DefTech conclave

Atmanirbharta in Naval & Material Technologies

SHREE REFRIGERATIONS

BHARAT FORGE | KALYANI

Date:
8th August 2025
Time:
9.30am to 5.45pm
Venue
Dr APJ Kalam Auditorium
Pashan, Pune

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Atmanirbharta in Naval & Material Technologies

DefTech Conclave are a collective of defence veterans and professionals with extensive expertise across diverse domains, actively engaged in nation-building.

As a part of a small contribution towards a holistic nation building initiative under Viksit Bharat, we provide our assessments and recommendations on various projects relevant to the authorities.

In recent past we have submitted comprehensive reports on the following.
1 Formation of Defence Industrial Corridor in Maharashtra.
2 Formation of Naval Base and Ship building and ship repair facilities at Vadhawan Port
3 Sourcing of rare earth elements and arranging Joint Ventures with Australian Mines and generation of filtering and processing facilities in India (work in progress).

We continue to actively associate with the above projects.

Date 08 Aug/The Friday

09 30 - 9 45 AM:

Event : Introduction - Col Sachin Randale (Rtd)

9.45 AM to 10.45 AM:

Event : Indigenization
Cmde Sandeep Deshmukh Director Indigenization,
Naval Headquarters, New Delhi
Prospects of Indigenization, OEMs, technology, opportunities for MSMEs, collaborations,
Trials/Testing, vendor partnerships, future orders, IP rights, developmental orders/ contracts,
Swabhlambhan, presentation by Director of Indigenization/NHQ

10.45 AM to 11.45 AM:

Event : Vendor Development by the Navy

1. Materials Organization Introduction
2. Requirements and types of equipment items:
   OEMs, Naval stores and Machinery & spares
3. Procurement/TCMS/ Inspection processes and payments
4. Registration/Sources development processes
5. Tender enquiries

Presentation on the above by couple of officers from
MO MB Question Answers

11.45 AM to 12.00 PM: (Tea time)

12.00 PM to 12.20 PM: (Session continues)

13.00 to 13.30 PM: Lunch Break

12.20 to 12.45 PM:

Event: Shree Refrigerations have proudly sponsored this Conclave. The company has grown exponentially under the able leadership of the CMD Shri Ravalnath Shende recently they had entered IPO. They have been proudly supplying to the Indian Navy and Mazagaon Dockyard and Goa Shipyard Limited. We look forward to their sharing of their exclusive experience for the benefit of MSME

12.45 PM to 13.00 PM:	**Event:** Address on MSMEs by Mr Prashant Joglekar , Director Defence MCCIA . He has been working meticulously for Defence equipment manufacturers
13.00 PM to 13.30 PM: Snack time	
13.00 PM to 14.15 PM:	**Event : IREL** Presentation by Rare Earth Elements India Limited, Atomic Energy, Gov of India.
14.15 PM to 14.30 PM:	**Event :** Address by Australia Trade and Investment Director Defence Lt Cdr Bidishia (Rtd)
14:30 PM to 15:00 PM:	**Event :** Mazagon Dock Shipbuilders Limited Presentation by MDL on the registration, indigenization and procurement processes. Mr HR Singh, GM (Material) and Mrs Amruta Bhandarkar, Chief Manager, Material and MIS Question Answers
15.00 PM to 15.15PM: Tea Time	
15.15 PM to 15.45 PM:	**Event :** Presentation on SAMAR Assessor Dr Bhushan Joshi , He is Ex DRDO
15.45 PM to 16.30 PM:	**Event: NMRL/DRDO Presentation** Dr D Ratna, Scientist G has been nominated from NMRL (Naval Material and research Laboratory from Ambernath). Innovation, indigenization, OEMs - Question Answers
16.30 PM to 17.00 PM:	**Event: GEM:** Presentation We keep listening about the issues working with GEM.
17.00 PM to 17.30 PM:	**Event:** Working with Defence industry Presentation by Bharat Forge
Vote of Thanks	
19.00 PM: Dinner get together	

SHREE™ REFRIGERATIONS

ABOUT SHREE REFRIGERATIONS LIMITED

Shree Refrigerations Limited is a leading Indian company with 35+ years of expertise in defence grade HVAC and refrigeration. Known for award winning, Make in India solutions with a strong focus on indigenisation, Shree Refrigerations has successfully developed technologies that meet the most demanding naval environments. Its portfolio includes advanced HVAC cooling systems & refrigeration plants designed to enhance operational efficiency while ensuring sustainability. Trusted by the Indian Navy and the only Indian company to have naval registrations across all three key domains — Chillers and Refrigeration Plants, Turnkey HVAC & R Solutions, and Electrical Control Panels. Shree Refrigerations continues to set industry benchmarks with its commitment to quality, engineering excellence, and mission-critical reliability.

LOCAL TO GLOBAL

Our Director Mrs. Rajashri Shende interacting with **Hon.Prime Minister Shri Narendra Modi ji** at Udyam Bharat Conclave.

Def Tech Conclave : 08 Aug 2025
List of Exhibitors :

1. Shree Refrigerations
2. Shree Refrigerations
3. Twintech Control Systems
4. DSA Electro Controls
5. Revine Technologies
6. i4 Marine Technologies P Limited
7. i4 Marine Technologies P Limited
8. Kaustubha Udyog (Orion Instruments)
9. Adisan Systems
10. Adisan Systems
11. Bharat Forge

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Group members from the Organisers of the DefTech Conclave present the Defence Industrial Corridor report to Dr. Medha Kulkarni, who later submitted it to the Hon'ble Defence Minister

The program begins with an opening session at 9:30 AM, followed by a keynote presentation by the Director of Indigenisation, Naval Headquarters, New Delhi, focusing on the roadmap for indigenisation in naval technologies. This segment will address critical areas, including vendor partnerships, IP rights, testing procedures, and developmental contracts, with a special emphasis on opportunities for Indian MSMEs and technology developers.

A dedicated session on Vendor Development by the Indian Navy will demystify procurement mechanisms, registration norms, inspection protocols, and tender processes. Officers from the Materials Organization, Mumbai will provide in-depth presentations, ensuring attendees gain clarity on how to become part of the Indian Navy's supply chain.

Post lunch, the IREL (India) Limited, under the Department of Atomic Energy, will shed light on the global rare earth crisis and India's emerging solutions in critical materials. This is particularly timely as India seeks to reduce its dependency on imported rare earths, essential elements for defence, electronics, and clean energy technologies.

Strategic Industry and International Engagements

The afternoon sessions will showcase major players and government organisations at the forefront of defence indigenisation. Defence establishments will share insights into collaborative development models, followed by several sessions focusing on defence manufacturing, critical minerals, and empowerment of MSMEs in the Defence Technology ecosystem.

India's leading private defence manufacturer Bharat Forge will present on the evolving dynamics of working with the Indian defence sector, reflecting the growing role of private enterprises in building sovereign capabilities.

Mazagon Dock Shipbuilders Limited (MDL) will provide an overview of their procurement and registration process, alongside their efforts to boost exports and indigenisation. A senior MDL official will address queries from potential vendors and industry players. The conclave will culminate with a Vote of Thanks and an informal dinner gathering, an opportunity for deeper engagement and networking among defence stakeholders.

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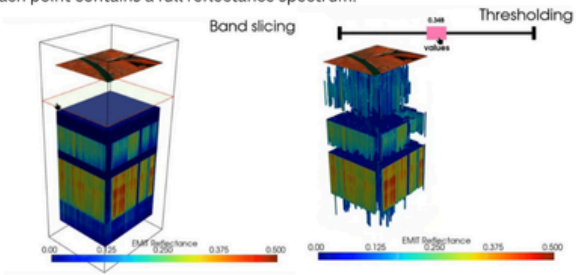
HyperSpectral Image Analysis for Rare Earth Elements(REE)

Hyperspectral imaging collects and processes information from across the electromagnetic spectrum. Unlike conventional imaging which captures three bands (red, yellow, green) or multi-spectral imaging (which may capture 4-12 bands) Hyperspectral imaging captures collects over hundreds of narrow spectral bands across a wide range of wavelengths from visible to infra-red.

HSI captures 3D data cubes, where two dimensions represents spatial information and the third dimension captures the spectral information of each pixel. The result is what is called as a hypercube

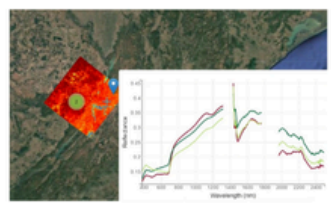
$$[x, y, \lambda]$$

Here each point contains a full reflectance spectrum.



HSI for mineralogy is supposed to be well developed. Airborne imaging can identify many minerals, and their associations with valuable resources like gold and diamonds are well established. Due to the economic potential of rare earth minerals, new research is focussed on identifying hyperspectral signatures for minerals like Neodymium(Nd), Yttrium (Y) and Scandium (Sc). HSI can be used to indirectly detect REEs by identifying host minerals or alteration patterns that are typically associated with REE deposits. Many REE-bearing minerals (like monazite, bastnäsite, xenotime) have distinct spectral absorption features, especially in the Short-Wave Infrared (SWIR) region (1000–2500 nm). Current research is also focused on understanding how oil and gas leaks from pipelines and natural wells affect vegetation and alter their spectral signatures.

The Bayan Obo mine in Inner Mongolia, China, is the world's largest deposit of rare earth elements (REEs)—accounting for over 40% of global REE production. It also contains iron and niobium in addition to REEs. Researchers and exploration geologists have used hyperspectral imaging (HSI), particularly in the VNIR–SWIR range (400–2500 nm), to study and map the mineralogical composition and alteration zones in the area.



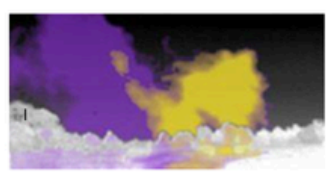
HyperSpectral Imagery of Koraput in Odisha, one of the largest bauxite mines owned by NALCO

HSI is especially valuable here due to:

1. Extensive surface exposure
2. Distinct alteration halos
3. Spectrally diagnostic minerals associated with REEs

Researchers used hyperspectral data from HyMap, AVIRIS, and PRISMA to detect host REE minerals.

n warfare, Chemical Warfare Agents (CWAs) and Toxic Industrial Compounds (TICs) represent some of the most dangerous threats to field troops. Soldiers may encounter a broad range of chemical hazards both during combat and in surrounding environments. These threats are often invisible and difficult to detect. Hyperspectral imaging, however, provides a powerful standoff capability for detecting, identifying, and visualizing such chemical agents from a distance.



About the Author

Aakash Gupta
C.E.O. & Founder : Think Evolve Labs

Aakash Gupta, CEO and Co-Founder of Think Evolve Labs, brings 12+ years of experience in Data Science, AI/ML, and Cloud to helping businesses scale through smart, data-driven strategies. Previously VP of Data Science at Edelweiss, he's a patent holder, Kaggle awardee, and IIM Indore alum with a deep passion for tech-powered innovation and impact.

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At ThinkEvolve we are inspired by human-nature interaction over the millennia and how it has shaped history. Just as humanity has evolved crops, animals and tools to adapt to this fast changing world, we help businesses evolve and grow by harnessing the power of AI. At ThinkEvolve we believe in thinking deeper, innovating further and evolving smarter. This has manifested in multiple delighted clients and awards. ThinkEvolve has won the Economic Times DigiTech Award, Telangana Grand Challenge, Norwegian AI institute Sustainability Challenge and European Space Agency (ESA) Challenge.

Featured Awards

TELANGANA FOREST AI GRAND CHALLENGE 2022

Government DIGITECH AWARDS '23

NORA.ai
Road AI Challenge
Winner 2023

esa
European Space Agency
Contest 2021

Patents

PATENTED

US Patent Granted for AI based Segmented Numeral Character Recognition and Reader in 2022 (US11430236B1).

Customer Testimonials

★★★★★

ThinkEvolve has presented high creativity and the ability to think outside of the box while maintaining the precision of the models. The choice and use of the algorithms were appropriate for the goals that the team had assumed. Along with creative solutions, the jury especially appreciated additional efforts that the group made to account for imperfect data and improve the accuracy of their algorithms.

Nora.AI and Skansa/Dittio
CEO of a ConstructionTech Company

★★★★★

As a pioneer in telemedicine, we strive to provide best in class patient service and innovative telemedicine solutions to our patients. Aakash was originally retained as a technical consultant to provide guidance for our deep learning/machine learning project team. Early on in the project it became apparent that he had much more to offer, and it made more sense for him to drive the project. ThinkEvolve has provided accurate estimates and nailed our time line while staying within our budget. We have been pleased with our choice of ThinkEvolve and we have more projects for them on the horizon.

Eddie Storey
CTO RediMD LLC

★★★★★

ThinkEvolve was chosen from a group of 59 startups based on their deep technical expertise. Their platform provides invaluable insights for assessing the fauna. With a single analytic view for the entire sanctuary.

Shri Rohit Gopidi
DFO Amrabad Tiger Sanctuary

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vaibhav.maheshwari@velan.com

Technical Process: Rare Earth Material to Magnet

From Rare Earth Material to Magnet: A Condensed Overview. Rare earth magnets are powerful permanent magnets made from alloys of rare earth elements—primarily Neodymium-Iron-Boron (NdFeB) and Samarium-Cobalt (SmCo). Despite being called "rare," these elements are abundant but difficult to extract.

1. Mining & Refining
- Extraction: Rare earths like neodymium or samarium are mined (mainly in China).
- Separation: Complex chemical and solvent processes refine these into pure elements.
- Alloying: Elements are combined with iron, boron, or cobalt to create specific magnetic alloys.

2. Alloy Melting & Ingot Formation
- Melted in vacuum induction furnaces to prevent oxidation.
- Cast into ingots for further processing.

3. Pulverization
- Crushed & jet-milled into fine powder (~micron scale).
- Conducted in inert gas (argon/nitrogen) to prevent oxidation.

4. Pressing & Magnetic Alignment
- Powder pressed in molds under 4 Tesla magnetic field for crystal alignment.
- Die pressing or isostatic pressing methods used to maximize magnetic strength.

5. Sintering & Thermal Processing
- Heated to ~1000°C in vacuum furnaces (sintering) to densify and bond particles.
- Followed by tempering to refine grain structure and improve performance.

6. Machining
- Sintered magnets are brittle and are ground to precise shapes using diamond tools.

7. Coating
- Neodymium magnets are coated (e.g., nickel, epoxy) for corrosion protection.
- SmCo magnets have better natural resistance.

8. Magnetization
- Finished magnets are exposed to strong magnetic fields to lock in polarity.

9. Quality Control
- Each magnet is tested for strength, dimensions, and defects, then packaged.

This powder metallurgy process is key to producing rare earth magnets used in EVs, turbines, electronics, and more.

Author - Manish Bharadwaj - Mail for full article & technical advice - manish66@gmail.com

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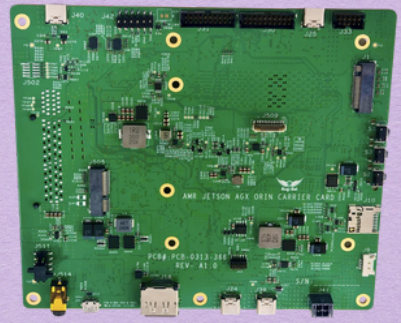
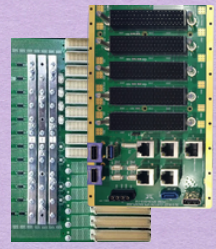


AI Controller Card



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- Coil Resistance : 800 to 1500 W

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- Threading Length : 50/ 76/114/152 mm
- Sensor Connector : 2 Pin Male Assembly mating with MS connector
- Operating Temp : -40 °C to +106 °C
- Coil Resistance : 800 to 1500 W

3/8" 24 UNF THREADS

E UIVALENT TO **AMERICAN BRAND**

RETI SPEED SENSOR
- Threading Length : 70.0 mm
- Sensor Connector : N.A.
- Operating Temp : -40 °C to +106 °C
- Coil Resistance : 800 to 1500 W

3/4" 16 UNF THREADS

E UIVALENT TO S IT ERLAND BRAND

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- Sensor Connector : N.A.
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- Output : Dual

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RPM ndicator LCD Display
- Supply : 8 to 36 VDC
- Input : MPU
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- Supply : 8 to 36 VDC
- Input : MPU
- Size: 96 X 96 X 50 mm

Greetings from : Counterpoint Technologies Private Limited Website : www.techcounterpoint.com

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- Solutions for improving the Intrusion Detection / Security of Naval Establishments
- Collaboration / Solutions for Forged Wheels for Indian Railways / RRTS / HSR / Metros / for Coaches / Locomotives
- Collaboration for Ship Building at Burn Standard Ltd.

Meet us at “Atmanirbharta in Naval & Material Technologies” Technical Conference, at Bharat Ratna Dr. APJ Abdul Kalam Auditorium, Parshan, Pune, on 08-08-2025, where Counterpoint Technologies Pvt. Ltd. will Collaborate with your company, for smart and New Technologies which are Proven abroad, but that have not yet come to India. We have 46 years technical / technological experience in pioneering work in advanced railway systems, smart mobility, international collaborations, and infrastructure consultancy. We have contacts in the Indian Government, who appreciate our Ideas and Our Strategies and our Value addition that we give, for Nation Building.

Offices : Delhi | Lucknow | Gurgaon | Singapore

Contact : Ravi Shanker Kochak, CEO

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Notes / Observations

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