

***AIFI***

Association of Indian Forging Industry

# FOCUS

TECHNOLOGY

| ISSUE 3

| 2024-25



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**FOCUS**

**Issue 3, 2024-25**

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## **From the Editor's Desk...**

*As 2024 draws to a close, we in AIFI thank all for your support during the year gone by and wish a very happy new year filled with growth and exciting opportunities in 2025.*



*During 2024, India's economic growth remained resilient despite global challenges. Vehicle retail sales grew by 9 per cent, reaching a record of nearly 26.1 million units and surpassing the pre-covid peak of 25.4 million units set in 2018. Commodity prices have remained volatile. However, Government's push for EV remains a challenge for the forging industry. It is essential to recognize and address the impact on the traditional forging industry due to electric vehicles. Through strategic diversification, policy support, and a commitment to innovation, we can navigate this transition, ensuring that the Indian forging industry not only survives but thrives in the evolving market dynamics.*

*On global front, trade measures by US and other geopolitical issues will be the key to shape the trade and industry during 2025. The world today is witnessing rapid change in technology which impacts business growth. The advent of modern technology has transformed the business landscape, enabling companies to innovate, scale, and adapt to changing market dynamics. Technology's impact on business growth is profound and multifaceted. With this backdrop the theme selected for "FOCUS" Issue-3 (2024-25) is "Technology". Forging is a technology-dependent business that can be drastically affected by scientific breakthroughs and innovation. New advancement, regulations, innovative solutions create new opportunities. Thus technology upgradation is key to remain competitive in today's technology driven world.*

*The government has taken various initiatives such as digitalization, ESG to transform Indian manufacturing sector. Internet of things (IOT), artificial intelligence (AI), Machine learning (ML), robotics and automation are reshaping the manufacturing industry.*

*In its report titled "Smart Manufacturing : Unlocking India's Potential" The Confederation of Indian Industry (CII) has mentioned that most manufacturers recognize technology adoption as a critical driver of profitability and compactivities. The report has suggested that besides public-private partnerships to establish shared technology hubs, the government may look to have budget allocation for technology strengthening industry-academia collaboration and implementing supportive policies to encourage broader adoption of smart manufacturing.*

*We in AIFI are organizing sessions on Innovative Technology Solutions, Technology upgradation to create awareness and provide update on technology advancement to the members.*

*We strongly recommend members participation in such sessions.*

*Warmest wishes for a prosperous 2025 !*

*Happy Reading!!!*

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## ORDINARY MEMBER



### **Austenite Metalworx Pvt. Ltd., Pune, Maharashtra**

Established in 2023, Austenite Metalworx Pvt. Ltd. specializes in hot forging, serving the automotive sector with precision-engineered components. The company operates a 0.75-ton hammer for smaller forging tasks and is set to enhance its capabilities with a 1000-ton Russian-made press, operational by January 2025. This upgrade will enable the production of larger and more complex components, catering to diverse industrial demands. By combining advanced technology, precision, and innovation, Austenite Metalworx is poised to deliver high-quality solutions, reinforcing its reputation as a reliable partner in the automotive manufacturing supply chain.

**Mr. Girish Kulkarni & Mr. Manish Bhargava is Director of Austenite Metalworx Pvt. Ltd.**

### **Balu Forge Industries Ltd., Mumbai, Maharashtra**

Established in 1989, BFIL specializes in precision-engineered products like crankshafts and forging components, catering to industries such as automotive, railways, defense, renewable energy, and heavy machinery. Operating a 46-acre facility in Belgaum, India, BFIL boasts advanced forging equipment, including hydraulic hammers and an 8000T press, with a current capacity of 72,000 tons annually, soon expanding to over 100,000 tons. With 7-axis machining, BFIL produces up to 2,000 crankshafts daily. Certified with IATF 16949 and ISO standards, the company leverages Industry 4.0 practices to ensure quality, sustainability, and innovation, positioning itself as a global leader in precision engineering.

**Mr. Jaikaran Singh is Director of Balu Forge Industries Ltd.**

### **KLM Forge Pvt. Ltd., Pune, Maharashtra**

Founded in 2014 by Mr. Anand Mehta and Mr. Ankit Mehta, KLM Forge Private Limited has grown from a modest open die forging company in Pune to a recognized name in the forging industry. An ISO 9001:2015 certified firm, it offers open die, closed die forging, ring rolling, and heat treatment, serving diverse industries with high-quality products, short lead times, and competitive pricing. Equipped with advanced facilities, KLM Forge sources premium raw materials to produce forgings up to 800 kg. Committed to innovation, the company is expanding into exotic metals, aiming to lead the industry while supporting national growth.

**Mr. Ankit Mehta is the Director of KLM Forge Pvt. Ltd.**



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**Mr. Shekhar Gupta is the CEO of Satelite Forging Pvt. Ltd.**

### **Unique Forgings (India) Pvt. Ltd., Anand, Gujarat**

Established in 1987, Unique Forgings (India) Pvt. Ltd. is a premier manufacturer of closed die and open forgings in alloy, carbon, and stainless steel, serving automotive, agriculture, railways, and industrial sectors. Operating across four units with a monthly capacity of 2000 MT, the company employs advanced forging technologies, including pneumatic and drop hammers, open forging hammers, and upsetters. With in-house heat treatment and machining facilities like CNC, VMC, and IBH furnaces, Unique Forgings ensures comprehensive solutions. ISO 9001:2015 and IATF 16949:2016 certified, the company exports globally, including to the USA and Denmark, delivering high-quality, precision-engineered products.

**Mr. Pravin Sherasiya is the Director of Unique Forgings (India) Pvt. Ltd.**

### **Treeton Engitech Pvt. Ltd., Padavala, Gujarat**

Founded in 2019, Treeton Engitech Pvt. Ltd. operates in a 40,000 sq. ft. facility with a workforce of 80 skilled professionals. The company specializes in close die forging with an annual installed capacity of 5,000 tons, producing single-piece forgings ranging from 1 kg to 50 kg. With a total group sales of ₹110 crores. Treeton emphasizes safety, quality, delivery, and cost efficiency, supported by a team of experienced engineers who ensure adherence to globally accepted ISO standards.

**Mr. Divyaraj Gohil is the director at Treeton Engitech Pvt. Ltd.**



## ASSOCIATE MEMBER



### **Engineering Tools & Machines, Panchkula, Haryana**

Engineering Tools & Machines, established over 25 years ago, is a leading dealer of used machinery in India. The company specializes in a wide range of equipment, including gear and forging machines. Under the leadership of Mr. Vinay Shukla, Engineering Tools & Machines has built a strong reputation for providing high-quality, reliable, and cost-effective machinery solutions. With 4 warehouses and over 500+ machines in stock, Engineering Tools & Machines has grown to become one of the largest importer and supplier of used machine to companies in India.

**Mr. Vinay Kumar Shukla is the Owner of Engineering Tools & Machines**

### **Onlygood Futuretech (India) Pvt. Ltd. , Gurugram, Haryana**

OnlyGood Futuretech (India) Pvt. Ltd., established in 2022 and based in Gurugram, Onlygood.ai is a cutting-edge SaaS platform tailored to address sustainability challenges in the forging and steel sector. It streamlines carbon accounting, baseline setting, and goal alignment, aiding businesses in achieving net zero. Specializing in Scope 1, 2, and 3 emissions, CBAM compliance, and supplier integration, it offers seamless SAP, ERP, and Tally integration with real-time dashboards in three days. With expertise in BRSR, GRI, and ESG reporting, Onlygood.ai provides 360-degree sustainability solutions. Trusted by industry leaders like Maruti and DICV, the platform empowers companies to meet regulations, reduce environmental impact, and drive sustainable growth.

**Mr. Rajeev Sinha is the Director of Onlygood Futuretech (India) Pvt. Ltd.**





## MACROECONOMIC FACTORS OF THE INDIAN ECONOMY

*(Source ministry of finance, department of economic affairs (economic division))*

### ABSTRACT

India's GDP grew at 5.4 per cent in Q2 of FY25, resulting in a growth of 6 per cent in H1 of FY25. From a demand perspective, private consumption remained steady because of sustained rural demand, while investment growth softened in Q2. The slowdown in investment growth can be attributed to a softening of public capex and private capex levels being affected by global uncertainties, excess capacity, and fears of dumping. There are signs of capital formation growth rebounding early in H2 of FY25, with Union Government capex picking up pace. The order books of infrastructure and capital goods grew sharply in FY24 and H1 of FY25, indicating a pent-up investment impulse that will play out in the quarters ahead.

On the external front, the Indian economy witnessed a high merchandise trade deficit in November 2024, driven by a slowdown in merchandise exports and a double-digit import growth. Regarding capital flows, Foreign Portfolio Investment (FPI) flows showed mixed trends in November 2024, witnessing capital outflow in the first half and inflows in the second half. The positive trend has continued in the first half of December 2024, driven by the expectation of a cut in the US policy rate and increased uncertainty in the Chinese capital markets after the US election results. Gross Foreign Direct Investment (FDI) inflows revived in FY25. FDI inflows into India have surpassed the USD 1 trillion mark from April 2000 to September 2024, solidifying the country's position as a safe and significant global investment destination. Supported by stable capital inflows, India added USD 6.4 billion of foreign exchange reserves during FY25 as of 13 December 2024. The reserves are sufficient to cover more than 11 months of imports and about 96 per cent of external debt outstanding at the end of June 2024.

The labour market continues to show signs of growth. Formal job opportunities are increasing, as indicated by the growing net payroll additions under the Employee Provident Fund Organisation (EPFO). Additionally, both the employment sub-index of the Purchasing Managers' Index and the Naukri JobSpeak index indicate growth in hiring.

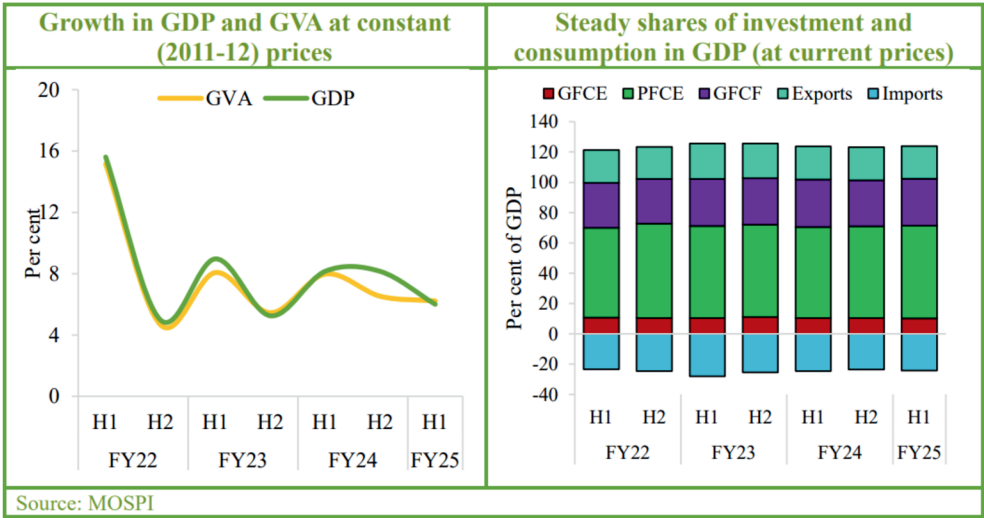
Looking further ahead, we note the build-up of global risks. There is uncertainty with respect to the growth in global trade next year. Equity prices in the United States are deemed extreme by some measures. Of course, while we know that stock markets could remain irrational longer than expected, the threat hangs over global markets. Second, in recent days, reconsidering the path of policy rates in the United States by financial markets has caused long-term sovereign borrowing costs for advanced countries to increase, and emerging market currencies have weakened against the US dollar. This will weigh on the minds of monetary policymakers in emerging economies, India included.

Therefore, India's growth outlook in FY26 for the coming years is bright when viewed through the lens of Indian domestic economic fundamentals, but is also subject to fresh uncertainties

Domestic economic development

Real GDP growth moderates in Q2 of FY25 but likely to pick up in H2 of FY25

India’s real GDP grew 5.4 per cent during Q2 of FY25 and 6 per cent for H1 of FY25. The slowdown was mainly concentrated in some manufacturing sections compared to the previous quarter. On the demand side, private final consumption expenditure (PFCE) at constant (2011-12) prices grew by 6 per cent in Q2 of FY25, resulting in 6.7 per cent growth in H1 of FY25. Consumption remained strong, with its share in GDP (at current prices) rising from 60 per cent in H1 of FY24 to 61.2 per cent in H1 of FY25.



Consumption growth was driven by sustained rural demand, even though urban demand softened in Q2 of FY25. Indicators of rural demand such as 2-wheeler sales, 3-wheeler sales, and tractor sales grew by 14.0 per cent<sup>1</sup>, 7.6 per cent<sup>2</sup> and 4.33 per cent YoY, respectively, in April-November 2024.

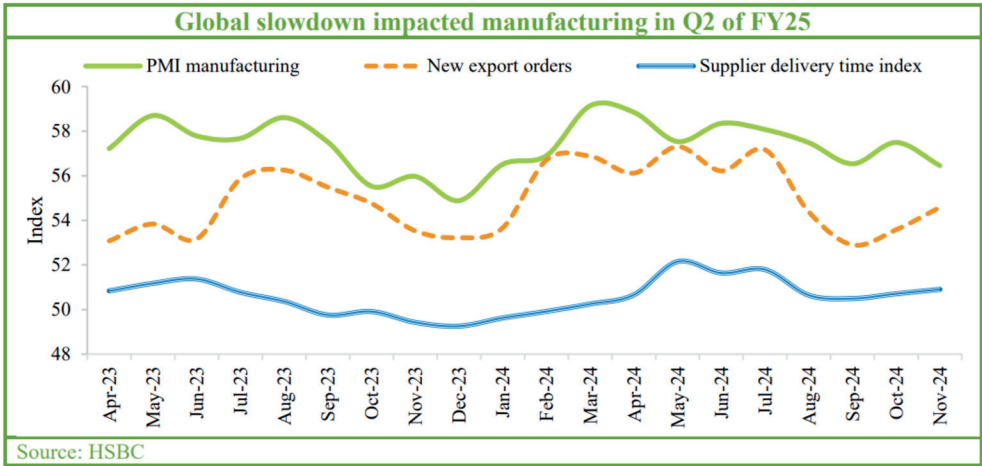
Investment, as represented by gross fixed capital formation (GFCF) at current prices, remained steady at 30.8 per cent of GDP in Q2 of FY25 and 31 per cent of GDP in H1 of FY25. The year-on-year (YoY) growth in GFCF at constant (2011-12) prices was 5.4 per cent in Q2 of FY25 as compared to 7.5 per cent in the previous quarter. The moderation in investment growth in Q2 of FY25 can be traced to two reasons: (a) the softening of capex growth at different levels of the government on account of the general elections and multiple state elections, and (b) private sector capital formation in FY25 so far being affected by the domestic political timetable, global uncertainties, excess capacity and fears of dumping in India, leading to some slowdown in private capex spending.

Manufacturing sector growth moderates but shows positive expectations

The industrial sector grew by 6 per cent in H1 of FY25. Q1 of FY25 registered a strong growth of 8.3 per cent in the sector, whereas it moderated in Q2 of FY25. Due to rising trade uncertainty and geopolitical risks, global manufacturing activity slowed down in Q2 of FY25, impacting global supply chains and demand conditions. This likely affected the economy’s industrial activity by pressurising supply chains and new export orders. The Index of Industrial Production (IIP) grew by 4 per cent YoY from April to October 2024.

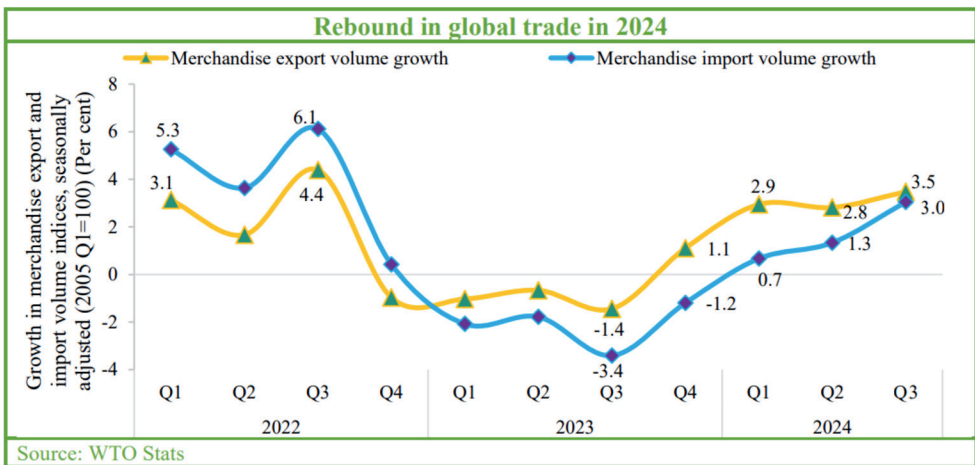


Disaggregated data shows no broad-based slowdown in manufacturing, with many subsectors posting positive growth. However, some faced a slowdown, likely due to global and seasonal factors. While oil companies suffered due to inventory losses and lower refining margins, steel companies faced price pressures and lower global prices. The cement sector faced weak demand in Q2 due to heavy rains and lower selling prices, thereby affecting construction activity.



### Global trade trends

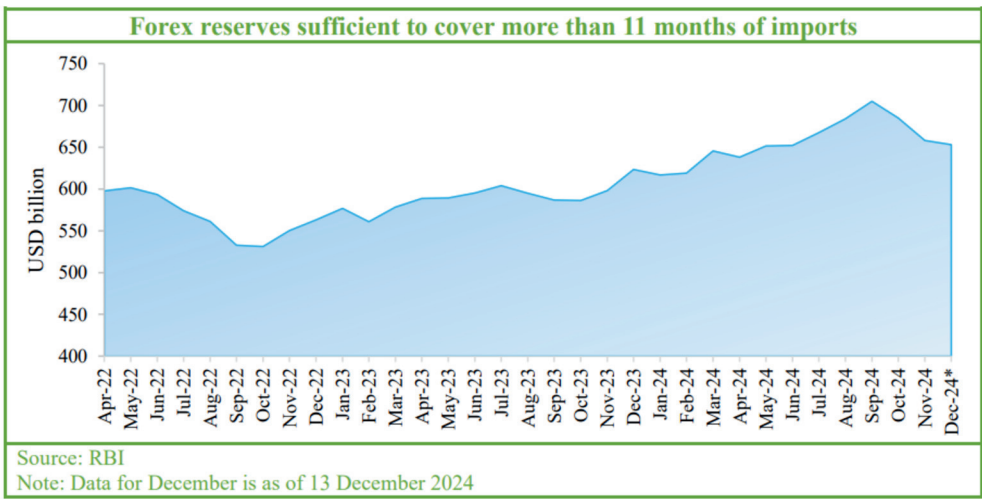
According to the latest trade update by the United Nations Conference on Trade and Development (UNCTAD)<sup>10</sup>, the gradual increase in global trade that began in H2 of 2023 has persisted into 2024. Global merchandise export and import indices (seasonally adjusted, 2005 Q1=100) grew by 3.5 per cent and 3 per cent, respectively, in Q3 of 2024. Further, global services exports and imports grew by 7.9 per cent and 6.7 per cent (YoY), respectively, in Q2 of 2024. Over the last four quarters, trade growth in developing countries generally exceeded that of developed nations. However, this trend reversed in Q3 of 2024, with trade growth primarily propelled by positive developments in developed economies. In contrast, trade growth in East Asia stalled, and several major Asian developing economies experienced negative growth.



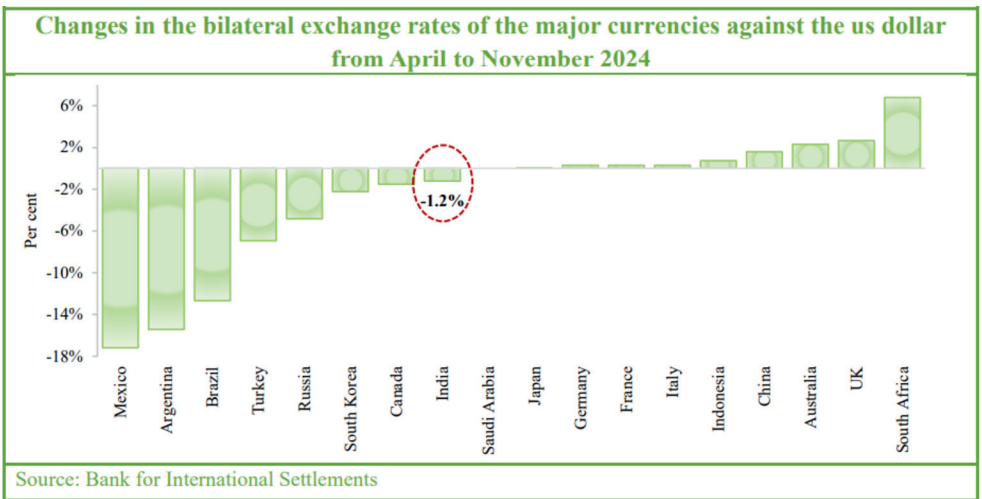
Looking ahead, moderating global inflation, stable economic growth forecasts, and improving business activity are expected to foster positive momentum in global trade in early 2025. Nonetheless, this upward trend may encounter substantial challenges. Likely increase in U.S. tariffs could significantly impact global trade dynamics due to its role as a major consumer market and the interconnectedness of cross-border value chains.

An increase in tariffs and the imposition of retaliatory measures can harm international trade, investments, and overall economic growth. A rise in the imposition of measures, such as CBAM and EUDR, aimed at promoting the production of sustainable and environmentally friendly products is expected to slow down the growth of international trade in certain sectors.

India’s foreign exchange reserves increased by USD 6.4 billion during FY25 so far to USD 652.9 billion as of 13 December 2024. The reserves are sufficient to cover more than 11 months of imports and about 96 per cent of external debt outstanding at the end of June 2024.



Despite an overall depreciation, the rupee has experienced a moderate decline compared to other emerging market currencies. In FY25 (as of 30 November 2024), the rupee remained largely range-bound and exhibited low volatility compared to its G20 counterparts. It witnessed a modest decline of 1.2 per cent, performing better than significant currencies such as the South Korean Won and the Brazilian Real, which depreciated by 2.2 per cent and 12.7 per cent against the US dollar, respectively, during the same period. Notably, all G20 currencies, except for the British Pound (GBP), depreciated by over 4 per cent during FY25 (as of 30 November 2024).



Performance of High-Frequency Indicators

Data Title	Unit	YTD Period/As at the end of	Year to Date			Year to Date (YoY Growth)		
			2022-23	2023-24	2024-25	2022-23	2023-24	2024-25
Agriculture								
Fertiliser Sales	Mn Tonnes	Apr-Oct	39.4	40.3	39.5	14.4	2.3	-2.1
Domestic Tractor Sales	Lakh	Apr-Nov	6.8	6.6	6.9	9.4	-2.9	4.3
Foodgrain Production (Kharif)	Mn Tonnes	1st AE	149.9	148.6	164.7	-0.4	-0.9	10.9
Reservoir Level	Bn Cu. Metres	19-Dec	129.6	110.9	139.4	0.9	-14.4	25.7
Rabi Sowing	Mn Hectare	13 Dec	48.9	46.0	46.7	6.0	-6.0	1.6
Rainfall	% of LPA	30 Sep	106.5	94.4	107.6		-11.4	14.0
Credit to Agriculture and allied activities	₹ Lakh crore	Oct	16.3	19.1	22.1	13.8	17.5	15.3
Industry								
IIP	Index	Apr-Oct	134.3	143.7	149.4	5.3	7.0	4.0
8-Core Industries	Index	Apr-Oct	142.4	154.9	161.3	8.4	8.8	4.1
Domestic Auto sales	Lakh	Apr-Nov	171.1	180.6	202.8	16.6	5.5	12.3
PMI Manufacturing	Index	Apr-Nov	55.3	57.4	57.6	3.0	3.8	0.4
Power consumption	Billion kWh	Apr-Nov	1009.3	1106.9	1149.5	10.1	9.7	3.9
Natural gas production	Bn Cu. Metres	Apr-Oct	20.1	21	21.3	0.9	4.8	1.1
Cement production	Index	Apr-Oct	162.1	182.1	185.4	8.7	12.3	1.8
Steel consumption	Mn Tonnes	Apr-Nov	75.8	87.4	97.9	12.5	15.3	12.0





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## **ENERGY SAVING IN THE FORGING INDUSTRY**

### **“SERVO-BASED SYSTEMS AND IOT PRODUCTIVITY MONITORING”**

*Author - Mr. Milind Saindane, Instron Technologies LLP*

In today's competitive manufacturing environment, the forging industry is constantly looking for ways to enhance energy efficiency and productivity. Traditional hydraulic press systems are widely used in forging, but they often come with high energy consumption, complex operations, and maintenance challenges. By adopting servo-based solutions and integrating IoT-based productivity monitoring systems, forging plants can achieve significant energy savings, improved efficiency, and enhanced productivity.

#### **Challenges in Traditional Hydraulic Systems**

Traditional hydraulic press machines operate at a constant speed and pressure, regardless of whether the press is actively working or idle. This leads to unnecessary energy consumption, increased heat generation, and noise levels. Key challenges include:

- **High Energy Consumption:** Hydraulic pumps run continuously, leading to wasteful energy use.
- **Complex Systems:** Multiple components increase the chances of breakdowns and maintenance requirements.
- **Noise and Heat:** Continuous operation results in high noise levels and elevated oil temperatures.
- **Inconsistent Productivity:** The inability to optimize pressure and flow can affect cycle times and overall productivity.

Addressing these issues requires innovative solutions that reduce energy loss, simplify system complexity, and improve productivity.

#### **Servo-Based Energy Saving Solution**

To tackle challenges as referred above, forging plants are adopting advanced hydraulic systems based on servo technology. The servo-based solution involves a complete package of a servo drive, servo motor, and an internal gear pump. This system has been successfully installed in various manufacturing plants with hydraulic presses or forges, delivering substantial energy savings and productivity improvements.

#### **How the Servo-Based System Works**

The servo-based hydraulic system utilizes a PLC (Programmable Logic Controller) to process feedback and reference signals, converting them into torque and speed commands for the motor. This motor, in turn, regulates the flow and pressure of the pump, optimizing energy use according to demand.

#### **Components of the Servo-Based System:**

- **PLC/Controller:** Manages feedback and reference signals.
- **Drive:** Controls motor operation.



- **Servo Motor:** Adjusts speed and torque based on real-time requirements.
- **Servo Pump:** Delivers hydraulic power with variable speed and flow.

#### **System Operation Flow:**

1. **Pressure Signal** is monitored and fed to the PLC.
2. **Speed Reference** is set based on operational needs.
3. The PLC adjusts the **Servo Motor** speed and torque.
4. The **Servo Pump** controls the flow and pressure accordingly.
5. Feedback loops ensure precise control and optimization.

#### **Benefits of the Servo-Based System**

The servo-based solution offers several advantages over traditional hydraulic systems:

1. **Energy Savings of 20% to 30%:** By operating only when needed, the servo system reduces idle energy consumption.
2. **Stable Pressure Holding:** Precise control ensures consistent pressure, improving product quality.
3. **Noiseless Operation:** Variable-speed operation minimizes noise, creating a safer and more comfortable working environment.
4. **Shorter Cycle Times:** Faster response times and optimized operations increase productivity.
5. **Lower Oil Temperature:** Reduced energy loss leads to less heat generation, extending the life of hydraulic oil and components.
6. **Simplified System:** Fewer components and less complexity mean reduced maintenance.
7. **Adjustable Stroke Length:** Greater flexibility in operations and product customization.
8. **Extended Equipment Life:** Reduced wear and tear on hydraulic components prolongs machine lifespan.

#### **IoT-Based Productivity Monitoring System**

In addition to energy-efficient servo technology, integrating an IoT-based productivity monitoring system enhances efficiency and operational transparency. These systems provide real-time data on machine performance, allowing manufacturers to:

- **Monitor Key Metrics:** Track Overall Equipment Effectiveness (OEE), cycle times, and downtime.
- **Receive Alerts and Alarms:** Immediate notifications for any abnormalities or malfunctions.
- **Data-Driven Decisions:** Analyse trends and optimize operations based on real-time insights.
- **Remote Access:** Access machine data via mobile apps or web-based platforms.
- **Integration with ERP Systems:** Seamlessly integrate production data with enterprise resource planning systems for holistic management.

#### **Benefits of IoT Productivity Monitoring:**

- **Increased Uptime:** Early detection of issues prevents unexpected downtime.
- **Enhanced Efficiency:** Continuous monitoring helps identify bottlenecks and optimize processes.
- **Improved Quality Control:** Real-time data ensures consistent quality and reduces defects.
- **Resource Optimization:** Efficient allocation of energy, manpower, and machine time.

## Conclusion

The forging industry can achieve significant improvements in energy efficiency and productivity by adopting servo-based hydraulic systems and IoT-based productivity monitoring. The successful case studies in manufacturing industries demonstrate the effectiveness of these technologies in reducing energy consumption by 30%, simplifying system complexity, and enhancing overall productivity.

Investing in these solutions not only ensures sustainable operations but also positions forging companies as leaders in Industry 4.0 innovation. By embracing these advanced technologies, manufacturers can achieve operational excellence, reduce costs, and contribute to a greener future.





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## **ENERGY EFFICIENT FORGING AND HEAT TREATMENT FURNACE**

*Author - Mr. Prakash Maladkar, AFECO Heating & Automation Pvt. Ltd.*

In Forging, the typical production process involves heating of MS blanks in a reheating furnace up to a temperature range of 1050 – 1150 O C. The heated material is then passed on to forging press, better known as hammer. Other than heating and forging, there are also a number of other process, both upstream and downstream side, for example, die sharpening, blank shearing, material pushing, heat treatment and so on. All these processes also require energy. Thus, it can well be concluded that forging is one the most energy intensive process in the manufacturing industry.

In most of the forging industry in SME category in India, fuel fired furnaces are being in use for process heating. Mostly conventional designed furnaces are being used, which have no monitoring system for fuel/electricity consumption.

The process parameters like temperature, time of operation etc. are manually operated, verified and controlled. Nowadays gas fired furnace & electrical induction furnace are replacing oil fired furnace. Drop forging hammer are the second most high energy consumer, use pneumatic power and electrical motor for the operation.

In most of the units manual operation & control system are used to operate equipments. Based on the present operating system in forging industry and available best technology, there is very good potential in forging industry to improve upon energy consumption

### **Energy Intensity in Indian Forging Industry**

Energy cost represents 10% to 12% of the cost of production for a forging/heat treating plant. For an induction furnace, specific energy consumption varies from 400 to 600 kWh/t of forging.

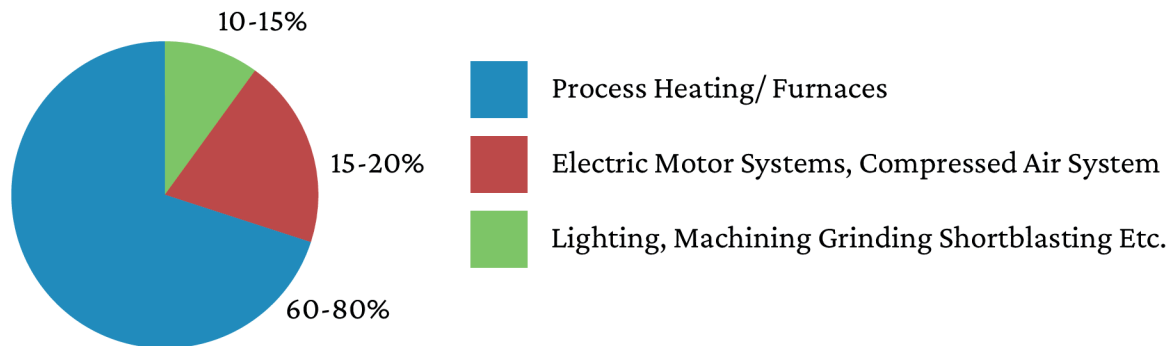
The specific fuel consumption varies highly depending on the size of the blank, but it averages around 130 litres per tonne. Specific fuel consumption in well designed efficient furnace can come down to 80 litres per MT.

The average Specific Energy Consumption (SEC) in small die forging units is 160-170 litres of furnace oil per MT of forged product. In large die forging units, the SEC is estimated at 120 litres per MT of forged product, compared to an achievable SEC of 90- 100 litres/ton in small die forging units and 70-80 liters per MT in large die forging units.

### **Energy Consumption Pattern in a Forging Industry**

Heating and heat treatment furnaces are the major thermal & electrical energy consumers. Process Heating/Furnaces alone accounts for 60 – 80% of the total energy consumption. Electric motor systems, compressed air system account for 15 – 20% & others like lighting, machining, grinding, shot-blasting etc account for 10 – 15% of total energy consumption in a forging industry.

## Energy Consumption Pattern In A FORGING INDUSTRIES



### ENERGY CONSERVATION MEASURES IN A FORGING INDUSTRY

In forging industry substantial reduction in energy consumption can be achieved by improving the operational practices, fine tuning the operating parameters, application of low cost automation & upgrading technology. A list of possible energy conservation opportunities in three categories is listed below;

#### Energy Saving Potential in Indian Forging Industry

The energy saving potential considering the short term and medium term energy saving projects is 10-12 % of the total energy consumption. The energy saving potential considering the long term energy saving projects, which have payback period of about 3-4 years, is in the range of 15-20%.

Short, Medium and Long term Energy Saving Projects

#### Short-term energy saving proposals

- Optimize the overall loading of furnaces by better planning of jobs
- Improve combustion efficiency of heating & heat treatment furnace
- Operate furnaces at the optimum temperature
- Reduce heat losses from furnace openings
- Maintaining correct amount of furnace draft
- Arrest compressed air leakages by vigorous maintenance
- Optimize overall operating pressure of compressors based on the system requirement
- Provide ball valves at the user ends of compressed air cleaning hoses and other similar points
- Install Tran vector nozzle for cleaning applications involving compressed air
- Replace the delta connection with permanent star in case of motors, which are lightly loaded.

#### Medium-term energy saving proposals

- Install kWh indicator cum integrator for induction furnace
- Use of Translucent sheets for maximize use of day light
- Use of Eco Ventilators of hot air exhaust
- Use of automation for temperature control in forging and heat treatment furnace
- Improve the overall Insulation levels and close the openings in furnaces, so as to minimize heat losses.
- Install Automatic Power Factor Control (APFC) System



- Replace faulty capacitor banks
- Relocate capacitors to the machine ends, or from the MSBs to the SSBs (at the substation ends), to minimise voltage drop in cables
- Install Automatic - Star - Delta - Star converter in the lightly loaded motors which handle fluctuating loads
- Install automatic voltage stabilizers for lighting circuits and other precision electronic circuits.
- Install lighting transformers in all major lighting feeders and operate the lighting circuit at 220 V

#### **Long term energy saving proposals**

- Install air pre heater for preheating the combustion air supply to the heat treatment furnaces & heating furnace
- Replace existing oil fired heating & heat treatment furnaces with gas fired furnaces
- Provide ceramic fiber insulation for batch operated furnaces
- Practice oxygen enrichment in furnace
- Segregate high pressure and low pressure compressed air users in the forging industry
- Install variable frequency drive for the screw compressor
- Replace pneumatic operated tools with electrical tools
- Use energy efficient equipment in allied operations like hammers, compressors, machine tools and machining centres, heat treatment etc.
- Install energy efficient reheating furnace with flat roof
- Use of energy efficient motors
- Use of energy efficient air compressor
- Use of online O<sub>2</sub> measurement and control system.





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## **HAMMER VS. SCREW PRESS FOR CLOSED DIE FORGING**

*by FICEP S.P.A*

Screw presses and hammers share a long history in forging equipment, each offering unique benefits compared to mechanical and hydraulic presses.

### **FLEXIBILITY IN DIE OPENING**

Hammers and direct drive screw press feature variable die openings, unlike mechanical presses with fixed opening. This flexibility allows the forging of a wider range of parts and offers better force control and strokes repeatability.

### **SUPERIOR QUALITY: A KEY DIFFERENTIATOR**

When comparing a direct drive screw press to a pneumatic or hydraulic hammer you will find a number of areas where the screw press excels over the hammer. The first area is quality. With precision guiding the matching of the upper die to the lower die is more exacting with a screw press. This allows for higher tolerance at the match line on the parts there by producing a higher quality finished part.

Hammer dies tend to have more draft angles allowing the part to pop out of the die after each hit. Consequently, a hammer operator will typically hold onto the part with tongs and is thereby responsible for lining the forging back up in the die for additional blows. Overall providing for a less exacting part.

With screw press forgings, the parts stay in the dies and are then lifted out by an ejector. This allows to obtain a tighter fitting part to the die and higher finished quality with perfect dimensional accuracy.

### **SURFACE FINISH AS A MARK OF EXCELLENCE**

Another area of quality advantage for the screw press is surface finish. Screw presses achieve a better surface finish by retaining parts in the dies until ejection.

Automated air-blow systems efficiently remove scales, reducing scale defects and increasing dies life. Hammer operations lack this precision, leading to less consistent results.

### **EFFICIENCY AND COST SAVING**

Screw presses are more efficient than hammers, typically requiring a single blow to forge a part instead of multiple blows, saving time and energy.

Moreover, screw presses offer programmable and precise energy control across a wide range, ensuring more energy is directed to the workpiece and less is wasted on the frame.

This reduces maintenance issues, such as wear on machined surfaces and cracks in structural components, ultimately lowering long-term operating costs.

### **OPTIMIZED LUBRICATION FOR LONGER LIFE**

Hammer die and way lubrication is often applied manually. This method makes it difficult to ensure proper application in terms of quantity and location, and keeping the lubricant clean from slag and

debris is challenging. Screw presses use automated systems, applying precise amounts of lubricant to specific areas, increasing die and press life while reducing waste and labor costs

**SEAMLESS AUTOMATION AND MONITORING**

Screw presses are well-suited for automation due to their precision. Programmable ejectors, precise energy control, and integration with robots streamline part transfer and improve productivity. Advanced PLC controls enable monitoring of tonnage, temperature, and lubrication systems, allowing predictive maintenance. Hammers lack these advanced capabilities, making automation expensive, more challenging and subject to frequent maintenance.







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## **AIFI AT EUROFORGE conFAIR 2024**

*Forging the future: EUROFORGE conFAIR 2024*

The EUROFORGE conFAIR 2024, held on October 22-23 at the Allianz MiCo – Milano Convention Center in Milan, marked a milestone for the forging industry, bringing together 565 participants from 34 countries. This unique European trade fair and conference serves as a hub for innovation, collaboration, and exchange, attracting leading suppliers, researchers, and decision-makers from across the globe. With 56 exhibitors showcasing cutting-edge solutions, the event demonstrated the dynamic and forward-looking nature of the forging sector.

### **Key Themes and Opportunities**

This year's conFAIR focused on tackling the challenges and leveraging the opportunities presented by industrial megatrends. Key themes included sustainability in forging processes, the integration of digitalization and artificial intelligence, and breakthrough innovations in material technologies. The combination of scientific insights and practical applications made the event a vital touchpoint for the forging industry.

A particularly significant part of the program was the emphasis on decarbonization efforts. Companies and researchers presented strategies for reducing the environmental impact of forging, aligning with Europe's broader industrial sustainability goals. Delegates engaged in active discussions, exploring how technological advancements can balance efficiency and ecological responsibility.

### **Spotlight on Regional Reports: The Case of India**

Among the highlights of the event were the highly anticipated regional reports, which provided a comprehensive overview of the forging industry across various global markets. Amongst the reports from China, Europe, North America and Japan, the report from India stood out, illustrating the remarkable growth and transformation of the country's forging sector.

Indian representative Yash Munot, President of the Association of Indian Forging Industry AIFI shared insights into their rapid adoption of advanced forging technologies, increasing automation, and the strong push toward environmentally sustainable practices. With a growing role in global supply chains, India has established itself as a key player in the production of high-quality forged components for industries such as automotive, energy, and infrastructure.



*Mr. Yash Munot, President, AIFI presenting India report at EUROFORGE conFAIR 2024.*

The Indian presentation showcased innovative case studies, including developments in forged materials and high-performance alloys. These advancements have positioned India not only as a competitive exporter but also as a strategic partner in the global push for forging excellence. The enthusiastic response to this regional report highlighted India's importance as a driver of change within the global forging community.

**Participation and Networking on an International Scale**

The EUROFORGE conFAIR 2024 underscored its global relevance by attracting a diverse and international audience. With 565 participants representing 34 nations, the event offered unparalleled opportunities for knowledge exchange and networking. The exhibition hall buzzed with activity as 56 companies showcased their latest technologies, products, and services, sparking discussions and forging partnerships that will shape the future of the industry.

**Inspiration Through Knowledge and Practice**

One of the event’s unique features was its ability to combine forward-looking discussions with practical experiences. High-profile speakers presented cutting-edge research and solutions during the conference sessions, inspiring delegates to rethink traditional forging paradigms. At the same time, the accompanying exhibition provided an engaging environment for hands-on demonstrations, product launches, and face-to-face interactions with industry innovators.

Another standout aspect of the event was the opportunity to visit a forging company, a steel mill and a machine builder in northern Italy, a region known for its deep-rooted forging tradition. These visits offered participants valuable insights into operational best practices, state-of-the-art equipment, and innovative workflows, enhancing the practical dimension of the conference.

**Forging the Future: A Shared Vision**

The EUROFORGE conFAIR 2024 once again solidified its reputation as the leading platform in Europe for the forging community. By addressing both immediate industry challenges and long-term strategic goals, the event demonstrated the forging sector’s commitment to innovation, sustainability, and global collaboration. In 2025 EUROFORGE will host the International Forging Congress IFC, 5-10,October 2025 in Frankfurt / Germany. Participants registration will be open soon.

*EUROFORGE AISBL is the association of the European forging industry. We represent 9 national associations with 550 companies, more than 70.000 employees and a total of 13,5 billion Euro of annual turnover. By supporting the exchange between our member associations as well as organising benchmarks and expert groups EUROFORGE develops the European forging technology and enhances the international competitiveness of our industry sector.*





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## AIFI's Vision for a Skilled Future: Tackling Industry Challenges through Innovation and Collaboration

NL Correspondent

Jammu Tawi: The Association of Indian Forging Industry (AIFI), the apex body representing the Indian forging industry, recently hosted a successful session on "Current Industry Scenario, Innovative Technology & Skill Development" in New Delhi. This event marks the second such session, following a highly successful gathering in Pune that focused on similar themes. The session brought together industry leaders, experts, and decision-makers from various sectors, including CEOs, COOs, CFOs, Plant Heads, HR Heads and other functional heads, to discuss the latest technological advancements and strategies for upskilling the workforce in the forging industry.

The session featured three insightful presentations, covering the current industry scenario, energy price risk management, and skill development. It highlighted the critical need for embracing technological innovations and making substantial investments in workforce skill development to drive growth in the forging sector. The key takeaway was the importance of fostering closer collaboration between industry and academia to create curricula that align with the latest technological advancements, ensuring the workforce is equipped with the necessary skills to excel in



an ever-evolving industry landscape.

Prof. (Dr.) Raj Nehru, Vice Chancellor, Vishwakarma Skill University, Government of Haryana shared how Vishwakarma Skill University is forging industry and academia collaborations which is so vital for building a workforce equipped with the skills and knowledge necessary to meet industry demands. Prof. Nehru also shared various industry-aligned curricula being offered to the industry to bridge the education-industry gap.

Hemal N. Thakkar, Senior Practice Leader and Director, CRISIL Market Intelligence & Analytics presented the current industry scenario and

highlighted the opportunities emerging in defense and aerospace sectors.

The event also featured importance of energy price risk management and the challenges of navigating volatile energy prices amidst global disruptions.

The session also highlighted India's remarkable manufacturing revival, driven by strategic government initiatives, which presents both exciting opportunities and significant challenges. Rapid technological advancements, geopolitical conflicts, and regulatory complexities are creating hurdles for the industry. A key issue is the skills mismatch in advanced manufacturing, which calls for greater investment in vocational training to meet the demands of the industry.

Overall, the session reinforced the need for stronger collaboration between industry and academia, particularly in integrating forging technology into engineering curricula and upskilling the workforce. The event highlighted the urgency of investing in technology and skill development to bridge the gap in high-skilled labor and support India's growth in advanced manufacturing. AIFI's proactive approach in addressing these challenges positions collaboration, innovation, and skill development as essential drivers for the forging industry's future growth.

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**KT NEWS SERVICE**

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## **Navigating the Technological Tide: AIFI Highlights the Critical Need for Upskilling in the Forging Industry**

Pune, (TNB) : The Association of Indian Forging Industry (AIFI), the apex body representing the Indian forging industry, hosted a special session on "Innovative Technology Solutions and Skill Development" recently in Pune, aimed at addressing the evolving needs of the forging industry. The session brought together industry leaders, experts, and stakeholders to discuss the latest technological advancements and strategies for upskilling the workforce in the forging sector.

The session saw key discussions on innovative technology solutions and skill development initiatives, highlighting the forging industry's need to evolve with changing technological trends.

On the technology side the presentation was made on two topics 1) CNC Skill Development with an Advanced range of CNC Simulators and 2) Revolutionizing Forging: The Impact of 3D Printing technology.

Regarding Skill development, Prof. Dr. Prabhat Ranjan, the Founding Vice Chancellor of D.Y. Patil International University in Akurdi, Pune shared his perspective on "Integrating forging technology into engineering programs and enhancing the skills of industry professionals through strong collaboration



between academia and industry

The event also featured a presentation on Energy Price Risk Management further enriching the discussions around operational efficiency and risk management in the forging industry.





In a rapidly changing technological environment, this event emphasized the necessity for upskilling and adapting to new technologies. The discussions highlighted that to remain competitive, the industry must harness the skills of the youth and foster partnerships between industry and academia. Investment in technology and skill development will be crucial in overcoming the challenges posed by a shortage of high-skilled labour in advanced manufacturing sectors.

**MEDIA COVERAGE: AIFI**

**NOVEMBER-2024**

Sr No	Publication	QR Code
1	HT syndication	
2	Autoguideindia	
3	Machineedgeglobal	
4	Puneinsight	
5	Businessmicro	

**DECEMBER-2024**

Sr No	Publication	QR Code
1	Businessnewsthisweek	
2	Apnnews	
3	Cityairnews	
4	Autoguideindia	



**AIFI ACTIVITIES AT A GLANCE**

Month	Activities Held	Remarks
22nd – 23rd November 2024	2 day workshop on “Manufacturing Problem Solving Using Shainin Methodology”	In Person-Pune
25th November 2024	Southern Region Meeting & Session on "Sustainability in Forging Industry - Risks and Opportunities"	In Person-Chennai
29th November 2024	Western Region Meeting & Session on "Renewable Power Sourcing through Open Access Wind and Solar"	In Person-Pune
3rd December 2024	Southern Region Meeting	In Person-Bengaluru
10th January 2025	Special Session on “Business growth through Technology upgradation”	In Person-Rajkot
16th January 2025	Training programme on “Total Employees Involvement”	Virtual

Forthcoming Activities		
31st January 2025	Western Region Meeting	In Person-Pune
6th February 2025	Special Session on “Current Industry Scenario, Innovative Technology & Upskilling”	In Person-Chennai
7th February 2025	Training programme on “Die Set-up change (SMED)”	In Person-Chennai
11th February 2025	Training programme on “Die Set-up change (SMED)”	In Person-Pune
14th February 2025	NR Meeting & Session on “Current Industry Scenario, Innovative Technology & Upskilling”	In Person-Ludhiana
15th February 2025	Training programme on “Die Set-up change (SMED)”	In Person-Ludhiana
28th February 2025	Western Region Meeting	In Person-Pune

**INTERNATIONAL EVENTS**

Month	Event	Remark
March 3-8, 2025	TIMTOS (Taipei Int’l Machine Tool Show)	Taipei, Taiwan
May 10-12, 2025	China Forging Industry Exhibition	Guangzhou, China
May 13-15, 2025	Forge Fair 2025	Cleveland, USA
October 5-10, 2025	IFC (International Forging Congress)	Frankfurt, Germany



**GLIMPES OF ACTIVITIES HELD**

2 day workshop on “Manufacturing Problem Solving Using Shainin Methodology”  
22nd & 23rd November 2024, Pune



Southern Region Meeting  
25th November 2024, Chennai



Western Region Meeting  
29th November 2024, Pune





Southern Region Meeting  
3rd December 2024, Bengaluru



Special Session on “Business Growth Through Technology Upgradation”  
10th January 2025, Rajkot





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