ALUMINIUM GDC TECH GREAT DIE CASTING

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JOURNAL FOR ALUMINIUM CASTING TECHNOLOGY

Volume 74 - FEBRUARY 2026

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Volume 74 - February 2026

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A review of advances in the High Pressure Die Casting technique to produce car structural parts in aluminium alloys

Madhav Athavale, Consultant, athavalemadhav@gmail.com

Part VII Future of Aluminum HPDC car structural parts

10.0 Background/ Summary of topics covered in previous articles.

Part I to Part VI reviewed how need for light weighting led to replacement of iron and steel parts by Aluminum alloys. It covered role of HPDC process and its unique advantages such as near net shape casting, good finish and high productivity and & costs. Structural casting needs to be amenable to various joining techniques like fusion and friction welding, Self Piercing Riveting (SPR) & clinching and adhesive bonding to form structural assemblies. It led to evolution of HPDC process. Introduction of Electric vehicles in last 5 years resulted in new approach to car design and emergence of MEGA/GIGA/Very large structural castings.

Development of New alloys, application of high vacuum, extensive use of simulation for casting and die design, development of new die materials for better high temperature operations, development of melting metal treatment and metal transfer techniques and die presses are some of key advances that have been discussed in earlier parts.

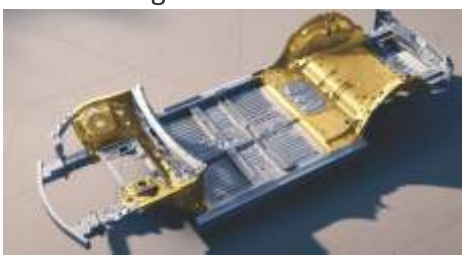
What direction the adoption of very large castings will take is under intense debate. The debate is about Modular structure vs Large Integrated structure. TESLA and some car producers in China have aggressively adopted it and other major players like Toyota, Honda, Volve, VW, GM, Ford have expressed interest in using the concept for EV but many technical and commercial challenges need to be addressed before real widespread adoption takes place. Following sections look at these challenges.

10.1 How different car makers are exploring GIGA/MEGA/Very Large castings

Tesla - Tesla's pioneering machines at its Texas Gigafactory produce single rear body pieces that previously required dozens of individual components, fundamentally re-imagining vehicle architecture (Unboxed manufacturing). Apart from Model Y (2.3 M vehicles sold till 2025), Tesla is using GIGA castings for Cyber truck

and has plans to launch Tesla Robotaxi Cyber-cab supposed to be fully autonomous later in 2026 that is claimed to use upper body GIGA casting .

China – As of now China produces largest number of EVs in the world. Many EV producers are aggressively using Very Large/GIGA HPDC Aluminium structural castings. Luca Greco, Founder and Editor in Chief of The Giga-casting Newsletter reports on Linked in Update of 17/11/2025 - 30/11/2025 – XPeng uses front and rear under body GIGA castings



XPeng was an early and aggressive adopter of Giga castings. It uses 7,000-ton, 12,000 ton, and 16,000 ton die casting islands to produce both front and rear underbody structures for all its high-volume models and nearly all of its one million vehicles produced to date. Xpeng also retrofitted the P7 with Giga castings during their latest restyling. From January to October, the company delivered 355,209 vehicles.

Xiaomi- It has made Giga casting a cornerstone of its manufacturing strategy. Both the SU7 and the newer YU7 feature a large rear underbody Giga casting. Xiaomi's Super Factory utilizes a self-developed die casting aluminium alloy and die casting machines with a clamping force of 9,100 tons. Currently, four 9100-ton machines are in production, and a fifth has already arrived at the factory, expected to be

installed and put into production by the end of the year.

Nio and BYD are other producers using Very large structural castings

Volvo – 26/11/2025. At Volvo's Torslanda plant in Sweden, an 8,400 ton die casting machine is producing the single piece rear underbody mega casting for the upcoming all-electric EX60, the BEV successor to the XC60. Volvo's first in-house Mega casting production is already ramping up ahead of the EX60's world premiere on January 21.

The first Volvo car to use mega casting as part of its production is expected to be the all-electric Volvo EX60. The cast parts will be for the rear chassis section, made from a single aluminium casting and is expected to confer 15–20 % section weight reduction. Phil Drew commented that "This isn't just a machine. It's the beginning of a new way of building cars." **Mega casting is not just a technology project, but an organizational one** as well. Torslanda is systematically building up the necessary expertise.

Toyota - Long a bastion of manufacturing conservatism - is eyeing the process for future applications. Expected to launch new models in 2026.

Honda – A series of six "giga casting" presses have been installed by Honda of America at the Anna (Ohio) Engine Plant as a core manufacturing element of the EV Hub the automaker will launch later this year. They will start assembling the new Acura RSX EV at Marysville, which will be followed by electric vehicles based on prototypes Honda unveiled in January at the 2025 Consumer Electronics Show, the Honda 0 SUV and Honda 0 Saloon. Honda's goal is for all its products to be zero-emissions vehicles by 2040.

Ford – It is pursuing its own ambitious path with the technology, branding its approach 'unicasting'. The US automaker is leveraging massive castings not only for structural simplification but also to enable a radical reconfiguration of its assembly process. Its strategy involves building three major subassemblies - a front unicast module, a rear unicast module, and a central battery-and-cabin unit - in parallel on an "assembly tree" before merging them.

Stellantis - The carmaker has concluded after internal assessment that the potential efficiencies of giga casting are eclipsed by its substantial drawbacks. These include not only prodigious capital outlays but also thorny implications for vehicle repairability and the economics of the aftermarket.

In summery 2025 has been an important year for the Giga casting industry, it marked 5 years after the first Tesla Model Y with Giga casting technology entered the market. In 2025 a record number of models in China adopted the technology and Western industry giants, like Volkswagen and Ford announced they are moving in this direction. 2026 is going to be an even more important year with the first European and Asian (non-Chinese) OEMs introducing Giga castings on the market as well as new launches by Tesla and other players.

10.2 Major Challenges

Tooling costs-

They are astronomical. Traditional stamping dies might cost $1.2-2.5 million, mega casting moulds/dies can exceed $12 million. Annexure 1 gives some cost details. More critically, these moulds are entirely specific to individual components - there is no flexibility for model variations or updates without complete tooling replacement. Such inflexibility poses a clear production risk to vehicle manufacturers. However modular die/mould constructions are already being used by Tesla and few others. Fewer, more powerful machines are potential bottlenecks. Any downtime on a giga press hits a large share of your production.

Mastering the casting production process control –

This is vital. Michael Cinelli, Director of Product Management & Marketing for Die Casting at Bühler, explains: "The hardest leap is mastering every step of the process -melting, dosing, injection, die thermal control, extraction, trimming, inspection, and palletising - while maintaining consistent quality. It goes beyond technology. It is about managing system-level complexity and building casting know-how in organisations that often come from stamping."

Quality control –

It becomes more complex in some respects. A defective traditional component affects only that part; a flawed mega casting can render an entire

structural assembly unusable. For castings over 60 kg that go directly into crash structures, maintaining quality without sacrificing cycle time demands sophisticated melt-handling practices. Bühler's approach involves "tightly controlled melting, multi-stage filtration, and rotary degassing with continuous hydrogen monitoring; maintain disciplined ladle and dosing system hygiene; and employ gating/venting designed to avoid air entrainment and trap inclusions," according to Cinelli. This transition is particularly challenging for traditional OEMs who must transform existing manufacturing capabilities.

Cinelli notes that "while Chinese newcomers act very quickly and promptly resort to technical prototype solutions, more traditional OEMs tend to rely heavily on simulation because a change to mega casting for them often means to transform existing manufacturing sites. Annexure 2 gives one way of how GIGA casting costs may be worked out.

Repairability & insurance impact –

If a large cast structure is damaged in a crash, you might have to replace the whole module instead of a few sheet metal pieces. That raises big questions about repair cost, total loss thresholds, and insurance models; long term real world repairability is still not fully understood. Tesla has issued a manual regarding repair of GIGA castings

10.3 Future of small structural and GIGA/MEGA/Ultra large structural castings

10.3.1 The structural castings in ICE cars

It will continue to be used in the way they are currently used. Innovations will continue with more integration of components. EU funded project for production of Ceramic Cores for use in HPDC to make closed deck diesel cylinder blocks was successfully completed though not commercialised due to change in regulations. The technology is however available, and interesting applications have been identified for the hybrid and electric vehicles of the future. Annexure 2 Gives the summary of the project taken from the public final report Titled “High Pressure Die Casting (HPDC) Lost-Core (LC) technology for the production of Aluminium Closed Deck blocks for next generation Euro 7 engines” dated 9th July 2019.

Honda recently suggested that future giga cast parts could include body frames and internal-combustion or hybrid-electric engine components as reported in NADCA News and Announcements

13.3.2 The future of giga/mega/ultra large HPDC (high pressure die casting)

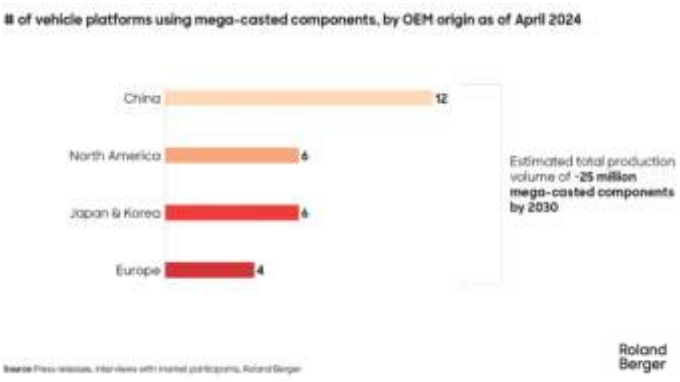
It is big, but not universal. It’s going to reshape parts of automotive manufacturing, especially EVs, but it won’t replace all conventional methods. Giga casting Market Analysis by Mordor Intelligence shows that the giga casting market size reached USD 0.16 billion in 2025 and is on course to touch USD 1.04 billion by 2030, advancing at a vigorous 45.41% CAGR. This rise underscores automakers’ tight focus on large-format high-pressure die casting, which replace large number of steel stampings into a handful of aluminium components.

A) Body assemblies held 58.72% of the giga casting market share in 2024 and remain core to most rollouts, yet battery and under-body castings are expanding at 48.05% CAGR. The giga casting market size tied to battery housing is forecast to widen sharply as every BEV adopts a floor-mounted pack needing rapid heat dissipation and crash load pathways.

B) Light commercial vans join the curve as e-commerce pushes operators toward zero-emission fleets. Medium and heavy trucks inch forward, but battery mass remains a hurdle.

Across all segments, lower total part count and tighter assembly real estate favour casting economics, ensuring passenger cars continue to headline adoption. More details are given in Annexure 3

Roland and Berger have given following forecast of OEMs using Mega Cast components in EVs by Country in the report titled “How mega castings are reshaping the automotive industry” dated March 27, 2025 By Bernhard Langefeld and Mathieu Bernard



Annexure 1

Typical Cost Ranges (industry observed) for Capex are as below-

Item	Approx. Cost Range
Giga-press	$5M–$12M
Tooling (per die)	$1.5M–$4M
Automation + robotics	$1M–$3M
Infrastructure upgrades	$2M–$10M

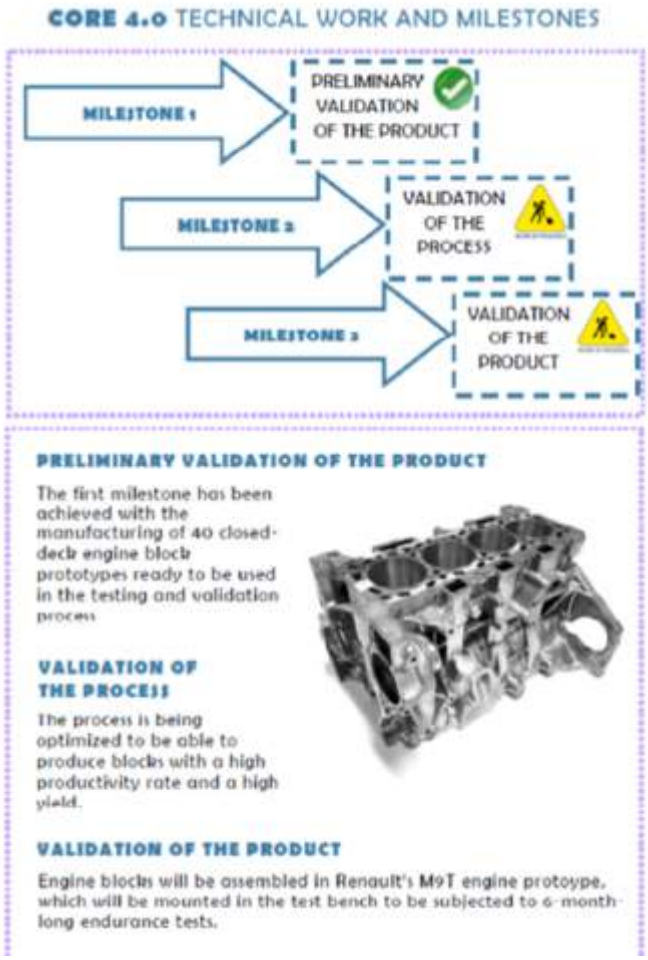
Opex would be material+ energy + labour + maintenance

Cost per Part Calculation Framework

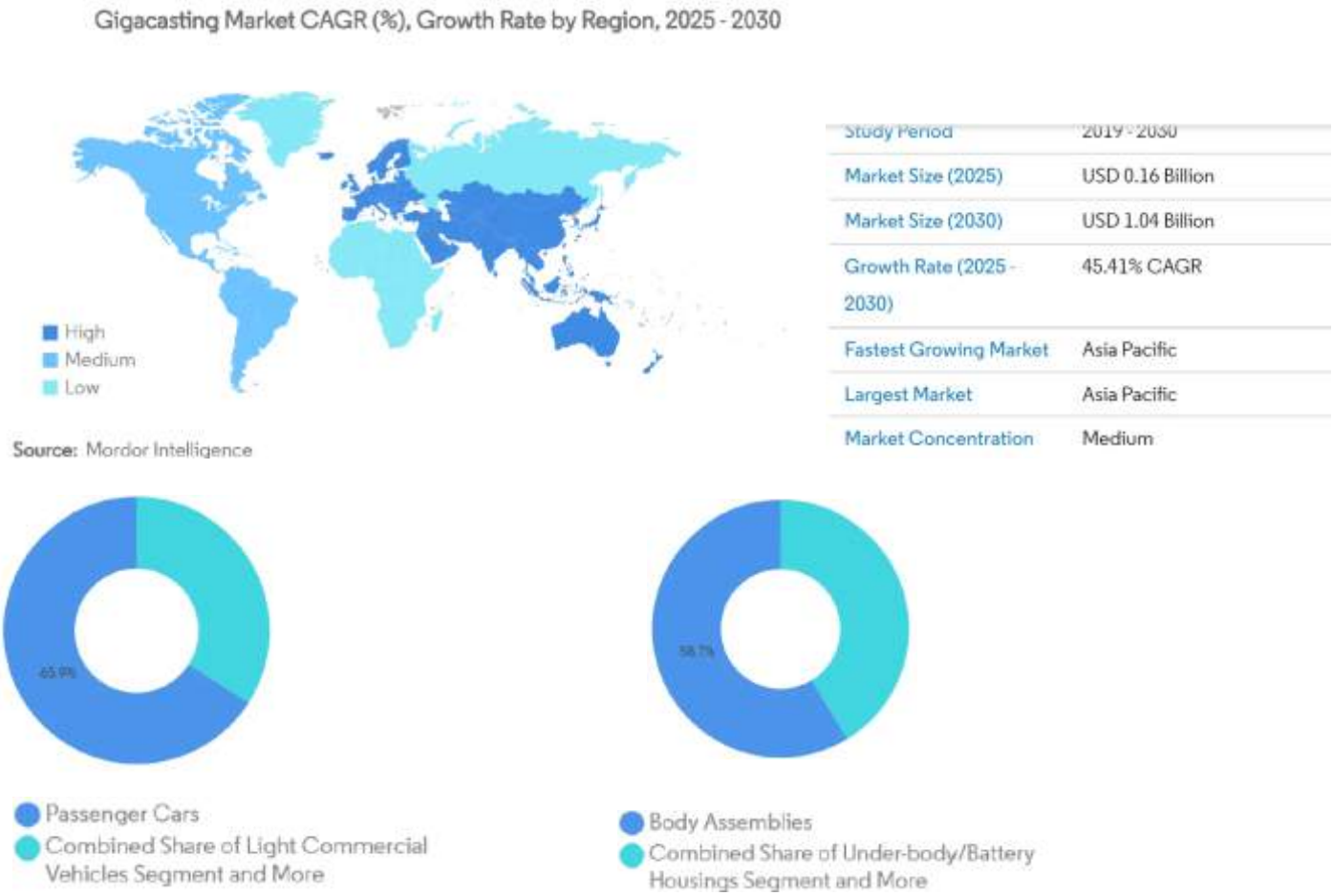
A typical costing model: Cost per part

$$= \frac{\text{CapEx amortization}}{\text{Annual volume}} + \text{Material cost} + \text{Energy cost} + \text{Labor cost} + \text{Maintenance}$$

Annexure 2



Annexure 3



10.4 Conclusion

Giga/mega/ultra large HPDC will become a core technology for EV underbodies and key structural modules in high volume vehicles.

- It will significantly reduce part counts, line complexity, and in some cases cost and weight, and will be particularly attractive to cost driven, high scale players (notably in China) and aggressive EV OEMs.
- It will not fully replace stamping/welding or multi piece structures; instead, the future will be hybrid architectures that mix large castings with other processes to balance cost, flexibility, repairability, and sustainability.
- The pace and extent of adoption will depend heavily on:
- Crash and repair data over the next 5–10 years
- Regulatory and insurance responses
- Advances in alloys, process control, and design methodologies
- Alternate processes like Rheocasting , Thixocasting will come up for making structural castings
- Mg castings will start making inroads.

References:

1 The Giga-casting Newsletter on Linked in Update of 17/11/2025 - 30/11/2025 by Luca Greco, Founder and Editor in Chief

2 How mega castings are reshaping the automotive industry" dated March 27, 2025 By Bernhard Langefeld and Mathieu Bernard

3 Giga casting market size & share analysis – Growth Trends and Forecasts (2025-2030) by Mordor Intelligence

SCADA

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SCADA Explained

Supervisory control and data acquisition (SCADA) is a system of software and hardware elements that allows industrial organizations to:

- Control industrial processes locally or at remote locations
- Monitor, gather, and process real-time data
- Directly interact with devices such as sensors, valves, pumps, motors, and more through human-machine interface (HMI) software
- Record events into a log file

SCADA systems are crucial for industrial organizations since they help to maintain efficiency, process data for smarter decisions, and communicate system issues to help mitigate downtime.

The basic SCADA architecture begins with programmable logic controllers (PLCs) or remote terminal units (RTUs). PLCs and RTUs are microcomputers that communicate with an array of objects such as factory machines, HMIs, sensors, and end devices, and then route the information from those objects to computers with SCADA software. The SCADA software processes, distributes, and displays the data, helping operators and other employees analyze the data and make important decisions.

For example, the SCADA system quickly notifies an operator that a batch of product is showing a high incidence of errors. The operator pauses the operation and views the SCADA system data via an HMI to determine the cause of the issue. The operator reviews the data and discovers that Machine 4 was malfunctioning. The SCADA system's ability to notify the operator of an issue helps him to resolve it and prevent further loss of product.

Who Uses SCADA?

SCADA systems are used by industrial organizations and companies in the public and private sectors to control and maintain efficiency, distribute data for smarter decisions, and communicate system issues to help mitigate downtime. SCADA systems work well in many different types of enterprises because they can range from simple configurations to large, complex installations. SCADA systems are the backbone of many modern industries.

Virtually anywhere you look in today's world, there is some type of SCADA system running behind the scenes: maintaining the refrigeration systems at the local supermarket, ensuring production and safety at a refinery, achieving quality standards at a waste water treatment plant, or even tracking your energy use at home, to give a few examples.

Effective SCADA systems can result in significant savings of time and money. Numerous case studies have been published highlighting the benefits and savings of using a modern SCADA software solution such as Ignition.

The Birth of SCADA

To understand the origins of SCADA, we must understand the problems industrial organizations are trying to solve. Before the concept of SCADA was introduced in the mid-20th century, many manufacturing floors, industrial plants, and remote sites relied on personnel to manually control and monitor equipment via push buttons and analog dials.

As industrial floors and remotes site began to scale out in size, solutions were needed to control equipment over long distances. Industrial organizations started to utilize relays and timers to provide some level of supervisory control without having to send people to remote locations to interact with each device.

While relays and timers solved many problems by providing limited automation functionality, more issues began to arise as organizations continued to scale out. Relays and timers were difficult to reconfigure, fault-find and the control panels took up racks upon racks of space. A more efficient and fully automated system of control and monitoring was needed.

In the early 1950s, computers were first developed and used for industrial control purposes. Supervisory control began to become popular among the major utilities, oil and gas pipelines, and other industrial

markets at that time. In the 1960s, telemetry was established for monitoring, which allowed for automated communications to transmit measurements and other data from remotes sites to monitoring equipment. The term "SCADA" was coined in the early 1970s, and the rise of microprocessors and PLCs during that decade increased enterprises' ability to monitor and control automated processes more than ever before.

The Evolution of SCADA

The first iteration of SCADA started off with mainframe computers. Networks as we know them today were not available and each SCADA system stood on its own. These systems were what would now be referred to as monolithic SCADA systems.

In the 80s and 90s, SCADA continued to evolve thanks to smaller computer systems, Local Area Networking (LAN) technology, and PC-based HMI software. SCADA systems soon were able to be connected to other similar systems. Many of the LAN protocols used in these systems were proprietary, which gave vendors control of how to optimize data transfer. Unfortunately, these systems were incapable of communicating with systems from other vendors. These systems were called distributed SCADA systems.

In the 1990s and early 2000s, building upon the distributed system model, SCADA adopted an incremental change by embracing an open system architecture and communications protocols that were not vendor-specific. This iteration of SCADA, called a networked SCADA system, took advantage of communications technologies such as Ethernet. Networked SCADA systems allowed systems from other vendors to communicate with each other, alleviating the limitations imposed by older SCADA systems, and allowed organizations to connect more devices to the network.

While SCADA systems have undergone substantial evolutionary changes, many industrial organizations continued to struggle with industrial data access from the enterprise level. By the late 1990s to the early 2000s, a technological boom occurred and personal computing and IT technologies accelerated in development. Structured query language (SQL) databases became the standard for IT databases but were not adopted by SCADA developers. This resulted in a rift between the fields of controls and IT, and SCADA technology became antiquated over time.

traditional SCADA systems still use proprietary technology to handle data. Whether it is a data historian, a data connector, or other means of data transfer, the solution is messy and incredibly expensive. Modern SCADA systems aim to solve this problem by leveraging the best of controls and IT technology.

Modern SCADA Systems

Modern SCADA systems allow real-time data from the plant floor to be accessed from anywhere in the world. This access to real-time information allows governments, businesses, and individuals to make data-driven decisions about how to improve their processes. Without SCADA software, it would be extremely difficult if not impossible to gather sufficient data for consistently well-informed decisions.

Also, most modern SCADA designer applications have rapid application development (RAD) capabilities that allow users to design applications relatively easily, even if they don't have extensive knowledge of software development.

The introduction of modern IT standards and practices such as SQL and web-based applications into SCADA software has greatly improved the efficiency, security, productivity, and reliability of SCADA systems.

SCADA software that utilizes the power of SQL databases provides huge advantages over antiquated SCADA software. One big advantage of using SQL databases with a SCADA system is that it makes it easier to integrate into existing MES and ERP systems, allowing data to flow seamlessly through an entire organization.

Many more systems may come but SCADA is likely to stay !

Condition Based Monitoring (CBM) - Predictive Maintenance

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Introduction:

In today's Competitive Industrial Environment, unplanned equipment downtime leads to significant financial losses, safety risks, and reduced productivity. Traditional maintenance approaches such as reactive (breakdown) maintenance and preventive (time-based) maintenance often result in either unexpected failures or unnecessary maintenance activities.

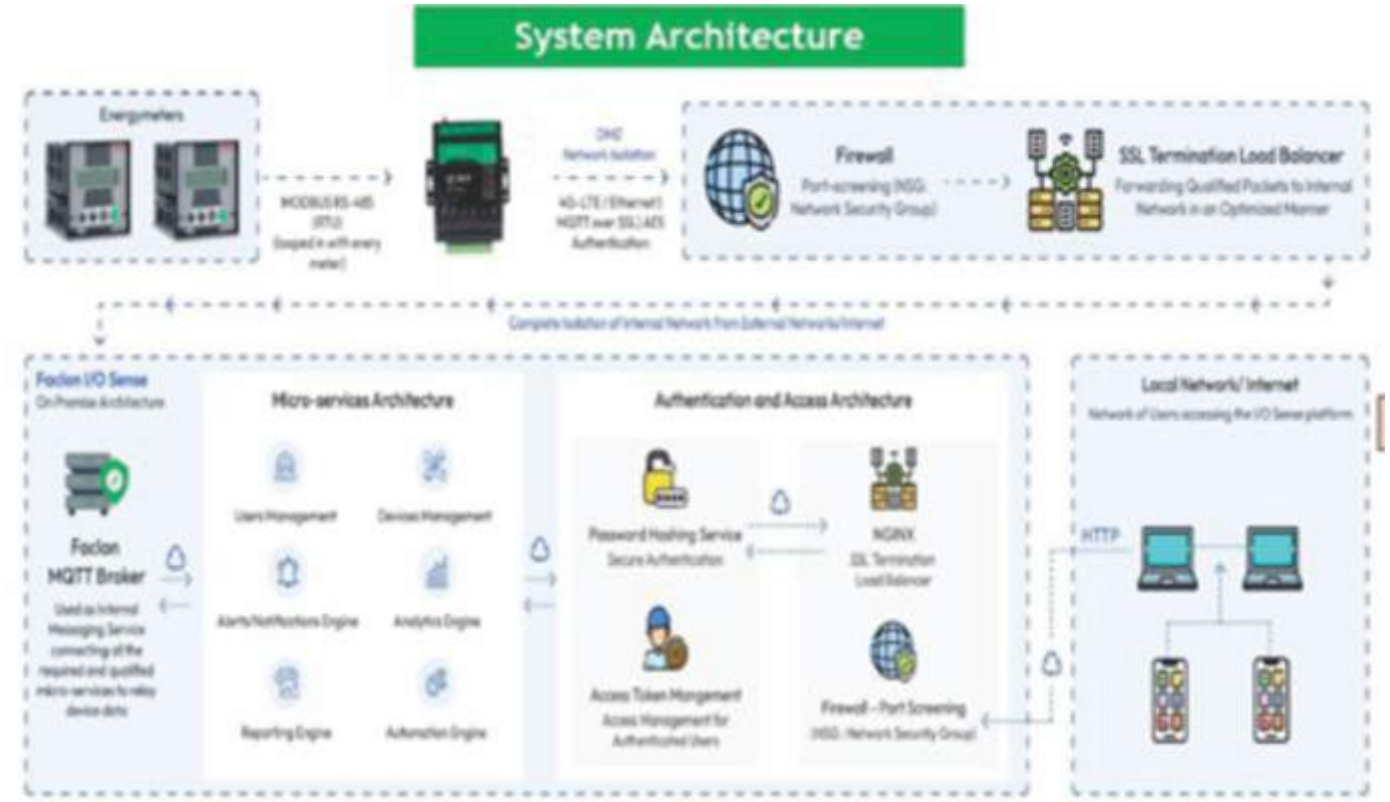
To overcome these challenges, industries are increasingly adopting Condition Based Monitoring (CBM) to Monitor Machine Health and undertake Predictive Maintenance Practice on the basis of Objective Inputs.

Condition Based Monitoring forms the Backbone of Predictive Maintenance by Continuously Monitoring Equipment Health Parameters. Predictive Maintenance Feature uses CBM Data combined with Analytics, and Historical Data Trends to Predict Failures before they occur, based on the Statistical Models, and sometimes with Artificial Intelligence (AI) enabling maintenance actions only when truly required.

Key Components of a CBM System:

- Sensors for Data Acquisition: Sensors such as Vibration Sensor, Temperature Sensor, Pressure Sensor, etc Collects real-time condition data from installed equipment's
- Data Transmission: Wired systems (Ethernet, fieldbus), Wireless systems (Wi-Fi, Industrial IoT)
- Data Processing & Storage: PLCs for pre-processing, SCADA, Cloud
- Data Analytics, Data Visualization & Alerts: Trend Analysis, Dashboards, Alarms, Notifications, etc.
- Maintenance Action: Corrective Maintenance, Spare Planning, Root Cause Analysis

System Architecture:



Benefits of Condition Based Monitoring & Predictive Maintenance

- Early Fault Detection
- Effective Maintenance Scheduling
- Reduction in Un-planned Downtime
- Lower Maintenance Cost
- Reduced Spare Parts Inventory
- Optimized & Effective Utilization of Manpower
- Improved Workplace Safety
- Consistent Product Quality

Implementation Case Study at Uno Minda AW2W Unit:

Project Background:

In Paint Shop, PT line had about 30 Pumps, in which frequent failures/leakages were observed wrt Water Circulation Pumps resulting in high unplanned downtime Averaging 35 Breakdowns per Month, Loss of 1020 Minutes in Downtime, and Loss of Approximately 5500 Wheels/Month, Impacting Overall Business Performance Significantly.

Maintenance Activities were primarily Manual and Reactive, Limiting Early Fault Detection. Significant technician time was getting consumed to resolve breakdown issues, along with complete dependency on human judgment.

Solution Approach:

A CBM System & Architecture as indicated above was implemented to enable real-time Health/Condition Monitoring of Pumps. Key parameters such as Vibration, Temperature and Noise, were measured by deploying relevant sensors to collect Data.

Sensor's data was integrated into centralized dashboards displaying real-time values, trends, and historical graphs. Maintenance teams were trained to interpret data, analyse trends, and take predictive maintenance actions based on the system generated alerts.

Results/Performance Improvement:

- Zero pump-related downtime after May-2023
- Complete elimination of pump breakdown incidents
- Increase in Production by approximately 5500 Wheels per Month

Digitization of Energy Management Systems (EMS)

Introduction:

In the Industrial & Commercial Landscape, Energy has become one of the most critical operational resources. Rising energy costs, stringent environmental regulations, and sustainability commitments are pushing Organizations to manage energy more efficiently.

Traditional energy management practices, which rely heavily on manual meter readings, periodic audits, and reactive decision-making, are no longer sufficient. This has led to the rapid adoption of Digitization of Energy Management Systems (EMS).

Digitization of Energy Management System:

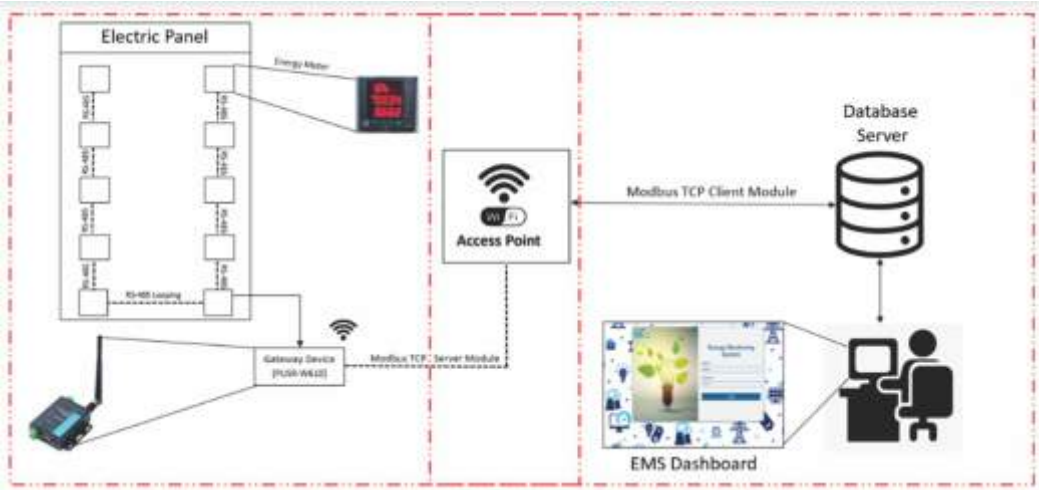
A digitization of Energy Management System is a technology-driven framework that continuously collects energy data from various sources, processes it using digital tools, and provides actionable insights to improve energy efficiency, reduce costs, and ensure regulatory compliances.

Key Components of an EMS

A digitized Energy Management System consists of multiple interconnected components working together:

- Energy Measurement Devices: Smart energy meters, Sub-meters for departments, equipment, or processes. They provide accurate, high-resolution data on consumption, voltage, current, and power factor to quote a few of the indicators.
- Communication Infrastructure: Data from meters and sensors is transmitted using wired protocols (Ethernet, etc), wireless technologies (Wi-Fi, etc). This layer ensures reliable and secure data transfer from field devices to central systems.
- Data Acquisition and Control Systems: Systems such as PLCs, SCADA, IoT gateways. These collect, aggregate, and pre-process raw energy data.
- EMS Software Platform: This is the core of digitization which includes elements like centralized energy database, real-time dashboards, trend analysis and reporting tools, alarm and notification systems.

System Architecture:



Benefits of Digitization of EMS:

- Digitized Data Tracking of Energy use at plant, process, or at equipment level
- Identification of Peak demand issues, energy wastage, and inefficient equipment's
- It helps in predicting the peak loads, and scheduling/management of loads intelligently

Implementation Case Study at Uno Minda AW2W Unit:

Project Background:

Earlier, energy monitoring at the plant was entirely manual, requiring night-shift operators to collect data from around 350 meters, for which 4 ~ 5 man-hours were getting consumed on daily basis followed by manual data entry of collected data in excel sheet (~ 2 hours job). Being, the readings were taken at different times, data could be called as mismatched or error-prone from time's perspective. This work being repetitive & non-value added was detrimental from maintaining employee morale.

Project Objectives:

The project was aimed at digitizing energy data collection and analysis to eliminate manual efforts, enable real-time monitoring, improve data accuracy, and provide clear, meter-wise and area-wise visibility for identifying energy optimization opportunities and supporting informed decision-making.

Solution Overview:

To address these challenges, an in-house digitized Energy Management System (EMS) Architecture (as indicated in above architecture diagram) and application was developed with the help of our Corporate IT Team. The solution automated energy data acquisition directly from energy meters, transmitted it securely to a central database, and web-based dashboards.

Application Features:

The EMS application provides secure, web-based access to real time, energy data summary, benchmarking, trend analysis, Devices Online/Offline details on the intuitive dashboards to support quick operational decisions.

Results/Performance Improvement:

- Paper savings through elimination of manual registers
- 4 ~ 5 daily Man-hour savings due to automated data collection & elimination of data entry
- Energy data is now received digitally on a daily basis at a fixed time through email
- Payback period is of about 3 years
- Optimized & Efficient Utilization of Manpower in other value added activities

The project was presented during the MEGA EVENT GDCTECH 2025 Conference. This was part of Project Competition 2025.

To Improve the good shots in ALU Step Bracket from 710 to 850 no's/day in 1800 1 PDC machine

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Summary:

Sundaram Clayton Limited – Oragadam Plant is engaged in the manufacture of aluminum castings and machined components with an annual production capacity of 12,000 MT. The plant supplies to leading OEM customers such as Hyundai, Kia, Daimler, TVS Motor, and DAF, serving both domestic and export markets including Germany, the USA, Indonesia, and Thailand.

This project focuses on improving productivity and good shot output of the ALU Step Bracket (LH) produced on the 1800T–1 Pressure Die Casting (PDC) machine. Baseline performance indicated an average of 710 good shots per day, which was significantly lower than the planned 850 good shots per day. This gap resulted in reduced OEE, internal customer line stoppages, monthly volume shortfalls, customer dissatisfaction, and an annual Cost of Poor Quality (COPQ) of approximately Rs. 12.0 lakhs.

A structured PDCA methodology was adopted for systematic problem solving. Initial analysis through historical trend studies and OEE breakdown revealed that while performance and quality factors were within targets, the availability factor was below expectation, primarily due to die breakdowns and higher cycle time. Detailed cycle time studies and Pareto analysis identified major contributors such as spraying, air blowing, solidification, core IN/OUT, and extraction operations, which consumed a significant portion of the total cycle time.

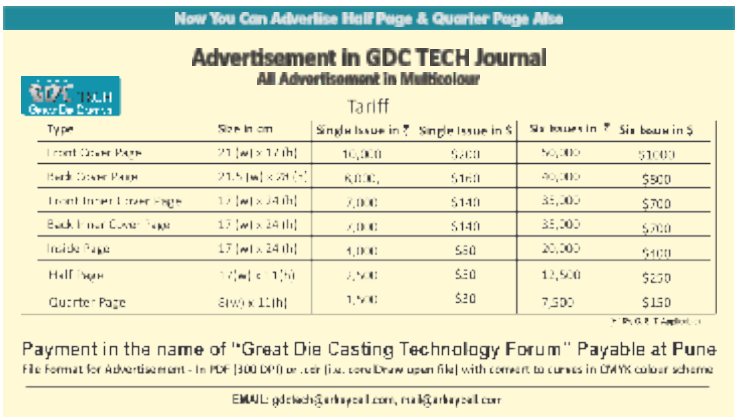
Further investigation using Gemba observations, IS–IS NOT analysis, process mapping, ECRS methodology, and statistical tools helped identify key improvement opportunities. Quick wins were implemented by optimizing metal pouring speed, robot movement speeds, die closing speed, and spraying logic.

Subsequently, deeper analysis addressed major issues related to die breakdowns, specifically tunnel core pin breakage and core signal problems. Root cause analysis revealed the absence of a standard operating procedure (SOP) for tunnel core pin movement, leading operators to handle it similar to a fixed die core pin, and the lack of a dedicated inspection checkpoint. Corrective actions included creating a standardized SOP for tunnel core pin movement, adding checkpoints in the die inspection check sheet, modifying core extraction sequences, updating robot programs, and improving die design clearances.

As a result of these systematic improvements, the cycle time was reduced from 98 seconds to less than 80 seconds, increasing the production rate from 36 to 45 shots per hour. This led to a significant improvement in daily good shots, enhanced machine availability, reduced breakdown losses, improved process stability, and a substantial reduction in COPQ.

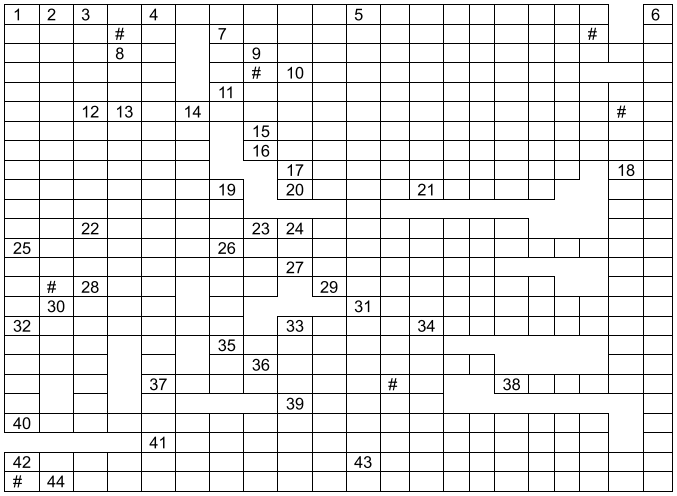
The improvements achieved through this project were horizontally deployed to the ALU Step Bracket (RH), ensuring sustainability and replication of benefits across similar products.

This is a summary one of the award winning Project in GDCTECH 2025.



GDCTech Crossword #13
The Cue: Melt and around

Compiled by: Pramod Gajare (Consultant) pramodgajare2013@gmail.com



Clues Along:

1) Due to usage over time the crucible material shows reduction in this. As a result, more energy and time is required to melt the same amount of metal

7) A system of bulk melting and metal treatment in a separate area followed by transfer of liquid metal to holding furnaces at the die casting station

9) Method of discharging the molten metal from the stationary furnace

10) Correct positioning of these in the melting furnace results to leave appropriate and uniform gaps for expansion of the crucible

11) Fuels with high ------ -------- give more heat and hence melt the metal in less time

13) A charge is mixed well in this furnace which allows a rapid dissolution of alloying elements

15) It travels frequently in between melting furnace and the holding furnace

16) An automatic closed holding furnace that precisely measures and delivers exact amount of molten metal to the die casting machine

17) The preferred direction of flame protruding from a burner with respect to the crucible in fuel fired furnaces

20) Aluminium logs

21) Specialized pliers essential for safely gripping and moving hot crucibles

24) A vessel in which metallic charge is melted by application of external heat

26) Painted or oily scrap can be remelted in this furnace since a fume extraction system is attached to it

27) An Iron-Chromium-Aluminium alloy used to make heating coils in electric resistance furnaces

29) Crucibles of this material are avoided in aluminium foundries due to possibility of high iron pick up in the melt

31) This is important while placing the crucible in fuel fired furnace, otherwise the combustion space gets reduced on one side which results in sub-optimal combustion

32) Accumulation of this at the bottom of a crucible reduces its capacity and also causes thermal stress on the crucible

33) It lifts and moves heavy material to and from the die casting machine

35) The crucible should be cleaned out by careful scraping when it is in this condition

36) Mixing well the flux in melt for removing dross from the melt

37) These are to be loaded first in the crucible while charging

38) This is provided on surface of a crucible so as to ensure high resistance to oxidation

39) Pouring lip of V shape on the crucible

40) Removing hydrogen from the melt without addition of any gas, solid or liquid agent in to it

41) Heating by different fuels viz. oil, gas or electric power is possible in this type of furnace

42) The new crucible must undergo this cycle for better bond formation of its material which leads to long life of the crucible.

43) As most of the fluxes are of this nature, they need to be protected from moisture in the air

44) Metal is heated indirectly by the flames reflected from the roof of this furnace

Clues Across:

1) Flaking of glaze of the crucible occurs mainly due to this

2) Typically, this type of furnaces contains a flat open floor where material is heated by flames or radiation from above

3) The preferred condition of a crucible at the time of removal from the furnace after usage

4) Maintaining temperature of metal at constant level becomes difficult in this furnace, since frequent

charging of fresh metal is carried out
5) Iron contaminated scrap like pistons or engine blocks can be melted in this type of furnaces
6) In this type of furnaces possibility of hydrogen pick up in the melt is less because of absence of combustion products
7) For better life the crucibles must be stored at a --- place so as to protect from moisture
8) In ----- ----- crucibles, carbon or resin is used as a bond
12) Tool used to remove dross from the surface of the melt
14) The ---- ---- of the furnace should be closed at all the times to avoid ingress of cold air
18) Effective utilization of heat from flue gases is one of the specialities of this furnace
19) A stand made of this material should not be used to support the crucible in the furnace, since it reduces heat transfer and hence can lead to cracks at bottom of the crucible
22) Never ---- a crucible on a hard surface while moving from one place to the other
23) A thin layer of this is generally sprinkled over the surface of a stand before keeping crucible on it so as to prevent the crucible from sticking to it
25) Cracks of this shape on crucible wall are result of the pressure from inside that may be caused by charge wedging into the crucible when it is cold
28) A chute used for transfer of molten metal
30) Excessive use of this reduces life of a crucible as it reacts with the crucible material
32) Never ----- crucibles one inside the other
34) It lifts up

Hearty Congratulations

GDCTECH JOURNAL AWARDS

GDCTECH Journal Editorial Committee this year decided to falicitate the prominent authors who have frequently contributed good knowledgeable articles to the Journal.
Accordingly the experts committee considered last three years publications. Based on their assessment and recommendation, following awards were declared during the GDCTECH 2025 Mega Event.

Significant Knowledge contributor Award

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Mr. Vishwas Kale
Managing Director
Vijayesh Instruments Pvt Ltd.

Consistent Knowledge Contributor
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MEGA EVENT 2025

UPDATE

GDCTECH 2025

International Conference & Exhibition on

Theme

Transforming Die Casting Through Innovation

4th, 5th and 6th December 2025 | The Orchid Hotel, Balewadi, Pune, India

FROM PRESIDENT'S DESK

Anil S. Kulkarni
President
GREAT DIECASTING TECHNOLOGY FORUM

Great Diecasting Technology Forum organised the Mega Event at The Orchid Hotel, Pune the Auto component manufacturers hub in India. The three days event from 4th Dec to 6th Dec was full of activities. The Exhibition was spread over 5000 sq mtr of area, having stalls with Aluminium and Magnesium casting related industries. Two International Conferences have taken place during this event. One on Aluminium Casting Technology and second one on Magnesium Casting Technology. The most happening one day event was Women Empowerment Programme for Women in Diecasting Fraternity. The CEO meet and Icon of The Die Casting Industry Award attracted the participants. The Quiz Programme, Panel Discussions and Best Project Presentations enjoyed by the participants. On first day Networking Dinner with cocktails enjoyed by the exhibitors and Delegates.

THE EVENT WAS INAUGURATED VIRTUALLY BY

Shri Suresh Prabhu

CHIEF GUEST OF HONOR

Shri Suresh Prabhu

Former Union Minister (Commerce & Industry; Railways; Civil Aviation; Power; Environment & Forests)
Government of India
Former G20 Sherpa of India
Chief Architect of India's Major "Ease of Doing Business" Reforms
Key Driver of Make in India, Startup India & FDI Liberalization

The Video message played during Inaugural function.

Keynote Speaker by M. S. Shankar, ANAND AUTOMOTIVE PVT. LTD., Guest of Honour - Dr. Martin Tauber, INTERNATIONAL MAGNESIUM ASSOCIATION (IMA), Chief Guest for Exhibition Inauguration - G D Rajkumar, UMS TECHNOLOGIES PVT. LTD.

Three Days Conference on Aluminium Die Casting Industry with the theme "TRANSFORMING DIECASTING THROUGH INNOVATIONS" (17 Experts presented Technical Papers & attended by over 180 delegates)

Rajesh R. Aggarwal
Conference Committee Chairman

Released Technical Volume

GUEST OF HONOUR - Dr. Martin Tauber, International Magnesium Association (IMA)

AUDIENCE

Katsumi Fukaya, Nikkei MC Aluminium Co. Ltd.

Kedar Vaidya, BUHLER (INDIA) PVT. LTD.

Ajit Chaturvedi, INDUCTOTHERM (INDIA) PVT. LTD.

PANEL DISCUSSIONS

Quality Imperative : By Dr. Pradeep Kulkarni

Digital Factories - Tech is stepping onto shop floors: Moderator was Dr. Arvind Tilak

Next-Gen Die - Casting through AI: Moderator was Dr. Satish Patil.

Exhibition

The GDCTECH 2025 Exhibition was successfully held for three days, total 108 Exhibitors participated in the Exhibition & spread over 5000 sq. mtr area.

The exhibitors included Die Manufacturer, Equipment Manufacturer, Alloy Manufacturer, Service Providers, Measuring & Testing, Consumables Suppliers, Casting Manufacturer and Magnesium Foundries participated.

Around 2000 knowledgeable visitors were visited the Exhibition from all over India, China, Europe & USA. The exhibitors were quite excited with the encouraging response from the visitors.

INTERNATIONAL EXHIBITION
Aluminium & Magnesium Casting Technology

Exhibitors

- ABHINITEE INDIA
- ACE DESIGNERS LTD
- AGANITA VENTURES PRIVATE LIMITED
- ALLIED REFRACTORY PRODUCTS INDIA PVT. LTD.
- BEI TECHNOLOGIES
- BHAGYANAGAR MAGNESIUM PRIVATE LIMITED
- CLOUD9 TECHNOLOGIES
- ELECTRO MECHANICAL SERVICES
- ENERGY SYSTECH
- EVERGREAT YOTA MACHINERY & AUTOMATION PVT LTD
- FORACE SPECIALITY CHEM PVT. LTD.
- FRECH INDIA MACHINERY PRIVATE LIMITED
- FUEL FURNACES MANUFACTURERS
- FURNTECK ENGINEERS PVT. LTD.
- GANESHA ENGISOL PVT. LTD.
- GODREJ AND BOYCE MANUFACTURING COMPANY LTD.
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- HISHINUMA MACHINERY CO. LTD
- IDECO ENGINEERING INDIA PVT. LTD.
- INSPIRON ENGINEERING PVT. LTD.
- ACHIEVE HYDRAULICS AND PNEUMATICS PVT. LTD.
- MAXION AUTOMATION PVT. LTD.
- ALPHACRAFT PVT. LTD.
- NIRANTARA ECOVENTURES PVT LTD
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- PNEUMEC KONTROLLS PVT. LTD.
- ITECH AUTOMATION
- JK PRECISION AND TOOLS
- KALYANI ENTERPRISES
- KARMA INNOVATIONS AND SOLUTIONS PRIVATE LIMITED
- KRISHANG ALLOY
- LK MACHINERY INDIA PVT. LTD.
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- MAKTECH INNOVATION INDIA PVT LTD.
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- DIMO CASTINGS PVT. LTD.
- SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA
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Media

Icon Of The Die Casting Industry Award

presented to
Mr. Srinivasan Ravi, Chairman and Managing Director of CRAFTSMAN AUTOMATION LTD.

The Award presented at the hands of Mr. Rajesh Nath, Managing Director, VDMA, President Anil Kulkarni & Founder Member R T Kulkarni.
Participants appreciated Mr. R. Shrinavan's interview.

Various Competitions held during three days and winner companies awarded with Mementos and Certificates.

Competition awards distributed at the hands of
Validictory Chief Guest Mr. Vandan Shah, Chairman, SIPRA ENGINEERS PVT. LTD.

Best Design Competition

For HPDC Winner: **CIE ALUMINIUM CASTING INDIA LTD.**
For GDC Winner: **POOJA CASTINGS PVT. LTD.**
For LPDC Winner: **POOJA CASTINGS PVT. LTD.**

Future Technology Award Winner

SKYFAST LTD.

Best Foundryman Award

Mr. M. M. Umadi,
Managing Director, SIPRA ENGINEERS PVT LTD.

Best Supplier of the Year Award

Mr. Prakash Chandra,
Director, FS INTERNATIONAL

Quiz Competition Award

MAXOP ENGINEERING CO. PVT. LTD, Gurgaon.

Best Project Competition Award

Kems Shakti Precision Castings Pvt. Ltd.
Sigma Electric Manufacturing Corporation Pvt. Ltd.
Sundaram Clayton Ltd.

Best Casting Competition

CASTING OF THE YEAR Award Winner
AAKAR FOUNDRY PVT. LTD.
"Valve Cover "casting.
Millennium Die Casting
"STATOR" casting.
NOBLE CAST COMP. PVT. LTD
"Mahle Housing" casting.
POOJA CASTINGS PVT. LTD.
CAST ENCLOSURE MACHINING

Special Appreciation Award
SHAGUN INDUSTRIES PVT. LTD.
"Motor Controller Housing "casting
ENDURANCE TECHNOLOGIES
"Transmission Housing" casting.

GDCTECH 2025

WOMEN EMPOWERMENT PROGRAMME FOR WOMEN IN DIECASTING FRATERNITY

Date: 5th December 2025 | Venue: The Orchid Hotel, Balewadi, Pune
Organized by: GDCTECH Forum | Part of: GDC Tech Mega Event 2025

GUEST OF HONOUR

The Women Empowerment Programme held on 5th December 2025 marked a significant milestone in the diecasting industry's journey toward inclusivity and professional development. Hosted at The Orchid Hotel, Pune, as part of the GDCTECH Mega Event, the initiative brought together women engineers, industry leaders, and changemakers to foster dialogue, share experiences, and chart a collaborative roadmap for the future. Around twenty-six students were present to glean insights into the fascinating field of die casting and the role women are playing in it.

Inauguration – Motivational Talk by Guest of Honour

The programme commenced with an inspiring inauguration session featuring **Guest of honour Lila Poonawalla**, Chairperson of the Lila Poonawalla Foundation, and motivational speaker Sheetal Arjunwadkar, Techpanacea Private Limited. he inauguration session was opened by a small speech from the Anil Kulkarni and a welcome by Mr. R. T. Kulkarni. This was followed by the ceremonial lighting of the lamp. Lila Poonawalla's address was extremely powerful and charismatic. Haven risen from the ranks as an apprentice at Alfa Laval to their managing director, she emphasized on the attitudes that assisted her rise in the company and in the other organizations which she worked in.

Sheetal Arjunwadkar talked about the evolving role of women in manufacturing and the importance of cultivating organizational cultures that support and sustain female participation in diecasting. Incidentally, she had been motivated by Lila Poonawalla's lecture where she had related an incident about taking up any work assigned to one and doing it so well that your superiors notice it and assign you relevant and challenging jobs. The GDC Tech executive committee attended this inaugural session after which they left.

CHIEF GUEST

Glimpses of Address By

Mr. Sarika Joshi

Founder - Invalue Analytics

(Present virtually due to travel issues)

Good morning, everyone.

I regret not being able to join you in person at The Orchid Hotel, Balewadi, due to unforeseen travel issues, but I am honoured to connect with you virtually. My heartfelt thanks to Mr. Kulkarni for his vision in founding GDCTECH FORUM and to the organizing team for bringing together this landmark Aluminium Diecasting Exhibition & Conference, GDCTECH 2025.

I stand before you—albeit virtually—with immense gratitude and a heart full of joy. It is a privilege to share this platform with Mrs. Lila Poonawalla. Her journey as one of India's first female mechanical engineers and later CEO of a multinational company is extraordinary, and her foundation's work in empowering underprivileged girls reflects the very spirit of resilience and women supporting women.

Reflecting on my own career, I recall standing on a die casting shop floor as a young engineer, wondering if I belonged. I learned that the real question is not "Do I belong?" but "What value can I bring?"

And that shift in perspective changed everything for me. That guided me through my studies at The Ohio State University, my work at Ryobi Die Casting in the USA, and later leadership roles in India. Each challenge became a teacher, each colleague a mentor, and every project an opportunity to grow.

My professional journey—from pioneering Statistical Process Control to leading supplier improvement programs—taught me that success is not only about technical excellence but also about people, partnerships, and purpose. Through Invaluue Analytics, I continue to learn and share, because growth stops when learning stops.

But here's something they don't teach you in engineering school: Technical excellence alone won't fulfill you. You need purpose. At the end of each day, I ask: "Am I better than yesterday? Have I added value to someone's life?" True fulfillment lies in giving—whether through effort, mentorship, expertise, or empathy. These acts build what I call an emotional bank account of trust and goodwill. Yet giving must be balanced with self-worth; we must celebrate our contributions to avoid resentment.

I want to express my gratitude to my husband, Mr Vivek Joshi, Director and CEO of Sundaram Clayton Ltd—my rock, my strongest supporter, my partner in every sense. My two daughters who cheer me on every single day and remind me why I do what I do. My mother and mother-in-law, who encouraged me, supported me through every challenge, and taught me that a woman can have both ambition and family. I would also thank mentors who believed in me even when I doubted myself.

To the women engineers and professionals here: you are pioneers in a demanding, male-dominated industry. Die casting and manufacturing are challenging, but they are also fields of extraordinary innovation where India's future is being built. Dream big, trust your abilities, speak up, and lead without waiting for permission.

My appeal to you is simple:

- Commit to lifelong learning.
- Define your purpose and let it guide you.
- Build networks of collaboration and support.
- Reflect daily on your growth.
- Give generously, but honour yourself in the process.

As Maya Angelou said, "You may not control all the events that happen to you, but you can decide not to be reduced by them." Challenges will come, but remember this gathering of brilliant women and know you are capable of extraordinary things.

I look forward to the insights from today's sessions and to the collaborative roadmap we will create together. Thank you to the GDCTECH team, to Mrs. Poonawalla for championing empowerment, and to all of you for your courage to be here. Dream big, work hard, stay curious, give generously, and above all, believe in yourself. The future of die casting—and of Indian manufacturing—is in your capable hands.

Following the inaugural session, attendees engaged in informal networking over tea, setting the tone for collaborative exchanges throughout the day.

Motivational lectures by Kavita Kaushik and Vrinda Walimbe

After the tea session, participants had the opportunity to hear two more motivational speakers, Kavita Kaushik who is currently spearheading strategic quality initiatives at Cummins India and Vrinda Walimbe, a psychologist. Kavita Kaushik stressed on the importance of communication, overcoming failures, and dedication to one's company. She also mentioned that her first job at Alfa Laval had materialized after she wrote to Lila Poonawalla who was then a director of Alfa Laval. Vrinda Walimbe gave the audience a reality check on expectations of the society from women and advised them to take care of themselves first. Both the speakers stressed on attention to self-care and being motivated throughout.

Panel Discussion – Insights from Industry Leaders

The panel discussion brought forward strategic insights from seasoned professionals including Manisha Kannur (ACE Designers Ltd.), Sarika Mahashabde (APT Pneumatics Pvt. Ltd.), Nidhi Shah (Voxeljet India Pvt. Ltd.), and Bhagyashree Mhaske (CIE Aluminium Casting India Ltd.). The dialogue revolved around leadership, innovation, and the evolving dynamics of finance, operations, and talent development in the diecasting sector. Very well conducted by Mugdha Akolkar, the panelists gave examples from their own journeys and forays into various fields. They encouraged women to work as fairly and equally as men if they wanted equality. They also mentioned that equity is different from equality and everyone should be made aware of the difference between the two. All the panelists had something different and enlightening to offer and the audience had many questions for all of them.

Experience Sharing – Voices from the Field

This segment featured candid reflections from women engineers actively contributing to the industry. Mrs. Leena Velankar from Velankar Chemicals, Priyanka Sangle from Dana and Anamika Singh from Victory Precision spoke about their roles and experiences. Their stories highlighted both the challenges and triumphs of navigating technical roles, underscoring the value of mentorship, resilience, and peer support.

Closing Session – Reflections and Next Steps

CHIEF GUEST - VALEDICTORY FUNCTION

Mrs. Manjoo Phadke, founder & CEO of SkillArbor Consultancy was the chief guest for the valedictory function. Mr. Aniruddha Inamdar introduced her. An excellent and witty speaker, Mrs. Manjoo delighted the audience with her stories and examples of tremendous hard work and motivation. She encouraged the delegates to follow their dreams as far as they could. The day concluded with a reflective wrap-up, reiterating the programme's core message: empowerment through opportunity, visibility, and community. Organizers emphasized the importance of sustained efforts and invited participants to remain engaged through GDCTECH's ongoing initiatives. Kruttika Apshankar-Kher, Chairman of the Women In Die-Casting committee gave the vote of thanks. The feedback from the participants was overwhelming with many of them reporting that they were extremely motivated and moved by the discussions that took place.

Students' Feedback - Students mentioned that they got a very interesting glimpse into the world of die-casting.

Glimpses


mega event
2025
GDCTECH 2025
WOM MPOWERME
AMME FOR
STING FRAT
2025 (Friday)


mega event
2025
GDCTECH 2025
EMPOWERMENT
AMME FOR
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025 (Friday)


WOMEN EMPOWERMENT
PROGRAMME FOR


mega event
2025

CEO MEET

4th December 2025

The CEO Meet was successfully organized on 4th December 2025 with the objective of bringing together industry leaders for meaningful interaction, knowledge sharing, and strategic discussion on leadership and business growth. Opening and welcome done by President Mr. A S Kulkarni and handover to Mr. Viren Joshi , Ex Global CEO of Sigma group.

Participation

A total of 37 CEOs / Managing Directors from various organizations attended the meet. The presence of senior leadership ensured rich discussions, high-quality networking, and active engagement throughout the programme.

Key Session Highlights

Due to some unavoidable circumstances, the Chief Guest of the CEO Meet, Mr. Sushir Joshipura, was unable to attend the program held on 4th December 2025. In his absence, Mr. Viren Joshi, Chairman of the CEO Meet Committee, took charge of the proceedings and carried the program forward seamlessly. Mr. Joshi delivered an insightful and motivating address, which was well received and highly appreciated by all the CEOs and Managing Directors present. A special session was conducted by Ms. Shama Patel, Corporate Coach, which emerged as the highlight of the event.

- The session focused on leadership effectiveness, mindset transformation, and managing organizational challenges.
- Ms. Patel's delivery was highly engaging, practical, and insightful.
- The session received an excellent response from all participating CEOs and MDs.
- Participants appreciated the real-life examples, interactive approach, and actionable takeaways shared during the session.
- Overall feedback from the participants was very positive.
- CEOs and MDs expressed satisfaction with the quality of content and relevance of the discussions.
- Many participants acknowledged that such forums are valuable for peer learning and leadership development.

Participants highly appreciated session by Ms. Shama Patel, made the programme meaningful and effective. The event reinforced the importance of continuous learning, collaboration, and leadership excellence.

Such meets are recommended to be organized regularly to sustain engagement and foster strong leadership networks within the industry.

Arkey Team - Women Power behind the show

CO-ORDINATOR

Dr. Ing. Martin Tauber
European Representative,
INTERNATIONAL MAGNESIUM ASSOCIATION
martintauber3120@gmail.com

POST EVENT REPORT UPDATES

2nd CONFERENCE ON

MAGNESIUM CASTING TECHNOLOGY

GDCTECH 2025

The Orchid Hotel, Balewadi, Pune, India
4th and 5th December 2025 (Thu-Fri)

Partner Association

Dear Magnesium Fraternity Members,

It gives immense satisfaction in 2nd conference & exhibition on Magnesium Casting Technology on 4-5 December 2025 at The Orchid Hotel, Pune.

As a conference co-coordinator, I must acknowledge the support by conference committee & speakers presenting all aspects of magnesium. Total 17 papers presented and one panel discussion. Below is the post conference report in brief.

Rajesh Sampat

1. Introduction and Context

The International Magnesium Conference, held as part of the GDCTECH Forum in Pune, on 4th & 5th December 2025 brought together International Magnesium Associations, global technology providers, researchers, equipment manufacturers, and Indian industry stakeholders to deliberate on the evolving role of magnesium and its alloys in modern engineering applications. The conference was structured to address magnesium technology from a holistic perspective—covering geopolitical supply considerations, process and product technologies, application development, sustainability, safety, and commercialization challenges.

Magnesium, as the lightest structural metal, occupies a unique position in global lightweighting strategies. Its relevance is being reinforced by regulatory pressure on emissions, electrification of mobility, and the demand for high-performance yet sustainable materials. The conference therefore focused not only on metallurgical and processing aspects, but also on the broader ecosystem required to enable large-scale industrial adoption.

2. Geopolitical and Supply Chain Perspective

Several contributions highlighted the strategic importance of magnesium resources and supply chains. Magnesium is an abundant element globally; however, its primary production is geographically concentrated. Presentations on global magnesium resource distribution and industrial policy demonstrated that China currently dominates magnesium production and

processing capacity, making magnesium a strategically sensitive material for automotive, aerospace, and energy sectors.

This concentration has two implications for India and other emerging manufacturing economies. First, supply security and price volatility remain key risks for downstream users. Second, there is a strong case for developing regional capabilities in recycling, secondary magnesium processing, and value-added manufacturing. Recycling of magnesium chips and turnings, as discussed in the sustainability-focused papers, was positioned as a critical lever to reduce dependence on primary magnesium and to close the material loop in lightweight manufacturing.

3. Magnesium Processing Technologies

Magnesium high-pressure die casting (HPDC) emerged as the dominant industrial process discussed during the conference. Comparative analyses of hot-chamber and cold-chamber die casting systems highlighted fundamental differences in melt handling, air entrapment, cycle time, and defect tendencies. Hot-chamber systems were shown to offer advantages in cycle time and reduced air volume, whereas cold-chamber systems provide flexibility for larger components and higher locking forces.

Design-for-magnesium principles were emphasized repeatedly. Papers on aluminum-to-magnesium conversion demonstrated that magnesium adoption cannot be treated as a direct material substitution. Differences in density, viscosity, solidification rate, and thermal behavior require re-engineering of gating systems, runner design, venting, and cooling layouts. Casting simulation was presented as an essential tool for magnesium, enabling prediction of flow behavior, shrinkage, and porosity before physical trials.

3.2 Porosity Control and Quality Assurance

Porosity remains one of the most critical quality challenges in magnesium castings. Detailed discussions on vacuum and pressure impregnation (VPI) technology illustrated how impregnation has evolved from a salvage operation to a mandatory quality assurance process for safety-critical and pressure-retaining components. The process sequence—vacuum evacuation, sealant infiltration, pressurization, cleaning, and polymerization—was shown to be effective in sealing both micro- and macro-porosity without altering dimensional or functional characteristics.

The increasing specification of impregnation by OEMs reflects the maturity of magnesium applications in automotive powertrains, transmission housings, and structural components.

4. Surface Engineering and Corrosion Protection

The high chemical reactivity of magnesium continues to limit its application in aggressive environments. Contributions on surface treatment technologies, particularly chrome-free conversion coatings, addressed this challenge directly. Modern conversion coatings based on zirconium, titanium, and other environmentally compliant chemistries were presented as effective alternatives to traditional hexavalent chromium systems.

These surface treatments serve a dual role: providing stand-alone corrosion resistance and acting as adhesion-promoting layers for subsequent organic coatings such as e-coat and powder coating. Anodizing processes were also discussed as electrochemical routes to enhance wear and corrosion resistance. The consensus emerging from these discussions was that corrosion protection must be treated as an integral part of component and process design rather than as a downstream corrective step.

5. Safety and Fire Risk Management

Safety in magnesium processing received focused attention, particularly in relation to Class D metal fires. Magnesium fires burn at extremely high temperatures and cannot be controlled using conventional water- or ABC-based extinguishing systems. Presentations on advanced dry chemical fire suppression agents demonstrated how tailored salt-based formulations can form stable, oxygen-impermeable crusts over burning magnesium.

The development of controlled-dispersion extinguishing systems and automated

suppression solutions was highlighted as a critical enabler for wider magnesium adoption, particularly in chip handling, recycling, and machining environments. Safety infrastructure was clearly identified as a prerequisite—not an optional add-on—for commercial-scale magnesium operations.

6. Application Development and Emerging Opportunities

6.1 Automotive and Mobility

Automotive lightweighting remains the primary driver for magnesium technology adoption. Case studies on conversion of aluminum components to magnesium demonstrated weight reductions of 25–40% while maintaining functional performance. Applications such as engine covers, transmission cases, seat structures, cross-car beams, and housing were discussed in detail. Faster solidification, improved vibration damping, and reduced machining effort were identified as secondary benefits beyond mass reduction.

6.2 Medical and Precision Applications

Beyond automotive, emerging applications were presented in the biomedical domain. High-precision magnesium microtubes and biodegradable magnesium implants were discussed as examples of how controlled corrosion—traditionally a limitation—can be transformed into a functional advantage. Applications such as resorbable screws, plates, and stents illustrate the breadth of magnesium technology when supported by precise processing and surface control.

6.3 Injection Molding and Alternative Processes

Magnesium alloy injection molding and thixomolding technologies were introduced as complementary manufacturing routes for thin-walled, high-precision components. These processes offer improved dimensional control and reduced oxidation risk, expanding the design envelope for magnesium components in electronics and consumer applications.

7. Sustainability and Circular Economy

Sustainability formed a unifying theme across multiple sessions. Magnesium's low density directly contributes to reduced fuel consumption and emissions during product use. However, the conference emphasized that true sustainability requires attention across the full lifecycle—from raw material sourcing to end-of-life recycling.

Recycling magnesium chips, turnings, and scrap was presented as both a technical challenge and a commercial opportunity. Controlled recycling processes can transform machining waste into high-quality secondary input material for the steel and foundry industries, significantly reducing carbon footprint and material loss.

8. Commercialization Challenges

Despite its technical maturity, magnesium technology faces several barriers to wider commercialization. These include: - Supply chain concentration and price volatility of primary magnesium. - Higher perceived risk related to fire safety and corrosion. - Limited domestic experience in magnesium-specific design and tooling. - Need for specialized infrastructure in melting, handling, and recycling.

The conference clearly demonstrated that these challenges are manageable through technology, training, and ecosystem development. Collaborative efforts between material suppliers, equipment manufacturers, surface treatment specialists, and end-users are essential to de-risk magnesium adoption.

9. Concluding Remarks

The International Magnesium Conference at GDCTECH Pune successfully positioned magnesium not merely as an alternative material, but as a strategic enabler for lightweight, sustainable, and high-performance engineering solutions. The deliberations reinforced that successful magnesium adoption demands an integrated approach—combining material science, process engineering, safety, surface protection, and lifecycle thinking.

The discussions clearly demonstrated that magnesium technologies have reached a level of technical maturity suitable for large-scale industrial deployment, provided they are supported by appropriate design methodologies, safety frameworks, and surface engineering solutions. At the same time, the conference

highlighted that challenges related to supply-chain concentration, fire safety perception, corrosion behaviour, and skill availability must be addressed systematically rather than in isolation.

From an Indian manufacturing perspective, the conference outcomes were particularly significant. India's strong automotive base, growing foundry and die-casting capabilities, and increasing emphasis on sustainability create a favourable environment for accelerated adoption of magnesium technologies. The presence of global technology providers, Indian system integrators, and end-user industries at a common platform enabled meaningful dialogue across the value chain.

It is evident that forums such as GDCTECH play a vital role in bridging the gap between research, industrial practice, and commercialization. The International Magnesium Conference has laid a clear roadmap for future collaboration, capability building, and responsible deployment of magnesium technologies, reinforcing GDCTECH's role as a catalyst for advanced casting and lightweighting solutions in India and beyond.

This is the second successful conference, on Magnesium Casting Technology organised jointly by GDCTECH forum & International Magnesium Association. Strongly supported by IMA, could get 6 International Papers and 4 International exhibitors. This is attended not only by magnesium fraternity & but also by Aerospace, Automotive and Hand Tool industry in large indicating the use of magnesium going to be on fast track.

Even our Chief Guest of Honour Shri. Sureshji Prabhu expressed the importance of the Magnesium in the industry considering the entrance of EV.

R. T. Kulkarni
Founder - GDCTECH FORUM
Director - ARKEY CONFERENCE & ENGG. SERVICES

Feedback

"GDCTECH's Mega Event in Pune marked the second major magnesium-focused milestone in India, following the inaugural event held earlier in January. This time, magnesium was embedded within the established Aluminium Casting exhibition, where magnesium companies showcased an impressive range of finished components and processing equipment. The International Magnesium Association (IMA) is proud to partner with GDCTECH and to attract both international members as well as growing interest from India. It is particularly encouraging to see the emerging Indian magnesium industry beginning to integrate into our global network.

The two-day magnesium conference featured a strong line-up of presentations and stimulated engaging discussions, especially during the dedicated panel session. Importantly, the programme looked beyond die-casting alone, also addressing alternative technologies such as thixomolding, complementary processes including extrusion, and related applications such as magnesium powder for desulphurisation. As a minor observation, a single larger exhibition hall and dedicated time slots for visiting exhibitors during the conference could further enhance the overall experience. Looking ahead, it is clear that magnesium will continue to establish itself in transport and aerospace/defence applications, both for the domestic market and internationally. IMA looks forward to supporting this development and facilitating a strategic path forward."

Regards,
Martin Tauber
European Representative
INTERNATIONAL MAGNESIUM ASSOCIATION (IMA)

Glimpses

Group Photo

GUEST OF HONOUR - Dr. Martin Tauber, International Magnesium Association (IMA)

Ashok Konduskar, HENKEL ADHESIVE TECHNOLOGIES INDIA LTD

Revanth Katta, BHAGYANAGAR MAGNESIUM PVT. LTD.

Panel Discussion

Audience

Teja Kethineni, TK VELOCITY WHEELS

Meeting with Japanese Association

GDCTECH FORUM DELEGATION AT EUROGUSS 2026

Nuremberg, Germany 12-17 January 2026

GDCTECH organised delegation to EUROGUSS was a great success. Seventeen members participated. It was 5 days tour EUROGUSS Exhibition & 2 days Industrial Visits.

This year trend of EUROGUSS was towards Light Weighting - Magnesium Casting Technology. Manufacturing Technology give of Thixomolding & LPSC were also Showcased.

Similar to our programme at Mega Event this year "WOMEN EMPOWERMENT PROGRAMME FOR WOMEN IN DIECASTING FRATERNITY"

Even EUROGUSS also orgnaised this year Programme on "LADIES IN DIECASTING'

This seems to be important.

Main Pride to India is over 25 Indian Companies had displayed the components & technologies were show cased.

Even Visitor's wise India was leading among Asia. Almost 300 visitors were for India.

Over 720 stalls spread over 6 Halls.

During visit R. T. Kulkarni had a meeting with IMA Members and visited following companies

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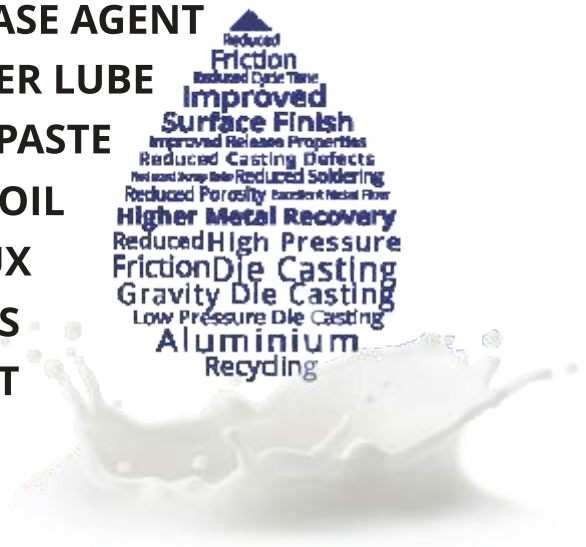

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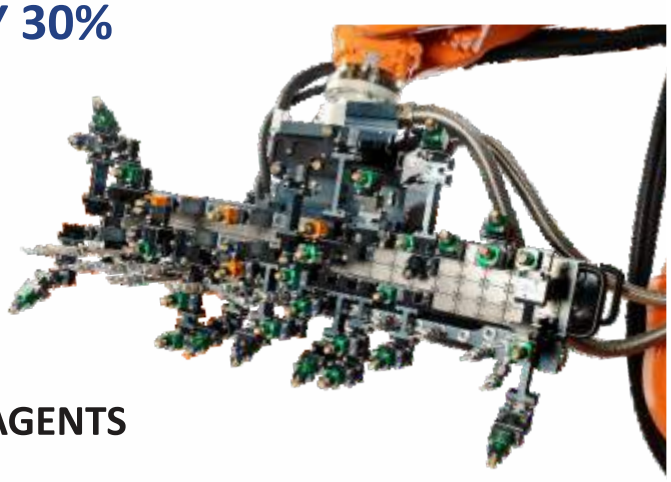

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