

A BRIEF REPORT ON WEBINAR “REQUIREMENT OF STEEL AND OTHER STRATEGIC MATERIALS FOR DEFENCE SECTOR” ON 06.03.2021

A Webinar was organized by IIM Delhi Chapter on “Requirement of Steel and other Strategic Materials for Defence Sector” on 6th March 2021 on the occasion of Platinum Jubilee celebrations of IIM. Shri K K Mehrotra Chairman, IIM DC welcomed Dr. Amol A Gokhale, President, IIM, Dr. R Balamuralikrishnan, Defence Metallurgical Research Lab, Hyderabad and member, National Council, IIM, eminent speakers in the Webinar and participants of the Webinar.

Dr. Gokhale was the Chief Guest of the Webinar. In his address, he stated that the topic of the Webinar is very pertinent in the context of our India’s initiatives in the area of Atmanirbhar Bharat.



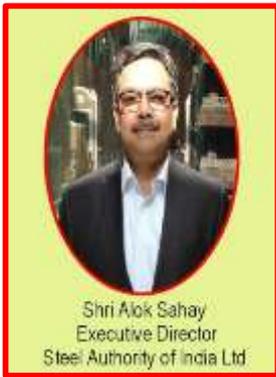
In his address, Dr. Gokhale touched upon the definition of strategic materials in the context of production of steel for meeting the defence needs of our country. He stated that the strategic steels should have excellent strength. It should have light weight and should be corrosion resistant. It should be substitute for steel being presently imported by us. The producers of strategic steel should have their own technologies. Many countries are ahead of us in production of strategic steel materials for defence sector.

He emphasised that an all out efforts should be made to be ahead of other countries in production of value added steel. Particular mention was made by him in production of strategic steels by Rourkela Steel Plant of SAIL and ArcelorMittal Nippon Steel India and MIDHANI. They have high level of expertise in production of special steels.



Dr. R Balamuralikrishnan, Defence Metallurgical Research Lab, Hyderabad, and Member, National Council of IIM, was the Guest of Honour in the Webinar. In his address, he stated that steel is very important for our economic development. A lot of work has been done by domestic steel producers to increase share of special steel production. The special steels find applications in atomic energy, space, defence and Railways. He also mentioned about the National Steel Policy 2017. The policy envisages steel production capacity of 300 MT by 2030.

Shri N K Kakkar, Hon. Secretary, gave an introductory profile of Shri Alok Sahay, ED (Commercial) SAIL and requested Shri Sahay to share SAIL’s perspective on production of special steel to meet Defence Sector requirements.



Shri Alok Sahay, ED (Commercial) SAIL, stated that 50 years back SAIL collaborated with DMRL to set up plate mill at RSP. SAIL is also producing special steel for aircrafts from 2007. He stated that 96% of the steel requirement for Naval workshops is being produced indigenously. SAIL can meet the entire requirement of steel for naval sector. SAIL has got a lot of support from DMRL for production of steel for Defence Sector. SAIL is also supplying steel for INS Vikrant. It takes a long time to develop special types of steel. DM 249 grade of steel was developed by Rourkela Steel Plant in collaboration with DMRL. This marked the end of presentation of Shri Sahay. Thereafter Shri Kakkar gave an introductory profile of Shri Duraiswamy.



Shri M. Duraiswamy, Dy. GM, BDL, talked about missiles being produced by BDL. He informed that a missile is a projectile, guided and controlled from the launch to the terminal stage with or without propulsion and delivers the warhead for inflicting lethal destruction to the designated target.

A missile system consists of

- Launch System
- Target Surveillance and Tracking Radars System
- Command Control Communicative and Intelligence System
- Missile Replenishment System
- Pome Supply System
- Survey Vehicle, Radar Repair & Vehicle Repair Vehicle
- Fuel and Oxidise Carrion
- Missile Automates Health Check System

BDL uses the indigenous & imported technology in production of missiles. The following material is used in missile manufacturing:

- Steel & Its Alloys
- Aluminium & Its Alloys
- Super Alloys
- Molybdenum
- Composites
- Rubber & Plastics
- Explosion Material

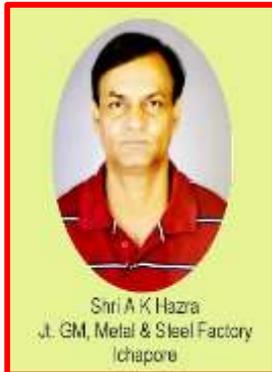
The steel used in the manufacturing of missile should have the following characteristics:

- High Strength to Weight Reduction and Corrosion Resistance
- High Fracture Toughness and Fabricability Creep Resistance

➤ Microstructural Material Missile

Maraging Steel is desirable for Missile Rocket Motor as its micro crack tolerance levels are high due to high fracture toughness, its ageing temperature is approx. 480°C and it has good weldability.

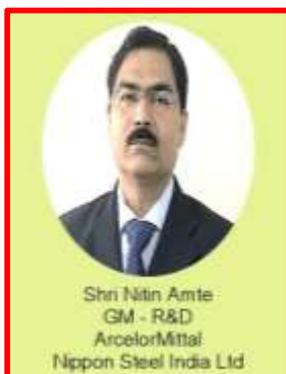
He also spoke about material which is imported and also sourced indigenously for manufacture of different kinds of missiles.



After conclusion of this presentation Shri N K Kakkar gave an introductory profile of Shri A K Hazra Jt. GM, Metal and Steel Factory, Ichapore and requested him to proceed with his presentation

Shri A K Hazra stated that Ordnance Factor Board (OFB) is having 41 ordnance factories located across India. Each factory is having its own product profile. The profile varies from clothing to armoured vehicle.

As regards steel, some factories of OFB produce plain carbon steel, low alloy steel, special alloy steel to meet hardware requirement of various arms & ammunitions weapons and armoured vehicles etc. The factories also produce grades of cast irons, spheroidal graphite cast iron for hand grenades and number of other products. The Defence Sector is heavily using various type of steel like carbon steel, alloy steel, Aluminium-Alloys, Ti-Alloys, Cu-Alloys and Ni-Alloys etc. Shells are also being produced by OFB factories. Steel is the common material for shells.



This marked are conclusion of presentation of Shri Hazra.

After this Shri N K Kakkar introduced Shri Nitin Amte, GM, R&D ArcelorMittal Nippon Steel and requested him to present AM/NS India's perspective on "Special Steel for Defence Applications: AM/NS India efforts towards Atmanirbhar Bharat".

In his presentation, Shri Nitin stated that the goal of AM/NS India is to create smarter, more sustainable steels for India and the world: AM/NS India is developing and producing innovative high quality steel products many of which are import substitutes and go a long way in creating a self-reliant India - Atmanirbhar Bharat under the Make-in-India campaign. He touched upon the products profile of flat products being produced by AM/NS India.

He stated that the following steels are being manufactured by AM/NS India for Defence Sector:

- ARMAPRO 500 Bullet proof steel for armouring combat vehicles and civilian vehicles.
- High Strength Ballistic resistance steel plates for artillery guns
- Ultra High Strength special alloy steel

- Weldable Homogenous Armour Steel Plates for ballistics tanks
- High Strength Quenched and Tempered Structural Steel
- High Strength and tough steel for warships hull structures and Quench and Tempered plates
- High Strength steel plates for submarine applications

He mentioned that AM/NS India has the Capability and Capacity to produce high strength quality steel plates required for the land and naval defence applications. He further stated that AM/NS India is fully geared up to actively participate in our Honourable Prime Minister's mission of Atmanirbhar Bharat.

After conclusion of the above four presentations, Dr. Gokhale, President appreciated Delhi Chapter, for organising this Webinar. Dr. Gokhale further stated that Delhi Chapter is one of the active Chapters of IIM organising various technical activities.

Shri K K Mehrotra, Chairman, delivered vote of thanks.

The Webinar was attended by about 40 participants across India.

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