spend at least 10-15% of their time in cultivating the habit of strategic thinking within an organisation can improve operational efficiency & resource optimisation by a minimum of 25-30%,” says Narendra Brahmkar, IRCA registered QMS Principal Auditor Trainer, Business Coach, and Consultant.**

## **Q What are the key challenges in the Indian Tooling Industry?**

The Indian tooling industry has grown significantly over the years and has huge opportunities. With a marketing size of about ₹ 18000 crore, the industry is in the right position to grow. However, we are still facing several challenges that are stopping us to play a bigger role in the global market. Challenges like:

- ▶▶ Delivery commitments issues
- ▶▶ Lack of resource utilisation
- ▶▶ Capacity & capability constraints
- ▶▶ Funds management
- ▶▶ Finding and retaining skilled manpower
- ▶▶ Agility due to changing requirements of the customers about QCD

# Tool Talk

- ▶▶ Poor synergy among toolmakers
- ▶▶ Competition from the global players
- ▶▶ High input cost
- ▶▶ High cost of financing
- ▶▶ Lack of industry-friendly policies.

Despite all these challenges, Indian toolmakers have made significant growth in the last few years. However, to play a bigger role in the global tooling market, we need to effectively address the above-mentioned challenges.

## Q What's the importance of strategic thinking in overcoming these challenges?

Strategic thinking plays a crucial role for any company in overcoming multiple challenges.

These challenges are like a storm. Very few companies can easily sail through the storm and sustain, whereas most of the companies become severely affected by challenges. Here the question arises, do you have business strategy? Of course, each company has a strategy that (good or bad) determines the outcome.

Study shows that although most of the companies show a very good performance in achieving top-line growth, they find difficulty in achieving bottom-line targets. The primary cause of this is poor decisions about strategy. While it's convenient to blame an organisation's poor performance on external factors such as the regulations, economy, etc., the decisions about strategy account for failure almost 70-80% of the time.

Most of us believe strategy is an inherent factor in an organisation's success. One study concludes that "Strategy has a positive and significant impact on an organisation's performance. Specifically, it is found to influence both the growth and profitability of a firm." Strategy contributes to profitability differences between successful and unsuccessful companies.

Finally, a ten-year-old study from Harvard Business School showed that firms with clearly defined and well-articulated strategies on average outperformed competitors by 304% in profits, 332% in sales, and a whopping 883% in total return to shareholders. Yes, the strategy does matter.

Strategic thinking enables us to think proactively.

As the premise goes: New growth requires new thinking..... We won't be able to address the challenges with the same level of thinking which we are doing now.

This reminds me of a famous quote by Stephan Covey, "The problem what you see is not the real problem; The way you look at the problem is the problem."

We need to change the way we look at challenges. With strategic thinking, one can differentiate himself/herself about one's strength & passion.

While addressing the challenges we can classify them into two segments -- Challenges that are within our control and challenges which are beyond our control. Considering this classification, we can decide the strategy to be adopted to achieve our vision and goals.

Based on my experience while working with companies in the Tooling industry, almost 90% of the entrepreneurs/ managers spend about 70-80% of their time in day-to-day operations (Tactical) and less than 15-20 % of the time for strategic thinking. Those who spend at least 10-15% of their time cultivating the habit of strategic thinking within an organisation have shown improvement in operational efficiency & resource optimisation by a minimum of 25-30%.

## Q What stops Business Owners or Managers to adopt Strategic Thinking?

The key reasons being attributed by most of the entrepreneurs are :

- ▶▶ Time-consuming
- ▶▶ The complexity of the process
- ▶▶ Lack of awareness about strategy/strategic thinking
- ▶▶ Lack of training regarding strategic thinking
- ▶▶ Limitations to get commitment from the team for implementation of strategy
- ▶▶ The mindset that it is for big companies & not for us
- ▶▶ It is for compliance & creates additional documentation
- ▶▶ Fear of disclosure of plans
- ▶▶ Fear of failure
- ▶▶ Responsibility of particular persons /teams.

Out of many reasons for reluctance to adopt strategic thinking is a 'lack of clarity'

## Q What is the difference between Strategy, Strategic Thinking, and Strategic Business Plan?

According to the Strategy Guru, Rich Horwath, the fundamental distinction between these basic terms are as follows:

**Strategy:** Strategy is the bridge between where you are now and where you want to reach. To reach your destination there can be multiple options available. These multiple options are nothing but strategies.

**Strategic Thinking:** Strategic thinking is defined as the ability to generate new insights continually to achieve a competitive advantage. Insight is the combination of two or more pieces of information or data in a unique way that leads to the creation of new value. So, at the core of strategic thinking is the information or data, which we place together in unique ways to come up with new approaches, new methods, or new solutions for providing superior value to customers. Managers who aren't receiving timely, high-quality information and data regarding the key aspects of their business are going to be hindered in their ability to think strategically—and the ability to understand this information is critical. Strategic thinking occurs on a regular basis.

A study showed that 62% of workers cannot make sense of the data that they receive. According to a Research by McKinsey & Company verified the challenge managers face when it comes to profitably grow their business on strategic insights:

**A fresh strategic insight**—something your company sees that no one else does—is one of the foundations of competitive advantage. It helps companies focus their resources on moves that separate them from the pack. Only 35% of 2,135 global executives believed their strategies rested on unique and powerful insights.

**Strategic Business Plan:** Strategic Business Plan is nothing but channelling of insights gained from strategic thinking into an action plan to achieve objectives. Normally the strategic business plan is done on yearly basis and is reviewed once in three to six months.

For example, when we get an order for manufacturing 100 moulds within one year

and you have the capacity to manufacture only 15 moulds a year. In this case, you have options -- To outsource the moulds and get the order executed smoothly or increase your capacity to manufacture the 100 moulds within one year.

These two options are two strategies.

Now let us understand Strategic Thinking with reference to the same example. To decide one of the 2 options, viz. Outsourcing or Increasing capacity, we collate data to understand:

- ▶▶ Our existing installed capacity
- ▶▶ Actual utilisation of capacity
- ▶▶ A further possibility of getting such orders regularly &
- ▶▶ The cost involved for the development of infrastructure and increase the manufacturing capacity

Based on the cost-benefit analysis of both the options, decide which strategy to be adopted. Taking such a decision based on the available data and projected benefits is called Strategic Thinking.

## Q How are Strategy and Risks related?

Strategy and risk go hand in hand. Risk or opportunity is an inherent element of strategy. According to the fundamentals of business management systems standards, risk is the effect of uncertainty to achieve the intended results. When the effect of uncertainty is negative, it is risk and if the effect of uncertainty is positive, it's an opportunity.

The key steps being followed for Risk management are:

- ▶▶ Identification of risk/opportunity
- ▶▶ Establish criteria for prioritisation
- ▶▶ Risk/ opportunity prioritisation
- ▶▶ Identification of critical or significant risks and opportunities
- ▶▶ Plan for risk mitigation or leverage the opportunities in accordance with the established criteria

Depending on the criticality of the business one may decide to adopt guidelines of ISO31000:2018 Standard for Risk Management.

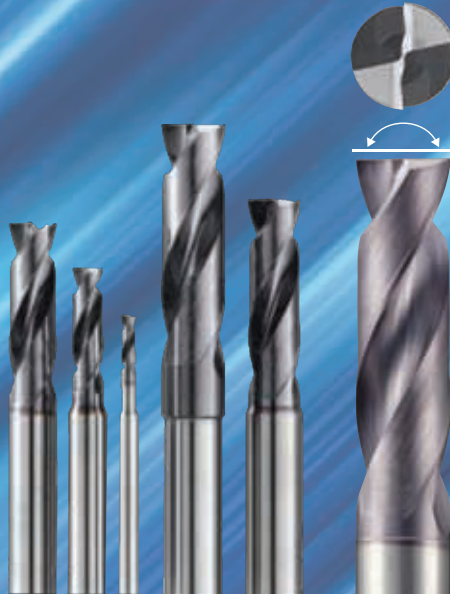
**Step 1- Decide the Purpose:** The intent of

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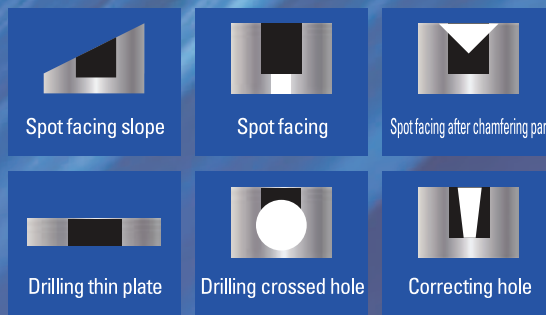
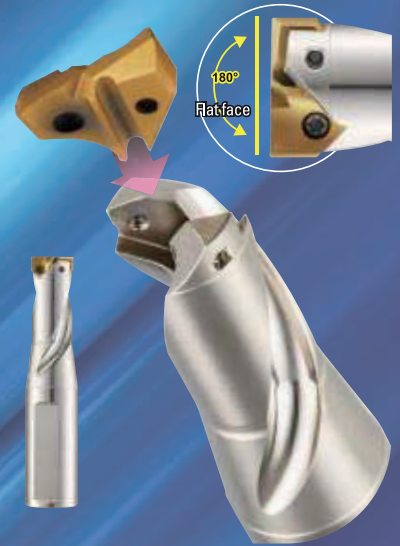
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the business is represented by the following elements:

- ▶▶ **Mission:** Current purpose; clear, concise, and enduring statement of the reasons for an organisation's existence today.
- ▶▶ **Vision:** Future purpose; provides a mental picture of the aspirations an organisation is working toward.
- ▶▶ **Values:** Guide purpose; ideals and principles that influence the thoughts and actions of an organisation, and define its character.

## Step 2- Develop Business Model

A structural description of how the organisation Creates, Delivers, and Captures value.

### CREATE:

- ▶▶ **Core Competency:** Primary area of expertise (what you know)
- ▶▶ **Capabilities:** Activities performed with key resources (what you do)
- ▶▶ **Value Proposition:** Rationale for the offering (customer, need/ job, approach, benefit)

### DELIVER:

- ▶▶ **Value Chain:** Configuration of capabilities to provide value (how you do it)
- ▶▶ **Channels:** Customer access points for offerings (where you offer it.)

### CAPTURE

- ▶▶ **Price Position:** Amount customers pay for the offering relative to alternative options (low, moderate, premium)
- ▶▶ **Revenue Generation:** Avenues for optimising profits viz. new mould manufacturing; Mould Maintenance Services; Moulding Opportunities.

**Step 3- Develop Plan** The strategic direction of the business is translated into activities. The plan includes the following four basic elements:

- ▶▶ **Goals:** What you are trying to achieve (General)
- ▶▶ **Objectives:** What you are trying to achieve (Specific)
- ▶▶ **Strategy:** How you will achieve the goals/objectives (General)
- ▶▶ **Tactics:** How you will achieve the goals/objectives (Specific)

Plans may also include situational analysis, description of target customers and needs, competitive landscape, organisational assessment, and milestones with appropriate metrics. The

key is to ensure the plan is concise enough to be used and updated daily and not get stuffed on a shelf.

### GOST Framework

- ▶▶ **Goal:** Achieve Sales Growth
- ▶▶ **Objective:** To manufacture 100 Moulds within 1 year
- ▶▶ **Strategy:** Outsourcing
- ▶▶ **Tactics:** a) Understand current capacity & capability of existing suppliers to meet the requirements; b) Determine the need to develop new suppliers; c) Identify potential suppliers and d) evaluate; selection and onboarding of new suppliers.

This plan is to be supported with responsibility, resource requirements, target dates, and evaluation method/ frequency.

### Step 4- Establish Review Mechanism:

- ▶▶ Carry out Performance Reviews periodically viz. Monthly, Quarterly, Yearly.
- ▶▶ Emphasise on Process Approach (PDCA) & Risk-based decisions.

### Step 5-Understand and inculcate 3A Disciplines of Strategic thinking within yourself

Herein lies the pearl of great opportunity: the deeper you can dive into the business and resurface with strategic insights, the more valuable you'll become to your organisation.

3A = Acumen, Allocation, and Action

- ▶▶ **Acumen:** Generating key business insights.  
Acumen Question: What is the key insight driving this initiative, project, or activity?
- ▶▶ **Allocation:** Focusing resources through trade-offs.  
Allocation Question: What trade-offs will I make to focus resources?
- ▶▶ **Action:** Executing strategy to achieve goals;  
Action Question: What actions can I take to achieve advantage?

### Q What are the 5 key suggestions for Entrepreneurs?

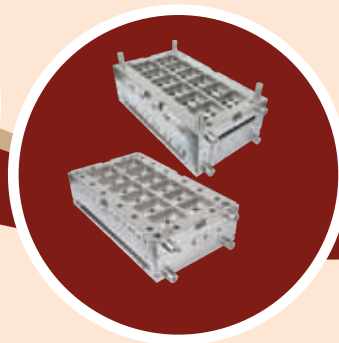
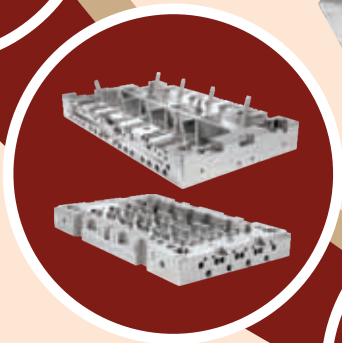
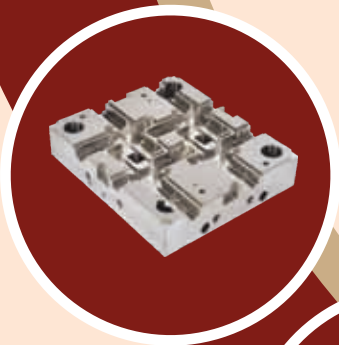
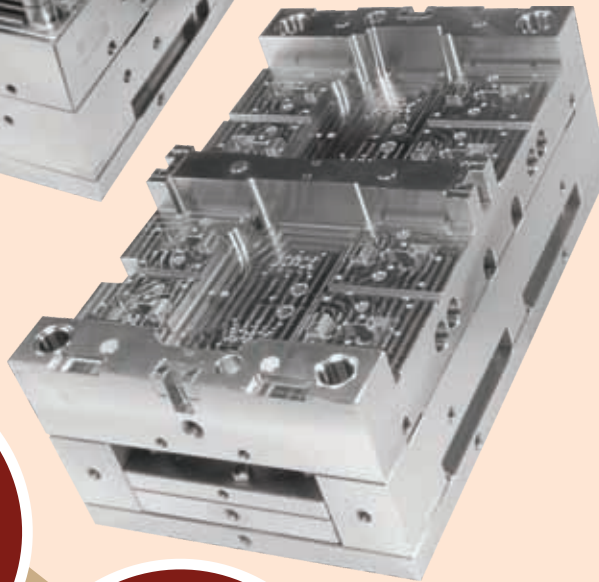
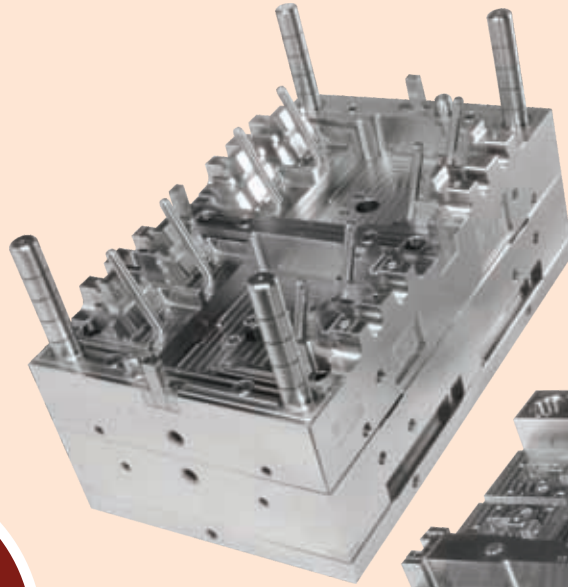
- ▶▶ Follow 5 Steps for Strategic thinking including G.O.S.T. Framework;
- ▶▶ Strategic Thinking & Mentoring to be Core competency skills for the Entrepreneur & Manager
- ▶▶ Focus on Team Development
- ▶▶ Have a Mentor or coach for yourself
- ▶▶ Develop consistency in performance and exercise annual business planning. 🌈



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# 8 Major Events that Rocked the

## Indian Manufacturing Industry in 2021

# Rewinding 2021

**A**utomotive is an important part of the Indian economy and acts as a trendsetter for its current state. A dire fall in commercial vehicle (CV) sales indicated approaching economic challenges in 2012 and 2019. A steep rise in two-wheeler and passenger vehicle (PV) sales was an announcer of good financial news in 2010.

As companies increase production, this sector will account for 65 million additional jobs within India by 2026. Let's take a look at some of the biggest events that happened in the Indian manufacturing space in 2021 regarding the significant announcement, investment opportunities, and government policies, among others.

# 1

## **PLI Scheme Announcement for Auto Components**

The government has announced the PLI scheme for India's automobile and auto components industry to enhance the country's manufacturing capabilities of advanced automotive products with a budgetary outlay of ₹26,000 crores. The scheme will be executed over a period of five years, starting from FY 2022-2023.

### **Who will benefit from the PLI scheme?**

Automobile businesses that will invest approximately ₹ 1,000 for two-wheelers and ₹ 2,000 crore for four-wheelers for more than five years will be eligible for the PLI scheme. Likewise, companies that invest more than ₹ 80 crore will be qualified for the government's PLI.

# 2

## **Ola - Building The World's Largest EV Bike Manufacturing Factory**

Ola Electric announced in August 2021 that the organization is constructing a mega factory on a 500-acre land area. In December, it had signed a ₹2,400-crore MoU with the Tamil Nadu government to develop the world's largest manufacturing plant for two-wheelers.

The Ola factory is stated to be the most automated in India since it will be powered by Ola's own tech stack and AI engine that will be deeply consolidated into all factory operations. Over 5,000 automated guided vehicles and robots will be employed when the factory is 100% operational. Moreover, the company claims that the factory will generate 10,000 jobs, despite incorporating Industry 4.0 technologies.

# 3

## **Koppal, Karnataka - India's first 400-acre Toy Manufacturing Ecosystem**

Chief Minister BS Yediyurappa performed the revolutionary ceremony of a toy manufacturing hub, describing the 400-acre

undertaking as a landmark for the Karnataka government's product-specific industrial cluster development program.

This cluster aims to attract an investment of ₹ 5,000 crore and produce around 1 lakh direct and indirect employment opportunities. The toy manufacturing industry is labour-oriented, and most workers are women. Therefore, this cluster is a bold step towards empowering women.

The project shows the government's drive to provide state-of-the-art manufacturing facilities within the state by furnishing an atmosphere that is congenial to doing business, relieving regulatory requirements, giving financial incentives, affordable workforce, and skilling initiatives.

# 4

## **Automobile Airbag Inflator Manufacturing Plant by Daicel Corporation**

The Japan-based Daicel Corporation announced that the company would establish an airbag inflator manufacturing plant in Chennai. During phase 1, the business invested roughly ₹ 230 crore, and it is their first airbag inflator manufacturing facility in India.

OneHub Chennai shows the firm's manufacturing facility's plug-and-play infrastructure and right ecosystem.

The company served the Indian market from its production site in Thailand and other countries. The manufacturing plant will come up at CapitaLand's OneHub Chennai, an industrial township. The factory will fulfill the growing demand for automobile airbag inflators in India. Daicel is scheduled to begin operations by December 2023.

# 6

## **Honda Cars Announced First-Ever Automobile Exports to Left Hand Drive Markets**

In January, Honda Cars India Ltd, which is a leading manufacturer of premium cars in India, declared exporting its newly embarked 5th Generation Honda City to Left Hand Drive countries.

This car manufacturing company has invested in building an extensive world-class manufacturing facility at Tapukara, supplying both left-hand and right-hand drive benchmarks. It allows them to fulfill the demand for national and international customers.

This is in line with the organization's strong commitment to 'Make in India', where HCIL has been essential in designing a robust ecosystem and has been fabricating all its volume models with over 90% localization.

# 5

## **Inauguration of Second LCA Plant**

In February 2021, Hindustan Aeronautics Limited's (HAL) second reliable Tejas LCA (light combat aircraft) facility was launched by Defence Minister Rajnath Singh in Bengaluru.

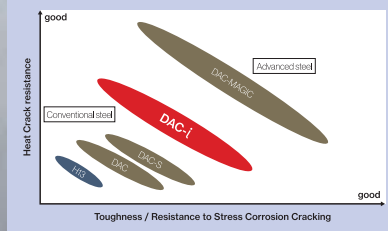
He truly admired the efforts made by HAL to boost the production capability of LCA and called it a success for the IAF fighter fleet in the coming years. Hindustan Aeronautics Limited's newly declared LCA plant is an excellent example of how 'Aatmanirbhar Bharat' is reshaping, and HAL got the biggest order of 83 LCA Mk-1A. State-of-the-art machines such as CNC profilers, five-axis machining centers, and so on for producing technologically challenging, high-pressure fluid-cell press machines, test rigs, specialized facilities for heat treatment, unique processes, and hangars for the structural council of aircraft are being assembled in the new LCA facility. Adopting the latest simulation software packages under capacity augmentation, production tooling, and productivity improvement initiatives have also been undertaken.

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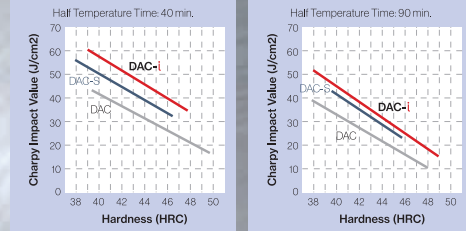
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# 7

## **PLI Scheme for Battery Storage**

The Union Cabinet approved the proposal of the Department of Heavy Industry in May 2021 for fulfilling the PLI Scheme - 'National Programme on ACC (Advanced Chemistry Cell) Battery Storage' for conducting the manufacturing capacity of 5 GWh of 'Niche' ACC and 50 GWh of ACC with an expenditure of ₹18,100 crores.

ACCs are cutting-edge storage technologies that can easily store electric energy either as chemical energy or as electrochemical and transform it to electric energy whenever required.

Consumer electronics, advanced electricity grids, electric vehicles, solar rooftops, etc., which are primary battery-consuming sectors, are projected to accomplish robust growth in the coming years. It is also anticipated that the dominant battery technologies will control some of the world's most significant growth sectors.

ACC battery storage producers will be chosen via a transparent and aggressive bidding method. The manufacturing facility will have to be undertaken within a period of two years. This incentive will be paid in five years.

## **PLI Scheme for Investment**

Wistron, Foxconn, Dell, and domestic firm Lava are among the 19 companies that have applied for investments under the PLI scheme for IT hardware manufacturing.

The scheme will lead to total production worth around ₹1.6 trillion, according to the ministry. The IT hardware firms have suggested production of around ₹1.35 trillion from the entire production, and domestic enterprises have offered over ₹25,000 crore.

Fourteen other firms have filed applications under the category of domestic companies, including Info power, Bhagwati (Micromax), Dixon, Orbic, Neolync, Syrma, Optiemus, VVDN, Smile Electronics, Netweb, RDP Workstations, Panache Digilife, HLBS, Coconics, and many more.

These businesses are projected to expand their manufacturing operations immensely and extend into national champions in IT Hardware production. The scheme will also generate approximately 37,500 direct employment opportunities in the next four years, along with the generation of additional indirect employment of nearly three times the direct employment.

# 8

## **Conclusion**

The worldwide automotive industry is moving to a new epoch, and it is likely to become as powerful as having the potential to change the power poles. The above listed are some of the biggest events that happened in the Indian automobile manufacturing space in 2021.

The growing dominance of connected vehicles and autonomous, along with new technology companies making ways into the automobile industry, will lead to a new era of regulations and challenges.

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# Keeping Everything in Check

**PolyWorks® Cuts the Symmetry and Alignment Check Time on Bombardier's CRJ Series by 75%.**



**A**s the airplane touched down on the runway, an unexpected force of impact with the ground resulted in what is commonly referred to in the aviation industry as a “hard landing”. Considered a frequent incident, each pilot is expected to experience at least one hard landing over the course of their career. Whether due to meteorological conditions, mechanical problems, an overweight aircraft, pilot error, etc., a hard landing can vary in seriousness from simply causing mild passenger discomfort to resulting in extensive damage to an airplane. So when a hard landing occurs, the airplane must be checked for structural damage before its next flight. At Bombardier Aerospace, this is where the Ground Support Equipment team comes in.

The world's third largest civil aircraft manufacturer, Bombardier Aerospace designs, manufactures,

and supports innovative aviation products for the business, commercial, specialized, and amphibious aircraft markets. Dedicated to setting new standards of customer care and aircraft availability, Bombardier offers a comprehensive range of support and services to its customers. Within its Customer Support Group lies the CRJ Ground Support Equipment team, which consists of experts committed to resolving technical issues—to keep the aircraft flying.

The CRJ Ground Support Equipment group focuses on the commercial aircraft division, and lately on Bombardier's CRJ NextGen Series of regional jets. When an incident occurs with an airplane requiring a symmetry and alignment check to analyze its structural engineering (such as the result of an airplane being hit by a baggage transporter or a jet bridge, or after undergoing a hard landing), a notification is sent to the CRJ Ground Support Equipment group,

# Case Study

**Knowing that a grounded plane can sum up to \$100K/day in lost revenue, the CRJ Ground Support Equipment team is dedicated to working around the clock, and across the globe, to return aircraft to service as fast as possible.**

and the In Service Engineering team is dispatched, on short notice, to any location worldwide. "Knowing that a grounded plane can sum up to \$100K/day in lost revenue, the CRJ Ground Support Equipment team is dedicated to working around the clock, and across the globe, to return aircraft to service as fast as possible," said Benoit Roby, CRJ Ground Support Equipment Coordinator at Bombardier.

Once the In Service Engineering team is on location, they will make a diagnostic to determine whether the incident has caused any deviations or damage to the components or to the structure of the airplane that may impact its airworthiness limitation. This diagnostic is done by inspecting the airplane, which includes performing a symmetry and alignment check to expose damage that could otherwise go unnoticed. Then after inspection, if the aircraft is out of specification, maintenance is performed. Once completed, a final symmetry and alignment check is done to ensure that the airplane is once again airworthy.

## Symmetry and Alignment Check

A symmetry and alignment check is a dimensional verification of the aircraft's airframe to determine whether its wings and tail are symmetrical to the longitudinal axis. The symmetry check includes inspection of: fuselage vertical deviations, horizontal stabilizer dihedral, engine vertical deviations, engine horizontal alignment angle, fuselage horizontal deviations, wing and horizontal stabilizer alignment, vertical stabilizer alignment, wing incidence and twist check, landing gear check, as well as the symmetry of the winglets. The alignment check of the aircraft's structure means that the position relationship of each major component must be inspected; this includes inspection of the wing group, tail group, and fuselage group.

Prior to the check, specific conditions must be respected to ensure the precision of the measurements, namely, the aircraft should be inside

a closed hangar where air currents or sunlight will not interfere with the alignment readings, the motors should not have operated within the past four hours, all of the fuel tanks should be drained, and the aircraft must be in a neutral/level position (i.e., mounted on jacks with its weight evenly spread out).

## The Challenge

### The Traditional Method

Traditionally, the symmetry and alignment check has been performed by using the plumb bob and datum plane method. This involves taking manual measures using plumb bobs, precision optical levels, transit rulers, tape, and numerous geometrical accessories that make up the symmetry and alignment kit. However, each kit is aircraft-model specific, meaning that when it's in use, its accessibility is limited. Also, the traditional method requires two technicians and, in the best-case scenario, takes between 12-14 hours to complete.

To perform the check, target points are taken relying on the symmetry screws located on the airplane as datum points. The plumb bob line is then



Taking measures manually requires time and patience to ensure precision.

“After selecting the portable 3D hardware, I turned to our specialists in measurement systems of tooling services, and they highly recommended PolyWorks®.”

**Benoit Roby,  
CRJ Ground Support Equipment  
Coordinator at Bombardier**

dropped to the floor and manually measured. Due to the extraordinary size of the airplane, obtaining the measurements is both time consuming and physically demanding on the technicians. Add to the equation the fact that reporting is done manually, two technicians must be present: one to take the measures and one to record the results. The physical size of the symmetry and alignment kit used in the traditional method poses altogether another set of challenges. Since the kit comes in an oversized crate, simply ensuring that the shipment follows the mobile team being dispatched to an international location is a feat.

Additional costs, delays, and customs issues are common occurrences. These complications have, on occasion, resulted in the team being forced to wait for the kit upon their arrival, making their time unaccountable during the wait. Also, shipping the kit back to the initial destination poses another set of problems because the equipment is packed by another crew, meaning there's the risk of damaging or misplacing tools.

Roby and his team reached the point where they needed to simplify their symmetry and alignment process with a portable system common to all airplanes. “Transport of the traditional symmetry and alignment kit had considerable drawbacks, which led us to consider using a 3D scanning solution, yet we were looking for a solution that would not affect the input or the output of our reporting system,” said Benoit Roby. The goal of the CRJ Ground Service Equipment team was to eliminate equipment, save time, and make the measurement instruments as simple as possible since not all technicians are metrology specialists.

## **The Solution The 3D Metrology Method**

Roby's team opted for the portable Leica Absolute Tracker AT401 and the 1.5" Corner Cube Reflector (CCR) combined with InnovMetric's PolyWorks|Inspector™ software. The selected 3D metrology method provides a universal solution that is compatible

with all aircraft—making limited accessibility to the tools a thing of the past. “The new solution is universal, portable, and fits right in our carry-on; this is a huge plus since we don't even have to check in the equipment for air travel,” said Roby. Add to the equipment a laptop and a homemade stand onto which the laser tracker is mounted, and the symmetry and alignment kit is complete—greatly simplifying transport logistics.

Another benefit of the portable 3D metrology solution comes with the fact that the previously mentioned best conditions for performing the symmetry and alignment check cannot always be respected. With the flexibility and robustness that this solution now provides, some of the preparation steps may be altogether eliminated, reducing logistic constraints.



■ The selected 3D metrology solution fits in carry-on.

Yet the most noteworthy benefit is the major time savings: A symmetry and alignment check can now be completed with only one technician in 6 hrs—and Roby even estimates that they will be able to do it in 4 hours. Add the fact that the previous method often encountered delays during transport; the CRJ Ground Support Equipment group was not able to set a flat service rate. With the 3D metrology method, they can now estimate the costs, which is a significant plus because within an organization like Bombardier being able to plan operations costs is key.

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## The Benefits

### The Application

With PolyWorks, the entire symmetry and alignment procedure is simplified. The technician arrives on location, sets up his equipment and identifies the target points on the airplane. Once this is done, he begins measuring using the CCR, and PolyWorks does the rest. Operations such as determining the axis, moving the device, pairing, and adjusting to match are performed in PolyWorks. As each measure is taken, the data is instantly accessible in PolyWorks, and what's more, it's automatically updated throughout the report.



■ Data of the measures taken with the CCR is immediately available in PolyWorks|Inspector™.

PolyWorks reduces human error, "I have confidence in PolyWorks; if a mistake occurs during the process, it's immediately pinpointed," said Roby. After measurement of the target points is complete, the technician instantly gets real-time deviations with respect to nominal points from the CATIA CAD model in PolyWorks. Roby finds the interoperability of the software intuitive. In fact, the ease with which PolyWorks handles the model imported from the CAD software, as well as the facility to generate reports were the key factors that influenced Roby's buying decision.

## Reporting

By using PolyWorks, it's now easier than ever to generate reports. The results are exported to Excel and the standard report format in place remains untouched. "Due to the fact that we must adhere to the strictest international standards, we needed a solution that would not impact our model file. PolyWorks is easy to understand and use, plus it complies with our standards," stated Roby. PolyWorks offers the reporting flexibility that the In Service Engineering team needs in the field since reports can now be done in real-time. Moreover, the PolyWorks



technical support group closely collaborated with Roby's team to create reports adapted to their reality. The result: Reports are optimized, yet there's no impact on the report model since the input and the output are exactly the same.

## Conclusion

PolyWorks was initially purchased to assist the CRJ Ground Support Equipment team with their symmetry and alignment check, and it has proven that it can go beyond. "PolyWorks offers the versatility that we need. We purchased this product for one purpose, and we've started to use it for our mapping needs," stated Roby. By integrating PolyWorks into their inspection process, Bombardier reduced by 75% their symmetry and alignment check time, and with this in mind, PolyWorks is in the process of being evaluated for the symmetry of amphibious aircraft.

Over the course of an aircraft's lifecycle, it is likely to sustain some form of structural damage, and due to this, damage assessment will remain an essential step in repairing an aircraft. Fortunately, there exist proven solutions that assist inspection crews and help get the aircraft back in the air as fast as possible—reducing downtime, saving money, and contributing to safer air travel. 🌈



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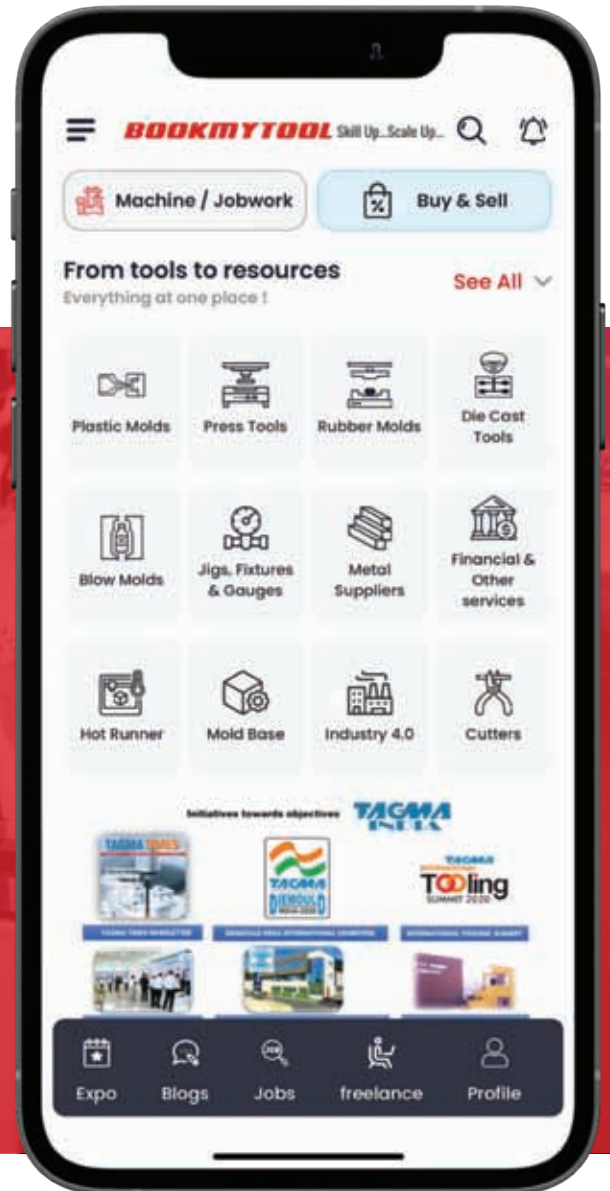
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# Convenient, networked and sustainable: New solutions for charging electric Volkswagen models

Volkswagen is the first high-volume manufacturer to offer its customers a universal and seamless ecosystem for charging their electric models. The service with the name 'We Charge' will be enhanced step-by-step to offer higher performance, convenience and sustainability – with new charging solutions for home and mobile charging, new functions in the ID. models, and soon also with the technology of bidirectional charging.

"The across-the-board enhancement of the charging infrastructure is decisive for accelerating the ramp-up of the electric mobility campaign. Charging must become simpler and easier to integrate into daily activities," explains Silke Bagschik, CMO ID. Digital and Head of Marketing & Sales, Product Line e-Mobility at Volkswagen. "With the new software in our ID. Models along with solutions like 'Plug & Charge', we, as a manufacturer, are making a decisive contribution to realising such goals."

## Thinking beyond the car

The Volkswagen Group is establishing important prerequisites for the success of the brand's electric offensive. "Our goal is to ensure that an electric vehicle is capable of being a customer's primary car – without any compromises. That is why, we are building a complete charging ecosystem, with residential charging solutions and a rapid expansion of the fast-charging infrastructure required for mobile charging, as well as competent advice, comprehensive charging tariffs and the right fleet solutions for business customers," says Elke Temme, Head of the Charging and Energy business area at Volkswagen Group Components and CEO of Elli. "We also have a clear strategic objective. We want to make it possible for the batteries in our electric vehicles to be used on the energy market as flexible, mobile energy storage units. Such energy storage options are essential for increasing the share of renewable energies. In addition, this can also make charging significantly cheaper for customers, and they will then be able to feed their own power into the public grid."

## Charging at home

The electrically powered Volkswagen models can already be conveniently charged in the garage at home – using the ID. Charger, for example, the home charging station from the Group brand Elli. Customers can choose here between the basic version and two fully networked variants, which they can control using the We Connect ID. App on their smartphone. In Germany, the Volkswagen brand also offers a suitable electricity supply contract with 'Volkswagen Naturstrom', to guarantee fully-certified green electricity from renewable energies.

## Mobile charging – also with 'Plug & Charge' in future

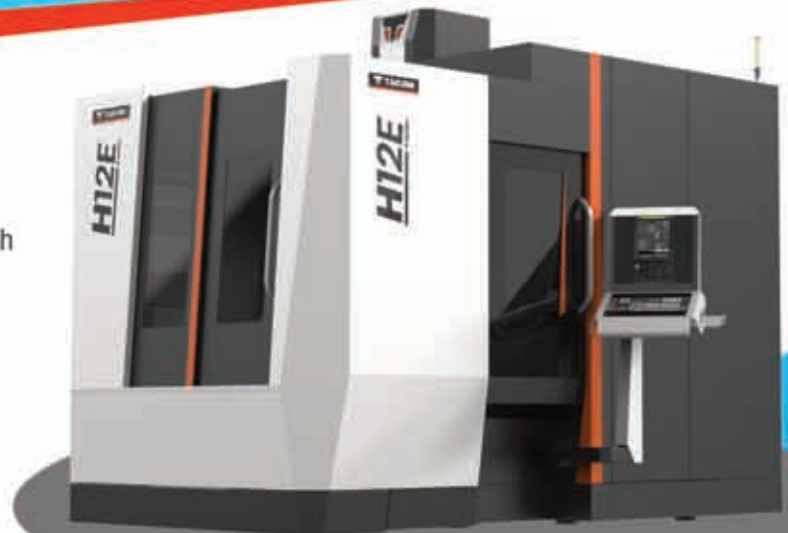
With the 'We Charge' charging card, 'We Charge' customers already have access to one of the largest charging networks in Europe. Over 270,000 public charging points are already connected – both in towns and on long-distance routes. And this number is increasing all the time. By 2025, the Volkswagen Group will also install around 18,000 fast charging stations in



Volkswagen's 'We Charge' will make charging even more convenient in the future by offering suitable charging solutions that are available everywhere and at all times.



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Europe – together with powerful partners. These will be supplemented by approximately 35,000 charging points that will be established with retail partners – many of which will be publicly accessible.

In 2022, Volkswagen's ID. models will already be provided with a new function that will replace the current charging card authentication process to make charging at fast charging stations even simpler. Here, encrypted and secure communication, in accordance with the ISO 15118 standard, will be started between the car and charging station as soon as the customer plugs in the charging cable. This authentication process takes just a few seconds before charging starts. Billing then functions in the usual way via the 'We Charge' contract. In 2022, 'Plug & Charge' will be possible in the networks of Ionity, Aral, bp, Enel, EON as well as Iberdrola and eviny. Discussions are ongoing with other major partners.

### **The next level: intelligent charging and bidirectional charging**

A Home Energy Management System (HEMS) is a prerequisite for intelligent charging at home. This system recognises all the requirements of consumers so that it can stagger and manage their power supply intelligently. The main benefit of this is that it makes charging with self-generated solar power even easier for owners of photovoltaic systems.

What's more, clever electricity tariffs and algorithms already make it possible to charge the car at the point at which a lot of renewable energy is available. This means, for example, that wind turbines won't need to be shut down because there isn't anyone using them. In 2019 alone, 6,500 gigawatt hours of renewable energy went unused in Germany – enough to have powered 2.7 million electric cars for a year.

But the potential is even greater in combination with bidirectional charging – a ground-breaking technology about to be launched at Volkswagen: the electric cars can feed electricity they don't need into the customer's home network (vehicle-to-home) and, in the future, they will also provide electricity to stabilise the electricity grid. All ID. models with a 77-kWh battery will have this capability in future. An over-the-air update rolled out gradually will be used to make this available for vehicles already delivered as well. A special DC BiDi wallbox will be used for the power transfer and communication.

### **New software for the ID. models**

In the near future, all ID. models will leave the production line with a new software version that offers significant benefits for charging. The maximum power rating for the 77-kWh battery will increase from 125 to 135 kW (or 150 kW for the ID.5 GTX). This will cut the charging time by up to nine minutes when charging from 5 to 80 percent SOC (state of charge). These improvements will be activated in already delivered

customer vehicles by means of a software update in the near future. There is also a new Battery Care Mode that ensures maximum protection of the battery. This restricts the upper charge level (SOC) to 80 percent.

The charging menu, which now appears on the top level of the large touch display in the ID. models, will also be structured in a more informative and clearer way. The 'Online Route Calculation' function in the navigation system performs intelligent multi-stop route planning for long journeys so that the vehicle can reach the destination as quickly as possible. The function uses traffic and route data as well as the desired charge level at the destination for this purpose. The charging stops are evaluated dynamically on the basis of the charging station capacity and occupancy level. As a result of this, the route planning function may suggest two short charging operations with high power instead of a long charging stop with low power.

### **Support for expansion of renewable energy generation**

As the first car manufacturer, the Volkswagen brand is supporting the expansion of renewable energies by means of new wind and solar farms in Europe. The goal here is to additionally generate and feed into the grid the amount of green electricity that the vehicles of the ID. family need for operation and that is not already charged by customers in the form of green power. It is planned to build around 20 new installations by 2025. These will generate around seven terawatt-hours of additional green electricity each year, equivalent to over 300 new wind turbines. Volkswagen will invest around 40 million euros for this by 2025.

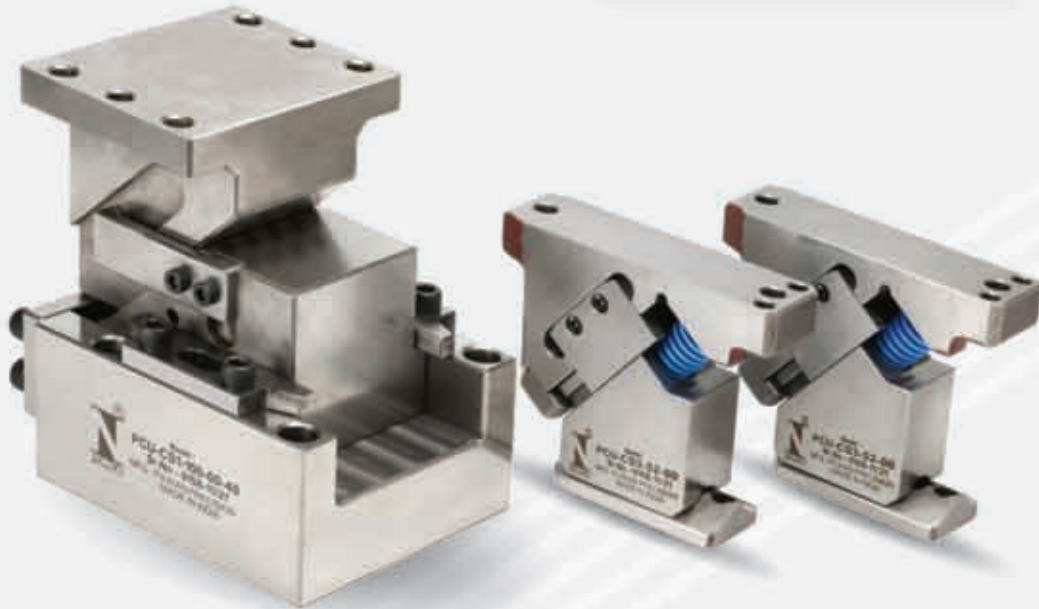
### **The strategic objective of the Volkswagen brand**

At the heart of the 'Way to ZERO' decarbonisation programme is the expedited ramp-up of the electric mobility campaign under the brand strategy, ACCELERATE. Volkswagen intends to be climate-neutral by 2050 at the latest. As an interim goal, it is planned to reduce the CO2 emissions per vehicle in Europe by 40 percent by 2030 (basis: 2018). The aim is also to make the manufacturing process, including the supply chains, and operation of electric cars, climate-neutral. This will be complemented by systematic recycling of the high-voltage batteries from old electric vehicles.

The goal is complete electrification of the new vehicle fleet. By 2030, it is planned that at least 70 percent of Volkswagen's sales in Europe will come from fully electric vehicles, which is equivalent to significantly more than one million vehicles. In North America and China, the goal is that electric vehicles will account for at least 50 percent of unit sales. To achieve these goals, Volkswagen will launch at least one electric vehicle onto the market every year. 🌱

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## Advertisers Index

Advertiser .....	Pg. Nos.
AMPCO METAL INDIA PVT. LTD.....	59
ASHNA ENTERPRISE .....	33
CAD MACRO DESIGN & SOLUTIONS .....	13
DEVU TOOLS PVT. LTD. ....	BACK COVER
DIJET INDUSTRIAL CO. LTD .....	37
DMI 2022 .....	17
FIBRO INDIA PRECISION PRODUCTS PVT. LTD .....	21
GOEL STEEL COMPANY .....	43
HASCO INDIA PVT. LTD.....	45
HURCO INDIA PVT.LTD .....	55
IMAGINARIUM SOLUTIONS I PRIVATE LIMITED .....	27, 51
KALYANI MOULD BASE PVT. LTD.....	19
LUCCHINI RS .....	11
MADHU MACHINES & SYSTEMS .....	1
MEUSBURGER INDIA PVT. LTD. ....	15
MILLUTENSIL SRL .....	5
MOULD STUDIO LLP .....	7
PAWAN INTERNATIONAL .....	57
PCK BUDERUS (INDIA) SPECIAL STEELS PVT. LTD.....	3, 30, 31, 32, 46,47
PRECISION MOULD TECH .....	39
PRECISION PUNCHES & DIES .....	29
PUROHIT STEEL INDIA PVT. LTD.....	FRONT INSIDE COVER
SCHIMMEL ONLINE INDIA PVT. LTD.....	53
VIJAYDEEP MOULD ACCESSORIES .....	BACK INSIDE COVER
VOESTALPINE HIGH PERFORMANCE METALS INDIA PVT. LTD. ....	9
YUDO HOT RUNNER INDIA PVT. LTD. ....	60

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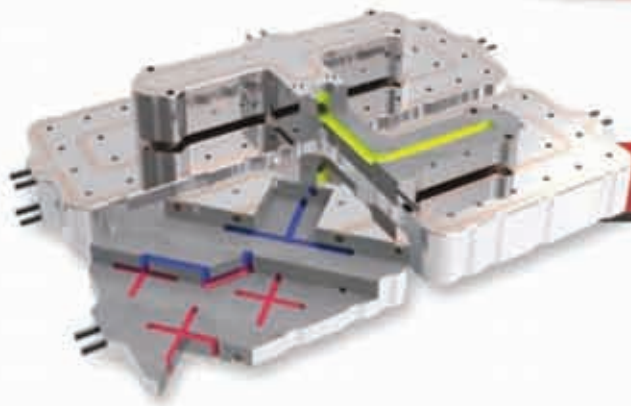
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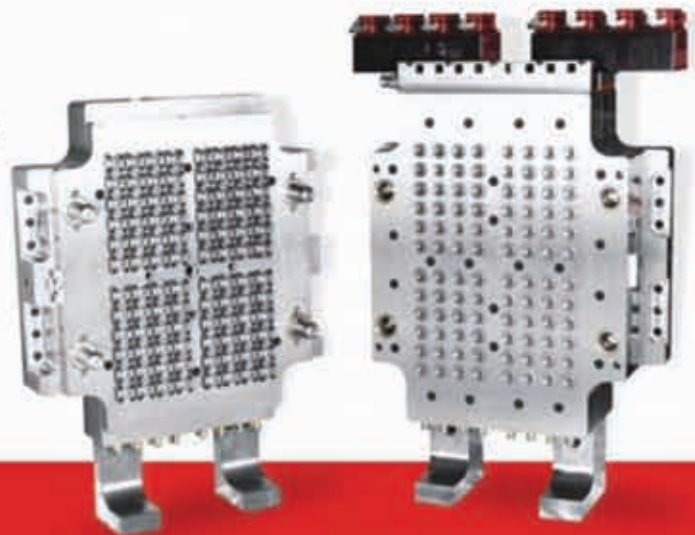
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