

Since 2001

# METALWORLD™

Devoted to Foundry & Non-Ferrous Metals Industry

Vol. 22 No. 03

March 2023

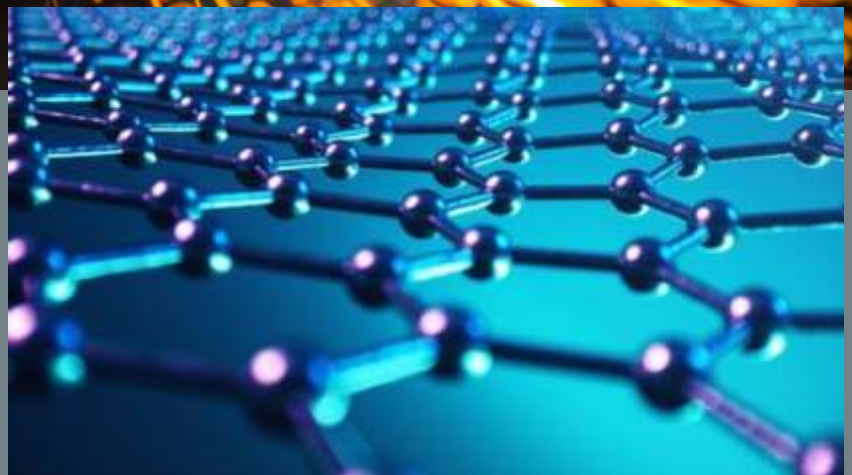
Registered-RNI No. MAHENG/2002/7908

[www.metalworld.co.in](http://www.metalworld.co.in)



Chandan Panda

■ "India aims to double castings market size to USD 40 bln by 2033"



■ BATTERY WASTE MANAGEMENT RULES 2022

■ Mineral Wealth of J&K/ Leh-Ladakh Region and Recent Developments

■ Nanotechnology in Metal Industry

■ Trends that will impact on the aluminum markets in 2023 and beyond

# Foundry Products for Non-Ferrous Metals

Since 1856, Morgan Molten Metal Systems is a pioneer and a global leader in supplying technically advanced range of foundry products to Non-Ferrous Foundries.



**Syncarb Z2e<sup>2</sup>**



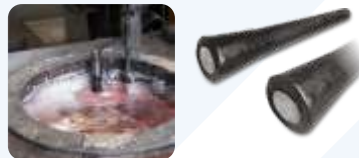
**Suprex-E Plus**



**BNI**



**Degassing Rotor & Baffle Plate**



**Degassing Tube**



**Blue Lightning**

## Complete Degassing Solution

Morgan has introduced a complete solution to degassing needs of the foundries.



**Mobile Degassing Unit**



**Hoist-Able Degassing System**



**Reduced Pressure Tester**



**Density Index Measuring System**



Morganite Crucible India Ltd.  
(ISO 9001 Company)  
B-11, M.I.D.C, Waluj, Aurangabad - 431136  
Maharashtra, India

**Contact:**  
vikramsinh.nalawade@morganplc.com  
+91 93705 91146  
**Web:** www.morganmms.com

## EDITOR

D. A. Chandekar  
B.E. (Met.) DBM, DJMC

## EDITORIAL BOARD

H.T.Makhijani  
Amit Majumdar  
R.T.Kulkarni  
Sadguru Kulkarni

## EDITORIAL ASSISTANCE

Swati Padave

## PRODUCTION

Anita Chandekar

## DESIGN & LAYOUT

Ace Graphics

## MARKETING

Prachee More

## Administrative Office

1, Alpha, M. G. Road, Vile Parle (E),  
Mumbai - 400 057. India  
**Tel. :** 91-22-2619 2376,  
2617 1575 / 2617 1866

## Email :

[info@metalworld.co.in](mailto:info@metalworld.co.in)

**Editorial :** [editorial@metalworld.co.in](mailto:editorial@metalworld.co.in)

**Website :** [www.metalworld.co.in](http://www.metalworld.co.in)



[facebook.com/pages/Metalworld249596461861510](https://facebook.com/pages/Metalworld249596461861510)



[metalworldblog.wordpress.com](http://metalworldblog.wordpress.com)



[twitter.com/chandekar\\_d](https://twitter.com/chandekar_d)



[linkedin.com/company/13450168](https://linkedin.com/company/13450168)



[youtube.com/channel/UC4vpElyHO-xqdavO40rXXlw](https://youtube.com/channel/UC4vpElyHO-xqdavO40rXXlw)



## D. A. Chandekar Editor

Dear Readers,

We all know that today India is the fastest growing large economy in the world, surpassing the major countries like Germany, China, US, etc. We also know that the last two decades belonged to China when it manifested a phenomenal economic growth of more than 10 % annually year after year. Infrastructure development was a major contributing factor and the trigger for this fantastic unparallel growth. Development of roads, bridges, dams, airports, railways, metros etc. not only facilitate the transport and logistics but generate huge employment, consume steel, cement and also metals. All this make the economy wheel rotate faster. Thus infrastructure development is the key for the economic growth of any region / country.

The reason to narrate the Chinese story is that Indian government too is giving a lot of emphasis on the infrastructure development. China adopted open economy model by late seventies / early eighties, a decade prior to India. They started first with infrastructure development process, invited international auto companies after that and finally the consumer durable companies. We started with consumer durable companies, invited foreign auto companies after that and finally understood the importance of roads, bridges and infrastructure development. In my opinion, the

sequence should have been exactly the opposite. Anyway, past is past. It has been more than three decades of adopting Liberalization and Globalization as economic principles but the real benefits have started coming only after we placed infrastructure development agenda in the centre of our growth strategy. I am now seeing India entering the fastest growing part of the famous 'S' curve of the economy.

Friends, 'metals' being a very important input for the infrastructure development, I see a very bright future for our industry on a long term basis. Now this is a very general statement indicating a positive direction in which the industry is likely to move. For an individual company, it is just a possibility, not a certainty. There will be tremendous competition all along this journey. One has to take care of quality, price and delivery in a best possible manner, adopt latest technology and processes, employ modern promotion, marketing and branding strategies and then hope for the good returns. Recycling whatever one can, harming the environment in a minimum possible manner and inducting sustainability in the enterprise are the newest challenges before our industry. We have to address them at individual as well as at the industry level. The government too is pushing the concepts such as Recycling and Green Manufacturing. Let us work on them together taking all the stakeholders in the confidence. Only that will convert the possibility of success into a certainty !

The 'Indian Growth Story' has just begun. If it is to continue, it will need a strong support from metals industry. Are we ready ?

Write your comments :

<https://metalworld.dac.wordpress.com>

# Content

## Face to Face



- 6** "India aims to double castings market size to USD 40 bln by 2033"  
- Chandan Panda  
Vice President (Technical Services and Business Development)  
Gargi Huttenes Albertus Private Ltd, Mumbai.

## Technology

- 12** BATTERY WASTE MANAGEMENT RULES 2022  
L.Pugazhenthly

## Feature

- 16** Mineral Wealth of J&K/ Leh-Ladakh Region and Recent Developments  
Sadguru Kulkarni

## Industry Update



- 20** GREAT DIE CASTING TECHNOLOGY FORUM International Women's Day Celebration



- 23** Nanotechnology in Metal Industry  
Dr. Ramesh Chaughule

## Analysis



- 26** Trends that will impact on the aluminum markets in 2023 and beyond  
Metalworld Research Team

## News Update

- 28** Global copper mine production up by 4.5% in January 2023: ICSG

Europe AI cuts continue despite power relief

- 29** Glencore will not renew \$16 bln aluminium deal with Russia's Rusal

Vedanta Aluminium recycles 12.5 billion litres of water in FY23

- 30** Chile open to modifying copper royalty bill on miners objections



- 31** Book Review - Unfolding Success  
Sapan Bardhan

## Industry Update

- 32** Aluminium Extruders' Council (ALEX) Two day Conference on Aluminium Extrusions

## Statistics

- 38** Domestic Automobile sales up by 10%; export declines by 35%: SIAM Data

### Disclaimer :

The views and opinions expressed in the articles are solely of the authors. The Editor may not subscribe to these.

### Feedback :

Your feedback / suggestions regarding the content will be appreciated  
[editorial@metalworld.co.in](mailto:editorial@metalworld.co.in)

# 33% CO<sub>2</sub>

Our Norwegian hydropower based silicon plants have a carbon footprint of only 1/3 compared to the global average



## Silloy™ silicon

Silloy™ silicon is produced in Norway, where our hydropower based production is more environmental friendly. Silloy™ has very low calcium and phosphorus levels, perfect for the aluminium industry. Other standard silicon grades are available on demand.

Our local India team of specialists and our local warehouse ensures swift supply. Contact our team directly:

ELKEM South Asia Pvt. Ltd,  
BSEL TECH PARK, B wing, 307/308,  
Sector 30A, Vashi, Navi Mumbai 400705  
INDIA

+91 22 67761900 / [mohan.deshkar@elkem.com](mailto:mohan.deshkar@elkem.com)  
[elkem.com/silicon-products/aluminium](http://elkem.com/silicon-products/aluminium)



# “India aims to double castings market size to USD 40 bln by 2033”

## - Chandan Panda

Vice President (Technical Services and Business Development)

Gargi Huttenes Albertus Private Ltd, Mumbai

Indian Foundry industry is fully committed to make Indian industry to become a casting superpower and aligning towards the global destination for sourcing hub for casting. The government focus on Make in India, Ease of Doing Business, Infrastructure projects and easing foreign investment norms promotes investment in manufacturing and other sectors which have positive cascading effects on the foundry industry.

India is aiming to double its foundry casting market size to USD 40 billion and push up the annual production capacity to 23 million tones (MT) by 2033. The predicted growth rate of Indian foundry business for the next 10 years is about 6.5 CAGR.

Chandan Panda secured Degree in Chemistry (with Honours) ; Degree in Chemical Engineering with specialization in Polymer Science and Technology both from University of Calcutta, M. Tech in Production Engineering from Kalinga University and MBA in marketing from National Institute of Management.

He has been working in the field of Foundry Binders,

Coatings, Special RCS and auxiliary chemicals for the past 22 years and has to his credit many achievements in this field.

His work has taken him too many foundries in South Africa, Turkey, Poland, Germany, South East Asia, Saudi Arabia and UAE.

He has been attending Foundry Exhibitions all over the world regularly. He has presented technical papers in Metal Casting Conference –South Africa, IFC, Foundry conclave, Sourec on, NFD, GDC Tech, CFER and other events. Currently, Panda is Vice President (Technical Services and Business Development) at Gargi Huttenes Albertus Private Ltd, Mumbai.

Looking at the tremendous

market for castings industry, D A Chandekar, Editor & CEO of Metalworld had an exclusive interaction with Mr. Chandan Panda, VP (Technical Services and Business Development), Gargi Huttenes Albertus Private Ltd to understand more about the present status of Indian Foundry Industry along with the assessing the foundry sector in Southeast Asia & MENA region.

*Excerpts:*

**1)What is the present status of Indian Foundry Industry?**

First, I would like to thank Chandekar for giving me the chance for an exclusive interview. I am really honored of the invitation of your prestigious industry publication 'Metalworld' magazine.



**AIKOH  
CHEMICALS**



## PRODUCT RANGE

- > Fluxes
- > Granular Fluxes
- > Tablet Grain Refiner
- > Tablet Degasser & NT Based
- > Master Alloy Ti, B
- > Mag Remover
- > Phosphoreous Copper
- > Coating G.D.C.
- > Die Release Agent H.P.D.C.
- > Plunger Lubricant
- > Copper & Brass Fluxes
- > Teeming Compound
- > Fluxes of Copper, Brass, Lead, Mg, Ferrous & Non Ferrous Metal

## ABOUT US

- > Long Term Support
- > Strong R & D
- > Prompt Delivery
- > Consistent Quality
- > 80 Years of Experience
- > Export to More than 25 Countries

- **Technical Collaborations with M/s Aikoh Co. Japan**
- **Sales & Distribution with M/s JS Chemical INC, USA**
- **Technical Collaborations with M/s NTC Japan**

**SARU AIKOH CHEMICALS PVT LTD.**

A-2, INDUSTRIAL ESTATE, PARTAPUR, MEERUT - 250 103 INDIA

Tel. :0121-2440636, 0121-2440641, +91-7302000869, Fax : +91-121-2440644

E-mail: [info@saruaikoh.com](mailto:info@saruaikoh.com), [customer.support@saruaikoh.com](mailto:customer.support@saruaikoh.com), Website :- [www.saru.co.in](http://www.saru.co.in)





## Face to Face

Indian foundry industry manufacturers of metal cast components for applications in Auto, Tractor, Railways,

### **assessment regarding the foundry sector in Southeast Asia & MENA region?**



Machine tools, Sanitary, Pipe Fittings, Defense, Aerospace, Earth Moving, Textile, Cement, Electrical, Power machinery, Pumps / Valves, Wind turbine generators etc. Foundry Industry has a turnover of approx. USD 19 billion with export approx. USD 3.1 billion. Casting production in India reached a value of 12.5 million tons in 2022. It is aiming to double its market size to USD 40 billion and push up the annual production capacity to 23 million tones (MT) by 2033. 60% of the foundry produce is for the Auto sector. Light metal castings are increasing to cater to BS-6 Phase 2 & focus towards developing EV is on the anvil.

Indian Government is focusing on "MAKE IN INDIA" & "EASE OF DOING BUSINESS" by creating adequate infrastructure & easing FDI norms to promote investments in manufacturing & new initiatives & cooperations in skill development.

### **2) What is your**

### **SEA Region**

Generally speaking, the countries from South East Asia are becoming the global business hubs, the need for upgrading of Infrastructure, Railways, Water & Sanitation, shifting to Alternate Energy sources are the major driving forces for the growth of the foundry industry in this region. The foundry chemicals market in ASEAN is expected to gain market growth in the forecast period of 2021 to 2028. This market is growing at a CAGR of 5.1% in the forecast period of 2021 to 2028 and is expected to reach USD 1,200.43 million by 2028.

The Indonesian government is eager to turn Indonesia into a global production base for car manufacturing and would like to see all major car producers establishing factories in Indonesia as it aims to overtake Thailand as the largest car production hub in Southeast Asia and the ASEAN region. On the long-term, the government

wants to turn Indonesia into an independent car manufacturing country that delivers completely built units (CBU) of which all components are locally manufactured in Indonesia. Thailand, Malaysia & Vietnam project a strong future for the foundry industry and are gearing up to meet the global challenges to grow and sustain in this market to compete with India & China.

### **MENA Region**

Demand for new vehicles in the Middle East and Gulf region (excluding Iran) rose by an estimated 22.3% in December 2022, slightly improving the recovery that has begun to form in the region. Across the region, many countries have lifted economic restrictions, and business activity has returned. For 2023, new vehicle demand will continue to recover throughout the year. Saudi & UAE leads the casting market in the MENA Region.

Middle East and African Foundry Chemicals Market is expected to gain market growth in the forecast period of 2021 to 2028. This market is growing at a CAGR of 3.4% in the forecast period of 2021 to 2028 and is expected to reach USD 241.77 million by 2028. The increasing demand for metal casting in the automotive market is acting as a driver for the foundry chemicals market in the forecast period.

### **3) How do you see the Future of Foundry Industry in the country?**

As I mentioned before, Indian foundries currently produce over 12.5 million TPA of cast components in ferrous and non-ferrous category as per various international standards. It is about 10% of



# VAS

## SPECTROMETERS

### PLATINUM SERIES METAL ANALYZER

REINFORCED WITH **FUTURISTIC DESIGN**  
FOR MEETING THE NEEDS OF **STEEL INDUSTRY**



GOLD PLUS X



SILVER PLUS



eMission



**VAS SPECTROMETERS PVT. LTD.**

Unit No 107, Bldg No 17,  
Samhita International Complex  
MTNL Lane Off. Sakinaka,  
Andheri, Mumnai 400 072  
INDIA

[www.vasbharat.in](http://www.vasbharat.in)

[www.vasspectrometers.com](http://www.vasspectrometers.com)

[www.vas-spectrometers.com](http://www.vas-spectrometers.com)



[sales@vasbharat.com](mailto:sales@vasbharat.com)

LEADING INNOVATION IN SPECTROSCOPY



## Face to Face

the global production by weight. The products range in size from a few grams to over 100 tones per piece for various applications. The Indian foundry industry has gradually risen from No. 5 to become the 2nd largest globally, having grown by over 50% since 2008. The country exports castings worth USD 3.2 billion annually and there is huge potential to improve the market share of exports, which could grow three-fold. India also imports castings worth approx. USD 900 million annually, and about a fourth of these come from China.

The new manufacturing policy envisages an increase in the share of manufacturing in the GDP to 15% from the current 7.5% and to create 100 million additional jobs in next 10 years. Since all engineering and other sectors use metal castings in their manufacturing, the role of foundry industry to support manufacturing is very vital. It is not possible to achieve the above goal without the sustainable corresponding growth of the foundry sector.

India is aiming to double its foundry casting market size to USD 40 billion and push up the annual production capacity to 23 million tones (MT) by 2033. The predicted growth rate of Indian foundry business for the next 10 years is about 6.5 CAGR.

**4) Tell us about the present activities & product profiles of GARGI Group & also about your future plans ?**

Gargi HA is an Indian arm of the parent company HA Group, Germany.

It is a joint venture between Gargi and Hüttenes-Albertus Chemische Werke GmbH. Gargi HA is a renowned foundry chemicals manufacturer and supplier.

Since 1987, Gargi HA has persistently maintained its notable presence in the foundry industry by providing unrivaled foundry chemicals and commendable consumer service, both globally and nationally. HA Group has got over a hundred years of global experience & its alliance partner Gargi HA in India has



capitalized on this brand image and has grown many folds. Today Gargi HA has emerged as a true solution partner to many large, medium & leading foundry establishments in India.

Gargi HA delivering superior customers value and building a bridge between the customers' needs and our products and services-that's the aim of our Sales and marketing team. Gargi HA has a good, well-trained Marketing & Sales team, in tandem with R&D Specialists, who can

understand the foundryman's requirement and help to create innovative products & offer them as solutions to the industry. Gargi-HA has robust products with the most advanced formulations to suit almost all foundry Mold & Core making processes. Gargi HA today has a wide portfolio of Resins & Coatings, Slurry Sleeves, HD Sleeves, auxiliaries, etc., and caters to almost all fields of casting production in India like the Auto sector, Power, Railways, Defense, Aerospace, Infrastructure, Mining, Wind mills, Agriculture, Machine tools and a host of other industries.

Gargi HA, in recent years has taken the No 1 spot and has become a very Reliable & Preferred partner in the Indian foundry industry. Gargi HA, as a future plan has come out with New Products like Advanced Furan resins & resin for 3D system, Advanced Shell &

Cold box resins, IOB, Coatings for the Liner industry etc., for special and high-end applications, thus becoming a market leader in innovation & technology. As I stated at the beginning of our discussion innovation has ever been part of our corporate DNA. Our goal is to be the most innovative company and preferred partner for the foundry industry worldwide. And we are serious about it! Gargi HA has always believed in winning the race today, while running the race for tomorrow...!



***National Seminar on***

# ***LEAD & ZINC BATTERIES***

***- ENERGY STORAGE & GREEN RECYCLING  
24 April 2023, Hotel Chancery Pavilion,  
Bangalore***

***Plant Visit for ILZDA Member Delegates:  
Exide Industries, Hosur, 25 April 2023***

***For Cosponsorship, Advertisement,  
Registration Fees***

***Plant Visit Charges etc.,***

***Pls contact: Tel: 0-9871300929***

***Email: [ilzda.info@gmail.com](mailto:ilzda.info@gmail.com);***

***Visit: [www.ilzda.com](http://www.ilzda.com)***



# BATTERY WASTE MANAGEMENT RULES 2022

For several decades now, India has been using Lead batteries in various applications like automobiles, railways, communication, power, inverters etc. With the advent of the computer era, UPS became another major application for Lead batteries. And now with the emerging markets like renewable energy and e-rickshaws, the usage of Lead batteries has become more widespread and hence tonnage wise, Lead batteries is the largest electrochemical source of energy in India.

In order to ensure an organized collect of Used Lead Acid Batteries (ULABs) and eco-friendly recycling, the Ministry of Environment & Forests brought out Battery Management & Handling Rules in 2001. These rules covered all stakeholders namely battery manufacturers, dealers, reconditioners, recyclers, consumers (individual as well as bulk), auctioneers, importers of new batteries etc., BMHR had the following battery collection targets: First year (2002) 50% Second year (2003) 75% After second year 90%

Following the Paris Round on Climate Change in 2015, various countries including India, want to contain any increase in global warming and to minimize urban

transport pollution load. As a result India began to launch an Electric Mobility Mission called FAME (Faster Adoption and Manufacturing of Hybrid & Electric Vehicles) with a significant subsidy scheme for both EV manufacturers as well as buyers of EVs. This has given a fillip to electric two wheelers and electric three wheelers using Lithium ion batteries. Electric cars, Electric buses for urban transport have also gained momentum in our country.

There will be more availability of Used Lithium ion batteries after a few years. Therefore the MoEF&CC wanted to bring in one comprehensive, set of rules to cover all types of batteries such as Lead batteries, Lithium ion batteries, Zinc dry cell batteries, Nickel Cadmium batteries, button cells etc.; this led to the supersession of BMHR and introduction of Battery Waste Management Rules (BWMR) in August 2022.

BWMR covers battery manufacturers, dealers, consumers, and all entities involved in collection, segregation, transport and recycling. However, BWMR excludes batteries used in defense & space equipment's. BWMR covers end of life batteries, rejected batteries, expired batteries, discarded

batteries etc.

The main focus of BWMR is fixing the Extended Producer Responsibility (EPR) on battery manufacturers, dealers, consumers and all entities involved in collection, segregation, transport and recycling of used batteries and to send them for green recycling (no land filling, no incineration). These



**L. Pugazhenthay**  
Executive Director  
India Lead Zinc Development Association & Past President, The Indian Institute of Metals

stakeholders are expected to meet collection / recycling / refurbishing targets; these entities should file an EPR Plan to CPCB through an online portals. Registration will be sent followed by an EPR Registration Certificate to the applicants; renewal will be done periodically. The ERP Certificates will carry GST details & can be sold to producers in exchange for waste batteries. An appropriate Buyback / Refund Scheme should be introduced by these entities; they should also file Annual Returns in June following year. Products should carry appropriate warnings, labelling. Similar responsibilities have been fixed for consumers, public bodies like municipal



## Innovative Foundry Solutions

Modern castings need cores of all complexity. **Gargi Hüttenes-Albertus** products combine excellent performance, consistency and environmental compatibility to add value to your casting.

[ha-group.com](http://ha-group.com)



Our goal is to minimize foundry environmental impact throughout our product's life cycles, with an ongoing commitment to continuous improvement.

**Gargi Hüttenes-Albertus Private Limited**

1502 Vikas Centre, 15th Floor, Dr. Choitram Gidwani Road, Chembur, Mumbai - 400074, Maharashtra, India. ☎ +91 (022) 68785656 • +91 (022) 25201396 / 1397  
✉ [gargiha@ha-group.com](mailto:gargiha@ha-group.com) 🌐 [www.gargi-india.com](http://www.gargi-india.com)



## Technology

corporations, used battery collectors / segregators / refurbishes / recyclers etc.

Following Recovery Targets have been fixed for

Recyclers:

BATTERIES	2024-25	2025-26	2026-27 & onwards
Automotive	55	60	60
Industrial	55	60	60
Electric Vehicles	70	80	90
Portable	70	80	90

Central Pollution Control Board (CPCB) has been given the main responsibility for effective implementation of BWMR 2022, who will have an online portal for registration purposes; registration for 5 years should be given in two weeks. CPCB will charge a fee for registration which will be shared with respective SPCBs / SPCCs along with ERP details. Such registration can be cancelled or suspended for any violations during the period. CPCB can also order any auditing, inspection or verification by any expert or a committee. CPCB will develop an appropriate mechanism for exchange of ERP Certificates online. CPCB has already formed an Implementation Committee for effective implementation and monitoring of BWMR. Finally the BWMR has fixed targets for automobile batteries, industrial batteries, Electric Vehicles (2Ws / 3 Ws) as well as four wheelers EVs (4 Ws) as shown below:

Conclusion: BWMR is a new legislation covering all types of batteries with multi stakeholders' responsibilities. One must wait & see how regulatory bodies, Central as well as State, are going to coordinate & work together to make BWMR a successful legislation in the shortest duration. Fine tuning of BWMR will also be done in the coming months. Let us hope that the industry will also come forward to understand BWMR properly and to implement BWMR voluntarily.

### TARGETS FOR ELECTRIC VEHICLES (4W)

YEAR	COLLECTION TARGET (MIN)	100% by end of 7 years
2029-30	70%	
2030-31	80%	
2031-32	80%	
2032-33	80%	
2033-34	80%	
2034-35	80%	
2035-36	80%	
2036-37	80%	

### TARGETS FOR AUTOMOBILE BATTERIES

YEAR	COLLECTION TARGET (MIN)	100% by end of 5 years
2022-23	30%	
2023-24	50%	
2024-25	70%	
2025-26	90%	
2026-27	90%	

### TARGETS FOR AUTOMOBILE BATTERIES

YEAR	COLLECTION TARGET (MIN)	100% by end of 5 years
2022-23	30%	
2023-24	50%	
2024-25	70%	
2025-26	90%	
2026-27	90%	



Scottish  
Chemical  
Industries

## Empowering Metallurgy

### Our Products

- ▶ Hexachloroethane
- ▶ Degaser 200 / 190 / N2
- ▶ Nucleant 2
- ▶ Lomag (*Magnesium Remover*)
- ▶ Sodium / Calcium Remover
- ▶ Foundry Fluxes
- ▶ Granulated Fluxes
- ▶ Fused + Granulated Fluxes (*Scot-Mag*)
- ▶ Coatings
- ▶ AlSi / AlTi Alloys
- ▶ AlTi5B1 Coils / Ingots
- ▶ Al -Mn, Al-Cu, Al-Cr Alloys
- ▶ Al-Boron 3-10%
- ▶ Mn / Fe / Cu / Cr / Ti Adal Tablets
- ▶ Magnesium Ingots
- ▶ Silicon Metal
- ▶ Ceramic Foam Filters
- ▶ Refractory Products
- ▶ Silicon Carbide Crucibles
- ▶ Coil Feeding Machine
- ▶ Mobile Degassing Unit
- ▶ Hydrogen Testing Machine
- ▶ Pet Straps

5th Floor | Span Center | South Avenue | Santacruz West | Mumbai 400054 | India.  
Ph +91 22 26056666 Fax +91 22 26056060 Mob +91 9820138620 Email [scottish@vsnl.com](mailto:scottish@vsnl.com)



## Feature

# Mineral Wealth of J&K/ Leh-Ladakh Region and Recent Developments

This article in Metalworld is on a special subject- Jammu & Kashmir state and what it has to offer for the mineral wealth of India. With the revocation of Article 370 of the Constitution of India, the special status of J&K is gone, and the state is open to development with inputs from all across India. It is therefore imperative that the Metals and Minerals Technologists take a close look at the opportunities the state has to offer.

### Mineral Wealth of J&K/ Leh-Ladakh Region:



The Maps-of-India ([Rhttps://www.mapsofindia.com/maps/jammuandkashmir/jammuandkashmirmineals.htm](https://www.mapsofindia.com/maps/jammuandkashmir/jammuandkashmirmineals.htm)) shows the distribution of various minerals across Jammu & Kashmir and Leh-Ladakh. The region which is earthquake prone due to its geographic location, is also blessed with multiple minerals in the area, the area

of Gilgit-Baltistan region is rich in the possession of metallic, non-metallic, energy minerals, precious stones. It has a very high-capacity stores of gold and base metals extraction. It also has copper in the Skardu and Shigar districts of the area. It also has a huge reserve of precious gemstones and the areas have been notified and acknowledged. Two industrially important materials spotted in recent times are Lithium and Sapphire. In addition, the presence of underground hot water springs, which have



**Sadguru Kulkarni**

*Retired President- Technology, Hindalco Industries Ltd Corporate, covering Research & Technology, Technical. Now a Freelance Consultant in FMCG, Minerals & Metals, Chemicals and Sustainability*

been put to use for alternate power generation. One important point to be noted is that the difficult geographical terrain, presence of rivers and natural plants make it difficult to recover these mineral resources and a state of art, environment-friendly mining and upgradation technology will

need to be deployed to generate value out of these resources in J&K/ Leh-Ladakh and region.

### Lithium Deposits in J&K:

One material that is common across almost all electronic gadgets and equipment is lithium - the main component of rechargeable batteries. A typical mobile phone battery contains 2 to 3 gms of lithium as carbonate; A laptop battery contains 4.8 gms of lithium in its set of eight rechargeable lithium ion batteries. A typical electric scooter contains kg of lithium and a Tesla Electric car contains upto 75 kg of lithium! This illustrates how important lithium is getting with the advent of e-transportation and smartphones. With the ever increasing growth of mobiles and mobility, lithium has become a metal with the highest growth rate in consumption in recent years; and countries which have proven lithium deposits have a strategic advantage above those whom mother Nature has not gifted any lithium. These countries included Bolivia, Argentina, US, Chile, Australia, China. India had a strategic disadvantage with the important material, until on 9th February 2023 Geological Survey of India announced finding a significant quantity of lithium in the war ridden state of Jammu & Kashmir.

Lithium deposits in J&K are located in the Salal dam region in south-west J&K. The general find of lithium in the region was



# Stall Bookings Now Open | Book Your Stall Today

ORGANISED BY



THE OLDEST INSTITUTE OF ITS KIND IN ASIA

MGMI



TAFCON

# ISME

International Steel & Metallurgy Exhibition

November 6-9, 2023 | EcoPark, Rajarhat, Kolkata

[www.steelandmetallurgyexpo.com](http://www.steelandmetallurgyexpo.com)

ADVANTAGE  
INDIA

A Gateway for Business Expansion

Exhibit | Explore | Excel



## Expected Participation:

200+ Stalls

300+ Delegates

20+ Countries

10,000+ Footfalls

## Avail Various Incentives on Offer:

- 10% Early Bird Discount for bookings upto March 16, 2023
- 5% Extra Discount for 120 sqm. and above stalls inside Halls

## Co-Located with Prestigious



10<sup>th</sup> International Mining, Equipment & Minerals Exhibition

November 6-9, 2023 | EcoPark, Rajarhat, Kolkata

[www.miningexpoindia.com](http://www.miningexpoindia.com)

## Media Support

enfinder

EPCWorld

FORGINGS TODAY

ISO

India STRATEGIC

Industry Outlook

IRON & STEEL REVIEW

METALWORLD

Ore and Metals

STEEL & METALLURGY  
A COMPLETE STEEL MAGAZINE

STEEL TECH

STEELWORLD  
Devoted to Iron & Steel Industry

TIMES INTERNATIONAL  
YOUR GATEWAY TO INTERNATIONAL BUSINESS  
[www.timesinternational.in](http://www.timesinternational.in)

Contact at: [metallurgy@tafcon.in](mailto:metallurgy@tafcon.in) / +91-11-49857777



in fact reported nearly one and a half decades back; but it is tis to be appreciated that all such 'finds' are exploratory and confirmation of minable quantity of minerals requires

conjectures that the lithium concentration in the Salal deposits at over 550 parts per million (ppm) is more than twice the average concentration of 200 ppm reported in similar deposits elsewhere in the world.

From Lithium Mine to Lithium Ion Battery:  
The journey of lithium from the mine to the application is also interesting. Lithium in the mine is available either as sub-soil brine concentrate or as solid mineral deposit. It is harvested, concentrated to enrich its lithium content,

atomic number	3	[6.938, 6.997]	atomic weight
symbol	Li		acid-base properties of higher-valence oxides
electron configuration	[He]2s <sup>1</sup>		crystal structure
name	lithium		physical state at 20 °C (68 °F)

prospecting and verification, which has been completed for the Salal region deposits as per the reports.

With the high demand for lithium, the market price is in the range of USD 1350 per kg, which is close to a lakh of rupees per kg. proven deposits of 5.9 million T of lithium thus could amount to eight trillion USD after harvesting and processing for recovery of pure lithium. While the value could be phenomenal, there are a number of steps 'between the cup and the lip!' The chemical and mineralogical nature of the lithium compound present in the Salal deposits is being determined. At present Geological survey of India

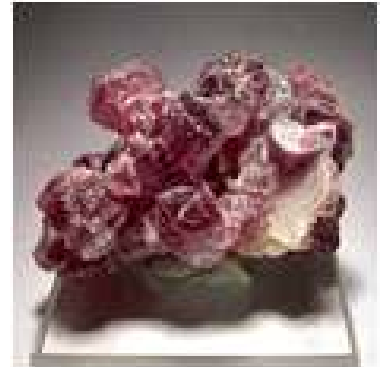
and is then processed in a chemical plant to get the lithium salt. The solvent extraction and reactions recover lithium as oxide or carbonate in the requisite purity. It is then processed to reactive metal or kept as the compound form depending upon the application. For the rechargeable battery application, it is formed along with a suitable electrode material.



**Lithium Brine ponds**



**Lithium Mines**



**Lithium Ore**



**Lithium Recovery Plant**



**Lithium Oxide or Carbonate**





## Feature



**Purified Lithium**



**Lithium Ion Battery**



**EV battery inside a car**

At the estimated level of 550 ppm to get 1 kg of lithium, over 2000 kg of the deposit must be mined, excavated, transported and processed using solvents, reactions etc. While the Salan deposit is estimated at 5.5% of the global lithium deposits, it is going to be a few years before the high value is realized. Typical mining projects generally have environmental clearance as a key concern. The Salan region is in close vicinity (35-40 km) of the famous Chenab river and the Salal hydroelectric power plant which is among the tallest dams in India. EC for the proposed lithium mining is only slated to be expedited as a strategic project for the

country since the material is sufficient to cater to the major portion of the need of the electric vehicle industry of the country.

### **Geothermal Power Plants in Ladakh, Jammu & Kashmir**

Lithium is not the only major find in J&K. Being an earthquake prone region, Leh-Ladakh valley also has sources of underground hot water that can be used to generate electrical power in an environmentally friendly manner. Such recovery



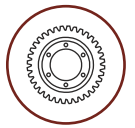
typically requires underground reservoirs of hot water/ entrapped steam at temperatures in the range of 95 to 150 deg C. Vertical wells are drilled to a depth of 3 to 5 km, to access the resource; and the extracted steam is used to run steam turbine, that generates electrical power. Presence of such hot water springs (Ref: <https://www.sciencedirect.com/science/article/abs/pii/S0012825213000949>) and J&K is fortunate to have over

fifteen percent of India's geothermal energy resources. India has net geothermal power generation potential of 10600 MWe. As a start, three localities in the Ladakh region – Chamuthang and Puga in the Indus valley and Panamik in the Nubra Valley – are considered to have geothermal power generation potential of between 3 and > 20 MWe. ONGC has announced a project to tap this resource (Ref:

<https://www.sciencedirect.com/science/article/abs/pii/S0012825213000949>).

As a pilot project, thirty-four wells have been drilled in the Puga geothermal field to date, at least 17 of which have resulted in mixed steam and water blow-outs. The discharges from some of the wells have temperatures of more than 120 °C. Thermal studies indicate temperatures of more than 220 °C at a depth of about 2.5 km below the Puga Valley.

Additional major mineral resources in J&K region are borax, available exclusively in the Puga valley in Leh-Ladakh. This resource has not been exploited appropriately so far. These resources, naturally available in the region, can offer a good opportunity to kickstart the mineral processing based economy in the troubled region of Jammu & Kashmir/ Leh-Ladakh. It is important to take cognizance of the fact that the Govt is already in the process of updating the relevant policies to facilitate business in the region.



# GREAT DIE CASTING TECHNOLOGY FORUM

## International Women’s Day Celebration

Great Die casting Technology Forum celebrated IWD on 8th March 2023. Sarika Mahashabde, the managing director of Apt Pneumatics which is a part of the IEC group of companies, graced the function as a Chief Guest. APT Pneumatics is a renown manufacturer of industrial pneumatic tools. Seven lady engineers working on shop floor in Die casting Industry, were Felicitated on this occasion. Kruttika Kher was Master of Ceremony who narrated the brief history of IWD and explained the theme of IWD 2023 “EMBRACE EQUITY”.



**Chief Guest Mrs. Sarika Mahashabde**

Pooja Sapre, introduced the participants and asked them interesting questions. Each participant had a different and very interesting story to tell and the crowd applauded them for their courage, determination and efficiency

in handling their jobs as well as other challenges in their life.

B.P.Poddar gave an example of how he was inspired by the women in his life. Chief Guest Felicitated

all lady engineers and the lady staff of GDCTECH Forum. Felicitations of the chief guest by Anil Kulkarni.



**Master of ceremony by Kruttika Kher**

Chief Guest in her address emphasized the importance of every one to have mentor. Continuous learning, Understanding of Finance, and Use of power with responsibility are the Key factor for Self Development and ended her speech with few more pearls of wisdom to be successful. Kruttika introduced Pooja Sapre who co-ordinated the further programme.



**Programme co ordinated by Pooja Sapre**

R. T. Kulkarni proposed a special thanks to MINDA CORPORATION LTD., UNO MINDA LTD., VICTORY PRECISIONS PVT. LTD., who deputed their engineers. He also thank Kruttika and Pooja for conducting excellently the programme.

### 1. Harshada Musale



She Hails from Ahmednagar. She has completed her Diploma & is pursuing 3rd Year BE Engg while working currently. She Started job at an early age of 19 and was always committed to study & become an Engg right from childhood. Harshada is a very hard working , courageous and aims to bring financial strength to herself by consistently working in her current position. Currently working as a VMC / CNC Operator in Yuno minda.

### 2. Rajshree Kale



She is a mechanical engg from ahmednaga. She is very communicative and believes working cohesively

# ALUMINIUM CHINA

05-07 July 2023

Hall N1-N3, Shanghai New International Expo Center

## Asia's Leading Sourcing and Networking Platform for The Entire Aluminium Industry Chain

ALUMINIUM CHINA provides an integrated platform for business procurement, international exchange, networking and branding by converging new products, technologies, processes, and applications covering the entire aluminium industry chain of alloys, processing materials, manufactured parts, finished products, as well as equipment, auxiliary materials and consumables.



**500+**  
Exhibitors



**45,000** sqm  
Exhibition area



**23,000**  
Domestic and overseas trade visitors



### Previous Exhibitors (partial)

#### Materials



#### Equipment



### Exhibit Range

#### Materials

- Primary aluminium
- Recycled aluminium
- Aluminium alloys
- Semi-products and half made alloys, such as aluminium profiles, sheets, belts, foils, aluminium-plastics, casting, and forge
- Deep processed products, covering construction, transportation, machinery, packaging, electronics, photo-voltaic industries

#### Equipment

- Primary aluminium processing equipment
- Recycled aluminium processing equipment
- Heat processing
- Extrusion and rolling equipment
- Surface processing equipment
- Test and measurement
- Deep processing equipment
- Auxiliary materials and other equipment
- Environmental protection and energy efficient equipment

### Concurrent Events

**Lightweight 2023 Asia's Lightweight Automotive Trade Fair**  
2023 Asia's Lightweight Automotive Trade Fair

**上海国际车轮工业展**  
2023 Shanghai International Wheel Industry Exhibition

### Follow us on our socials



For exhibiting, visiting and marketing cooperation, please contact:

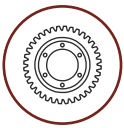
Caroline Wang +86 10 5933 9325 caroline.wang@rxglobal.com

Organizer:

**RX** In the business of building businesses

Co-Organizer:

Reed Exhibitions Deutschland GmbH  
Beijing Antaka Information Co., Ltd.



## Industry Update

with the team indeed brings success.

Has started her career with being a Quality Inspector, Moved to working as an MR and now is working in the training dept of a YUNO minda... In all 6 to 7 years of experience in Engg Industry. Currently her profile is hand holding for new joiners ....and finally hand over to their managers... Happily married to a Doctor and maintaining good work and life balance.

### 3. Anuradha Shinde



She is a commerce Graduate, Moved to skill herself to complete degree of Mechanical Draftsman and then PGDBM. Her 1st job was in a IT company, 2nd job at a bank. She Joined Uno minda and accepted a very challenging role which very few women would accept. She is working as Assistant to the Business Head Yuno Minda "KD Sir" ie Kishor Sir.

### 4. Dipali varade



She has done her mech Engg from Dhule and was selected thru campus for her 1st job at Spark Minda. She joined as NPD engg and Processing RFQ, Costing, initial Feasibility, preparing Qtn, negotiations as her current tasks. She believes in skill development and is very ambitious about her career. She has set a short term goal for herself to become Asst Mgr NPD.

### 5. Amruta malji



She is from Solapur and moved to Pune for work. She has done her Diploma in mech Engg and is aspiring to complete her Degree. Started working at a young age of 19 ... Worked in casting industry for more than 2 years. Currently working as NPD engg in spark minda Chakan.

### 6. Nikita kangutkar



- Nikita is a BE Mech
- She moved from Kolhapur to Pune for joining her 1st company Victory Precision Pvt Ltd.
- Currently she is working as jr Executive Ppc and is in charge of planning to delivery to customer
- She has a creative side to her personality and was

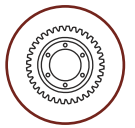
always inclined to be a fashion designer. However here she is now working in a Mechanical Industry and enjoying the learning process. She is good at communication , internally with team , externally with vendors as well as Customers.

### 7. Renuka Shahakar Shende



Another team member from Victory precision as our invitee for the day. She did her Mech Engg from Satara. Joined as a Grad trainee at SKF. Further moved to Victory precision and is now working in Marketing dept She is also pursuing her Post grad in international Business. Processing RFQ, Preparing Qtns, Participating in Exhibitions and customer interaction are in her current scope of work. She has been excellent in academics, thought Mechanical engg is a field of less competition for Women ..hence she chose to become a Mech Engg. She says ..I am a life long learner...





# Nanotechnology in Metal Industry

## Introduction

Nanotechnology is a field of science and engineering that deals with the study and manipulation of materials at the nanoscale level.

Nanotechnology is the science of creating and using materials and devices that are incredibly small, typically less than 100 nanometers (nm) at least in one dimension in size.

At this scale, the properties of materials and devices can be vastly different from those at the macroscopic scale, which opens up new possibilities for developing innovative products and solutions across a wide range of fields, including electronics, medicine, energy, materials science and engineering.

Nanotechnology involves the

design, synthesis, characterization, and application of materials and devices that exhibit novel properties and functions due to their size and structure at the nanoscale level.

Nanoparticles in Metals  
Nanoparticles (NPs) in metals are embedded in a metallic matrix. They are commonly produced by the reduction of metal ions or by the precipitation of metallic species in solution, and can be formed in various shapes such as spheres, rods, wires, and tubes.

The properties of NPs in metals are often different from those of bulk metals due to the increased surface area and high surface energy of the NPs. These properties can be tuned by adjusting the size, shape, and

composition of the NPs, which opens up new possibilities for developing innovative materials with unique properties and functions.

Some of the promising applications of NPs in metals include catalysis, energy storage, and biomedical applications. For example, NPs in metals can be used as catalysts for various chemical reactions due to their high surface area and unique catalytic properties. They can also be used as electrodes in energy storage devices such as batteries and super capacitors due to their high conductivity and large surface area. In biomedical applications, NPs in metals can be used as contrast agents in medical imaging and as therapeutic agents for targeted drug delivery.



**Dr. Ramesh Chaughule**

Ex Senior Scientist,  
Tata Institute of  
Fundamental Research,  
Mumbai  
Adjunct Professor,  
Ramnarain Ruia  
Autonomous College,  
Mumbai

We will review the applications of NPs in metals such as Aluminum, Copper, Zinc and Magnesium used in metal industry.

### ***NPs in Aluminum***

They can be produced by various methods such as chemical reduction, electrode positing, and ball milling.

The properties of NPs in Al can be different from those of bulk aluminum due to the increased surface area and high surface energy of the NPs. For example, NPs in Al have been found to exhibit higher hardness, strength, and wear resistance compared to bulk aluminum. These properties can be tuned by adjusting the size, shape, and composition of the NPs.

NPs in Al have several potential applications. For example, they can be used as reinforcing agents in metal matrix composites, which are materials that combine the high strength and stiffness of metals with the light weight and corrosion resistance of polymers. NPs in Al can also be used in the production of functional coatings, such as anti-corrosion coatings and anti-fouling coatings, due to their high surface area and unique properties.

Additionally, NPs in Al can be used in energy-related applications, such as hydrogen storage and catalysis. For example, NPs in Al have been found to be effective catalysts for the production of hydrogen from water, which is a promising

alternative fuel for transportation and energy storage.

However, there are also potential risks associated with the use of NPs in Al, such as environmental and health concerns. Therefore, it is important to continue to invest in research to address these risks and to develop safe and sustainable technologies for the production and use of NPs in Al.

### ***NPs in Copper***

NPs in copper (Cu) have several potential applications in the metal industry because of their unique properties. For example, NPs in Cu can be used as a reinforcement agent in metal matrix composites, which are materials that combine the high strength and stiffness of metals with the light weight and corrosion resistance of polymers. The addition of NPs in Cu can improve the mechanical properties of the composites, such as hardness, strength, and wear resistance.

NPs in Cu can also be used in the production of functional coatings, such as anti-corrosion coatings and anti-fouling coatings. The high surface area of the NPs in Cu can increase the effectiveness of these coatings and improve the corrosion resistance and anti-fouling properties of the metals.

Additionally, NPs in Cu can be used in metal plating and electroplating applications to improve the quality and performance of the plated

metals. The addition of NPs in Cu can improve the adhesion, hardness, and wear resistance of the plated metals.

As stated earlier, there are also potential risks associated with the use of NPs in Cu, such as environmental and health concerns. Therefore, it is important to continue to invest in research to address these risks and to develop safe and sustainable technologies for the production and use of NPs in Cu in the metal industry.

### ***NPs in Zinc***

NPs in zinc (Zn) have several potential applications in the metal industry. For example, NPs in Zn can be used as a reinforcement agent in metal matrix composites, which are materials that combine the high strength and stiffness of metals with the light weight and corrosion resistance of polymers. The addition of NPs in Zn can improve the mechanical properties of the composites, such as hardness, strength, and wear resistance. NPs in Zn can also be used in the production of functional coatings, such as anti-corrosion coatings and anti-fouling coatings. The high surface area of the NPs in Zn can increase the effectiveness of these coatings and improve the corrosion resistance and anti-fouling properties of the metals. Moreover, NPs in Zn can be used as a component in alloys to improve their mechanical and physical properties. The addition of NPs in Zn can enhance the strength, hardness, and ductility of the alloys, and also improve their resistance to wear and corrosion.



However, there are also potential risks associated with the use of NPs in Zn, such as environmental and health concerns. Therefore, it is important to continue to invest in research to address these risks and to develop safe and sustainable technologies for the production and use of NPs in Zn in the metal industry.

### **NPs in Magnesium**

NPs in magnesium (Mg) have several potential

can also be used in the production of functional coatings, such as anti-corrosion coatings and anti-fouling coatings. The high surface area of the NPs in Mg can increase the effectiveness of these coatings and improve the corrosion resistance and anti-fouling properties of the metals.

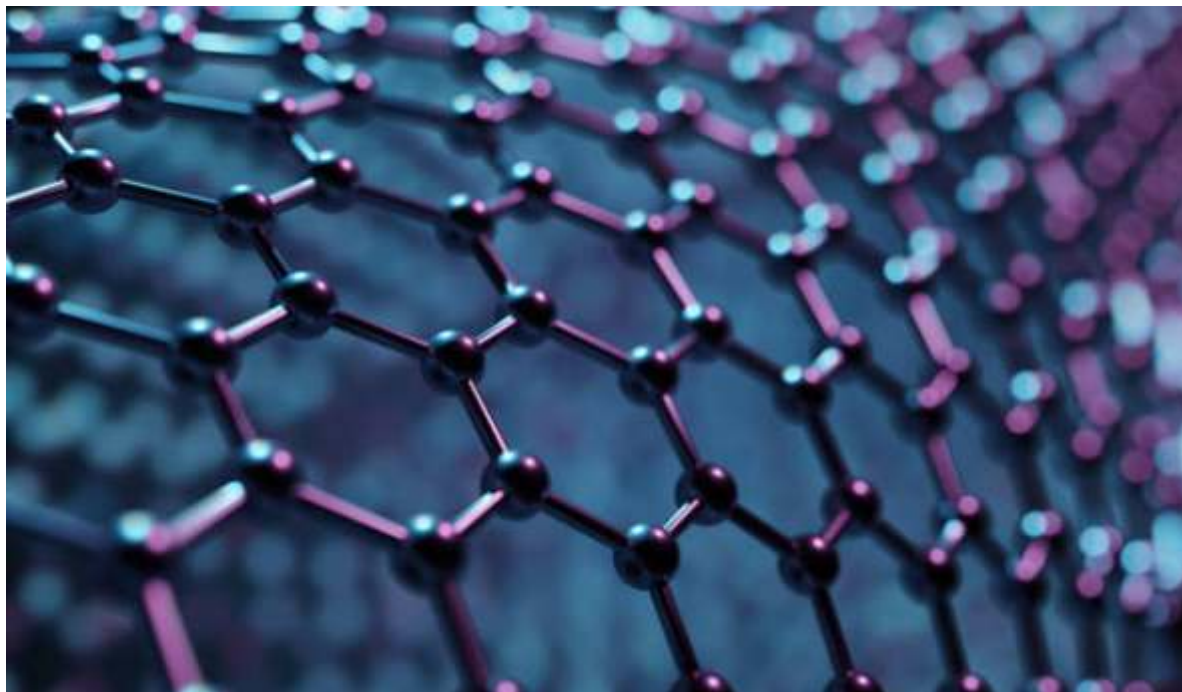
Moreover, NPs in Mg can be used as a component in alloys to improve their

production and use of NPs in Mg in the metal industry. However, there are also potential risks and challenges associated with the development and use of nanotechnology, such as environmental and health concerns, ethical issues, and regulatory challenges. Therefore, it is important to balance the potential benefits of nanotechnology with its potential risks and to continue to invest in research to address

these challenges.

### **Conclusion**

The improvement of metals' mechanical properties is one of the main challenges in metallurgical industry. The review describes the novel approach of nanotechnology applications for the production of industrial materials with incorporation of



applications in the metal industry. For example, NPs in Mg can be used as a reinforcement agent in metal matrix composites, which are materials that combine the high strength and stiffness of metals with the light weight and corrosion resistance of polymers. The addition of NPs in Mg can improve the mechanical properties of the composites, such as hardness, strength, and wear resistance. NPs in Mg

mechanical and physical properties. The addition of NPs in Mg can enhance the strength, hardness, and ductility of the alloys, and also improve their resistance to wear and corrosion. There are also potential risks associated with the use of NPs in Mg, such as environmental and health concerns. Therefore, it is important to continue to invest in research to address these risks and to develop safe and sustainable technologies for the

nanoparticles of individual metals as reinforcement agents in metal matrix composites to gain higher mechanical, physical and chemical properties. The addition of NPs in metals thus improves the mechanical properties of the composites, such as hardness, strength, and wear resistance. ■



# Trends that will impact on the aluminum markets in 2023 and beyond

The demand for aluminum in the U.S. is expected to grow by 0.5 to 2 percent in 2023, largely unchanged from the previous year as mills and scrap processors remain wary of inventory due to an anticipated change in scrap consumption patterns as reported by Sovit Biswal, Davis Index.

Since January 2023, recycled LME aluminum material prices have witnessed a 20 percent swing, finding a floor at \$2,150 to 2,200/mt (metric tons). These prices are expected to average around \$2,300 to 2,600/mt during the year. However, in the short term, prices could spike to \$3,000 to 3,200/mt before settling down to the average levels. But what has led to this outlook?

In 2022, an energy crisis in

the EU, Russia's invasion of Ukraine, and China's COVID-19 lockdowns were just some of the factors that impacted the primary and secondary aluminum markets. Last year, global primary aluminum production climbed by 2 percent to 68.4 million mt, mostly led by increases in Asia, according to the International Aluminium Institute (IAI). Smelter shutdowns across Europe were reflected in the 12 percent decline in primary output to 2.9 million mt. In North America, production dropped by 4 percent to 3.7 million mt while Russia's output declined by 1 percent. Aluminum companies in the EU mothballed 1 to 1.3 million mt or 25 to 30 percent of the approximately 4.5 million mt primary aluminum capacity in the

## Metalworld Research Team

region due to the energy crisis. Companies in the U.S. also curtailed more than 500,000 mt per year in capacities.

This provided an opportunity for the secondary aluminum market. In the U.S., secondary production increased by more than 10 percent annually and constituted about 78 percent of the total production in 2022, the latest U.S. Geological Survey (USGS) data indicated. However, the secondary aluminum and scrap market will likely bear the brunt of weak demand this year as the market grapples with many uncertainties.

### Macroeconomic outlook

Uncertainties over an economic slowdown and its extent have also kept the market guessing. However, according to a recent World Economic Outlook by the International Monetary Fund (IMF), global economic growth



has been revised to 2.9 percent for 2023 from 2.7 percent earlier. The U.S. slowdown is also not expected to be as severe. The Federal Reserve has not shown any signs of lowering interest rates despite encouraging trends that reflect a deceleration in inflation along with improved employment. Demand for consumer durables, housing, and automotive is expected to trend flat in 2023 due to the high interest rate regime. Thus, the risk of a demand downside is higher, and markets anticipate a decline without support from credit.

#### Aluminum demand uncertainty

Transportation accounts for 35 percent of total aluminum consumption in the U.S., with automotive constituting the lion's share. According to the latest analysis released by Moody's Analytics, 9.3 percent of loans have been more than 30 days late in payment for the first time since 2010.

Loan defaults in automotive can be a significant deterrent to new car production. Scrap availability is also likely to increase, and that, along with declining demand, could have catastrophic effects on secondary scrap prices - both alloy and non-alloy grades.

Demand in the aluminum packaging segment, which constitutes 23 percent of the U.S. aluminum consumption and is dominated by aluminum beverage cans, is expected to be flat in 2023, which could impact the grade's supply-demand dynamics. Still, the national implementation of bottle bills could potentially improve recycling rates. Aluminum demand is also



expected to remain tepid in the U.S. housing market, which comprises around 16 percent of the country's total aluminum usage. Loan defaults are inching up and higher interest rates will prevent any significant improvement in the year.

#### The Asian angle

COVID-19 restrictions slowed down the Chinese economy in 2022. In 2023, the country's economic activity is expected to recover in the post-new-year market. Expected production and demand of bauxite is also expected on par.

However, Chinese primary aluminum production could be capped at 45 million mt, the same levels as the previous year. Secondary production capacity in China of 2.3 million mt could increase with government focus on reducing emissions. Demand from China and other Asian countries will also rise in 2023 especially for twitch, taint tabor, extrusions, and ADC.

Any changes in China's stance, which may boost its production, can result in a spike in bauxite prices, eventually snowballing to scrap price increases in 2023.

#### LME actions

In September 2022, the LME released a statement about considering a ban on Russian aluminum from LME-approved stockyards. The exchange has since abetted all thoughts of Russian stock ban, as the markets reacted with a \$200/mt-plus increase in

prices within a week.

However, with the worsening condition of the war on Ukraine, the calls for Russian stock ban are expected to rise. Prices could soar in that case, going back to \$3,000/mt according to some participants. U.S. aluminum premiums are also expected to rise in tandem, as already witnessed in January.

#### Higher aluminum output in 2024

New capacities are likely to improve primary aluminum supply in 2024 as well as the demand for recycled aluminum raw material. Novelis' 600,000 mt per year flat rolled mill and 100,000 mt per year rolling unit is expected to be online in Q1 2024. Moreover, a 650,000 mt per year aluminum mill by Steel Dynamics is also expected to come online in early 2025. Demand for grades like UBCs will soar due to raw material demand with the UBC balance, which has been in excess since



2013, expected to turn to a deficit next year as mills plan for the new mix.

Mills have started working on scrap grade replacement to improve efficiency and tackle high energy cost and availability. In 2024, the industry is expected to see changes in grade consumption and availability of feedstock, having far-reaching consequences on the aluminum scrap supply segment. Combined with high export demand, scrap supply for specific grades will witness a shortage in the domestic market.



### Global copper mine production up by 4.5% in January 2023: ICSG

According to preliminary data from the International Copper Study Group (ICSG), in January 2023, global copper mine production increased by about 4.5%, with concentrate production increasing by around 3.5% and solvent extraction-electrowinning (SX-EW) by about 9%. ICSG said that actual production in Chile, the world's largest copper producing country, increased by 3% compared to January 2022, but was lower by 1.5% when compared to the average monthly production of 2022, adding that Chilean concentrate production grew by 0.8% in January and SX-EW output by 8%.

"In Peru, local communities' actions impacted production at various copper mines leading to a decline of 0.3% in the country's total output. Concentrate output was down by 1.6%, as the mines impacted were mainly producing concentrates," it added.

According to the report, output in the D.R.Congo is estimated to have grown by about 15% as a consequence of rises at the new Kamoa mine and new/expanded capacity at other mines, while Chinese mine production rose by 1% and output in the United States declined by 5%.

ICSG's preliminary data indicate that world refined copper production increased by about 5.5% in January 2023 with primary production (electrolytic and electrowinning from ores) up by about 5.9% and secondary production (from scrap) up by 4.7%.

"Growth in world refined production was mainly attributed to strong output in China and the D.R. Congo, due to expanded capacity," ICSG said.

Importantly, the group noted that the world apparent refined copper usage grew by about 1.5% in January 2023, with Chinese apparent demand (excluding changes in bonded/unreported stocks) grew by 2% and net refined copper imports declined by 0.6%; while world ex-China refined usage is estimated to have increased by about 0.7%.

ICSG also said that in January, the world refined copper balance, based on Chinese apparent usage (excluding changes in bonded/unreported stocks), indicated a preliminary surplus of about 103,000 t, adding that the world refined copper balance adjusted for estimated changes in Chinese bonded stocks indicated a market surplus of about 176,000 t.

### Europe Al cuts continue despite power relief

Up to half of European aluminium production capacity was cut over the past two years as skyrocketing power prices slashed margins among all but the lowest-cost producers. But the cuts have continued even as power prices have fallen back, and despite all the capacity taken off line, prices have yet to recover from their precipitous falls that started a year ago.

More than 1mn t of annual aluminium capacity has been cut from European smelters as a result of high power prices since late 2021. Average monthly electricity wholesale prices peaked in August last year, in some cases settling 10 times higher than they were two years earlier.

Prices in Germany reached almost €470/MWh in August last year, from €47/MWh in March 2021, according to market and consumer data platform Statista. French prices jumped to €493/MWh from €50/MWh in the same period, and Italian prices reached €543/MWh from €60/MWh.

But power prices fell back significantly in September and October, and again in January. German prices fell by 71.1pc from their August peak to €136/MWh in January, with French prices dropping by 73.2pc and Italian prices falling by 67pc.

France's Aluminium Dunkerque, which operates one of Europe's biggest aluminium smelters, began restarting idled capacity in January, leading some market participants to predict that other producers would do likewise amid a more favourable energy market. Dutch TTF Natural Gas Futures fell below €50/MWh in February, the lowest level seen since August 2021 from an all-time high of €345/MWh in August last year.

But the aluminium capacity cuts have continued elsewhere in Europe, with a further two such announcements this month alone. Germany-based aluminium producer Speira will fully curtail its Rheinwerk smelter in Neuss because of high energy costs, while Slovenian producer Talum said it will halt operations at its smelter in Kidricevo, Slovenia.

Producer margins are still not adequate, even with power prices falling. Power prices remain up to three times higher in Europe than they were two years ago. Aluminium prices have not recovered enough to salvage producer margins, or even at all. London Metal Exchange aluminium prices peaked at over \$3,950/t in March last year, following Russia's invasion of Ukraine in February. But prices fell to lows of just over \$2,100/t in September, and after a brief recovery are down by almost 15pc this year from January highs of around \$2,660/t.

Global aluminium production has continued to rise. Global aluminium output reached 5.27mn t in February, data from International Aluminium show, up by 2.69pc on the year. Chinese production rose by 4.5pc on the year in 2022 to reach 40.21mn t, and China's output has continued to grow this year, reaching 3.11mn t in



February, up by 4.26pc on the year. This is despite power shortages prompting aluminium capacity cuts in Yunnan province.

It may be that the latest cuts to European aluminium production have less to do with power prices and instead reflect a structural shift of primary production eastwards. Speira's latest cuts may have been attributed to high power prices but the company has been transitioning to a pure aluminium rolling and recycling company since it was formed in 2020 from Norwegian aluminium producer Norsk Hydro's former aluminium rolling business. Talum's stoppage was likewise hung on power prices, but the smelter was only operating at 20pc capacity because of earlier cuts.

Restarting aluminium smelting capacity entails high costs, and so the power crisis has accelerated a structural shift and it is unlikely that any significant portion of curtailed European capacity will be restarted.

The European aluminium market has appeared vulnerable to an improvement in demand because of its curtailed supply picture, but consumers may avoid the worst of predicted price hikes that higher demand could cause if they secure access to new, lower-cost production in other locations.

### Glencore will not renew \$16 bln aluminium deal with Russia's Rusal

Glencore will not renew a \$16 billion deal to buy aluminium from Russia's largest producer United Co Rusal International when it expires next year as per the Bloomberg News report.

The group has continued to honour existing contracts but has pledged not to enter into any new business with Russia in the wake of its invasion of Ukraine, the report said.

### Vedanta Aluminium recycles 12.5 billion litres of water in FY23

Vedanta Aluminium Business, India's largest producer of aluminium, has recycled 12.5 billion litres of water as of February during FY 2022-23. On World Water Day, the company has also undertaken the groundbreaking ceremony of a new Sewage Treatment Plant (STP) with a processing capacity of 440 kilo litres per day (KLD), at its mega aluminium smelter in Jharsuguda. Once operational, the treated water from the facility will be reused within the plant premises, reducing fresh water consumption by 15 crore litres per year. This reiterates the company's commitment to become Net Water Positive within the decade, leveraging advanced technologies for efficient water utilisation and community participation towards building a sustainable water footprint. Vedanta Aluminium's water sustainability efforts are aligned to the 6th UN Sustainable Development Goal of 'Clean Water and Sanitation'.

In the week leading up to World Water Day, Vedanta Aluminium organized an interactive session with Ramveer Tanwar, popularly known as the Pond Man of India and a



noted pond conservationist, to encourage employees and community members to work towards water conservation in their personal and professional capacities. Desilting and restoration activities of several waterbodies were also undertaken at its operations in Kalahandi and Jharsuguda districts, Odisha and in Korba, Chhattisgarh, with the active participation of employee volunteers and professional experts. Further, the company organized community marches and street plays at local educational institutions to spread increased awareness of the need to conserve water.

Speaking about the program, Mr. Rahul Sharma, CEO, Vedanta Limited – Aluminium Business, said, "On World Water Day, we recommit to our mission of becoming Net Water Positive and ensuring a sustainable water footprint in the regions where we operate. The quality of our lives and business sustainability is contingent on the planet and hence, excellence in ESG (Environment, Social & Governance) forms the bedrock of our aspirations. Water is a critical shared resource that is crucial to sustaining the ecology and communities around us, and hence, our endeavours are aimed at ensuring the sustainability of our operations and making more water available for local communities and biodiversity."

Commenting on the impact of the new STP project, Mr. Ajay Pandey, COO – Power, Vedanta Jharsuguda, said "Our operations maintain a laser-focus on ensuring the judicious usage of precious water resources. By deploying a strategic mix of resource conservation and source rejuvenation programs, we have been successful in achieving a steady improvement in our water management efforts. The new Sewage Treatment Plant provides an additional fillip to our efforts in this regard and will help accelerate our roadmap to water positivity."

The company has a structured 4-pronged approach to water sustainability, which involves:

#### Robust monitoring of water usage:

- Water management is integrated into decision-making processes for all projects
- Water-related risk assessments have been carried out to identify the degree of water stress, and accordingly, undertake mitigation measures
- All water quality parameters, including reduction of specific water consumption, are strictly monitored
- Quick Response Teams respond to extreme weather



## News Update

conditions, including unprecedented heavy rainfall

- Internet of Things (IoT) and other leading-edge technologies deployed for efficient & automated water management

### Ensuring maximum water reutilization:

- Stringent control measures and technologies adopted to ensure zero discharge operations
- High-Concentration Slurry Disposal (HCSD) system deployed for ash management to ensure maximum water recycling through feedback loops
- Operational excellence in Cooling Tower systems have resulted in one of the best Cycles of Concentration (COC) globally; higher the COC, less is the additional freshwater intake

### Creating a positive water footprint:

- Partnership with TÜV SÜD, a global leader in sustainability solutions, for creating the roadmap for Vedanta Aluminium to become net water positive
- Rainwater harvesting infrastructure and on-site water reservoirs created for water sourcing during contingency scenarios

### Working with local communities:

- Restoration and rejuvenation of over 40 community waterbodies in the vicinity of its operations in Chhattisgarh and Odisha in this fiscal alone
- Training communities on growing climate-resilient crops and adopting better methodologies (like SRI technology in paddy cultivation) for improving yield in the face of irregular climactic conditions
- Helping local farming communities adopt drip-irrigation, treadle pump, solar powered water pumps, rainwater harvesting structures like percolation tanks, etc. to boost irrigation potential and reduce dependency on monsoons for cropping
- Construction of hundreds of community water infrastructures like check dams, tube wells, bore wells, farm ponds, percolation tanks, etc. to help communities get perennial access to water for household and irrigation purposes
- Integrated watershed management benefiting thousands of communities through livelihood creation, capacity building, new livelihood opportunities and more

Vedanta Aluminium, a business of Vedanta Limited, is India's largest producer of aluminium, manufacturing more than half of India's aluminium i.e., 2.27 million tonnes in FY22. It is a leader in value-added aluminium products that find critical applications in core industries. Vedanta Aluminium ranks 2nd in the Dow Jones Sustainability Index (DJSI) 2022 world rankings for aluminium industry, a reflection of its sustainable development practices. With its world-class aluminium smelters, alumina refinery and power plants in India, the company fulfils its mission of spurring emerging applications of aluminium as the 'Metal of the Future' for a greener tomorrow.

## Chile open to modifying copper royalty bill on miners objections

Chile's government said it is open to further amend a controversial mining royalty bill expected to enter into force next year, following mounting criticism of its impact on the industry's competitiveness.



As it stands, the proposed royalty has a hybrid nature as it combines an ad valorem component that would be applied to annual sales of copper and a variable element linked to the mining operating margin.

Amid several potential adjustments, Marcel highlighted one that would set a limit to the potential tax burden for the combination of various taxes. This, he noted in a statement, would give "greater security or predictability to collection".

Another adjustment would allow companies to include start-up expenses as a cost for the calculation of the adjusted mining operational taxable income, Marcel said.

Companies with operating losses as well as those with very low or near negative profitability would be exempt from the ad valorem component.

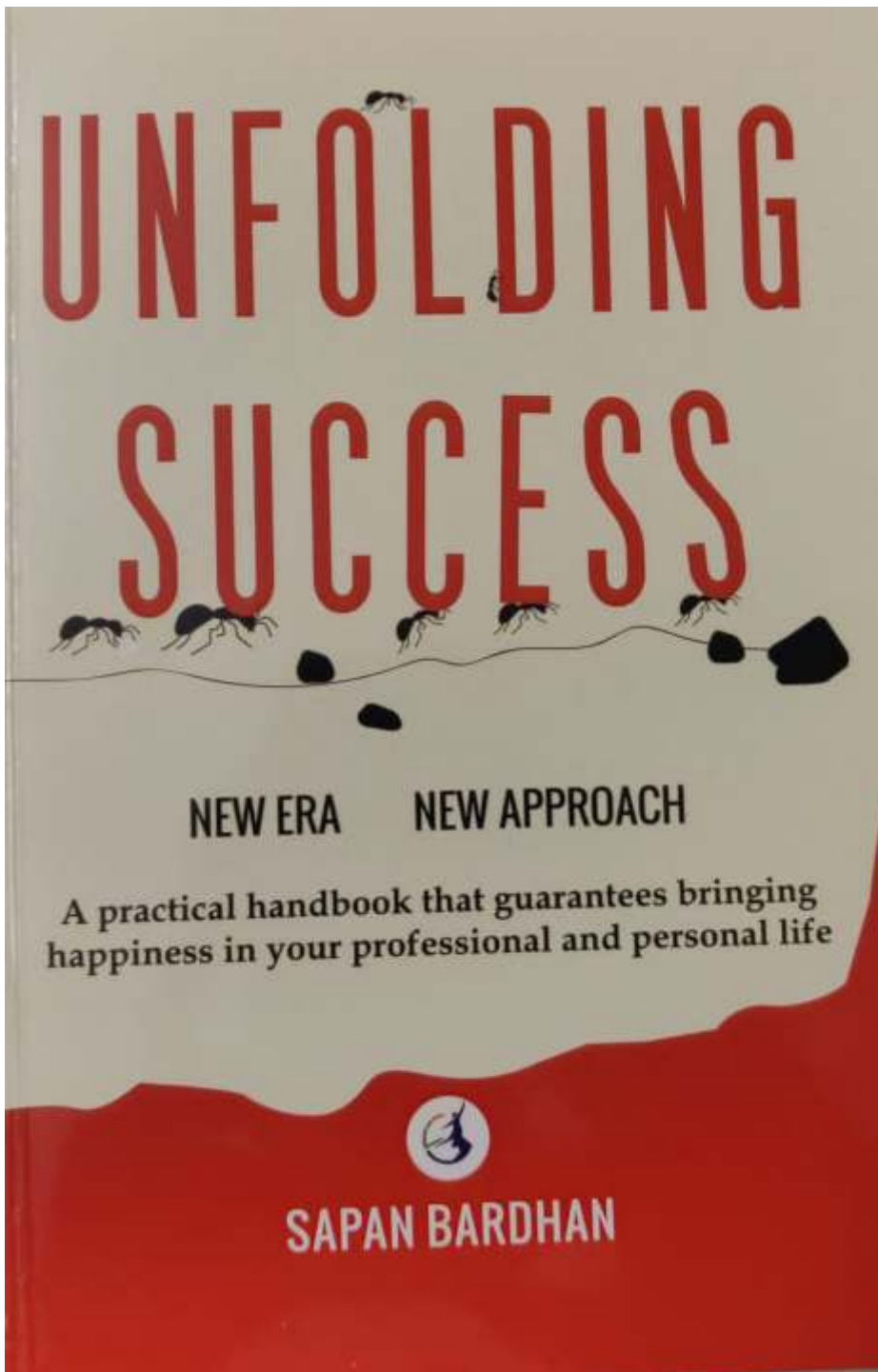
Since President Gabriel Boric first introduced the idea of a new royalty, the mining industry has been up in arms. It argues that, as they stand, the reforms would add uncertainty to investment decisions needed to help fill a global copper supply gap as demand rises in the clean energy transition.

The potential changes, the government says, would protect inversions, particularly from small and medium-sized miners, as the royalty would have a fixed "ad valorem" component of 1% on copper sales.

Between 8% and 26% of the total to pay would depend on the mining company's operating margin.

Chile, the world's largest copper producer, hosts major miners including BHP, Anglo American, Rio Tinto, Antofagasta, Glencore and state-run Codelco.

# Book Review - Unfolding Success



Unfolding Success takes an in-depth look into what success means beyond just the generic definition of the word and takes into account how each individual can achieve happiness in their personal and professional lives. Differentiating it from all other books in the market,

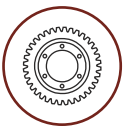
the book is not only a singular input from the author but a compilation of hundreds of life experiences that he has carefully curated and brought to the reader. It illustrates what success looks like from all walks of life and is a guiding force for any individual who wishes to



find fulfillment. The book is unique in its approach as it doesn't box in any ideas about success or guarantee it, rather it simply wants to open up people's mind to different perspectives that could help them as well. The book provides practical advice that is sure to bring a healthy and positive mindset to one's idea of success.

**The author Sapan Bardhan is a motivational speaker, people and organization development coach as well as a lean consultant. Working with large-scale clients like Hindustan Lever, Tata Bluescope Steel and others, he has on ground experience dealing with training individuals in HR, Safety and Environment and Quality Systems. He also led the Indian delegation to Manila, during the International Convention for ICQCC in 1999. His grounded nature and interactive management style has made him popular among all the participants and trainees as a coach.**

The book has garnered appreciative comments from all over. It has been acknowledged with thanks from Ms. Damini Kukreja ( Addl. Pvt Secretary To Honorable Former President of India). Shri D Prasanth K Reddy (Pvt Secretary to Vice President of India) and Shri Chandresh Sona (Director - PMO's Office) among many others in esteemed positions in the Indian government.



# Aluminium Extruders' Council (ALEX) Two day Conference on Aluminium Extrusions

Aluminium Extruders' Council successfully concluded its two days conference on Aluminium Extrusions which was held at Hotel Taj, Goa.

It was Inaugurated by the Chief guest Mr. Pragun Jindal Kaitan who is the



Vice Chairman & Managing Director of Jindal Aluminium.

In his thought provoking inaugural address, he touched upon present status of Indian Extrusion Industry and its roadmap to Extrusion Application, Development, Sustainability, Technology Adoption, People Development and Growth of MSME.

He further highlighted that India is one of the largest producers of aluminum extruded products in the world, with a growing market share in both domestic and international markets. We are sitting at a per capita aluminium consumption of 2.5kg / capita. We are still lagging behind the global average of 12kg / capita. Can you imagine, if we grow to just the world average? The India aluminum extrusion market size was valued at USD 1.3 billion in 2019, and is projected to reach 2.5 billion USD by 2027, growing at a CAGR of

8.3% conservatively. We, the Indian aluminium extrusion industry, is already the fifth-largest producer of Aluminium in the world. We should be aiming to get to the top 3 producers by the end of the decade.

In Application he said, "We need to invest in a significant way in research. Today, I believe that the combined spend on R&D by the Indian aluminium extrusion industry will be below 0.25% of the revenue. Globally the material manufacturers, on average, spend about 1.4% of their revenue on R&D. As an industry having more than 150 extrusion manufacturing units, just imagine if each one of the units comes up with 3 new extrusions applications in a year. We are talking about more than 450+ new uses of aluminium extrusions every year. Our objective needs to be to drive this innovation, and share it with our peers in the industry. That is why such conferences such as Alex, can help us all improve. It will be a excellent platform for all of us to share our experience and learning".

### **For sustainability**

"As the world turns green, economic growth led by aluminium in this space is expected to increase rapidly. The future is bright for the use of aluminium in these areas, and we should innovate to capitalize on this opportunity. To give you an idea of the potential, here are some insights on future trends. By 2030, it is expected that approximately

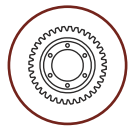
30% of global market share will be of electric cars. A study by the World Bank in 2020 shows that the single most widely used material in solar photovoltaic applications is aluminium. Our industry is fortunate to be completely aligned with the biggest need of the 21st century – sustainability. Additionally, we should look at how we can incorporate recycling into our supply chain for extrusions, which is a critical requirement for many global MNCs. Engineers of today will become the leaders of our extrusion companies tomorrow. And we must encourage them, as an industry. We must attract them to the industry. And this cannot be done by only 1 company – it requires all of us to do this together.

People skill development is very critical and serious too.

There should be a strong collaboration through a common platform that connects our industry and promotes partnerships within it. An example of how we can benefit as an industry is in the sharing of spares. For example, if I have an urgent need for a spare in my factory which may be available with one of my peer extruders, we should have a network to facilitate such a transaction. Similarly, it can help in the sharing of capacities.

He also touched upon as issues of MSME's who should adopt new technologies to grow and become the leaders and it is possible only we all come on common platform like ALEX which has taken very good initiative. The industry-





focused platform is not about disruption, but a movement towards collaboration and moving away from isolation.

Such platform can bring together industry leaders, key policymakers, governments, including consumers. Because where there is a change, there is progress.

During Inaugural function Mr. D. K. Das, Chief



Marketing Officer – Hindalco Industries Ltd., highlighted the need of such a Technical Conferences on a regular basis to be in line to upgrade Extrusion technology to take care of emerging applications.

He also appreciated the subject technical papers and arrangements.

Aluminium Recycling- Challenges, Opportunities & Process Upgradation:

Dr. Anupam Agnihotri, Director, JNARDDC



India embarks on a growing aluminum consumption trajectory, both primary and scrap recycling industries are essential to the vision of India's aluminum roadmap. JNARDC has convinced

Govt A- aluminum is sustainable recycling takes just 5% energy compare to primary metal production energy consumption. B- Primary production range from 3 ~ 19 tons of Co2 depending upon smelting process and energy used where as remelt emits 0.5Tons of Co2.

Hence it is good to import aluminum scrap (because more than aluminum we import energy). Circularity and sustainability are the way forward for this and future generation to survive.

He brought out that challenges brought being faced by recycling industry on various fronts. NITI Aayog and ministry of mines are bringing various regulations or policies and carrying out several promotional activities. On technical side JNARDC is working out on various process upgradation in Aluminium recycling. He brought out that challenges brought being faced by recycling industry on various fronts. NITI Aayog and ministry of mines are bringing various regulations or policies and carrying out several promotional activities. On technical side JNARDC is working out on various process upgradation in Aluminium recycling.

Development of 6xxx series special alloys aiming superior extrudability :

Mr. Ram Sandipam Adhikary- Head Customer Technical Service – Vedanta Aluminium Co Ltd

He chalks out 6063 & 6060 widely used alloy's impact on physical characteristics attended at an extrusion press with optimizing the phase transformation & microstructure in the



extrusion billets. He explained with Spectro & morphology graphs with various test results how with little change in alloy chemistry yield success in superior extrudability - productivity with higher physical properties.

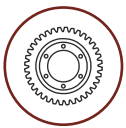
OPPORTUNITIES IN ROLLING STOCK AND EV BATTERY ENCLOSURES :

Mr. Sayan Dey, Sr. Officer - Business Strategy Directors' Office, BHORUKA FABCONS PVT. LTD.



Transport segment (Rail – Metro – Auto) Compare to conventional IC engine has adopted Ev's as alternate fuel. To offset battery weight aluminum semi fab has got major role to play in the form of rolled -extruded and cast products. He presented emerging products 4W – Battery enclosures – Various traction electrical Systems-car body frame structure -Battery mounting with cross members Battery assembly with crash cages, third rail systems.

He also presented Bhoruka



## Industry Update

Fabcon success products – Split configuration enclosures -Rail Window assembly- Rail gangway component – Gangway frame profiles – Emergency ladder assembly.

Heavy Duty Extrusion Presses for Large Profile Applications :

Mr.Mohit Aggarwal,  
General Manager, Senior Specialist - Technical Sales, SMS INDIA PVT. LTD. (SMS GROUP)



In today's high demand for modernization and infrastructure program like high-speed trains- metro- intercity – freight wagons. Aluminium extrusion demand for wide and long profile demand is in pipeline.

He also emphasize that continuous development in performance , productivity and product quality, ease of operations and safety development are the added benefits that comes with SMS presses. He explained site precautions to be taken to reach 120 MN – 150 MN & 160 MN presses with dimensions.

Induction Technology For High Quality Extrusion Profiles With Reduced Carbon Footprint

Dr. Jan Weckes, IAS Induction (SMS Group)

He explained IAS induction



is commuted to cut down emission to meet the global efforts to reduce CO2 emissions. IAS development induction technology even more efficient and bring extrusion plant one step closer to the goal of climate neutrality. His presentation on effects of the aluminum billet heating technology on the carbon footprints – Direct converter- - multi – layer oils- Aluminium hot extrusion for high efficiency & heat recovery system offered improvement in the overall efficiency up to 81% compare to initial stage of 61%. Ultimate emission reduced by 25.

New Tool Steel Trends In Aluminium Extrusion

Mr. Mahesh Jagdale, Sr. Manager –



Uddeholm (India)  
VOESTALPINE HIGH PERFORMANCE METALS INDIA PVT. LTD.

Common failures in extrusions -Mechanical load- Thermal load- machine load-

degree of deformation design of component and die- Friction between work metal and die.

He explained required properties of tool and die steel also “Uddeholm” recommendations on tool steel with some tips on Heat checking resistance-Die inserts temperature resistance – effect of surface finish-sharp radius- die pre heat & gate speeds high velocity parts within thin wall. Ended with how to select correct Uddeholm die steel.

Fluxing Techniques For Savings And Efficiency Improvement

Mr. Shrikant A. Bhat, Head Non-Ferrous Foundry FOSECO INDIA LIMITED

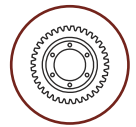


Quality, soundness and properties of Aluminium alloy extrusions can be controlled and enhanced by appropriate metal treatment. Proper selection of fluxes and their optimum additions is the key to the successful metal treatment. Good fluxing practices leads to saving of loss of aluminum in dross and clean furnace walls leads to sustained capacity and better energy efficiency.

Innovative Refractory Lining For Aluminium Recycling Furnaces

Mr.Gulab Patel, Business Manager – Aluminium,

ALLIED REFRACTORY PRODUCTS INDIA PVT. LTD.



Paper focused on challenges, best practices and technical approaches on selecting right refractory lining and repairs material for reverberatory furnaces and launders used for aluminum recycling to achieve desired product quality, best refractory life with reduced energy cost.

The Importance of OTIF (On-Time In Full) Delivery in Aluminium Extrusion

Mr. Vinay Kumar -Engineer & Mr. CV Kirthen J -Asst Manager, BHORUKA EXTRUSIONS PVT. LTD

Mr. Vinay Kumar -Engineer :On Time In Full (OTIF)



delivery is one of the most crucial and important key performance indicator to measure a company's performance in terms of achieving customer demands which translates to customer satisfaction. The inspiration taken from the first "Zomatto" delivery

slide touched common industry problem impressed delegates. It spoke about OTIF in the Aluminium extrusion domain and demonstrate the significance of lean management and real time data, to define, measure and analyses to improve OTIF. Mr. CV Kirthen J - AsstManager: Presented second part how Bhorka improve the communication between processes and its team members for efficient process flow which in tern achieve on time in full delivery.

Aluminium Application in Railway Freight Wagons in India

Mr. Sudhir Jain, General Manager & Head



Manufacturing - commercial vehicle

HINDALCO INDUSTRIES LIMITED

Hindalco is always on fore front when it comes to development. In line with global efforts to reduce Co2 emission norms Hindalco recently introduced freight wagon (50 nos Wagons) rake which is one of the milestones in extrusion industry. The salient features are light weight – Co2 emission saving – no painting required – less pulling force- extra pay load etc. US built first freight car in 1931.

PRESEZZI EXTRUSION -

ENERGY SAVINGS STRATEGY IN EXTRUSION PROCESS

Mr. Soumyadeep Ghosh,



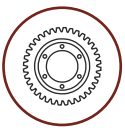
Representative of Presezzi Extrusions S.p.A. – Italy

Company is the international leader in the production and commissioning of complete extrusion lines for non-ferrous metals. They developed the environmental labelling EPD Environmental product declaration for two strategic products 1) Permanent Magnetic billet heater and the PE.E.S.S." technology used for presses. They undertake revamping of any press.

The salient features: Reduction of power rating and dimensions of motors – The pumps being used ensure that the system requires reduced number of spare parts and significantly reduced amount of maintenance. Energy saving can be quantified in the order of 25~30%.

Aluminium Extrusion Usage In Bus Body- A Techno Commercial Walkthrough Shashwat Yadav,- Managing Director, R. Y. EXTRUSIONS- Ambarnath





## Industry Update

Extrusion MSME unit located in Mumbai -Pune and Nasik industrial belt. With Govt Smart city initiative- Introduction of BS-VI standards company supply bus body profiles to OEM's only. Besides 3 press lines they have powder plant & R&D where they develop specific improved alloys for improved properties. Company has vendor registration with almost all OEM's for bus body profiles. This presentation was beautiful example of strategic management case study.

How to save money in die cleaning recovering completely caustic soda with a safe and automatic operation

Mr. Nahid Mohammed Khalleelulla, Business Head,



ITALTECNO INDIA PVT. LTD.

Paper evaluated the possibility to increase the efficiency of the die cleaning process by better optimization of the involved chemical and physical parameters.

This fully automatic but low cost system has created valid and innovative solution with the possibility of recovering and re-using more than 80% of chemicals @ 50% faster speed .

Extrusion Technology For Car Body: Including Crash

Box Management System

Mr. Pavnesh Sharma: Head - Process Excellence & Quality,



BANCO ALUMINUM LTD.

Author noticed that there is big scope and market for aluminium extrusion products used in car that definitely provide sustainability to extruders. During presentation he highlighted automotive process and extrusion process approach. This is a management case study to understand your customer's product needs you have to be in the shoes of that industry approach. When you understand next industries approach and business models becomes comfort zone to interact and develop design / research to end with win-win situation. Company is in exports and has successfully captured major market in auto industry.

Panel Discussion was moderated by Mr. Rajat Agarwal,

Panellist were

Dr. Anupam Agnihotri, Mr. Sayen Dey, Mr. Deepak Deshmukh & Mr. Ram Sandipam Adhikary.

Discussion were on

1.Latest advancements in Aluminium Extrusion Technology for Electrical Vehicles?

2.What are some of the benefits of using Aluminium in EVs?

3.Technology playing in the future of the EV Industry? How do you see it gearing up industries? To meet the projected demand of 80,000 tons by 2025.

4.Industries working to improve the sustainability including the sourcing of raw materials and the recycling of end of the life products?

### Valedictory Function :

Mr. Alok Ranjan- Chief Marketing Director (Bharat & Vedanta Aluminium Co Ltd) honored guest in his valedictory speech appreciated the efforts made by "ALEX" to bring extruders on common platform . It was a feast of technology information through presentation by experts and created platform for "NETWORKING".

He strongly emphasized to build this "ALEX" very strong and assured all the support. He appealed the delegates to enroll as members of Alex and be part of it for the suitability and progress of the Aluminium extrusion industry so also Nation. He also thanked Alex and staff of Arkey Conference for making good arrangements for the Conference till end.

Mr. Varadraj Shriyan, Director & SBU, HOESCH METALLURGIE INDIA PVT. LTD., and Secretary ALEX thanked Chief Guest, the paper presenters and the delegates who made this conference a grand success. He also thanked Sponsor M/s Hindalco Industries – sponsor M/s Bhoruka Aluminium Ltd, advertisers and table displays Ceratherm, AICircle BIZ, QVI India Pvt. Ltd.

Technical sessions handled by Mr. Anand Joshi.

# MEGA EVENT IN CHENNAI

1-2-3 DECEMBER 2023

Venue  
Chennai Trade Centre,  
Chennai, India



GDCTECH 2023

International Conference & Exhibition on  
**Aluminium Diecasting Industry**

THEME

## Preparing for the Next...

[www.gdctechforum.com](http://www.gdctechforum.com)



FORGING 2023

International Conference & Exhibition on  
**Forging Industry**

THEME

## Change for the Future...

[www.forgingtechnologyforum.com](http://www.forgingtechnologyforum.com)

Managed By



**ARKEY CONFERENCE & ENGINEERING SERVICES**

Tel.: 020 - 2567 2555, 2567 0808 Mobile: +91 97647 11315

[gdctech@arkeycell.com](mailto:gdctech@arkeycell.com), [fftc@arkeycell.com](mailto:fftc@arkeycell.com)

[arkeyconference@arkeycell.com](mailto:arkeyconference@arkeycell.com)



## Domestic Automobile sales up by 10%; export declines by 35%: SIAM Data

Indian automakers dispatched nearly 2.92 lakh passenger vehicles, the highest ever for February, driven by strong demand for cars and utility vehicles, industry body SIAM said on Friday.

Last month, the total passenger vehicle dispatches from companies to dealers increased 11% to 2,91,928 units from 2,62,984 units in February 2022.

Passenger car sales rose to 1,42,201 units in February against 1,33,572 units in the year-ago period. Similarly, utility vehicle dispatches, including sports utility vehicles, rose to 1,38,238 units compared to 1,20,122 units in February 2022.

The Union Budget led to an increase in car sales as 2,91,928 units of passenger vehicles were sold in February 2023 versus 2,62,984 units sold in the same period last year. Maruti Suzuki sold 1,02,565 units in February this year versus 99,398 units in the corresponding period last year. Hyundai Motor was the closest competitor with sales of 24,493 units in February 2023 versus sales of 21,501 units in February 2022, as per the latest Society of Indian Automobile Manufacturers (SIAM) data.

34,61,716 passenger vehicles were sold in April-February

2022-23 whereas 26,66,109 passenger units were sold in April-February 2021-22. During this period in 2022-23, Maruti Suzukisold 10,25,836 units of passenger vehicles whereas Hyundai Motor sold 2,42,436. In the same period last year, Maruti Suzuki sold 8,32,873 units of passenger vehicles whereas Hyundai Motor sold 2,08,835 units.

SIAM President Vinod Aggarwal attributed the rise in sales to the encouraging provisions in the Union Budget 2023-24 for consumers. Aggarwal said, "Overall positive sentiments in the market continue, which is also driven by encouraging announcements at the Union Budget for consumers. Auto Industry is fully geared up for the transition to Phase 2 of BS 6 Emission Norms for all categories of vehicles from next month" However, he sounded a cautionary note with regards to the hike in repo rate by the Reserve Bank of India (RBI) and higher cost of borrowings and also urged the government to ensure the moderation of CNG prices.

Aggarwal noted, "Hike in Repo Rates in February, which would result in higher cost of borrowings, remains a concern and we hope that the rates would get moderated suitably. Moderation of CNG Fuel Prices is also important for expanding the footprint of Gas Based Mobility which is critical for Sustainable Mobility."

Category Segment/Subsegment	Domestic Sales		Exports	
	February		February	
	2022	2023	2022	2023
<b>Passenger Vehicles (PVs)*</b>				
Passenger Cars	1,33,572	1,42,201	33,515	25,207
Utility Vehicles (UVs)	1,20,122	1,38,238	17,623	21,139
Vans	9,290	11,489	75	140
<b>Total Passenger Vehicles (PVs)</b>	<b>2,62,984</b>	<b>2,91,928</b>	<b>51,213</b>	<b>46,486</b>
<b>Three Wheelers</b>				
Passenger Carrier	18,144	38,777	34,820	19,386
Goods Carrier	7,535	8,711	1,177	254
E-Rickshaw	1,249	2,615	-	-
E-Cart	146	279	-	-
<b>Total Three Wheelers</b>	<b>27,074</b>	<b>50,382</b>	<b>35,997</b>	<b>19,640</b>
<b>Two Wheelers</b>				
Scooter/ Scooterette	3,56,222	3,91,054	24,830	33,378
Motorcycle/Step-Throughs	6,58,009	7,03,261	3,49,221	2,01,097
Mopeds	35,848	35,346	1,638	612
<b>Total Two Wheelers</b>	<b>10,50,079</b>	<b>11,29,661</b>	<b>3,75,689</b>	<b>2,35,087</b>
Quadricycle	10	107	126	348
<b>Grand Total</b>	<b>13,40,147</b>	<b>14,72,078</b>	<b>4,63,025</b>	<b>3,01,561</b>

\* BMW, Mercedes, Tata Motors and Volvo Auto data is not available



SIAM						
Segment wise Comparative Production, Domestic Sales & Exports data for the month of February 2023						
Category Segment/Subsegment	Production		Domestic Sales		Exports	
	February		February		February	
	2022	2023	2022	2023	2022	2023
<b>Passenger Vehicles (PVs)*</b>						
Passenger Cars	1,70,428	1,69,826	1,33,572	1,42,201	33,515	25,207
Utility Vehicles (UVs)	1,33,246	1,56,333	1,20,122	1,38,238	17,623	21,139
Vans	9,368	11,550	9,290	11,489	75	140
<b>Total Passenger Vehicles (PVs)</b>	<b>3,13,042</b>	<b>3,37,709</b>	<b>2,62,984</b>	<b>2,91,928</b>	<b>51,213</b>	<b>46,486</b>
<b>Three Wheelers</b>						
Passenger Carrier	53,693	56,978	18,144	38,777	34,820	19,386
Goods Carrier	8,659	8,191	7,535	8,711	1,177	254
E-Rickshaw	1,512	2,516	1,249	2,615	-	-
E-Cart	148	407	146	279	-	-
<b>Total Three Wheelers</b>	<b>64,012</b>	<b>68,092</b>	<b>27,074</b>	<b>50,382</b>	<b>35,997</b>	<b>19,640</b>
<b>Two Wheelers</b>						
Scooter/ Scooterette	3,93,635	4,40,901	3,56,222	3,91,054	24,830	33,378
Motorcycle/Step-Throughs	9,98,438	8,72,062	6,58,009	7,03,261	3,49,221	2,01,097
Mopeds	38,455	35,706	35,848	35,346	1,638	612
<b>Total Two Wheelers</b>	<b>14,30,528</b>	<b>13,48,669</b>	<b>10,50,079</b>	<b>11,29,661</b>	<b>3,75,689</b>	<b>2,35,087</b>
<b>Quadricycle</b>	<b>140</b>	<b>452</b>	<b>10</b>	<b>107</b>	<b>126</b>	<b>348</b>
<b>Grand Total</b>	<b>18,07,722</b>	<b>17,54,922</b>	<b>13,40,147</b>	<b>14,72,078</b>	<b>4,63,025</b>	<b>3,01,561</b>
* BMW, Mercedes, Tata Motors and Volvo Auto data is not available Society of Indian Automobile Manufacturers (10/03/2023)						

SIAM						
Summary Report: Cumulative Production, Domestic Sales & Exports data for the period of April - February 2023						
Category Segment/Subsegment	Production		Domestic Sales		Exports	
	April-February		April-February		April-February	
	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23
<b>Passenger Vehicles (PVs)*</b>						
Passenger Cars	16,37,364	19,72,794	12,90,030	15,78,963	3,34,450	3,72,498
Utility Vehicles (UVs)	14,56,164	19,77,381	12,73,090	17,57,160	1,79,795	2,20,119
Vans	1,04,638	1,26,605	1,02,989	1,25,593	1,746	457
<b>Total Passenger Vehicles (PVs)</b>	<b>31,98,166</b>	<b>40,76,780</b>	<b>26,66,109</b>	<b>34,61,716</b>	<b>5,15,991</b>	<b>5,93,074</b>
<b>Three Wheelers</b>						
Passenger Carrier	5,99,133	6,61,579	1,51,587	3,20,963	4,51,318	3,41,819
Goods Carrier	77,193	89,553	67,273	86,679	9,877	4,396
E-Rickshaw	9,162	24,641	9,298	23,936	-	-
E-Cart	1,099	3,055	1,092	2,830	-	-
<b>Total Three Wheelers</b>	<b>6,86,587</b>	<b>7,78,828</b>	<b>2,29,250</b>	<b>4,34,408</b>	<b>4,61,195</b>	<b>3,46,215</b>
<b>Two Wheelers</b>						
Scooter/ Scooterette	40,50,505	51,13,161	37,37,975	47,52,401	3,28,601	3,74,014
Motorcycle/Step-Throughs	1,17,54,996	1,23,79,726	81,97,707	94,14,380	37,53,043	30,29,006
Mopeds	4,38,622	3,99,946	4,35,501	4,04,753	10,246	3,528
<b>Total Two Wheelers</b>	<b>1,62,44,123</b>	<b>1,78,92,833</b>	<b>1,23,71,183</b>	<b>1,45,71,534</b>	<b>40,91,890</b>	<b>34,06,548</b>
<b>Quadricycle</b>	<b>4,038</b>	<b>2,356</b>	<b>75</b>	<b>620</b>	<b>4,314</b>	<b>1,854</b>
<b>Grand Total</b>	<b>2,01,32,914</b>	<b>2,27,50,797</b>	<b>1,52,66,617</b>	<b>1,84,68,278</b>	<b>50,73,390</b>	<b>43,47,691</b>
* BMW, Mercedes, Volvo Auto data is not available and Tata Motors data is available for Apr-Dec only Society of Indian Automobile Manufacturers (10/03/2023)						

SIAM												
Category & Company wise Summary Report for the month of February 2023 and Cumulative for April-February 2023												
Category Segment/Subsegment Manufacturer	Production				Domestic Sales				Exports			
	February		April-February		February		April-February		February		April-February	
	2022	2023	2021-22	2022-23	2022	2023	2021-22	2022-23	2022	2023	2021-22	2022-23
<b>Passenger Vehicles (PVs)</b>												
FCA India Automobiles Pvt Ltd	1,354	1,000	15,478	15,387	1,020	917	10,676	11,765	390	630	5,449	4,612
Force Motors Ltd	95	42	493	653	78	60	378	677	1	1	2	6
Ford India Private Ltd	NA	NA	39,337	NA	NA	NA	15,818	NA	NA	NA	18,022	NA
Honda Cars India Ltd	8,883	9,635	96,234	1,06,687	7,187	6,086	79,020	84,726	2,337	969	17,084	19,521
Hyundai Motor India Ltd	53,000	55,401	5,51,000	6,47,478	44,050	47,001	4,36,900	5,16,946	9,109	10,850	1,18,573	1,42,119
Isuzu Motors India Pvt Ltd	333	66	1,968	1,971	30	66	702	657	24	-	255	355
Kia Motors India Pvt Ltd	22,774	30,309	2,08,629	3,29,399	18,121	24,600	1,64,165	2,47,728	5,504	7,406	45,337	79,554
Mahindra & Mahindra Ltd	24,041	30,978	2,07,467	3,30,225	27,663	30,358	1,98,292	3,23,256	1,116	1,408	9,369	9,659
Maruti Suzuki India Ltd	1,65,672	1,56,438	14,63,120	17,27,981	1,33,948	1,47,467	11,97,697	14,74,107	23,787	16,956	2,09,487	2,26,110
MG Motor India Pvt Ltd	4,038	4,327	36,410	49,857	4,528	4,193	35,648	42,815	-	-	32	12
Nissan Motor India Pvt Ltd	5,179	7,253	68,749	87,375	2,456	2,184	34,671	30,351	4,207	3,882	34,028	53,378
PCA Motors Pvt. Ltd	51	373	777	7,129	59	328	723	7,047	-	-	-	-
Renault India Pvt Ltd	7,986	10,102	96,772	1,11,170	6,568	6,616	78,957	73,537	1,936	1,537	20,746	29,471
SkodaAuto India Pvt Ltd	4,543	4,225	30,133	51,561	4,503	3,418	28,354	47,837	-	118	-	406
Tata Motors Ltd*	NA	NA	2,48,600	4,09,173	NA	NA	2,49,249	4,08,087	NA	NA	1,381	1,766
Toyota Kirloskar Motor Pvt Ltd	6,976	22,226	63,974	1,38,407	8,745	15,323	1,06,630	1,54,798	34	1,974	125	2,197
Volkswagen India Pvt Ltd	8,117	5,334	69,025	62,327	4,028	3,311	28,229	37,382	2,768	755	36,101	23,908
<b>Total Passenger Vehicles (PVs)</b>	<b>3,13,042</b>	<b>3,37,709</b>	<b>31,98,166</b>	<b>40,76,780</b>	<b>2,62,984</b>	<b>2,91,928</b>	<b>26,66,109</b>	<b>34,61,716</b>	<b>51,213</b>	<b>46,486</b>	<b>5,15,991</b>	<b>5,93,074</b>
* Only cumulative data is available for Apr-Dec NA= Not Available												









SIAM												
Sub-segment & Company wise Production, Domestic Sales & Exports Report for the month of February 2023 and Cumulative for April-February 2023												
Report IV (Number of Vehicles)												
Category	Production				Domestic Sales				Exports			
	February		April-February		February		April-February		February		April-February	
Segment/Subsegment	2022	2023	2021-22	2022-23	2022	2023	2021-22	2022-23	2022	2023	2021-22	2022-23
Manufacturer												
<b>UV4 : Price between Rs. 20 to 30 Lakh</b>												
FCA India Automobiles Pvt Ltd (Jeep Compass)	1,354	629	15,478	10,904	1,020	604	10,676	7,801	390	551	5,449	3,701
Force Motors Ltd (Gurkha)	-	-	23	-	-	-	-	-	-	-	-	-
Hyundai Motor India Ltd (Kona,Tucson)	328	485	1,327	3,332	215	498	1,242	3,325	-	-	-	-
Isuzu Motors India Pvt Ltd (MU-X)	-	-	1	-	-	-	3	-	-	-	2	-
Kia Motors India Pvt Ltd (Carnival)	260	390	3,862	4,376	283	504	3,974	4,089	-	-	-	141
Mahindra & Mahindra Ltd (Alturas G4)	27	-	334	436	27	-	351	446	-	-	-	-
MG Motor India Pvt Ltd (ZS EV)	160	902	2,237	6,159	-	514	2,223	5,121	-	-	-	-
PCA Motors Pvt. Ltd (C5 Aircross)	51	-	777	237	59	4	723	249	-	-	-	-
SkodaAuto India Pvt Ltd (Karoq)	-	-	-	-	-	-	2	-	-	-	-	-
<b>Total UV4</b>	<b>2,180</b>	<b>2,406</b>	<b>24,039</b>	<b>25,444</b>	<b>1,604</b>	<b>2,124</b>	<b>19,194</b>	<b>21,031</b>	<b>390</b>	<b>551</b>	<b>5,451</b>	<b>3,842</b>
<b>UV5 : Price &gt;Rs. 30 Lakh</b>												
FCA India Automobiles Pvt Ltd (Jeep Meridian)	-	371	-	4,483	-	313	-	3,964	-	79	-	911
Ford India Private Ltd (Endeavour)	NA	NA	3,947	NA	NA	NA	3,947	NA	NA	NA	NA	NA
Hyundai Motor India Ltd (Ioniq5)	-	105	-	205	-	33	-	33	-	-	-	-
Isuzu Motors India Pvt Ltd (MU-X)	12	1	43	46	4	3	58	50	-	-	-	-
Kia Motors India Pvt Ltd (EV6)	-	-	-	15	-	-	-	430	-	-	-	-
MG Motor India Pvt Ltd (Gloster)	119	104	2,383	1,838	151	101	2,689	1,774	-	-	-	-
SkodaAuto India Pvt Ltd (Kodiahq)	73	243	278	1,350	67	189	256	1,289	-	-	-	-
Toyota Kirloskar Motor Pvt Ltd (Fortuner, Land Cruiser, Velfire)	2,114	3,292	16,502	26,995	1,879	3,555	16,662	28,484	34	-	125	45
Volkswagen India Pvt Ltd (Tiguan)	-	146	-	1,270	130	93	231	1,095	-	-	-	-
<b>Total UV5</b>	<b>2,318</b>	<b>4,262</b>	<b>23,153</b>	<b>36,202</b>	<b>2,231</b>	<b>4,287</b>	<b>23,843</b>	<b>37,119</b>	<b>34</b>	<b>79</b>	<b>125</b>	<b>956</b>
<b>Total Utility Vehicles (UVs)</b>	<b>1,33,246</b>	<b>1,56,333</b>	<b>14,56,164</b>	<b>19,77,381</b>	<b>1,20,122</b>	<b>1,38,238</b>	<b>12,73,090</b>	<b>17,57,160</b>	<b>17,623</b>	<b>21,139</b>	<b>1,79,795</b>	<b>2,20,119</b>
<b>Vans</b>												
<b>C : Vans ; Generally 1 or 1.5 box; seats upto 5 to 10</b>												
<b>V1 : Hard tops mainly used for personal transport, Price upto Rs. 10 Lakh</b>												
Mahindra & Mahindra Ltd (Maxximo,Supro)	165	120	2,642	2,200	90	128	1,856	1,920	69	35	666	59
Maruti Suzuki India Ltd (Eeco)	9,189	11,430	1,00,000	1,20,538	9,190	11,352	99,124	1,19,196	6	105	964	318
Tata Motors Ltd* (Magic Express)	NA	NA	1,812	3,654	NA	NA	1,928	4,261	NA	NA	-	35
<b>Total V1</b>	<b>9,354</b>	<b>11,550</b>	<b>1,04,454</b>	<b>1,26,392</b>	<b>9,280</b>	<b>11,480</b>	<b>1,02,908</b>	<b>1,25,377</b>	<b>75</b>	<b>140</b>	<b>1,630</b>	<b>412</b>
<b>V2 : Soft tops mainly used as Maxi Cabs, Price upto Rs. 10 Lakh</b>												
Mahindra & Mahindra Ltd (Supro)	14	-	85	153	10	9	81	137	-	-	-	-
Tata Motors Ltd* (Magic Iris)	NA	NA	99	60	NA	NA	-	79	NA	NA	116	45
<b>Total V2</b>	<b>14</b>	<b>-</b>	<b>184</b>	<b>213</b>	<b>10</b>	<b>9</b>	<b>81</b>	<b>216</b>	<b>-</b>	<b>-</b>	<b>116</b>	<b>45</b>
<b>Total Vans</b>	<b>9,368</b>	<b>11,550</b>	<b>1,04,638</b>	<b>1,26,605</b>	<b>9,290</b>	<b>11,489</b>	<b>1,02,989</b>	<b>1,25,593</b>	<b>75</b>	<b>140</b>	<b>1,746</b>	<b>457</b>
<b>Total Passenger Vehicles (PVs)</b>	<b>3,13,042</b>	<b>3,37,709</b>	<b>31,98,166</b>	<b>40,76,780</b>	<b>2,62,984</b>	<b>2,91,928</b>	<b>26,66,109</b>	<b>34,61,716</b>	<b>51,213</b>	<b>46,486</b>	<b>5,15,991</b>	<b>5,93,074</b>

SIAM												
Sub-segment & Company wise Production, Domestic Sales & Exports Report for the month of February 2023 and Cumulative for April-February 2023												
Report IV (Number of Vehicles)												
Category	Production				Domestic Sales				Exports			
	February		April-February		February		April-February		February		April-February	
Segment/Subsegment	2022	2023	2021-22	2022-23	2022	2023	2021-22	2022-23	2022	2023	2021-22	2022-23
Manufacturer												
<b>Three Wheelers</b>												
<b>A: Passenger Carriers</b>												
<b>A1: Passenger Carrier</b>												
<b>A1: No. of seats including driver not exceeding 4 &amp; Max.Mass not exceeding 1 tonne</b>												
Atul Auto Ltd (Atul Gemini,Atul Rik,Atul Rik + 3P ,Atul Rik 3P 200,Atul Rik 3P 200,Atul Rik 3P 200)	141	141	3,918	4,835	173	77	2,330	2,678	140	184	1,280	2,231
Bajaj Auto Ltd (Maxima,RE)	32,533	38,826	3,87,225	4,00,251	13,126	28,889	1,14,212	2,31,256	19,537	11,374	2,79,279	1,70,478
Continental Engines Pvt Ltd (Baxy EVE PRO,Baxy Express Passenger)	92	92	1,662	1,25	83	1,006	1,669	-	-	-	-	-
Mahindra & Mahindra Ltd (Alfa,Treo)	1,506	1,626	7,526	18,222	1,410	1,768	7,426	18,201	3	-	261	337
Piaggio Vehicles Pvt Ltd (Ape Auto,Ape City)	3,979	6,132	34,474	71,204	2,074	6,314	15,900	48,110	2,023	(92)	18,879	22,616
TVS Motor Company Ltd (TVS King 4S)	14,618	9,476	1,58,466	1,57,798	900	1,308	7,304	14,346	12,921	7,724	1,48,579	1,43,449
<b>Total A1</b>	<b>53,230</b>	<b>56,293</b>	<b>5,92,538</b>	<b>6,53,972</b>	<b>17,808</b>	<b>38,439</b>	<b>1,48,178</b>	<b>3,16,260</b>	<b>34,624</b>	<b>19,190</b>	<b>4,48,278</b>	<b>3,39,111</b>
<b>A2: No. of seats including driver exceeding 4 but not exceeding 7 &amp; Max.Mass not exceeding 1.5 tonnes</b>												
Atul Auto Ltd (Atul Gem,Gemi Paxe)	295	335	3,420	4,805	336	338	3,409	4,703	-	-	58	48
Force Motors Ltd (Minidor)	168	350	3,175	2,802	-	-	-	-	196	196	2,982	2,660
<b>Total A2</b>	<b>463</b>	<b>685</b>	<b>6,595</b>	<b>7,607</b>	<b>336</b>	<b>338</b>	<b>3,409</b>	<b>4,703</b>	<b>196</b>	<b>196</b>	<b>3,040</b>	<b>2,708</b>
<b>Total Passenger Carriers</b>	<b>53,693</b>	<b>56,978</b>	<b>5,99,133</b>	<b>6,61,579</b>	<b>18,144</b>	<b>38,777</b>	<b>1,51,587</b>	<b>3,20,963</b>	<b>34,820</b>	<b>19,386</b>	<b>4,51,318</b>	<b>3,41,819</b>
<b>E-Rickshaw</b>												
Atul Auto Ltd (Atul Elite)	202	167	1,134	2,881	128	241	1,053	2,925	-	-	-	-
Continental Engines Pvt Ltd (Baxy E Rath)	95	99	356	1,323	24	90	290	1,342	-	-	-	-
Mahindra & Mahindra Ltd (e-Alfa Mini,Treo Yaari)	1,215	2,250	7,672	20,437	1,097	2,284	7,955	19,669	-	-	-	-
<b>Total E-Rickshaw</b>	<b>1,512</b>	<b>2,516</b>	<b>9,162</b>	<b>24,641</b>	<b>1,249</b>	<b>2,615</b>	<b>9,298</b>	<b>23,936</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>B: Goods Carrier</b>												
<b>B1: Max mass not exceeding 1 tonnes</b>												
Atul Auto Ltd (Atul Gem,Atul Gemini,Atul Samart Aqua,Atul Shakti,Atul Samart Aqua,Atul Shakti,Atul Samart Aqua)	1,060	1,060	6,061	8,769	543	1,160	5,844	8,647	-	4	194	118
Bajaj Auto Ltd (Maxima)	3,558	3,923	32,732	35,304	3,088	3,960	26,765	34,623	796	192	6,068	1,622
Continental Engines Pvt Ltd (Baxy Cargo,Baxy Cargo Super King Baxy E Cargo)	91	91	2,576	2,626	322	123	2,419	2,696	-	-	-	-
Mahindra & Mahindra Ltd (Alfa,Treo,Zor Grand)	1,192	1,020	9,739	12,912	1,208	1,141	10,017	13,204	2	-	62	126
Piaggio Vehicles Pvt Ltd (Ape Xtra)	2,794	2,005	24,853	28,261	2,332	2,292	21,983	27,115	153	1	2,842	1,198
TVS Motor Company Ltd (TVS King Kargo)	240	92	1,232	1,681	42	35	245	394	226	57	711	1,332
<b>Total Goods Carrier</b>	<b>8,659</b>	<b>8,191</b>	<b>77,193</b>	<b>89,553</b>	<b>7,535</b>	<b>8,711</b>	<b>67,273</b>	<b>86,679</b>	<b>1,177</b>	<b>254</b>	<b>9,877</b>	<b>4,396</b>
<b>E-Cart</b>												
Atul Auto Ltd (Atul Elite Cargo)	39	107	413	1,102	45	121	423	1,045	-	-	-	-
Continental Engines Pvt Ltd (Baxy E Cart)	9	-	36	31	4	1	31	36	-	-	-	-
Mahindra & Mahindra Ltd (e-Alfa Cargo,Treo Yaari)	100	300	650	1,922	97	157	638	1,749	-	-	-	-
<b>Total E-Cart</b>	<b>148</b>	<b>407</b>	<b>1,099</b>	<b>3,055</b>	<b>146</b>	<b>279</b>	<b>1,092</b>	<b>2,830</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Three Wheelers</b>	<b>64,012</b>	<b>68,092</b>	<b>6,86,587</b>	<b>7,78,828</b>	<b>27,074</b>	<b>50,382</b>	<b>2,29,250</b>	<b>4,34,408</b>	<b>35,997</b>	<b>19,640</b>	<b>4,61,195</b>	<b>3,46,215</b>

## A COMPLETE SOLUTION FOR STEEL INDUSTRIES

Electro magnetic industries for over 43 years, have lead the industry in producing Magnetic Separator/Vibrating equipments for the control and removal of ferrous tramp metal from product movement and processing system.



RECTANGULAR LIFTING  
ELECTRO MAGNETS



ELECTRO HYDRAULIC  
ORANGE PEET GRAB



VIBRATORY FURNACE CHARGER



FURNACE LINING VIBRATOR



HYDRAULIC PUSHER



### OUR PROJECTS



**Corporate office & Works :**  
Plot No: 1, Unit: 2, GIDC Industrial Estate,  
Por-Ramangamdi, Vadodara 391 243,  
Gujarat, India

www.electromagneticindia.com  
sales@electromagneticindia.com



+91-937-621-9322

+91-982-502-8823

+91-932-724-5492

REPRESENTATIVES / AGENT REQUIRE  
FROM ALL OVER THE WORLD



[www.vedantaaluminium.com](http://www.vedantaaluminium.com)

## Aluminium: The Metal of the Future

Aluminium is crucial for India's ambition of becoming a global manufacturing hub. It is imperative for hi-tech industries and sunrise sectors such as aerospace, defence, renewable energy, electric vehicles, etc.

India has the second-largest aluminium production capacity in the world.

### Vedanta Aluminium

- Is the largest producer of aluminium, the green metal, in the country
- Has 1% induced impact on GDP and creates thousands of MSMEs and lakhs of jobs
- Has invested INR 60,000 cr to build the country's largest aluminium assets
- Is ranked 4<sup>th</sup> amongst global aluminium companies in the Dow Jones Sustainability Index
- Is India's only producer of low carbon 'green' aluminium, branded as Restora

***Vedanta Aluminium stands fully committed to nation-building and an 'AtmaNirbhar Bharat'.***



**DESH KI ZAROORATON KE LIYE  
ATMANIRBHAR BHARAT KE LIYE**



**vedanta**  
transforming for good

**aluminium**