



# **Machinery and Heavy Equipment Industry**

Impact of macroeconomic trends on the current and future state of the industry – A Perspective **December 2022** 

## **Executive Summary**

The impact of current macroeconomic trends are huge on machinery and heavy equipment industry, but they present opportunities of growth and ecosystem plays for proactive players

Key Focus Areas	Key Findings and Observations
Rising interest rates and volatile input prices	<ul> <li>&gt; High-interest rate has reduced demand for machineries from capital intensive end-segments, like construction, mining and farm equipment</li> <li>&gt; Rising price of industrial inputs and volatile energy prices have impacted the margins for the industry</li> <li>&gt; However, these factors have also led to increased demand of machinery from mining and oil &amp; gas industries</li> </ul>
Strengthening US dollar	<ul> <li>Strengthening of the US dollar has impacted the demand for machinery from global customers</li> <li>The US dollar will likely continue strengthening into 2023 due to an expansionary monetary policy</li> <li>US Fed raising interest rates have made the US dollar attractive for global funds</li> </ul>
Supply chain bottlenecks	<ul> <li>Russia-Ukraine war, Covid-19 pandemic, continuing lockdowns in China, and worldwide economic slowdown has disrupted Global supply chains</li> <li>Alternate supply chains with digital capabilities are needed for greater reliability and end-to-end visibility</li> <li>Collaboration with suppliers and vertical integration can be explored by the OEMs to tackle the supply chain challenges</li> </ul>
Digital transformation for next generation machines	New-age technologies, e.g., edge computing, cloud computing, 5G internet, metaverse, digital twin, drones, are being acquired or built inhouse for <b>faster computing capabilities</b> that feed into next-generation machines
Future ecosystem plays	<ul> <li>IIoT firms, technology providers and OEMs have formed an ecosystem to leverage large amounts of data using AI/ML technology and build <b>intelligent, next-generation</b> solutions</li> <li>Equipment-as-a-service business model has seen greater adoption due to evolving demand</li> </ul>

## **High-level Trends in Machinery and Heavy Equipment Industries**

OEMs are focused on creating tailored end-to-end solutions for customers and building futuristic machines with large processing power, and are using inorganic routes to achieve these goals



#### Increased focus on core businesses

- Push towards divestments of non-core assets to focus on core business, e.g., Siemens listed its healthcare unit to form Healthineers AG
- Private equity firms have played active roles in buying such businesses and have transformed them at higher enterprise values



#### Focus on end-to-end customized solutions

- Major players are moving towards being **industry specialists** that offer one-stop-shop solutions to their clients
- Vertical integration has threatened the role of other stakeholders in the value chain, e.g., the system integrators
- Partnerships with customers to co-create products or solutions are now more common due to their complex requirements



#### Addition of software and services to differentiate amongst peers

- Players are adding software, cloud and edge computing capabilities for improved workstreams and additional revenues
- Services segment has seen increased attention by ensuring long-term customer engagement and additional aftermarket revenue streams



#### Acquisition of new age technologies and capabilities

- Players are snapping up new age tech startups to add IIOT and data analytics capabilities in their operations and offerings
- Companies have gained access to these technologies via venture capital arms, M&As, partnerships, collaborations with universities



#### Innovative business models and sustainable offerings

- Emergence of machinery-as-a-service and subscription-based offerings have opened new market segments
- Sustainable machinery and heavy equipment are being developed and offered to help customers achieve their zero-carbon goals

## **Machinery Industry – Overview**

While digitization of systems and process have driven investments in this space, the recent strengthening of the US Dollar has impacted export revenues for the industry players

#### Trends

#### **Metalworking Machinery Manufacturing**

 Heavily dependent on the automobile sector, the industry demand and growth outlook have been impacted by the same set of factors

#### **Crude Oil Machinery Manufacturing**

• Digitization, new tech, e.g., 3D imaging, 3D printing, robotics, and drones are being adopted to have greater workplace safety

#### Turbine, Container, Packaging Machineries Manufacturing

• Increased activity post pandemic and high demand for exports and imports of goods benefited these sectors

#### Food Processing Machinery Manufacturing

• Growing trend of healthier and vegan food options have created a demand for newer types of food processing equipment

### **Demand Drivers**

#### **Metalworking Machinery Manufacturing**

- · Geopolitical tensions and increased spending in defense and aerospace have led to high growth of metalworking machinery
- Increased private investment represents potential for high-growth opportunities in the industry

#### **Turbine Machinery Manufacturing**

· High demand for water and wind power led to a positive effect on the turbine machinery industry

#### **Crude Oil Machinery Manufacturing**

- As the price of oil increases, producers invest more in equipment and machinery to maximize output which leads to an increased demand for machinery
- Increased oil prices encourage widespread investment in new technologies to reach previously inaccessible deposits or locations

### **Barriers to Entry**

- Higher capital requirements and existing patents create barriers to entry in this industry
- Emerging demand for modernized machines equipped with IIoT and intelligence have challenged entry for new players

"Digital transformation of machinery is no longer an option but an imperative for businesses to thrive in the post-pandemic economy. I foresee digital adoption as increasingly important for all manufacturers"

> -Kumari Kanti Mitra Country Manager, Rockwell Automation

"Sales, operations, finance, analytics teams, and business leaders don't have a single source of data from machinery and thus cannot easily collaborate or make quick, agile decisions"

> -Raj Ravuri, Director, Manufacturing advisory, Salesforce India

## **Heavy Equipment Industry – Overview**

Robust demand and high investments in infrastructure are acting as catalysts for growth; But the supply chain disruptions and semiconductor shortage continue to impede the overall recovery

#### Trends

#### **Construction Equipment**

- Technology from early-stage start-ups are being leveraged to build next generation heavy equipment with traditional equipment also being retrofitted
- Dependence on gasoline and diesel have reduced due to new carbon-neutral and zero-emission regulations

#### **Farm Equipment**

- Heavy R&D investments are being made for electrification of farm equipment and addition of robotics/ autonomous features
- · Precision farming is being added by players to generate more yield-per-area

#### **Mining Equipment**

- Electric mining machinery is preferred over diesel-powered engines due to reduced emissions, lower noise and higher safety
- Technologies such as IoT, 3D imaging in machinery, are being added for faster feedback and better visibility

### **Demand Drivers**

#### **Construction Equipment**

- US government funding plans for infrastructure projects have increased the demand for construction equipment
- Urbanization in Latin America and Asia has created higher demand for residential projects and construction equipment
- Higher demand for the latest technology machines has increased R&D investments amongst end industries

#### **Farm Equipment**

- High agriculture commodity prices, low import duties and favourable government initiatives have led to the growth of
  agriculture industry
- Shortage and high cost of labour have prompted companies to increase automation and robotics in their farm equipment

#### **Mining equipment**

• Abundance of reserves and increased mining activities in the Asia-Pacific region will drive the demand for mining equipment

### **Barriers To Entry**

- High capital expenditure and technical expertise requirements are among the top barriers to entry
- Supply chain disruptions and bottlenecks continue to impact the industry and have impeded entry of new players

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## **Impact of Macroeconomic Factors – Machinery and Heavy Equipment Industry**

High levels of oil and commodity prices, rise of interest rates and the resulting slow down in economic growth have created a triple whammy for the industry



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1. US Inflation (CPI) and Fed fund rates shown here as a proxy of the similar trends being observed in other major economies

### Key Takeaways

- Covid-19 led to high government stimulus and lower rates from the central banks, accelerating demand that failed to match the supply, leading to unexpectedly high levels of inflation
- As central banks raise the interest rates, the cost of capital expenditure for machinery has increased, leading to lower demand from end industries
- Discretionary goods, such as automobiles, housing, retail, are expected to see **lower demand from consumers** and hence a lower demand for machinery from these industries
- Food, healthcare and medical have inelastic demand that would contribute to a stable demand for food processing machinery or healthcare equipment

### Key Takeaways

- Russia-Ukraine war amplified the rising commodities prices. Due to the war, Europe is facing a severe energy crisis and volatile oil and gas rates
- Slow down in demand from construction, automotive, food processing industries due to higher input costs of metals, cement, lumber, and food
- Players are facing **margin pressures** due to high prices of input metals and metal parts, impacting the overall heavy equipment and machinery industry
- High level of fuel prices led to high demand for oil exploration machines; Likewise, high metal prices and demand for EVs have benefited the mining equipment firms

## Machinery and Heavy Equipment Industry – Value Chain

Most industry players also offer maintenance and remanufacturing services through a robust network of dealers and distributors



## Machinery and Heavy Equipment Industry – Competitive Landscape

Industry leaders have diversified offerings and presence in multiple end industries, and have also added additional capabilities for optimization of operations

Machinery and Heavy Equipment										
		Core Offerings			Additional Offerings					
	Company	Industries served	Electrification	Autonomous	Data analytics	Fleet management	Cloud	<b>Rental Services</b>	Robotics Automation	
Heavy Equipment		Agriculture	√□	√□	√□	√□	√□	$\checkmark$	$\sqrt{\Box}$	
		Construction	√□	√□	√□	√□	√□	√□	√□	
Machinery	N@Y	Oil & Gas, Mining			√□		√□	√□	$\sqrt{\Box}$	
	HALLIBURTON	Oil & Gas, Mining			√□		√□	√□	$\sqrt{\Box}$	
		Metalworking			√□		√□	√□	٧D	
Diversified	CAT	Diesel Engine, Construction, Generator Sets, Mining, Oil & Gas	√□	√□	√□	√□	√□	<b>√</b> □	√□	
	JOHN DEERE	Agriculture, Construction	<b>√</b> □	<b>√</b> □	<b>√</b> □	√□	√□	<b>√</b> □	√□	
	KOMATSU	Construction, Energy, Manufacturing, Mining	√□	√□	√□	<b>√</b> □	√□	√□	√□	
	C	Agriculture, Construction, Mining, Oil and Gas, Marine, Commercial Power	<b>√</b> □	<b>√</b> □	Л	√□	√□	<b>√</b> □	√□	
	DOOSAN	Construction, Energy, Manufacturing	√□	√□	√□	√□	√□	√□	√□	

## **Challenges and Opportunities**

Recent challenges in the industry have created avenues of opportunities for proactive players who have long-term vision to turn adversities in their favor

### Challenges

- Macroeconomic challenges: High commodity prices and hikes in interest rates have created significant challenges, especially for the smaller OEMs, as they face margin pressures from lower demand
- **Global supply chain issues:** Recent shocks due to the pandemic and the Russia-Ukraine war have created supply chain bottlenecks, leading to a shortage of key components
- Carbon emission and worker safety norms: Municipalities globally have set rules for reduction of CO<sub>2</sub> emissions and protection of workers and surroundings, including the noise levels, acoustic cabin levels and roll-overs
- Changing consumer demand: Consumer demand has seen a shift to sustainable, eco-friendly options, that require machines with new configurations and have rendered existing ones obsolete
  - Semiconductor shortage: Low chip supplies not only impacted end industries, e.g., automobiles, but also led to shortage of key components for the manufacturing and heavy equipment industry



**Worker shortages:** Post pandemic, one of the key hurdles for scaling up production has been shortage of skilled staff. >2M jobs in US manufacturing are expected to remain unfulfilled by 2030

### **Opportunities**

- **Consolidation opportunities for larger players:** Large players can acquire smaller niche players or distressed diversified firms to re-focus priorities or expand their market share and to stay ahead of the competition
- **Reshoring of supply chains:** There are opportunities of reshoring the supply chains to have autonomy, security and reliability of production and delivery
- Advancements of optimized manufacturing: Use of IoT, additive manufacturing, metaverse and digital twin capabilities can help reduce cost, resource use, carbon footprint promoting a circular economy
  - **Customized offerings:** Shifts in demand have led players to refocus and offer tailored solutions to their customers
- B P
  - **Building partnerships to gain access to latest R&D:** Partnerships for capabilities helps stay abreast with latest technology



**Robotics in manufacturing:** Robotics and automation have alleviated the impact of labour shortage and reduced the lead time in manufacturing processes

## **Themes to Dominate in the Future**

Ecosystem plays will be a dominant theme in the industry as players strive to keep up with the fast-evolving demand and technological landscape

Future Themes	emes Description			
Ecosystems that build next gen solutions	<ul> <li>Ecosystems involving next generation solutions will be commonplace as firms look to tackle macroeconomic issues and supply chain disruptions. For e.g., NOVENEX platform by Bosch has service providers, dealers, manufacturers, and suppliers building automated farm machines</li> <li>Technology firms may play a greater role in the future as they are building next generation machines with autonomous and cloud computing capabilities</li> </ul>	Low High		
Integrations to bring advanced capabilities and solutions inhouse	<ul> <li>Sustainability goals will drive companies to add solutions inhouse that reduce waste and carbon footprint. For e.g., additive manufacturing that 3D prints with steel and aluminum leading to less wastage; Organic Rankine Cycle (ORC) system that converts waste energy to electricity</li> <li>Startups with advanced technology offerings, e.g., neural network driven intelligence platform that works with sensors (RADAR, LiDAR) on connected, autonomous vehicles, are being sought after by the industry leaders to gain a competitive advantage</li> <li>Metaverse and digital twin technologies will see faster adoption as firms replicating the shop floors and complex machinery on metaverse to enable supply chain stakeholders with a real-time view of the end-to-end manufacturing process</li> </ul>	Low High		
New business models targeting a new market	<ul> <li>Subscription-based business model that bundles product, services and software for onsite computing have seen higher demand. This model provides customers with agility to adapt in any scenario</li> <li>Equipment-as-a-service contracts are gaining more popularity as they eliminate machinery downtime and ensure uninterrupted supply with minimal investment</li> </ul>	Low High		



#### **About Transjovan Capital**

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