

HZL/2024-25/SECY/89

August 21, 2024

BSE Limited  
Phiroze Jeejeebhoy Towers  
Dalal Street, Fort  
Mumbai – 400 001

National Stock Exchange of India Limited  
Exchange Plaza, 5th Floor Plot No., C/I, G Block  
Bandra-Kurla Complex, Bandra (East),  
Mumbai – 400 051

Kind Attn: General Manager – Department  
of Corporate Services

Kind Attn: Head Listing & Corporate  
Communication

**Scrip Code: 500188****Trading Symbol: "HINDZINC"**

Dear Sir/Madam,

**Sub: Press Release**

Please find enclosed herewith a press release titled '**Hindustan Zinc and JNCASR Collaborate for New-Age Zinc-Based Battery Technologies**'.

The disclosure is being made in compliance with Regulation 30 of the SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015.

This is for your information and records.

Thanking You.

Yours faithfully,  
**For Hindustan Zinc Limited**

**Harsha Kedia**  
**Company Secretary & Compliance Officer**

Encl: as above



## Hindustan Zinc and JNCASR Collaborate for New-Age Zinc-Based Battery Technologies

- *Partnership Aims to advance research and development of Sustainable Energy Storage Solutions with Next-Generation Zinc-Based Batteries*
- *Cost-effective & durable zinc-based batteries are touted to be better alternatives to expensive & imported lithium batteries*

**Udaipur, 21<sup>st</sup> August 2024:** In a significant step towards advancing the future of energy storage, Hindustan Zinc Limited (BSE: 500188 and NSE: HINDZINC), India's largest and the world's second-largest integrated zinc producer, has signed a Memorandum of Understanding (MoU) with Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), a premier institute sponsored by the Department of Science and Technology, Government of India. This collaboration aims to develop new variants of zinc materials to propel the commercialization of zinc-based batteries.

The partnership between Hindustan Zinc and JNCASR marks a pivotal moment in the evolution of battery technologies, leveraging zinc's abundant resource availability, cost-effectiveness and sustainable practices. At present, lithium-ion batteries dominate the market but lithium availability, geographic concentration of mineral processing, and concerns around safety relating to combustion issues pose some key challenges to the advancement of sustainable energy solutions. Above all, lithium is far costlier (more than four times) compared to zinc which is much more affordable. Zinc-based batteries are better alternatives to lithium-based batteries mainly due to properties like long duration storage, cost-effectiveness, durability and proven safety track record.

Zinc-based primary batteries have long held a significant market share in India and globally. The stable chemistries offered by zinc have been in wide circulation since the 1800s. Recent advancements in rechargeable zinc-based batteries have opened up new avenues for innovation. These batteries have proven dependable and successful in the high-end defence sector (including aerospace and marine), renewable energy and critical infrastructure for data centres and 5G telecom, etc.

The indigenous development of zinc-based batteries will also lead to savings for the exchequer owing to the vast availability of resources within the country. Some of the widely recognized zinc-based battery chemistries include zinc-manganese, zinc-carbon, nickel-zinc and zinc-air. However, this collaboration will focus on the research and development of Zinc alloys as anodes for Zinc Ion and Zinc Air batteries, developing electrolytes for high-performance Zinc alloy anodes, and designing & developing chemical processes for recycling Zinc metal-based batteries.

Speaking on the occasion of MoU signing, **Arun Misra, CEO of Hindustan Zinc Limited**, said, "Zinc is integral to a low-carbon future and it presents itself as a safe, stable and sustainable alternative to lithium in the energy storage segment. At Hindustan Zinc, our climate action initiatives are focussed on aiding the ongoing global energy transition by advancing and exploring new applications of zinc in batteries. This collaboration demonstrates our crucial role



in catering to the increasing demand for alternative energy solutions by being an active contributor of critical raw materials for the development of emerging clean technologies.”

By entering into research, Hindustan Zinc aims to accelerate the transition to sustainable energy solutions, as zinc is crucial across the value chain of all critical industries like steel, renewable energy, battery storage solutions, electricals & electronic components and mobility. By developing next-generation zinc materials, the company aims to contribute to a greener and more sustainable future. Prof. Premkumar Senguttuvan's team at JNCASR, renowned for their cutting-edge materials research, will work closely with Hindustan Zinc to pioneer solutions that enhance the performance and reliability of zinc-based batteries.

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) is an autonomous institution under Department of Science and Technology, Government of India and a deemed to be university in Bangalore. Their mandate is to pursue and promote world-class research and training at the frontiers of Science and Engineering covering broad areas ranging from Materials to Genetics. It provides a vibrant academic ambience hosting more than 500 Researchers. Since its inception, JNCASR has generated over 350 patents and promoted establishment of a few startups based on indigenous inventions.

Adding his views, Prof. Sreenivas, Dean R&D of JNCASR said, “Prof. Premkumar Senguttuvan, brings extensive expertise in battery technology, with significant experience in lithium, sodium, and zinc-based systems. His research has leveraged the unique benefits of these elements for energy storage applications. Zinc’s widespread availability, minimal environmental impact, cost-effectiveness, and safety characteristics position it as a key player in advancing sustainable energy solutions. Prof. Senguttuvan’s proposed work in zinc-based battery technologies, in collaboration with Hindustan Zinc, holds the potential to make significant contributions to a more sustainable and resilient energy future.”

The world is witnessing a rapid evolution in the battery industry, driven by an essential need for sustainable energy storage solutions. The global energy storage market is on an upward trajectory, with projections of an annual growth of 21%, reaching 442 GWh by 2030 according to a recent Bloomberg NEF report.

The new partnership with JNCASR complements Hindustan Zinc's ongoing efforts in the battery storage space. Earlier this month, Hindustan Zinc signed an MoU with AEsir Technologies, Inc., a US-based company specializing in next-generation zinc battery technologies. This collaboration focuses on developing Nickel-Zinc (NiZn) batteries, which are poised to revolutionize energy storage with their high-power output, cost efficiency, and extended lifespan.

### About Hindustan Zinc Limited

**Hindustan Zinc Limited (BSE: 500188 and NSE: HINDZINC)**, a Vedanta Group company, is the world’s second-largest integrated zinc producer and the third-largest silver producer. The company supplies to more than 40 countries and holds a market share of about 75% of the primary zinc market in India. Hindustan Zinc has been recognized as the world’s most sustainable company in the metals and mining category by the S&P Global Corporate Sustainability Assessment 2023, reflecting its



operational excellence, innovation, and leading ESG practices. Hindustan Zinc is also a certified 2.41 times Water-Positive company and is committed to achieving Net Zero emissions by 2050 or sooner. Transforming the lives of 1.9 million people through its focused social welfare initiatives, it is among the Top 10 CSR companies in India. As a world leader in the metals and mining industry, Hindustan Zinc is pivotal in providing critical metals essential for the global energy transition for a sustainable future.

For more information, please visit – <https://www.hzindia.com/home/> and follow us on [LinkedIn](#), [Twitter](#), [Facebook](#), and [Instagram](#) for more updates.

**For any media queries, please contact:**

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## About JNCASR

The Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) is a premier autonomous institution under the Department of Science and Technology, Government of India. Committed to addressing fundamental and applied challenges across biology, chemistry, energy, engineering, environment, healthcare, materials science, and theoretical physics, JNCASR fosters interdisciplinary research without boundaries. This approach has successfully translated research breakthroughs into societal benefits, and resulted in more than hundred patents, fifty technology transfers and five startups. With about 400 students and 45 faculty members, JNCASR is recognized globally for its research excellence. The Centre also actively imparts research skills to the students through national outreach programs, including Summer and Graduate Research Internships.