

ALL INDIA INDUCTION FURNACES ASSOCIATION



AIIFA

INDUCTION FURNACE NEWSLETTER

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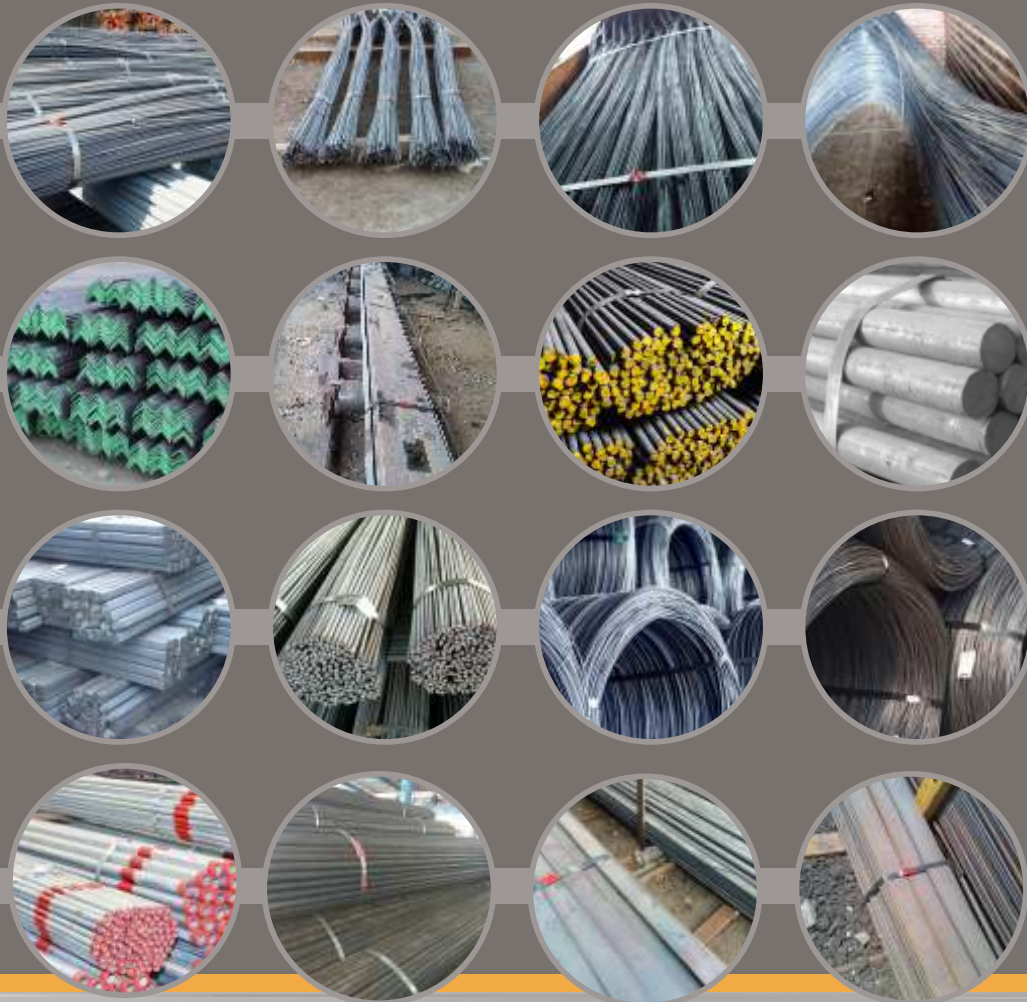
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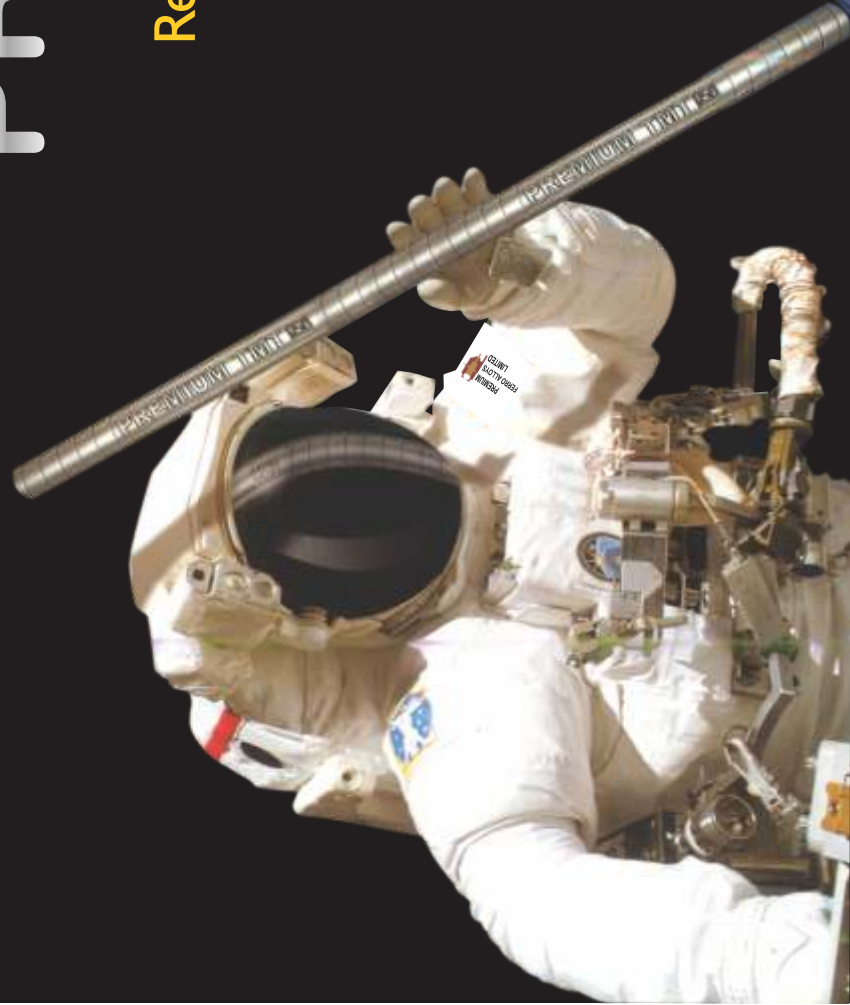
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ENVIRONMENT FRIENDLY STEEL



32nd

AIIFA'S 32nd International Conference on
22 Oct. 2018, Hotel Le-Meridien, New Delhi

**Emerging, Innovative & Future (EIF)
technology for manufacturing of
Clean, Green, and
Economical steel in India:
National Steel Policy 2017**

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AIIFA's 32nd INTERNATIONAL CONFERENCE

on

Emerging, Innovative & Future (EIF) technology for manufacturing of Clean, Green, and Economical steel in India: National Steel Policy 2017

22nd October 2018, Hotel Le-Meridien, New Delhi

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BACKGROUND

Steel is a necessity to the development of any modern economy and is considered to be the backbone of human civilization. The level of per capita consumption of steel is treated as an important index of the level of socio-economic development and living standards of the people in any country. All major industrial economies are characterized by the existence of a strong steel industry and the growth of many of these economies has been largely shaped by the strength of their steel industries in their initial stages of development. While steel continues to have a stronghold in traditional sectors such as construction, housing and ground transportation. The uses of special steels are increasingly in engineering industries such as defence, space, power generation, petrochemicals and fertilizers.



India occupies a central position on the global steel map, with the establishment of new state-of-the-art steel mills, acquisition of global scale capacities by players, continuous modernization and up gradation of older plants, improving energy efficiency and backward integration into global raw material sources.

In 2017, the world crude steel production reached 1689 Million tonnes and showed a growth of 3.67% over 2016. China remained world's largest crude steel producer in 2017 (832 mt) followed by Japan (105 mt), India (101.4 mt) and the USA (82mt). India is currently the 3rd largest steel producer in the world and poised to become the 2nd largest steel producer in the world in a couple of times. However, India's per capita consumption is low at 68 kgs compared to the world's average at 208 kgs. To reach to a level of 160 kg per capita consumption, the Government of India has set a target of producing 260 million tonne by 2030.

In India, steel is produced through two routes namely Blast Furnace- Basic Oxygen Furnace (BF-BOF) route which is limited to large integrated steel plants and the other being the electrical route which is more vibrant and widespread. Steel produced through electrical route consists of the sub-sectors of Direct Reduced Iron (DRI), Electric Arc Furnace (EAF), Electric Induction Furnace (EIF) and Steel Re-rolling Mill sector (SRRM). This sector is of prime importance in the overall supply chain of steel production in the country. The sector contributes over 55% of the overall country crude steel production and over 65% of the long finished products in the country. The sector accounts for direct employment of over 2 million people and supports livelihood for another 3 million people. With India's ambition projection of 300 MT crude steel capacity by 2030; this sector is also expected to grow exponentially.

Out of entire steel fraternity producing steel through electrical route, the electric induction furnace (EIF) sector alone consist of over 1187 units and the steel re-rolling mill (SRRM) sector consists of around 1300 units. These units fare better than their EAF counterparts

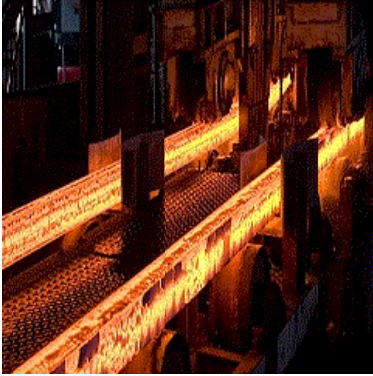
mainly because of their low cost of production and other factors related to local market supply demand conditions. Over time, the Induction Furnace sector has witnessed considerable technological upgradation with better charge mix of DRI and refining facilities. However, an analysis of the production of crude steel through various process routes indicate that the above performance has been contributed largely by the strong trends in growth of the electric route of steel making, particularly the induction furnace route (encouraged by strong growth in sponge iron)

CRUDE STEEL PRODUCTION – BY Process (mt)					
	2013-14	2014-15	2015-16	2016-17	2017-18
Oxygen	35.50	37.60	38.40	42.00	47.50
EAF	18.60	23.12	24.60	28.96	26.42
IF	27.57	28.28	26.79	26.97	29.22
Total	81.67	89.00	89.79	97.93	103.14
Source: JPC					

Further, shares of the various routes in total production, Electric Arc Furnace route is dominated by the Induction Furnace route, which has emerged as a key driver of crude steel production in the country.

PROCESS ROUTE SHARE IN TOTAL PRODUCTION (%age)					
	2013-14	2014-15	2015-16	2016-17	2017-18
Oxygen	35.50	37.60	38.40	42.00	47.50
EAF	18.60	23.12	24.60	28.96	26.42
IF	27.57	28.28	26.79	26.97	29.22
Total	81.67	89.00	89.79	97.93	103.14
Source: JPC					

The contribution of EIF sector to the country during the last financial year i.e. 2017-18 is around 29 million tonne of steel. However, most of the units in these two sectors fall under the category of small and medium enterprises. These units are scattered across the country and mostly form part of family run businesses. Most of these small and medium enterprises units have faced huge losses in the recent years. A number of the companies are experiencing difficulty to survive and are on the verge of collapse.



The reason for such declining conditions of the small and medium enterprises steel units can be sighted to a number of reasons like demand deficiency, decline of trade competitiveness and surge in imports, financial fragility, excessive taxation, low availability of skilled manpower, among others. The future of steel manufacturing through electric route will be at threat, unless the entire fraternity comes together and solves the road-blocks under joint capacity.

The steel industry in India is going through a massive transformation. The concept of stand-alone induction furnace units and stand-alone steel re-rolling mill are slowly disappearing and the different sectors are slowly moving towards a common umbrella. The issues and road-blocks are mostly common to all sub-sectors. For a sustainable future of the steel producing fraternity through electrical route, it is thus important that these sub-sectors come forward and jointly work hand in hand with the Government.

AIIFA's 32nd International Conference was a platform created for the entire steel fraternity producing steel through electrical route. The conference was supported by SAIL, RINL, JPC, SRTMI and NISST which shows the unity of Indian Steel Industry to work together to bring steel sector at new heights. The conference was unique in terms of its stature; its vast reach; the industry representations; topics covered and effort to build a road-map for the new India.

THE ORGANISERS

The All India Induction Furnaces Association (AIIFA) was established in 1987, initially to represent the stainless steel casting units. Gradually alloy steel casting units were included under the association. With emergence of mild steel casting, AIIFA became a more familiar name within the industry. Today, the association represents a significant section of the steel industry producing steel through electrical route.



Today, the association has over 1000 members comprising of induction furnace units, rolling mills, casting units, fabricators and manufacturers. With its registered office located in New Delhi, the association has eleven different chapters located at **C**hennai, **H**yderabad, **M**umbai, **I**ndore, **C**uttack, **B**hiwadi, **M**andi **G**obindgarh, **L**udhiana, **G**oa, **K**ashipur and **G**uwahati.

The role of AIIFA is to act as a bridge between the Government and the industry for driving various schemes, participating in the Government's research programs and ensuring capacity enhancement of its units. It also play a vital role to bring various issues of the industry with various related Ministries and concerned Departments and also create awareness of programs and policies of Central/State Government among the members of the association so that their knowledge could be enriched and also could help to adopt latest route of steel making/processing (EIF-Continuous Casting of Steel- Direct Rolling of Hot Billets into finished

products) for production of quality steel and also for mitigation of GHG emission. The Association also work hard to enhance the capacity of the industry to compete in the Global Market. The association brings out monthly newsletter featuring important news on iron and steel industry and custom and excise related notification/circulars etc.

In recognition of attaining excellence in production, quality control, energy efficiency, overall entrepreneurship, etc., the Association gives prestigious Dhatu Rachna Award (for excellence in Induction furnace units), Ispat Rachna Award (for excellence in stand-alone rolling mills) and Ispat Udyog Ratan Award (for excellence in composite units) to the selected units every year.

Since last three decade, the association has been conducting national/ International level meets, on yearly basis, to share and discuss the progressive ideas and ways to make the steel industry stronger. The past initiatives, taken by the association, in this direction, have made grand success in terms of interacting with the Hon'ble Ministers and top bureaucrats of the concerned Ministries and also acquainted with the policies and program of the Government for achieving 300 million tonne target of steel capacity in India by 2030.

Like every year, this year too AIIFA successfully presented its 32nd edition of international conference to showcase the disruptive and cutting-edge technological innovations in the steel and associated sector which can bring in a big transformation in the operational efficiency, cost-effectiveness and take the whole steel making process to the next level by Electrical route. The idea was to bring forth the innovations which can be co-opted and adopted rather than getting reinvented with an intent to channelize the available resources for researching, innovating and achieving the NEW & the NEXT.

ABOUT THE CONFERENCE

AIIFA's 32nd International Conference was designed under the pertinent theme of "**Emerging, Innovative & Future (EIF) technology for manufacturing of Clean, Green, and Economical steel in India: National Steel Policy 2017**". The strong efforts made by the organizers aimed at bringing the entire steel sector under a common umbrella; making consolidated efforts to resolve the critical issues; strengthening the sectoral presence and importance and building foundations for a sustainable future.

The 32nd international conference organized by AIIFA was one such opportunity for the entire secondary steel fraternity to come and display strengths and build foundation for a sustainable future.

THE CONFERENCE AGENDA

The final conference agenda followed during the 32nd AIIFA conference is placed below for perusal:

9:00 – 10:00	Registration
10:00 – 12:40	Inaugural Session <ul style="list-style-type: none"> - Welcome Address by Shri Sandeep Jain, President AIIFA - Theme Presentation by Shri Kamal Aggarwal, Hon. Sec. General, AIIFA -Release of Handbook on Indian Steel Sector - Release of AIIFA Memorabilia-2018 - Announcement of AIIFA Awards- 2018 - Address by Guest of Honor - Inaugural Address by Chief Guest -Valedictory
12:40 – 1:45	Technical Session – 1 <ul style="list-style-type: none"> -Saving in Steel making through Solar Energy - Important Suggestions on Sulphur & Phosphorus and Role of Refractory In Induction Furnace Steel Making -Tunnel Kiln: A techno-economic Route of Sponge Iron making - Next Generation Refractory Lining Solution for Induction Furnace - Concluding remarks by Chairman
1:45 – 2:00	LUNCH

2:00 -	Technical Session – 2 <ul style="list-style-type: none"> - Importance of Clean Steel Making – why and how? -Advantages of Steel making through Induction Furnace and refining Alternatives -DIFOC – Powering the growth of steel making through induction route With benchmark performance in Energy consumption & productivity -Productivity Improvement and Energy saving opportunities -Operation of Induction Furnace from the view point of a melter & Duration - Concluding Remarks by Chairman
	Technical Session –3 <ul style="list-style-type: none"> - Role of Spectrometer for quality steel production – Profits & Profitability -ICEX Steel long futures contracts as a price risk insurance tool - Concluding Remarks by Chairman

THE VENUE

The venue for the conference was Hotel Le-Meridien, Windsor Place, New Delhi-110001, located in the heart of the city. The iconic glass building of Le Meridien New Delhi has been recognized as one of the 100 Icons of Delhi. The hotel is located close to the institutions of both power and pleasure. The hotel towers over the historic landscape of Lutyen's Delhi surrounded by the President Palace –Rashtrapati Bhawan , Parliament House, Ministries, Government Institutions and the notable landmark- India Gate. Convention centers like Pragati Maidan and Vigyan Bhawan are in the close vicinity of the hotel. The main shopping hub Connaught place and the shoppers delight Janpath market, is within walking distance from the hotel. It's a perfect getaway for a business traveler who is also looking for some recreation nearby in the evening



EVENT OBJECTIVE

AIIFA's 32nd International Conference on “Emerging, Innovative and Future Technology for manufacturing of Clean, Green and Economical steel in India: National Steel Policy 2017” was a unique forum for deliberation between the Government and the Steel fraternity producing steel through the electrical route. The main objectives of the conference were:

- To highlight the current strength and opportunities of the sector
- To brainstorm on key bottle-necks for development in the sector.
- To showcase latest trends, technologies and R&D initiative taken up for the sector.
- To draw a road-map for sustainable development of the sector.
- To stress on the importance of energy efficiency and quality management for the sector.
- To stress on the importance of representing the entire sector under a single umbrella.

THE INAUGURAL CEREMONY

The event was inaugurated by Chief Guest for the event, Shri Chaudhary Birender Singh, Hon'ble Union Minister of Steel, Government of India in the august presence of dignitaries from Ministry of Steel, Government of India; officials from various government departments; entrepreneurs and flag-bearers from industry, members of AIIFA and various other industry associations, representing companies comprising of manufacturers and consultants related to the steel industry and media partners.

Photographs Lamp Lighting





THE WELCOME ADDRESS

The lamp lighting ceremony was followed by the welcome address delivered by Shri Sandeep Jain, President, AIIFA. In his address, Shri Sandeep Jain welcomed the **chief guest of the conference Shri Chaudhary Birender Singh, Hon'ble Union Minister of Steel**, Government of India and thanked him, for his gracious presence in the event has given a new dimension. Shri Jain also welcomed **Ms. Ruchika Chaudhry Govil, Joint Secretary, Ministry of Steel, Government of India** and stated that it was only under her brilliant guidance and support, AIIFA has been able to organize the event at such a scale. Shri Jain while welcoming **Shri Naveen Jindal, Chairman, JSPL** highlighted that he has always been a mentor and patron for the association and as a result the association has been achieve a new height and dimension under his able guidance. Shri Jain also welcomed **Shri Mukesh Bhandari, Chairman, M/s Electrotherm (India) Ltd.**, and highlighted that the industry as a whole is grateful to Electrotherm team for their sincere efforts towards innovative technology and ideas to bring in a transformational change to the small and medium enterprise steel sector.



Shri Jain also welcomed all dignitaries and guests from the Government, various departments, R&D institutes, industry, associations, manufacturer and consultants and other steel stakeholders. **He underlined that the theme of this year's event was chosen under based on its appropriate meaning in current times.**

He stated that the Indian economy is steadily getting stronger, which is a positive sign for industries and business houses. He also urged that all sub-sectors of the fraternity producing steel through the electrical route should come under a single umbrella and jointly build and work towards a sustainable road-map. He mentioned that the mission 2030 of enhancing capacity of steel production to 300 MT is a wonderful opportunity for the small and medium enterprise to multiply their production. However, he pointed out at some bottle-necks for development of the sector which jointly needs to be sorted out.

Mr. Jain reiterated that the AIIFA has been an effective link and medium of communication between the Induction Melting Furnace units and various Ministries of Government of India and Professional Institutions including R&D Centers. The Association represents on various

committees of Ministry of Steel and other bodies of Government of India dealing with statutory regulations, policy making, quality standardization, etc. related to the iron and steel industry.

Mr Jain also stated that the Association, besides raising various issues with the government authorities for redressal and taking part in Policy making, disseminates latest and important techno-economic information to its members, brings out monthly newsletter featuring important news on iron and steel industry and Customs & Excise related notification/circulars, etc. One of the important initiatives by the association has been their annual event which focuses on latest trends and technologies and also on issues which are providing bottle-necks for the development of the sector.

India is growing and so is its steel sector. Shri Jain concluded by saying that for the steel industries to grow, it is important for them to be technologically updated and operationally efficient. He requested the delegates to actively participate during the technical sessions.

THE THEME ADDRESS

The welcome address was followed by the theme presentation delivered by **Shri Kamal Aggarwal, Hon. Secretary General, AIIFA**. He said that the Indian economy is steadily growing towards a new era of development. India proudly possess the third largest position among the global steel producing country and soon poised to become the second largest producer in a couple of time. The year 2017-18 created history as the country's crude steel production crossed the magical mark of 100 million tonne for the first time and stood at 103.13 million tonnes, an increase of 5.3% over 2016-17.

At the policy level, National Steel Policy 2017 was unveiled and laid down a long term roadmap of development of the domestic steel industry by 2030. The policy is providing preference to domestically manufactured iron and steel products in Government procurement sought to accomplish our Hon'ble Prime Minister's vision of "**Make in India**" with objective of nation building and also to encourage domestic manufacturing.



As per the National Steel Policy 2017 projections, BF-BOF route shall typically contribute to about 60-65% of the crude steel capacity by 2030, about 33-38% by EAF and IF route and remaining 2% by new emerging processes such as as Finex/Romelt/Hismelt etc. The Indian steel industry is currently operating at a capacity level of 134 million tonne. The present capacity utilization is hovering around 76%. As per NSP 2017 Projection, crude steel production by 2030 is expected to be about 255 million tonne with a capacity utilization of 85%. Considering 60-65% contribution coming from the BF-BOF route, it would account for about 155-165 MTPA steel and the IF/EAF route shall account for 85-95 MTPA production by the year 2030.

Today, India is the largest manufacturer of Induction Furnace as well as the largest producer of steel with the Induction Furnace route. Steel making by Induction Furnaces has grown not only in terms of overall capacity but also in terms of sizes of Furnaces. Today, Induction Furnaces upto 40t Capacity are in operation in India.

The advantages of the Induction furnace compared to the EAF are better yield as no oxygen is required, better homogenization due to stirring effect of eddy current, less fumes generation, can operate even in absence of power grid and most important is the low capital investment.

The Electric steel making route drastically reduce the GHG emission. The GHG emission level in conventional BF-BOF route is about 2.5-3.0 t/tcs whereas in electrical route it is about 1.6 – 1.8t/tcs.

In 2017 about 57% of India's steel was produced using electric based methods, which is the second highest proportion of electric based steel production among major steel producing country, after the United States. Two unique features of the steel industry in India have been the emergence of the electric steel making route, especially the induction furnace units and second, the reliance on coal to produce direct reduced iron.

The continuous increase in production of steel through electric route and its great success in India are mainly due to the factors like proven technology, easy availability of non –coking coal, acceptability of flexible charge-mix, lower investment and shorter gestation period. There are 320 sponge iron units, 48 Electric arc Furnaces and 1126 Induction Furnaces that use sponge iron and/or melting scrap to produce steel. The concentration of secondary steel sector is mostly in Odisha, Jharkhand, Chhattisgarh, Maharashtra, West Bengal, Punjab, Haryana and Gujarat.

Shri Aggarwal acknowledged the present Government's extended support to the sector which has helped the industry to come out of the shell and compete equally with the big players. He said that, the Government is in the midst of taking out "**End of life vehicle scrap policy**" to increase availability of Ferrous scrap in India. The country's first State-of-the- art scrap processing centre has already come up in Noida in collaboration with MSTC and Mahindra & Mahindra which will take care of collection and processing of internally generated scrap. With effective collection, processing and segregation, scrap availability will significantly improve which will boost the electric route of steel making and make it more competitive. This will also

give flexibility to steel producers to optimize their cost of production with respect to market demand.

The operation of EAF and IF is totally depended on the availability of electricity. The electricity is not sufficiently available in the country. The Government has been working closely with State Government to make Electricity available to steel industry at reasonable price to reduce the cost of production. Cheaper power availability will also help in boosting electric route based steel industry. By adoption of scrap based electric steel making, fresh iron ore requirement will also come down which will help in mineral conservation and meeting the long term objective of raw material security.

During his address, Shri Aggarwal shared AllFA's view of setting up a road-map for sector in line with the Government's ambitious target of enhancing steel producing capacity up to 300 million tonne by 2030. Elaborating on the subject, Shri Aggarwal stated that the road map of sponge iron based industry should be towards forward integration. Building large capacity units with facilities of DRI, Induction furnace and rolling mill under the same premises with direct rolling technology, is the need of the hour. In this process, the captive power generated through waste heat of DRI should be utilized in the induction furnace and rolling mills. Also, required quality needs to be adhered to. These integrated plants will have a better economics compared to the scrap based units. To maintain the required balance, the supply of the products, manufactured from these units should be restricted to the states of manufacturing".

"Scrap based units, on the other hand, should be concentrated in the states with lower power tariff. Efforts should be put towards building of industrial parks consisting of induction furnace and rolling mills. The availability of scrap can be ensured through policies such as end of vehicle life. Also, scrap shredding and processing can be considered as an industry with involvement of local players. Also, supports needs to be provided for open access power purchase. To avoid market fluctuations, the control of cost of raw materials and power tariff should be fixed at least for a period of 3 months" stated Shri Aggarwal.

During his address, Shri Aggarwal also pointed out the major barriers for development of the sector and requested the Ministry of take active steps to solve the same.

- Power is considered as a raw material for the electric induction furnace sector. The rise in power tariff and disparity between states has led to a closure of a larger number of units in past few years. Getting power through open access, it has been hampered by DISCOMs of various states by imposing cross subsidy and surcharges and wheeling and transmission charges so as to make open access of power unviable. Power is provided to the priority sector almost free and the same is recovered as cross-subsidy from the industry. This cross-subsidy needs to be eliminated for the industry to grow. Also, DISCOMs should be privatized, which will bring competition and lowering T&D

losses. AIIFA proposes “One Grid One Tariff” and also easier regulations for Open access power purchase.

- Presently 2.5% import duty is imposed on imported scrap. Scrap being the main raw material for the steel industry, It becomes difficult to compete. In many countries, import duty is not imposed on scrap. Hence, we request that the import duty on scrap should be zero.
- Another aspect is the “**End of life vehicle scrap policy**” which the Government is in the midst of taking out. India has over 18 crore vehicle; the vehicles with older life is dangerous for environment. If 2.8 crore of such vehicles are scrapped, it can be saved 320 crore liter oil thus 20 thousand crore rupees. This initiative will not only solve the problem of availability of good quality indigenous scrap but also helps to minimize the pollution level which is being caused by the older vehicles and ultimately it will increase the productivity of auto industries by 22%.
- Sponge iron is also one of the important raw materials to the sector. For better yield, the metallic iron content should be at the highest possible range with Sulphur and Phosphorus as low as possible. Hence, in order to ensure quality production from this sector, sponge iron sector should also be brought under the mandatory quality control order
- Since, Electric Induction Furnace (EIF) based steel units only use steel melting scrap/sponge iron (substitute of steel scrap) as raw material. The steel scrap is generated during processing of crude steel into finished products in integrated steel plants using raw materials like iron ore, metallurgical coke, lime stone etc. The sponge iron is also a substitute of steel scrap, which produces in rotatory kiln using iron ore and non-coking coal. It may be noted that the GHG emission in Integrated Steel Plant is around 2.8-3.0 tonne/tonne of crude steel and in sponge iron units is around 3.5-4.0 tonne/tonne of sponge iron. However, in EIF units, the GHG emission is in the range of 0.7 -0.8 T/tonne of crude steel.

From the aforesaid background, it has been established that the EIF route is producing negligible amount of GHG emission during steel making and is the best route of steel making from environmental point of view. As per the Steel Policy 2017, announced by Ministry of Steel, Government has decided that the present capacity of crude steel production should be enhanced to 300 MTPA by the year 2030.

Since share of steel production through EIF units/plants is 28%, the EIF based units of 30000 TPA are not economically viable. In view to achieve 300 MTPA capacity of Steel production, minimum size of EIF steel making unit, which are presently in the range of 25000 TPA to 30000 TPA must be 100000 TPA. If the EC of EIF units/plants is continued in the same range, the EIF units will grow like mushroom. This will require

huge land, infrastructure, logistics etc., and would be difficult for them to meet out the target according to National Steel Policy 2017.

Since, Induction furnace route of steel making adopting latest steel making and processing technologies namely hot charging of steel scrap/sponge iron in induction furnace, continuous casting of steel in place of conventional ingot casting, direct rolling of continuous cast of billets, the steel making through this would be the most efficient in terms of very low GHG emission.

- In spite of the notification no. 8(1)/2015-TD (vol-iv) dated 12th May, 2016, issued by the Ministry of Steel to eliminate the categorization of Primary, Secondary and other producers, none of the Government Procurement agencies like RDSO, CPWD, NHAI, MES, Ministry of Railways etc., are agreeing to use materials produced through Electric Induction Furnace route. If Ministry of Steel, Government of India is really serious in true sense to achieve the ambitious target of 260 MT of steel production by 2030, there is a specific need to give directives to various user departments to make necessary amendments in their internal procurement policy, so that small and medium units can also eligible to supply quality steel in ongoing or upcoming project of the government.
- AIIFA acknowledges the initiative taken by Ministry of Steel in developing a flux under a R&D program. NISST and NML have jointly developed this flux for dephosphorization of steel in induction furnace. Ministry of Steel is yet to take necessary action towards commencement of the commercial production of Pre-fused flux developed individually by CSIR-NML and NISST so that this sector could be capable to produce quality steel.
- Higher production will require expansion of projects which will require more investment and bank funding. However, bank finance is limited as they consider steel industry as negative. There is a large no. of NPAs among bigger steel plants; however, the no. is less for the units under our sector. However, the banks are still reluctant to extend finance to the steel units. The small and medium enterprise steel sector should be brought under priority lending to upscale their production capacity.

Shri Aggarwal concluded his speech saying “The electrical route of steel production is the greener way of steel making. Recycling of steel is the need of the hour. This is why we choose the conference title as: “Emerging, Innovative and Future Technology for manufacturing of Clean, Green and Economical Steel in India”. This time AIIFA has made a generous effort in bring the entire steel fraternity producing steel either through electrical route or BF-BOF route under a common forum. We have to jointly go ahead to attain the ambitious target set by Government of India.

LAUNCHING OF AIIFA MEMORABILIA & STEEL HANDBOOK

The theme address was followed by launching of the AIIFA Memorabilia-2018 and a Hand-book on the Indian Steel Industry producing steel through electrical route, by the dignitaries on the dais.



AIIFA'S ANNUAL AWARDS

The next was announcing of the AIIFAs national awards. It has been a long legacy for AIIFA who have been announcing the annual awards to its member industries in recognition of their overall operational excellence. The prestigious “**Dhatu Rachna**” award is awarded to Induction furnace units in recognition of their overall operational excellence and notable achievement during the past financial year. The “**Ispat Udyog Ratan**” award is for other units in the sector comprising of composite units, manufacturer or consultant in recognition of their overall operational excellence or any path-breaking work carried out for the benefit of the sector. The “**Ispat Rachna Award**” in recognition to overall operational excellence in stand-alone Rolling Mills. In addition to the above, this year AIIFA also gives “Life time achievement” Award to Shri Muni Lal Gupta, Founder of AIIFA, in recognition of his hard and honest work during his stay with AIIFA.







ADDRESS BY SHRIMUKESH BHANDARI, CHAIRMAN, M/S ELECTROTHERM (I) LTD

The award ceremony was followed by address the guest of honuor, **Shri Mukesh Bhandari, Chairman, M/s Electrotherm (India) Ltd.**

Biography of Mr Mukesh Bhandari, Chairman, M/s Electrotherm (India) Pvt Limited, Ahmadabad



Mr. Mukesh Bhandari is the Founder Chairman of Ahmedabad-based multi-product, multi-division company Electrotherm (India) Ltd. He is an Electrical Engineer of 1972 batch from Shri GS Institute of Technology & Science, Indore. Before establishing Electrotherm, Mr. Bhandari worked at R&D Centre of BHEL, Bhopal and GEC, Kolkata. He established Electrotherm in 1983 primarily focusing on technological products catering to

the needs of metallurgical industry. Today, Electrotherm is a well-diversified conglomerate having businesses in the field of Engineering & Projects catering to iron & steelmaking, foundry and heat treatment industries; transformer manufacturing; steel making; ductile iron pipe making; electric vehicles; renewable energy; special batteries; transmission line tower; and education.

With his passion for generation and conservation of energy Mr. Bhandari ventured into solar power arena in 2010 and a year later he acquired Firefly Energy, USA which was involved in the development of a Revolutionary Battery Technology – Microcell Carbon Foam Technology – that was born in the R&D Labs of CATERPILLAR. This Patented Technology has now been licensed to Firefly Batteries Pvt. Ltd., India. Solar division of Electrotherm created a kind of record by setting up a 15 MW Solar Power Station at PV Gujarat Solar Park, Charanka in record time of 59 days in the year 2012. Mr. Mukesh Bhandari is recipient of numerous awards including Young Electronic Engineer of the Year Award 1987 at the hands of the then **President of India, Giani Zail Singh**. Mr. Bhandari is an active member at various professional forums viz. Institution of Indian Foundrymen, World Steel Association, Indian National Academy of Engineering, ASM International, National Board of Electric Mobility (NBEM), etc.

During his address, **Shri Mukesh Bhandari, Chairman, Electrotherm India Pvt Limited, Ahmadabad** welcomed Hon'ble Union Minister of Steel, Government officials, community of scientists, representatives of associations and Chairman/CEOs/representatives of steel fraternity who attended 1st International conference on Emerging Innovative & Future (EIF) Technology for manufacturing of Clean, Green and Economical Steel in India.

Shri Bhandari touched upon the highlights of the National Steel Policy 2017. He thanked AIIFA for giving this opportunity to put his views before the one of the biggest family of steel production through induction furnace route. He informed that since last 30 years, AIIFA represented various forum in dealing with Government Bodies, statutory regulation, policy makers, quality standardization and because of this, it has made possible to produce almost 1/3rd steel production through this route.

Shri Bhandari said that steel making through IF started somewhere in mid-eighties. In the year 2017, world steel production was 1690 Million tonne. India became 3rd largest steel producer by producing 102 million tonne in 2017 from installed capacity of 134 million tonne. India produces about 30% of its production through IF route. NSP 2017 has set an ambitious target of steelmaking capacity of 300 million tonne by 2030. The steel production capacity that has been achieved in last 70 years has to be increased by almost more than 2.25 times in next 12 years. IF route will have significant role in achieving this target due to its lower CAPAX, competitive OPEX, lower gestation period, lower land intensity and possibility to install at the point of usage. This route is equipped properly with all the necessary facilities like LRF etc then can reduce sulphur and phosphorous content and have to install air pollution control

system and the produce quality of steel. By this way it will be at par with produce through any other route. The main raw material for IF is sponge iron and steel scrap. Sponge is made by using non coking coal. Now as we all know coking coke availability is a big issue for steel through BF-BOF route. The steel production through IF route does not require metallurgical coke. So this is one of the important reason for IF steelmaking to become popular. In last couple of years Graphite Electrode prices have increased by six folds, which has made IF steel making more economical. IF hopefully can grow about 100 million tonne by 2030 and it is possible through IF route to achieve production capacity as envisaged in National Steel Policy.

Shri Bhandari requested Hon'ble Steel Minister and Joint Secretary to make it easier to get environment clearance up to 0.5 million tonne steel capacity through this route. If so much of steel produce through IFs, focus must be on quality of product, environment protection cost of production. However, technological and process development is revolved around these parameters.

Shri Bhandari congratulated AllFA for organizing this conference and shown confidence that today's conference will deliberate upon large spectrum of development that have taken place in the recent time so that all stakeholders continue to harness rich dividend.

Shri Bhandari hoped that conference would encourage further development and innovation on energy and cost efficient technologies and processes focus on use of abundantly available low grade raw materials with complete care and concern for environmental protection.

Shri Bhandari gave his good wishes to the organizers and success of this event.

ADDRESS BY SHRINAVEEN JINDAL, CHAIRMAN, JSPL

Followed by the M/s Electrotherm (India) Ltd., Chairman's address, the conference was graced by the address by Shri Naveen Jindal, Chairman JSPL.

Brief Profile of Mr. Jindal

Mr. Naveen Jindal is the Chairman of Jindal Steel and Power Limited (JSPL). He was born in Hisar, Haryana, on 9 March 1970, Mr. Jindal completed his MBA from the University of Texas at Dallas (UTD) in 1992. He was awarded the Distinguished Alumni Award for 2010 by the University. The UTD renamed its School of Management the Naveen Jindal School of Management in 2011.



Under his able leadership, JSPL has transformed into a world-class organization with business interests across India (Odisha, Chhattisgarh & Jharkhand), Asia, Australia and Africa.

Mr Naveen Jindal, Chairman, Jindal Steel & Power Limited said that we all are family of steel makers and there is an old relationship between us. The steel industry played a very important role for this world. To make steel, we appreciate the involvement of small, medium and large enterprises to come and built steel industries. As steel is a very basic industry to set up and without it, nothing can be possible in the world. We also started our Jindal steel industry by setting up a small induction furnace. We cannot put a large scale industry at once; it has to be started from small scale industry. The technical bend of mind is developed by putting small induction furnace to start a large steel industry. There are steel industries like BHUSHAN and many other examples who did the sponge iron backward integration. Before me Shri Sandeep Jain and Shri Kamal Aggarwal gave a lot of information on technology that if our country wants to make 300 million tonne steel by 2030, then the induction furnace plays an important role in this endeavor . Even today India produces steel through induction furnace and uses it more than any other country. Induction furnace can be built in less time and cost and it caters the local area requirements as well. What all demands Kamal Aggarwal have put amongst us and on behalf of us, I also request our Hon'ble Steel Minister to fulfill all the demands that has been put forward by all of us. Whatever help is required will be done because helping them is for the growth of the country's steel industry. People are getting more jobs and income because of the making of steel in the induction furnace industries compared to that of big and larger Steel industries. As recycling is the main national subject of the world that everything should be recyclable like paper, plastic, etc, so steel is such products unlike aluminium and copper that can be perfectly recycled and because of recycling of steel there will no change in the quality of it. In this way, the induction furnace plays an important role.

Mr Jindal mentioned that there is a less production of electricity because of low production of coal. Otherwise there is enough capacity for production of electricity in India. When there is no peak load, the cost is even less than Rs 2/- per unit. As Mr. Kamal Agarwal mentioned, the supply may be diverted to the industry, which may be started/closed at any time. When the electricity is cheap, at that time it can be supplied to the Induction Furnace Units so that the electricity suppliers may also get benefit as well as to the IF units. It will help to increase the production of steel in the country and steel prices can be maintained.

Mr Jindal made a statement that the big steel producers like us who could not increase the price of steel because of the role of IF steel makers. They are so efficient, competitive and innovative, and because of their innovation and entrepreneur sprit, they are cost competitive, they keep low cost compare to other big producers and because of this, big players are also forced to maintain price, which gives benefits to the consumers. Along with this, there is an electricity duty and cross subsidy charges imposed by the State Government. They make the

policy in such a way that the seller who wants to sell electricity and buyer wants to buy but they neither can sell nor buyer can buy because they impose cross subsidy on the cost of the production of electricity. This is a complex issue which needs deliberation among the Central/State Government and consumers so that the issue could be addressed.

Regarding process of steel making through IF route indicated by Shri Kamalji, it is true that the steel can be manufactured using steel scrap. However, I urge steel producers that there is need to maintain the quality of steel. Mr Bhandari also mentioned the same. It is necessary that the IF steel producers also install LRF so that the quality of steel could be maintained to bring down sulphur, phosphorous and carbon as per IS standard required for TMT steel. There is a need, if good quality of steel may be made available to the consumers and low cost. If we compromise the quality of steel, it means we play with the life of human because these harmful elements are not good in steel for long life. I understand that all IF steel producers will keep these things in their mind and those who have not installed LRF will also install so that they can also supply quality steel in the market.

Mr Jindal informed that in the present circumstances, only small plants, which terms as mini mills in US will be installed in India in future because of land and huge investment for setting up of big plants. If IF units maintain the quality at par with big steel producers, I am confident that the future of IF units would be bright in Indian scenario.

I would like to thank organizers especially Shri Kamalji who invited me to address this august gathering. I hope this relation will go a long way and will be maintained in future.

Thank you very much. Jaihind.

BACK GROUND PAPER FROM Mr. Araceli Fernandez Pales, Energy Technology Analyst, IEA

Dear Mr. Mishra,

Many thanks for your note.

Please find attached a background paper we submitted for the Metals and Mining conference earlier in the month. Hope this can still be of use for your event.

We look forward to identifying further opportunities for engagement. Apologies we couldn't engage personally in this latest event due to conflicts with other earlier commitments.

Thanks and best regards,

Mr. Araceli Fernandez Pales
Energy Technology Analyst

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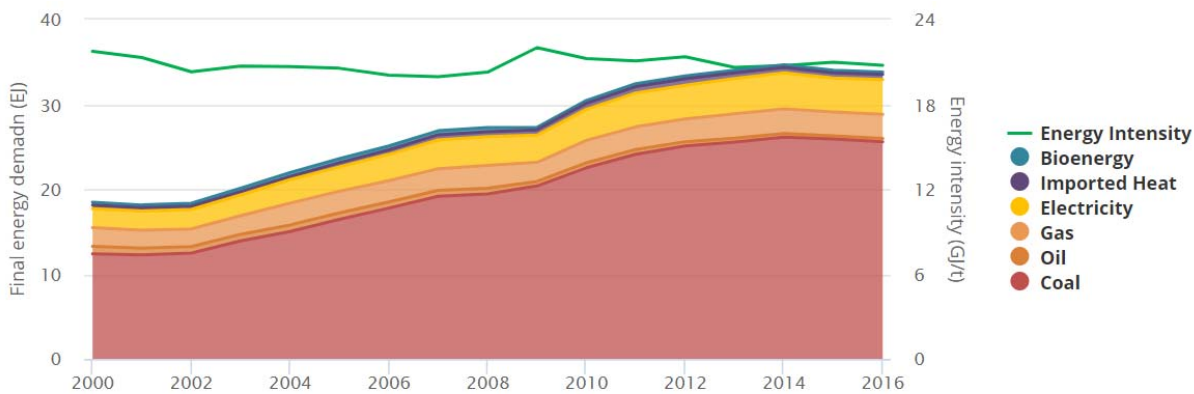
Sustainable Iron and Steel Production by Araceli Fernandez Pales and Cecilia Tam, International Energy Agency

Global crude steel production since 2000 has nearly doubled from 849 Mt in 2000 to 1627 Mt in 2016, largely driven by developments in China and more recently in India. The iron and steel sector is the second-largest industrial user of energy, consuming 34 EJ in 2016, and the largest industrial source of CO₂ emissions with around 2GtCO₂ or about 6% of total CO₂ emissions. As other sectors decarbonizes, this share is set to rise as options to achieve deep emission reductions of crude steel production require the development and implementation of disruptive processes.

While the average energy intensity of crude steel production has improved with the deployment of new more efficient production capacity, some of this downward trend has been offset by a decline in scrap-based electric arc furnaces (EAFs) as the share of total crude steel production, as scrap availability has not been able to meet rapidly growing demand for crude steel. Since 2000 global crude steel energy intensity has fallen from 21.8 GJ/t in 2000 to 20.8 GJ/t in 2016, reaching a peak in 2009 most likely due to the effect of lower capacity utilization rates derived from the economic downturn and declining since then by 0.8% annually.

Global energy demand and aggregated intensity in the iron and steel sector

Energy intensity of steel production reached a peak in 2009 and since has declined by 0.8% annually.



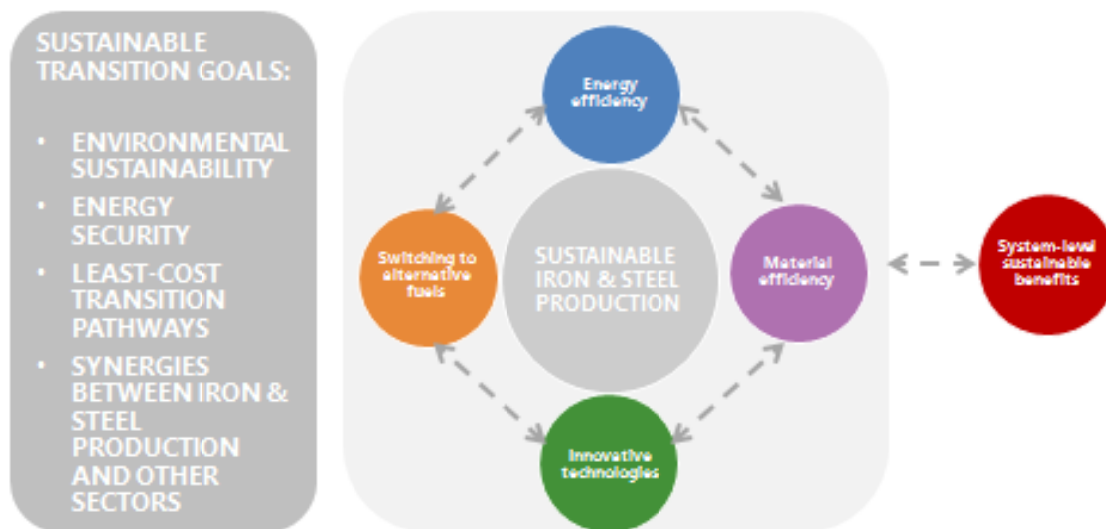
© OECD/IEA

Note: Final energy demand includes blast furnace and coke oven energy consumption.

Crude steel production is expected to grow steadily as demand particularly from developing countries rises. If the iron and steel sector is to contribute to global climate and energy security ambitions, energy efficiency will need to be maximized, through measures such as optimizing the use of available energy embedded in process streams and the deployment of Best Available Technologies (BATs). Deployment of scrap-based EAFs is particularly critical as a considerably less energy-intensive route compared to primary production. However, the contribution of EAFs to total crude steel production has remained at around 26% since 2013 (World steel, 2018). To achieve the IEA's Sustainable Development Scenario (SDS)¹ by 2030, global market share needs to reach over 40% (including fully scrap-based and direct reduced iron-based EAFs).

Such increases in EAFs should also be accompanied by measures that promote collection and recycling of scrap (particularly in developing economies, as greater amounts of steel-containing products start to reach their end of life), as well as the reuse of components from disposed products and the reduction of material losses in manufacturing.

Enabling strategies of sustainable iron & steel production



Short-term emissions reductions would come largely from energy-efficiency improvements and an uptake of scrap-based EAF production as greater amounts of scrap become available. Longer-term reductions would require adopting new upgraded processes that facilitate the integration of carbon capture for storage and use, and direct reduced iron processes that can be based on low-carbon electricity (directly or through electrolytic hydrogen), as well as adopting material efficiency strategies more broadly to optimize the use of steel along value chains.

¹The IEA's Sustainable Development Scenario is a pathway to reach the Paris Agreement well below 2°C climate goal, deliver universal energy access and significantly lower air pollution.

Government and industry should promote the widespread application of BATs to help overcome the challenges of slow capacity stock turnover, high emissions abatement costs, fluctuation in raw material availability and quality, carbon leakage and industrial competitiveness, in both mature and developing economies. Private and public sector collaboration for development and deployment of innovative technologies to reduce CO₂ emissions from the iron and steel making process is also critical.

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1. World steel (2018), *Steel statistical yearbook*, <https://www.worldsteel.org/steel-by-topic/statistics/steel-statistical-yearbook-.html> (accessed February 2018).

ADDRESS BY MS. RUCHIKA CHAUDHRY GOVIL, JOINT SECRETARY, MINISTRY OF STEEL.

Followed by the JSPL Chairman's address, the event was graced by Ms. Ruchika Chaudhry Govil, Joint Secretary, Ministry of Steel. During her speech reiterated the importance of the sector producing steel through the electrical route. She suggested that sector can be called as "Sustainable Steel sector" because of its growing importance in the country's economy. Ms. Ruchika highlighted that the present government is committed to support the sector and bring it parallel to the large



integrated steel players producing steel through the BF-BOF route. She congratulated AIIFA for organizing the grand event and their efforts to bring different sub-sectors of steel under a single umbrella.

Ms. Govil, during her address highlighted that in the growing steel market, the small and medium enterprise units making steel through Electric Induction Furnace route play a vital role. Thus, it is important that these units grow exponentially, inter-alia, in terms of technological innovation, energy efficiency, quality assurance and production efficiency. Ms. Govil stated that the widespread footprint of these units across the nation and their ability to produce various profiles within a short time span, with a relatively lower capital, provides a huge potential and tailwind for such Electric Induction Furnace route based units compared to the Integrated steel plants using the conventional BF-BOF route. However, due to inherent challenges, these units need continuous support in terms of technical assistance and capacity building.

Address through Video Conferencing by Shri Suresh Prabhu, Hon'ble Union Minister of Commerce and Industry

Let me congratulate, All India Induction Furnaces Association for organizing this event on Emerging, Innovative and Future Technology for manufacturing of Clean, Green and Economical Steel in India: National Steel Policy 2017. As we know, steel consumption in India is really very low. To build modern India, we are going to need a huge quantity of steel, whether it is for road or railway track or building or constructive new factories, bridges, cars and even it will need for house uses. So, steel is going to be the determining factor, as to how fast and how big we can grow. But in the process of growing faster and bigger we should not lose the site of an important issue of environment. So, making more steel necessary but making it greenery steel more necessary and therefore, I am very happy this seminar is organized. I am offering my full support. I can assure you that my Ministry will be standing fully behind you to ensure that we success a mission of increasing steel production in India making it greener, cleaner and better.



Address by the Chief Guest

Brief Profile – Union Steel Minister Shri Birender Singh

Shri Birender Singh is Union Minister of Steel since July, 2016. Prior to this, he was Union Minister of Rural Development, Panchayati Raj and Drinking Water & Sanitation since November, 2014. Shri Birender Singh hails from district Jind in Haryana (India) and did his graduation from Government College, Rohtak, Haryana and LL.B from Department of Laws, Punjab University, Chandigarh. In his long political career spanning over 40 years, Shri Singh has been a Member of the Haryana Legislative Assembly during 1977-82, 1982-84, 1991-96, 1996-2000 and 2005-2009. Shri Singh also remained Cabinet Minister, Government of Haryana during 1982-84, 1991-92 and from 2005-2009. Shri Singh has also been Member of Lok Sabha from 1984-1989 and Rajya Sabha from August, 2010 to August, 2014.



Shri Singh is at present Member of the Rajya Sabha since June 2016, representing Bharatiya Janata Party. Shri Singh has been actively involved in social service and is Member; Haryana Pradesh Harijan Sevak Sangh. He was instrumental in setting up the Rajiv Gandhi Mahavidyalaya and Nursing College in Jind District, Haryana to promote higher and technical education in the State. Shri Singh has also been an avid sportsperson having been Captain of the cricket team of Government College, Rohtak and Punjab University, Chandigarh. *Under his leadership first ever sport policy of CPSEs under Ministry of Steel has been launched in 2018.*

Under his leadership NSP-2017 has been approved and a long term growth strategy for Indian Steel Sector has been put in place. Steel Sector has seen a turnaround in last two years on account of several initiatives taken under his leadership. Due to his focus on research and development in Iron & Steel Sector. Steel & Technology Research Mission of India has been operationalized from 1 January, 2018.

The chief guest for the event, **Shri Chaudhary Birender Singh, Hon'ble Union Minister of Steel** in his address congratulated the organizers for selecting a topic which is most appropriate in the current scenario. During his address, he said that, I am very much delighted to attend first ever International Conference on Secondary Steel Sector. The efforts taken by AIIFA in this direction is highly appreciable. The Steel Authority of India Ltd., (SAIL), Rshtriya Ispat Nigam Limited (RINL), JPC, SRTMI, NISST have also supported this conference. This shows the unity of Indian Steel Industry to work together to bring steel sector at new heights.

He highlighted that, India has been consistently the 3rd largest steel producer in the world only after China and Japan and very soon India will achieve the second position in the global steel production soon. India produced 102 MTPA of crude steel in FY18 at a growth rate of 4.3% which is amongst the highest in the world. However, our per capita steel consumption is quite low, 68 Kg as against the world average of 216 kg. The low consumption however, indicates huge growth potential for Indian steel industry. Therefore, India has fixed a target for setting up of 300 million tonne crude steel production capacity by 2030.

Large integrated steel producers with more than 1 MTPA capacity produce about 55% of total crude steel production. The remaining 45% of the steel production is produced by secondary steel producers having capacity less than 1 MTPA production. These producers produce steel through electric induction furnace and electric induction furnaces, spread across the entire country. These units produce crude steel mainly from steel scrap or sponge iron.

I am told that the contribution of the Secondary Steel Sector in long product segment is around 33%. I am also happy to note that this sector is also contributing significantly in the overall production of alloy steel, special steel and stainless steel. This sector reaches out to millions of people in the rural areas and is an important player in meeting rural demand.

As you are aware, India is the largest producer of sponge iron in the world. This is a substitute of steel scrap, which is a main raw material for steel making through Electric Induction Furnace. We are aware of the problem of this industry with regard to limited availability of high grade steel scrap good quality of sponge iron. I am also aware of the environmental and power issues of this sector. However, I am told that the industry is badly affected mainly because of

high cost of inputs and also large scale imports of cheap steel products from abroad particularly, China. My Ministry is open to any suggestions and proposals for improving the condition of the sub-sector.

One of the characteristics features of our steel industry is that we have very large number of electric induction furnace units which contributes about 27% of total steel production in the country. But most of the units suffer from technological limitation to refine steel. To address this problem my Ministry has already undertaken several R&D projects. I am happy to announce that NML Jamshedpur has developed an innovative method to produce Quality Steel in conventional Induction Furnaces. Trial runs have carried out in industrial scale. I am told that Saint Gobain, who is one of the manufacturers of natural ramming mass for induction furnaces, is going to sign an agreement with NML for commercializing the product. It is a good sign towards supply of good quality ramming mass and flux for dephosphorization of steel in induction furnace. We are hopeful that these efforts will go a long way in making available quality steel from the Induction Furnace Sector.

I am told that there are more than 1300 steel re-rolling mills. They are mostly dependent on induction furnace units for their raw material/ inputs from which they produce Deformed /TMT bars and light structural sections which are used mostly in housing, construction and infrastructure sector. In view of the criticality of the end use, quality of these products is of utmost importance. Ministry of Steel has notified 53 steel products under the mandatory Quality Control Order to ensure production and availability of quality products for such critical end uses. I urge the induction furnace units to resort to production of quality billets so that the re-rolling units could produce good quality long products for the construction and infrastructure sector.

As you are aware that Government of India has submitted its NDC (Nationally Determined Contribution) for greenhouse gas emission by 30-35% by the year 2030. I urge Indian Steel Industry to adopt clean, green and energy efficient technologies and also follow good practices to minimize energy consumption and greenhouse gas emission. The Industry needs to come forward and adopt the best available technologies to achieve the set targets.

The Indian Steel Industry is ahead on the growth path. I am quite sure that the trend will definitely achieve said target of 300 MT Steel Production capacities by 2030. Both the larger & smaller steel plants have to work together to achieve this target. I am happy to learn that this time some Professors from India and abroad and also representatives are taking part in this conference. I am sure today's technical deliberation will be very useful and some new ideas will emerge, which will provide ample opportunities to learn good practices for production of quality steel at par with primary steel producers.

Concluding his remarks, the Hon'ble Union Minister informed that he would personally like to look at the outcome of the conference and ensured the Government's fullest support to the sector for its better future.





VOTE OF THANKS

The vote of thanks for the inaugural session was presented by Dr. Mukesh Kumar, Director, SRTMI, Ministry of Steel, Government of India. AIIFA Presented conference memento to the Chief Guest and other Guest of Honor on this occasion.



Messages from BSRM

It was very nice to have an invitation from your end to join the conference to be held on 22nd instant. Unfortunately, because of some unavoidable circumstances, we could not be able to join the conference. However, we were very much sanguine to attend such type of conference during the coming years if we get the opportunity. We are expecting a grand success of this conference where steel sector is moving so fast with quality and technological advancement. Hope the participants will be able to reap the benefit of lot many new inductions and interactions.

BSRM Group of Companies, Bangladesh

Brief Introduction of Unit

- ❖ BSRM is holding the leading position in Steels Sector in Bangladesh.
- ❖ They have four melting shops with a capacity of 2.0 million tonne billet and all are in IF route.
- ❖ Mentionable that our 1.0 million tonne capacity plant is having 50 MT Induction Furnace which the biggest is in the world in IF route.
- ❖ They have two re-rolling mills of capacity 1.5 million tonnes of long product including structural angle and channels.

List of Products

- ❖ BSRM Xtreme 500 W conforms to BS 4449 Grade 500C, GOST R 52544 A 550C, BDS ISO 6935-2 500W, IS 1786 Fe 500D.
- ❖ BSRM Ultima . It is a grade useful for earthquake prone zone conforming to ASTM A-706 GR 60, ASTM 615 GR 60, BDS 6935-2 GR 420D, IS 1786 Fe415.
- ❖ BSRM Maxima. It is a grade having high yield strength and high tensile strength Where yield is exceeding 80000psi and tensile is exceeding 105000 psi and with elongation exceeding 16%. This grade is conforming to ASTM A706 GR 80 & IS 1786 500D.
- ❖ BSRM Centura. It is epoxy coated rebar conforming to ASTM A775, BDS ISO 14654 & IS 13620.
- ❖ BSRM wires. Conforming to ASTM A496 & BDS ISO 6935-2:2016
- ❖ BSRM Strong. It conforms to ASTM A572 GR60 & ISO 630 GR 345.

BSRM GROUP aspires to:-

- ❖ Maintain our leadership position in the Steel Industry by producing the best quality steel products, continuously enhancing customer satisfaction and becoming a reliable business partner of their customers and suppliers.
- ❖ Be an employer of choice with focus on nurturing talent and developing future leaders of the Organization.
- ❖ Protect the interest of their shareholders through sustainable growth and value creation.
- ❖ Preserve the trust of all our stakeholders by adopting ethical business practices.
- ❖ Support the society through corporate social responsibility initiatives.



**Message from M/s Fabrimetal, Dakar, Senegal,
West Africa**

First of all I would like to thank you on behalf of MMD Steel for sending us the kind invitation for this Conference, which has really been a great initiative by AIIFA to arrange this event and giving the platform for all Steel Companies producing steel through Induction Furnace Route to come together and share their experiences.

This year it has been more special as you have gone one step forward and made great efforts to have this conference at International level. We have not been lucky enough to be part of this conference this time due to our pre-engagements but wish this event and the Conference a Grand Success.

Hope you would share the proceedings and the presentations by fellow participants with all the invitee members.

Once again all the best for this Conference and look forward for similar event next year.



TECHNICAL SESSION 1

The conference had three technical sessions. Session 1 focused on technological innovations, R&D initiatives etc. The session was chaired by Ms. Ruchika Chaudhry Govil, Joint Secretary, Ministry of Steel, Government of India and had four papers in total.

The first presentation of the Session on “**Saving in Steel making through solar Energy**” was delivered by Shri Kapil Jain, Head Solar Division, M/s Electrotherm (India) Ltd. Shri Jain highlighted that, gradually increasing scarcity of conventional fuel and hence increasing cost of electricity, and all kinds of pollution that it causes, it is evident that non-conventional sources of energy will become inevitable sooner than later. Solar Energy is a techno-commercially

lucrative solution to our energy needs and Steel Units can take lead and show the path to others by installing Solar PV System to meet their needs and garner benefits.

The Second Presentation on “**Important Suggestions on Sulphur, Phosphorus and Role of Refractory in Induction Furnace Steelmaking**” was delivered by **Prof. Seetharaman, Royal Institute of Technology Stockhom, Sweden.**

The third presentation on “**Tunnel Kiln: A Techno-Economic Route of Sponge Iron Making**” was delivered by **Dr. Dayanand Paswan**, Scientist, CSIR-NML, Jamshedpur.

The last presentation of this session was on “**Next Generation Refractory Lining Solution for Induction Furnace**” and delivered by Shri Vignesh Babu, M/s Saint Gobain, Bangalore.

TECHNICAL SESSION 2

Session 2 of the conference focused on Energy and Environment. The session was chaired by **Prof. Seetharaman, Royal Institute of Technology Stockhom, Sweden**

The first presentation on “**Importance of clean Steelmaking – why and How?**” was delivered by **Dr. Viswanathan Nurni**, IIT Mumbai.

The Second Presentation on “**Advantages of Steel making through Induction Furnace and Refining Alternatives**” was delivered by **Dr. Mukesh Kumar**, Director, SRTMI, Ministry of Steel, Government of India.

The third presentation on “**DIFOC – Powering the growth of steel making through Induction Route with benchmark performance in Energy Consumption and Productivity**” was delivered by **Dr. Swaren Bedarkar**, M/s Electrotherm (India) Limited

The fourth presentation was on “**Productivity improvement and Energy Saving opportunities**” and was delivered by **Dr. G L Grover**, Chairman, M/s Mozab Karan Ariya Ltd., Tehran

The last presentation of this session was on “**Operation of Induction Furnace from the view point of a Melter & Duration**” and presented by **Shri Chandranath Bhattacharya**, DGM, I/C-works SAIL, SGW, Kulti, West Bengal

TECHNICAL SESSION 3

The session was chaired by Shri Parmjeet Singh, Additional Industrial Advisor, Ministry of Steel, Government of India

The first presentation of this session was on “**ICEX Steel long futures contracts a price risk insurance tool**” and presented by **Shri Sanjit Prasad**, MD&CEO, ICEX Mumbai.

The last presentation was on “**Role of Spectrometer for Quality Steel production – Profits and Profitability**” and presented by Shri **C R Seshadri**, President, Global Sales & Marketing, Metal Power Analytical (I) Pvt. Ltd.



SPEAKERS







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AIIFA's 32nd International Conference





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Emerging, Innovative and Future (EIF) Technology for Manufacturing of Clean, Green and Economical Steel in India: National Steel Policy 2017

AIIFA's 32nd International Conference



HANDBOOK ON INDIAN STEEL INDUSTRIES

(a directory of units producing steel through electrical route)

2018-19



Compiled by:



All India Induction Furnaces Association

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- Details Covered:** Name of Unit, Factory Address, office Address, Director/ Contact Person with Name, Phone, Mobile No., Email Ids etc.,
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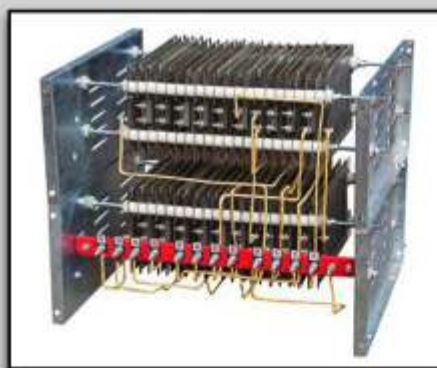
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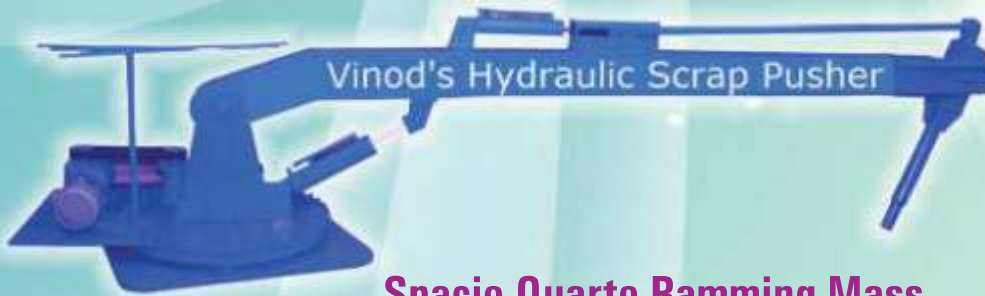
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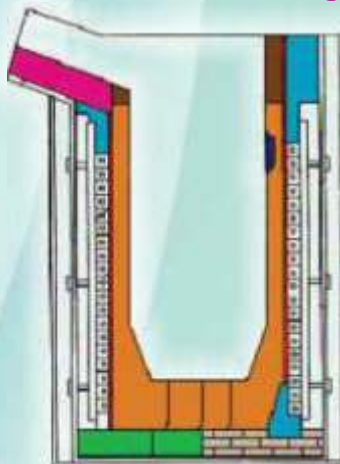
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