ALL INDIA INDUCTION FURNACES ASSOCIATION

AIIFA

INDUCTION FURNACE NEWSLETTER

Vol. No. XVII
Issue No. 11,12, 1
Nov., Dec. 2017 & Jan. 2018

What's Inside

हमारे सभी सदस्यों को
नववर्ष की हार्दिक
शुभकामनाये

2018

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The Road Ahead for the Indian Induction Furnace Segment- Challenges and Prospects

- Mr. Kamal Aggarwal,
Hon. Secretary General, AIIFA

As the Indian economy is steadily growing towards a new era of development; so is the Iron & Steel sector. India proudly possess the third largest position among the global steel producing country and soon poised to become the second largest producer in the next 2 years. India continues it high growth rate in terms of steel production. At present, the per capita steel consumption in India is still quite low i.e. around **63 kg** as compared to the global average of **208 kg.** This shows that the country has to go in a long way to achieve a reasonable level of steel consumption. To reach per capita consumption of around 160 kg, India has set an ambitious target of steelmaking capacity of **300 MT** by year **2030-31**.

The industry producing steel through the electrical route, as usual, continues to play an important link in the overall supply chain of Steel in India. The present Government has also recognized the importance of the sector and has initiated a number of activities for its development.

With the ambitious target of higher production of steel on role, the demand for steel also needs to increase. The current level of infra-structural development across sectors is not sufficient enough to increase steel demand. Increase in per capita consumption of steel can be brought by more innovative and holistic approach. Use of steel needs to be embedded with the developmental strategy of the country. Increase in use of steel structure in multi-storied buildings, multi-level parking's, beautification of parks and footways; cross-over bridges; heavy infrastructure like roads , bridges and canals etc., will lead to a prospective demand-supply balance in total steel production of the country.

While the existing integrated steel plants have gone for major modernization cum expansion to increase the production of crude steel. The secondary steel sector consisting of **Electric Arc Furnace (EAF)** and **Induction Furnace (IF)** have remained either stagnant or on the down trend.

Induction Furnace industry has been contributing very significantly in the overall production of steel in the country, both in quantitative terms and as percentage of total steel production. Crude steel production through induction Furnace route has been continuously increasing from about **4.3 MT (16%)** to **22.6 MT (32%)** in **2010-11** and finally to **26.66 MT (27%)** in **2016-17**. Contribution of the Induction Furnace sector is likely to be significant in years to come in making available quality steel at competitive price to the consumers in different geographical locations in the country.

Since, it has a number of advantages such as **low investment cost**, **land intensive** as compared to integrated steel producer, **agility to produce various profiles** of steel within a short time span, **low operating Cost**, providing greater **opportunity of employment** in rural areas to prevent un-necessary migration of people towards Metropolitan city etc. therefore, a special thrust is required to be given to look in to the barriers which are coming on the way for increasing the production from this sector.

Presently, the Indian steel sector as a whole had been facing adverse market conditions due to lower demand and dumping of steel into the country. The small and medium enterprises have particularly been affected by this situation. The Ministry of Steel, Government of India, in the recent past few years has taken positive steps and made interventions to counter these adverse conditions. It is important to mention here some of the major initiative taken by Ministry of steel to boost up this sector:

- Eliminated the **categorization** of steel industry based on Primary, Secondary and other producers
- Enforcement of Quality Control Order to produce quality steel as well as to generate confidence level of industry to face the global competition

- In process to implement an **end of life for vehicles**, which could bring a big transformation in terms of raw material security for the steel sector
- Develop new flux compatible with neutral lining which is more economical to the industry as against de-phosphorisation of steel while making through this route
- In process to bring Sponge Iron under Mandatory Quality Control Order to produce quality steel as per BIS Standard
- Opening of **MSTC Metal Mandi "M3" (a large competitive market)** to improve the marketing potential of Medium and small scale steel producers
- Imposition of MIP, Safe guard duty and Anti-dumping duty on steel products to curb steel import

Our Hon'ble Prime Minister, special thrust on "Make in India" drive is going to create an enormous opportunities in all the above sectors, where large investments are already in pipeline through FDI and domestic investments. Therefore, as far as the demand is concerned, there is no doubt that in a very near future, it is going to increase substantially in all sectors of the economy.

But there are still many issues and Challenges which are plaguing the induction furnace industry and needs to be addressed by the concerned Ministries

1. POWER TARIFF & ITS IMPLICATION IN ELECTRIC INDUCTION FURNACE

As Ministry of Steel, Government of India has planned for a targeted crude steel capacity of 300 MTs by 2030, the EIF segment is expected to embellish its production as well even if the share remains constant at 30% of the total steel produce by 2030. For this to turn into reality this sector needs continuous power for efficient production**. "Cost disparity of power tariffs"** between states and barriers towards use of open-access power purchase by imposing cross subsidy surcharges, wheeling and transmission charges by the power-companies has led the business un-viable in many states, because of which there is a sharp decline in the number of operating units (about **120 EIF** units are forced to shut operations) in the recent past. Rising trend of electricity tariff across the state in different regions of the country and sharp fall in operating units can be seen under the below mentioned **Table-I**

Table I State-wise Power Tariff vis-à-vis No. of units

States	Energy Charge (INR/kWh) (Variable Electricity Charge)				Production Units of EIF (In Numbers)		
	2013-14	2014-15	2016-17	2017-18	2013-14	2014-15	2016-17
West Bengal	4.35	4.29	6.6	7.15	79	78	70
Odisha	3.95	4.0	4.2	4.25	110	93	73
Chhattisgarh	3.8	3.8	5.3	5.6	66	66	75
Maharashtra	7.01	7.01	7.21	7.07	64	64	55
Gujarat	4.3	4.3	4.3	4.3	56	56	55
Punjab	6.31	6.33	6.33	6.33	125	125	115
Tamil Nadu	6.35	6.35	6.35	6.35	115	110	100
Uttar Pradesh	6.0	6.35	6.35	6.35	94	100	54

This trend is likely to continue as most of the states push for tariff rise under the HT segment of tariff for industrial consumers under which EIF units also falls. Hence, to sustain the targeted production from the EIF sector, India needs some concrete steps to limit the rise of power tariffs for the EIF units in such a manner, wherein the annual cost addition for the operators does not lead to forced shut down.

Keeping in view of the above we would like to propose the following recommendation for betterment of this sector

Recommendations	Descriptions
Reduction of cross subsidy charges	One of the key reasons for witnessing high tariffs for industrial consumers across different states has been the idea of adapting a cross subsidy mechanism which subsequently puts less pressure on agricultural and domestic consumer in terms of the per unit consumption of the electricity. Strange, but a fact that some of the states like Punjab and Haryana completely subsidize the agricultural consumer despite having significant electricity consumption and in turn leads to heavy burdens of cross subsidy on the EIF units. Thus, the matter of such imbalance impacting the operations of EIF units could be looked upon and the cross subsidy mechanism could be replaced in a phased manner as the cost of generation of electricity is experiencing a fall due to up gradation in technology from both the renewable and conventional resources.
Privatization of DISCOMs	A large portion of electricity is lost in the Transmission & Distribution. Also, the DISCOMs levy a variety of charges which ultimately lead to increase in Electrical Tariff. A much more competitive environment can be created through privatization of the DISCOMs. Also, a regulatory commission can be set up to control the price of T&D. The T&D under a grid should be same irrespective of the states. Fall in the price of telecom can be sighted as a good example.
One-Grid-One-Tariff	The steel production through EIF Route is nearly same under the states covered under a single grid. While the western and eastern zone are sponge iron based, the northern and southern belt are predominantly sponge iron driven. Implementation of "One Grid One Tariff' can provide similar dynamics within neighboring states, thus leading to competitiveness and motivation in the market for higher production.
Enhanced usage of decentralized power generation	Although, captive power generation for EIF units are not feasible economically, but utilizing the penetration decentralized power generation through renewable resources could hold up a good business case on a comparative cost benefit analysis upto 30% of the electricity requirements of the EIF units could potentially be offset through decentralized power generation units which could help them control the costs incurred towards electricity. Subsequently, aiding their business sustenance.
Enhanced application of demand response system of electrical furnace industry to improve PF	The demand response mechanism calls for enhanced usage of energy efficient technologies to reduce the actual power consumption which helps in reduction of costs incurred towards it. For EIF units, it is important to be more energy efficient and design a better response system for ever growing electricity demand needs and subsequently, the government should establish R& D centers in collaboration with BEE which can help the EIF units cater this challenge.
2. RAW MATERIAL SUFFICIENCY	
	Under raw material sufficiency while on one hand we have the challenge of ensuring an uninterrupted supply, we need to be vary of the price swings that the industry is witnessing of late. For e.g. the iron ore prices after remaining stable for almost 50 years and increasing from US$ 5 to US$ 20 between 1950 to 2000; witnessed huge upsurge to US$ 180 in next 15 years and then again witnessed a fall to US$ 35-40 and now back to US4 55. Such wide swings can haywire the complete planning of the units which has been the case off-late.

Recommendations	Descriptions
Consistent availability of scrap	India produced nearly **52 million tonnes** of steel through the electric route (MoS Annual Report 2015-16), of which about **24 million tonnes** was supported by **sponge iron** as feed material. This leaves about **28 million tonnes** of steel to be served by way of **steel scrap**. At **1.1 tonnes** of scrap per tonne of crude steel, one may expect that to produce 28 million tonnes of steel, one would need **30.8 million tonnes of scrap.** India imports about close to **7 million tonnes** of scrap which would leave us with a need to internally generate over 23 million tonnes of steel scrap annually and subsequently, this figures are growing to grow three fold by **2030**.
Enforcement of "End of Life" of Vehicle	India has over 18 crore vehicle; the vehicles with older life is dangerous for environment. If 2.8 crore of such vehicles are destroyed, it can save 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 increase the productivity of auto industries by 22%
Abolition of basic custom duty on import of scrap	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 with neighbouring countries like **USA, Europe, UK, Australia, China, Thailand, Pakistan** etc., In countries like above there is no such duty applicable on import of scrap. Hence, the import duty on scrap should be nullified.
Mandatory Quality Control Order for Sponge Iron	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 **Phosphorusas 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
POLLUTION & ENVIRONMENT	
Environmental Clearance for the project above 30000TPA	To increase capacity beyond 3**0000 TPA** Environmental clearance required from **CPCB** (**Notification no. S.O. 3067(E) dated 1st December, 2009 under itemno.4, Note (ii) of Section "C")** which is not only time consuming but also one of the **major barriers** for **modernization/ expansion** of existing units as well as for **commencement** of **new project.**In today's time a project of **30000TPA** production of Billet/Ingot is not viable because of **E**conomy of **S**cale. The **minimum requirement** of the project which is considered to be viable is **100000 TPA and above** and such unit may be either **standalone units** or **integrated with continuous casting and Rolling Mill** to produce final rolled product through the **Direct Rolling Technology** It has been time and again proved that furnaces of such small sizes are not the significant contributor to pollution and also there is a lot of paper work and processes which these small producers have to go through. Hence, it's time that they are saved from that for utilizing the same time more productively in operations.
Energy Efficiency Need of the hour	There is a strong need for the induction furnace units to adopt energy efficiency. The units are not self-capable for up gradation of technology. Hence, external support is definitely required to promote energy efficiency and also enhance capacity of users. Understanding the benefits reaped by the implemented IF units, the remaining units (about 1,000 units), who hasn't participated in the existing phase of the project are **looking forward for Ministry of Steel and UNDP** to quickly launch the third phase of the project and extend benefit to all.
3. OTHERS	
Acceptance of ISI marked \product only	In spite of the notification by the Ministry of Steel to eliminate the categorisation of Primary, Secondary and other producers, none of the Government Procurement agencies like RDSO, CPWD, NHAI, Ministry of Railways etc., are agreeing to use materials produced Electric Induction Furnace route and are still continuing with the old classification. This might be the challenges for increasing production from this route

Concerns of Banking/Financial assistance to this sector	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 are large number of NPAs among bigger steel plants; although the number is less for the units under this segment. The banks are still reluctant to extend finance to the unit's operating through electrical route. The small and medium steel units should be brought under priority lending to upscale their production capacity.

CONCLUSION:

Amidst the lucrative national figures and rising importance of India in global steel market, the volatile market of the small and medium size enterprises remains a fact. The small and medium enterprises units; comprising of over 1100 Electric Induction Furnace units and over 1300 Steel Re-rolling Mill units; serves an important link to overall steel production chain in the country. Ministry of Steel, in the recent past has duly acknowledged the importance of the sector by initiating some key policies and development activities in favour of the sector. The historic step towards removal of anomalies related to production of steel through different route; has shown a new beginning in the country's overall development. Efforts such as the one executed in association with UNDP has brought in a successful transformation among the steel fraternity. Also, the increase in frequency of dialogues and discussion between Ministry and the steel producers/association shows the intensity with which even Government is putting effort for the development of this sector. AIIFA stands committed for supporting all such positive initiatives by the Government and strongly feels that the target of producing 300 MT steel by 2030 is possible with efforts of all.

In spite of the positive trends; the steel sector specially the small and medium enterprises are facing some acute difficulties for survival; led due to issues cited above. With the ambitious target of higher production of steel on role, the demand for steel also needs to increase. The current level of infrastructural development across sectors is not sufficient enough to increase steel demand. Increase in per capita consumption of steel can be brought by more innovative and holistic approach. Use of steel needs to be embedded with the developmental strategy of the country. Increase in use of steel structure in multi storey buildings, multi-level parking's, beautification of parks and footways; cross-over bridges; heavy infrastructure like roads , bridges and canals etc. will lead to a prospective demand-supply balance in total steel production of the country.

Issues cited above are causing hindrances for the Indian private steel sector to grow. These barriers are leading to decline in the interest of the investors to increase capacity of existing plants or go in for green-field units. The last few years has already seen a decline in the total production trends from the small and medium enterprises. It is prudent to mention here that more and more units are coming up in African and Middle-East countries; which have conducive environment for the growth of steel. In order to stop the brain drain and decline of growth in country's steel private production; it is important that immediate steps are taken to motivate the indigenous companies to increase their level of investment in the country. Removal of the barriers for accelerated development of the small and medium enterprise units is the call of the day.

The small and medium enterprise units carry with it a unique legacy of being flexible and user friendly. While the big steel plants run in long batches, the small sector is flexible enough for easy change over besides being capable of making any section and size. The flexible nature of these businesses coupled with their presence across the nations, provides them a unique upper hand to become cost competitive for users. AIIFA strongly feels that the sector along is capable of catering to the country's need and demand for long steel products. The country can prosper in a large way when the big steel plants concentrate on flat steel production leaving the long steel products to their small counterparts. This will increase the productivity of the country at a high-speed level.

When India stands high targeting to achieve the ambitious target of 300 MT steel by 2030; the importance of the small and medium enterprise units is deemed to grow.

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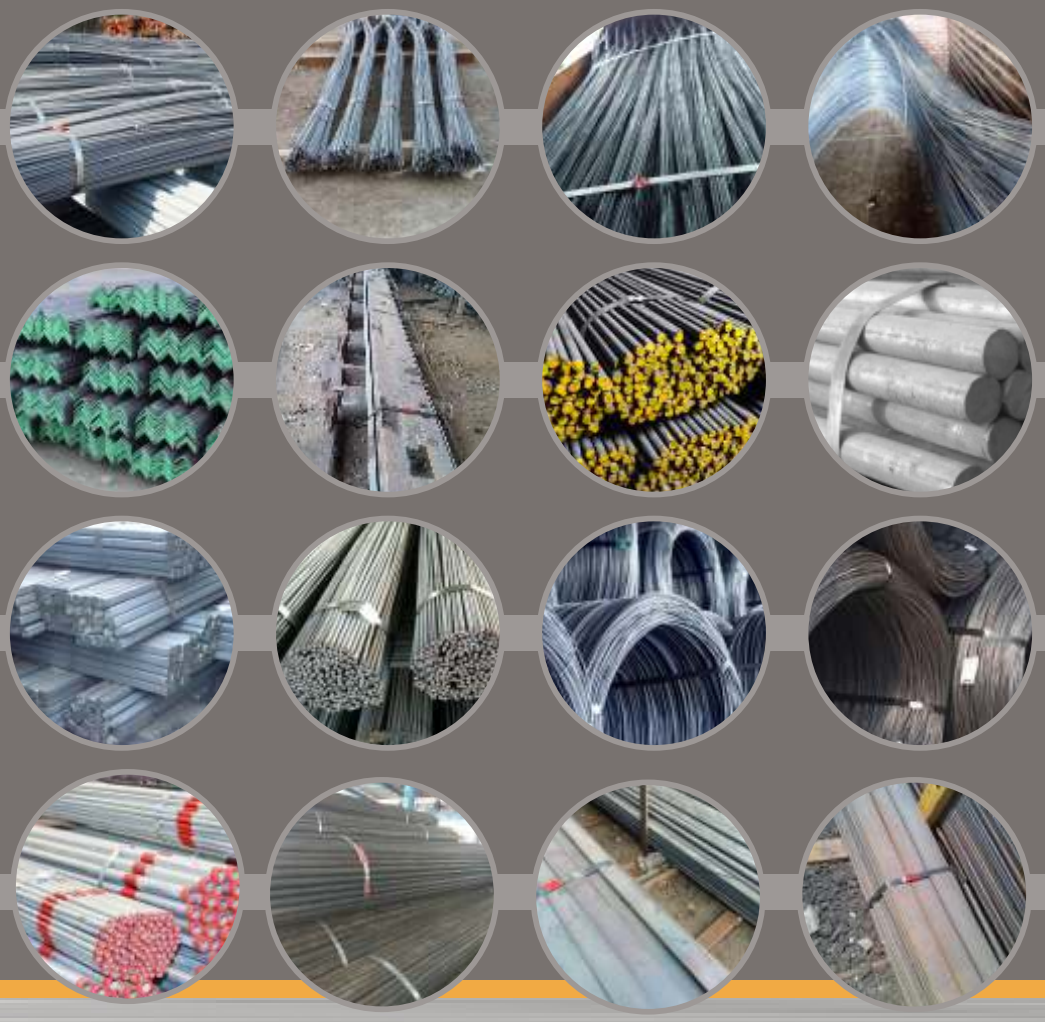

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Organised by

All India Induction Furnaces Association

Supported by

Ministry of Steel
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Strengthening Green Steel Production
- Building Pillars for New India

November 24, 2017

Sovereign Hall, Hotel Le-Meridien, New Delhi

AIIFA's 31st National Conference

POST EVENT REPORT

BACKGROUND

Steel is the world's most important engineering and construction material. It is used in every aspect of our lives; in cars and construction products, refrigerators and washing machines, cargo ships and surgical scalpels. A country's economic growth is linked with the growth of the country's steel industry. Consumption of steel is often taken to be an indicator of economic development. While steel continues to have a stronghold in traditional sectors such as construction, housing and ground transportation, special steels are increasing being used in engineering industries such as power generation, petrochemicals and fertilizers. India continues to occupy a significant 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 upgradation of older plants, improving energy efficiency and backward integration into global raw material sources.

In 2016, the world crude steel production reached 1630 million tonnes (mt) and showed a growth of 0.6% over 2015. China remained world's largest crude steel producer in 2016 (808 mt) followed by Japan (105 mt), India (96 mt) and the USA (79 mt). World Steel Association has projected Indian steel demand to grow by 6.1% in 2017 and by 7.1% in 2018 while globally; steel demand has been projected to grow by 1.3% in 2017 and by 0.9% in 2018. Chinese steel use is projected to show nil growth in 2017 and decline by 2% in 2018.

Thus, India occupies the position of being the third largest producer of crude steel in the world and soon poised to over-pass Japan to become the second largest producer. Supply and demand is just like the two sides of a coin. While the supply of a commodity grows, it is important to raise its demand for sustainability. Per capita finished steel consumption in 2016 is placed at 208 kg for world and 493 kg for China by World Steel Association. Unfortunately, for India, the per capita consumption of steel has touched only a level of 63 kg.

In order to maintain the demand & supply balance; the Government of India has set an ambitious target of increasing capacity of production of crude steel to 300 MT by 2030 and also raising the per capita consumption of steel to 161 kg.

In India, steel is produced through two routes: one being the 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 57% 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.

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Out of entire steel fraternity producing steel through electrical route, the electric induction furnace (EIF) sector alone consist of over 1200 units and the steel re-rolling mill (SRRM) sector consists of around 1300 units. The EIF sector's contribution to the country during the last financial year i.e. 2016-17 is around 26 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 31st Conference was a platform created for the entire steel fraternity producing steel through electrical route. The workshop 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 ORGANIZERS

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 ten different chapters located at Chennai, Hyderabad, Mumbai, Indore, Cuttack, Bhiwadi, Mandi Gobindgarh, Ludhiana, Goa and Kashipur. AIIFA not only helps to build a bridge between the Government and the industry, but also work hard to enhance the capacity of the industry to compete in the global market.

AIIFA is 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 Centres. The Association represents on various committees of Ministry of Steel and other bodies of Government of India dealing with statutory regulations, policy making, Excise and Customs, quality standardization, etc. related to the iron and steel industry.

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.

In recognition of attaining excellence in production, quality control, energy efficiency, overall entrepreneurship, etc. the Association gives Dhatu Nayak (for excellence in Induction furnace units) & Ispat Udyog Ratan Award (for excellence in composite units) to selected units every year. This year there was an addition in the form of Ispat Rachna Awrad (for excellence in stand-alone rolling mills)

One of the key initiatives by AIIFA has been its national conference which is held every year. These conferences mainly aim at enhancing knowledge of the industry on latest trends and technologies and also to discuss and brainstorm on various bottle-necks for the industry and its possible solutions.

Like every year, this year too AIIFA successfully presented its 31st edition of national conference on a theme quite appropriate on today's scenario.

ABOUT THE CONFERENCE

AIIFA's 31st national conference was designed under the pertinent theme of "Strengthening Green Steel Production: Building Pillars for New India". The strong efforts made by the organizers aimed at bringing the entire secondary steel sector under a common umbrella; making consolidated efforts to solve the sectoral issues; strengthening the sectoral presence and importance and building foundations for a sustainable future. With its crude steel production reaching over 100 Million tonnes (MT); India stands high in the global steel market with an ambitious target of the government on producing 300 Million tonnes (MT) by 2030. Amidst the lucrative national figures and rising importance of India in the global steel industry, environment of the steel sector remains a fact. The reasons for such volatile conditions of the steel sector can be cited to a number of factors 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 secondary steel manufacturing especially the small and medium enterprises can be bleak; unless the entire fraternity comes together and face the roadblocks under joint efforts. The 31st national conference organized by AIIFA is one such opportunity for the entire secondary steel fraternity to come and display our strengths and build foundation for a sustainable future.

THE CONFERENCE AGENDA

The final conference agenda followed during the 31st AIIFA conference is placed below for perusal:

8:00 to 9:00	**Registration**
9:00 to 11:30	**Inaugural Session** - Welcome Address by Shri Sandeep Jain, President, AIIFA - Theme Presentation by Shri Kamal Agarwal, Secretary General, AIIFA - Address by Guests of Honor - Inaugural Address by Chief Guest - Valedictory
11:30 to 1:30	**Technical Session 1:- Policies, Challenges, Issues and R&D Activities in Steel Sector** - National Steel Policy 2017 — Preference for domestic steel industry - Need of Uniform Power Tariff for steel production through Induction Furnace route - Value addition of Steel produces through Electrical route - DIFOC — A Path breaking technology for melting - Zero emission technology for steel sector - Utilization of Steel plant waste in the manufacture of paver blocks and slag foams - De-phosphorisation of liquid steel - R & D perspective in Steel produced through electrical route - Why Steel manufacturers are losing million by neglecting the latest innovation in Silica Ramming Mass?
1:30 to 2:00	**Lunch**
2:00 to 3:30	**Technical Session 2: Energy & Environment** - Session Agenda and Opening Remarks - Energy Efficiency for sustainable steel production in secondary steel sector- opportunities and future roadmap - Importance of Energy Audit and Energy Management in steel industry and PAT II Cycle - Technology option to produce quality steel in Induction Furnace - Schemes and Financial Models for implementation of Energy Efficiency technologies for steel sector - Power Harmonics and its impact
4:30 to 5:00	**Concluding Session** - Opportunities for steel makers through Induction Furnace Route - Concluding remarks - Valedictory

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 31st National Conference on "Strengthening Green Steel Production: Building Pillars for New India" was a unique forum for deliberation between the Government and the Steel fraternity producing steel through the electrical route. The main objectives of the meeting 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; United Nations Development Programme (UNDP); 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.

Figure 1: Hon'ble Union Minister of Steel, Shri Chaudhary Birender Singh during the lamp lighting ceremony of the conference. (On extreme left) Dr. Aruna Sharma, Secretary - Steel, Ministry of Steel. (On 2nd from left): Ms Marina Walter, Country Director, a.i. UNDP-India; Members of AIIFA and the Steel Faternity

Figure 2:(From left) Dr. Aruna Sharma, Secretary, Ministry of Steel; Shri Kamal Aggarwal, Hon. Secretary General (AIIFA);Ms. Marina Walter, Country Directora.i. UNDP-India; Shri Gopal Gupta, President Emeritus (AIIFA); Shri Chaudhary Birender Singh, Hon'ble Minister of Steel; Shri Sandeep Jain, President (AIIFA); and Shri Ramesh Goyal, Industrialist during the lamp lighting ceremony.

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 event Shri Chaudhary Birender Singh, Hon'ble Minister of Steel and thanked him for his gracious presence in the event. Shri Jain also welcomed Dr. Aruna Sharma, Secretary, Ministry of Steel and stated that it was only under her guidance and support that AIIFA has been able to organize the event at such a scale. Shri Jain while welcoming Ms. Marina Walter, Country Director, a.i., UNDP, highlighted that the industry as a whole is grateful to the UNDP team for their support to make the industry more energy efficient and cost competitive.

Figure 3: Shri Sandeep Jain, President, AIIFA

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. He congratulated the Government for the introduction of GST, which is expected to take business to a new level. 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.

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

fortnightly 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 playing an introductory video film on the steel industry and AIIFA's role. This was followed by the theme presentation by Shri Kamal Aggarwal, Hon. Secretary General, AIIFA. Shri Aggarwal strengthened the role played by the steel producing fraternity through electrical route in the Indian Iron & Steel sector. Close to 57% of the total crude steel production in India is route through the electrical route out which 28% comes from the electric induction furnace route. The steel re-rolling mill sector alone contributes to over 65% of the country's total long steel production. Thus, the sector as a whole is of prime significance in the Indian economy. He highlighted that this sector is expected to play a bigger role in future as India steadily marches towards the 300 million tonne mark by 2030. "With close to 3000 units, comprising of the direct reduced iron, electric arc furnace, electrical induction furnace and steel rolling mill; this sector has presence throughout the country, are flexible and cost effective and is expected to grow 3 fold by 2030. The sector provides employment to 0.2 million and supports livelihood of 3 million people. Thus, the sector is of prime importance in the Indian economy" said Shri Aggarwal during his address.

Figure 4:
Shri Kamal Aggarwal,
Hon. Secretary General, AIIFA

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. The Government has already made a history by eliminating the categorization of primary, secondary and other producers. The motivating steps like enforcement of quality control order and opening of MSTC metal Mandi has helped the sector to reach a new level of standards. It is expected that the Government is soon going to launch many new programs like implementation of end-of-life for vehicles, implementing the first even auto shredding machine, setting up laboratories and training center, bring sponge iron under mandatory quality order, bring all R&D efforts under a single umbrella. These initiatives are going to take the steel industry towards a sustainable future.

During his address, Shri Aggarwal shared AIIFA's view of setting up a road-map for sector in line with the Government's ambitious target of enhancing steel producing capacity to 300 million tonne by 2030. Elaborating on the subject, Shri Aggarwal stated "For the sponge iron based units, the road map should be 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 generated 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 atleast 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 is 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 of power has also been hampered by the 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 privatization, 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 duties are not imposed on scrap. Hence, we request that the import duty on scrap should be nullified.
- Another aspect is the "End of Life" of vehicle which the Government is already thinking of. This initiative will not only solve the problem of availability of good quality indigenous scrap but also solve the pollution which is being caused by the older vehicles.
- Sponge iron is also one of the important raw materials to the sector. So, in order to ensure quality production from this sector, sponge iron sector should also be brought under mandatory quality control order.
- Presently, to increase capacity beyond 30000 TPA, environmental clearance is required which is a cumbersome process. To adopt direct rolling, which is an energy efficient process, the minimum scale of operation is 100000 TPA. Easier paper works for such projects would help industry to grow.
- Energy Efficiency is another aspect which is the need of the hour. UNDP along with Ministry has already done lots of efforts in this regard. We would earnestly request the ministry to launch the third phase of the project at the earliest.
- Inspite of the notification 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, Ministry of Railways etc., are agreeing to use materials produced by our sectors and are still continuing with the old Classification, Ministry of Steel is requested to take a serious note on the issue. This might be the challenge for increasing production from this sector.
- 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 chose the conference title as: Strengthening Green Steel Production: Building Pillars for New India. This time AIIFA has made a generous effort in bring the entire steel fraternity producing steel through electrical route under a common forum. We have to jointly go ahead to attain the ambitious target set by Government of India."

LAUNCHING OF AIIFA SOUVENIR AND STEEL HANDBOOK

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

Figure 5:

AIIFA's annual souvenir and steel handbook launched by Shri Birender Singh, Hon'ble Minister of Steel in presence of Dr. Aruna Sharma, Secretary (Steel), Ms. Marina Walter, Country Director, a. i., UNDP-India, Shri Sandeep Jain, President, AIIFA, Shri Gopal Gupta, President (Emeritus), AIIFA and Shri Kamal Aggarwal, Hon. Secretary General, AIIFA

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 "DhatuNayak" award is awarded to Induction furnace units in recognition of their overall operational excellence and notable achievement during the past financial year. The "IspatRatan" 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. This year AIIFA also introduced "IspatRachna" award in recognition to overall operational excellence in the field of rolling mill.

Figure 6: Ispat Ratan Udyog Award Presented to Mr. Devender Kumar Agarwal, M/s Kashi Vishwanath Steels Pvt. Ltd., Kasipur

Figure 7: Ispat Ratan Udyog Award Presented to Mr. Ramesh Chand Goyal, M/s BDG Metal & Power Limited, Kolkata

Figure 8: Ispat Rachna Award presented to Shri Vats Rathi, M/s Rathi TMT Saria Pvt. Ltd., Bhiwadi

AIIFA also recognized Late A.K. Agarwal, the ex-national council member who left to heavenly abode on 10th April 2017, by awarding posthumous-meritious service award. The award was handed over to his family member by the chief guest.

Figure 9: Award presented to family of Late A.K.Agarwal, Ex. Secretary General, AIIFA

Address by Ms Marina Walter, Country Director, a.i., UNDP

The award ceremony was followed by address the guest of honor, Ms Marina Walter, Country Director, a.i. UNDP. During her address, Ms Marina reiterated the long association between UNDP and Ministry of Steel and their joint initiative in transforming the secondary steel sector into energy efficient and cost competitive sector. Ms Marina highlighted that since 2004, UNDP has been privileged to have partnered with the Ministry of Steel and many of these enterprises in introducing a range of energy efficient technologies that have had tremendous success. Together with the Ministry, UNDP identified 40 technological interventions for steel re-rolling mills and induction furnaces and ensured that over 300 steel re-rolling mills in the country have been able to embrace energy efficient practices. This resulted in a 24 percent reduction in GHG emission. If implemented across all steel mills in the secondary steel sector, this could generate a monetary savings of half a billion dollars in a year. “Of particular relevance I know for many in our audience is the results this partnership has achieved in electric induction furnaces, which account for 16 percent of the secondary steel sector’s total emissions, making it an important site for energy innovation” said Ms Marina. She concluded by saying that the business case for greening steel production has never been more compelling or achievable as it is today. One: Energy bills can decline by almost 30 percent through greater energy efficiency and Two: Conventional energy consumption can decline by 30 percent, thereby reducing pollution.

Figure 10: Ms. Marina Walter, Country Director, a.i., UNDP-India

Address by Dr. Aruna Sharma, Secretary, Ministry of Steel

Followed by the UNDP Country Director's address, the event was graced by the address by Dr. Aruna Sharma, Secretary, Ministry of Steel. Dr. Sharma, 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. Dr. Aruna 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. Dr. Sharma, 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. Dr. Sharma stated that the widespread footprint of these units across the nation and their agility 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.

Figure 11: Dr. Aruna Sharma, Secretary, Ministry of Steel during her address

While responding to the barriers for development as identified by AIIFA, Dr. Sharma stated that power tariff is something which comes under the control of the state government. However, the Ministry, on case to case

basis, has been requesting the state government for due consideration. She cited the example of Raipur, where the power tariff has been recently reduced for industrial use, by the state government. Responding to the issue of custom duty on imported scrap, Dr. Sharma informed that the Ministry of Steel is already in dialogue with Ministry of Commerce & Industries for the same. Dr. Sharma also reacted saying that "End of Life" for vehicles is already under discussion in the government. Regarding imposing quality control order on sponge iron, Dr. Sharma said that the same is under review by the ministry. Regarding environmental clearance of projects, Dr. Sharma ensured that she will discuss the same with her counterpart in the Ministry of Environment.

While deliberating of energy efficiency, Dr. Sharma highlighted that being energy efficient is the necessity of the hour. She also informed that Ministry along with UNDP has done a significant work in the sector which needs to further taken up by the industry. While responding to the issue of non-acceptance of secondary steel productions by major PSUs, Dr. Sharma said that is a matter of mind-block and Ministry is handling the issue of case to case basis. While reacting to the issue of flux being developed by NISST and NML, the Secretary (Steel) said that Ministry has taken the initiative to carry out the R&D. Now, it'supto the industry and the association to ensure the commercial usage of the flux.

Concluding her remarks, Dr. Sharma once again congratulated AIIFA and requested delegates to actively participate in the technical sessions.

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 Green Steel Production. 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 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 organize. I offering my full support. I can assure you 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

The chief guest for the event, Shri Chaudhary Birender Singh, Hon'ble Minister of Steel in his address congratulated the organizers for selecting a topic which is appropriate in the current scenario. He highlighted that the small and medium producers of steel, are of prime importance in the country's economy. The Hon'ble Minister ensured the fullest support of the Government to this sector for a sustainable and better future. "Economic & Industrial liberalization in the country has exposed the steel industry to international competition both in the domestic market as also in the global market. Since steel is under deregulated sector, therefore, to sustain in the global world, we have to constantly up-grade technologies and resort effective cost cutting measures in all areas starting from raw material to finishing operation to ensure not only production of world class steel but also at internationally competitive cost" said the Minister.

Figure 12: Shri Chaudhary Birender Singh, Hon'ble Minister of Steel

The Hon'ble Minister highlighted that the Indian steel industry is already in the process of transformation and steadily moving towards to become an industry comprising of high quality, low cost producer by adopting technology up-gradation and modernization. The Minister stated that although the country has some world-class steel plants, whose products are highly cost competitive but this standard needs to be achieved by the whole of the industry for a sustainable future.

The Hon'ble Minister stated that there are some issues related to quality production for the steel produced through Induction furnace. The Government has already taken active initiative in finding a solution to this. He also stated that the Government is in the process of launching a single platform for all research, development and marketing activities for the steel industry and the same will run based on the Industry's feedback. When India is moving forwards towards 300 million tonne steel production capacity by 2030, it is important for the all sectors of industry to develop and compete in the global market. The Minister also highlighted the with Hon'ble Prime Minister's vision of moving towards a new India; there has been growing stress of developing infrastructure including roadways, railways, internal waterways, smart cities, affordable housings and many more. Thus, the steel usage in the country is poised to grow at much faster rate. The Minister urged the industry should be ready to compete in this transforming environment and jointly make efforts to add on capacity to meet the growing demand.

Figure 13: Event Memento presented to the Hon'ble Minister of Steel

The Hon'ble Minister highlighted that technology upgradation and operation excellence is the need of the hour. It is also important these industries become energy efficient. The Hon'ble Chief Guest cited the example of the UNDP-MoS project which has brought a transformational change to the steel re-rolling mill sector. He stated that the papers envisaged for discussion during the technical sessions of AIIFA's meeting are really interesting. He urged the industry to participate actively.

Concluding his remarks, the Hon'ble 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.


Figure 14: Event Memento presented to Secretary Steel


Figure 15: Event Memento presented to Ms Marina Walter, UNDP

Figure 16: Dignitaries on Dias

Vote of Thanks

The vote of thanks for the inaugural session was presented by Shri Gopal Gupta, President (Emeritus), Ministry of Steel, Government of India. AIIFA presented conference memento to the Chief Guest and other Guest of Honor on the occasion.

Figure 17: Vote of Thanks

TECHNICAL SESSION 1:

The conference had two technical sessions. Session 1 focused on technological innovations, R&D initiatives and the issue of rising power tariff. The session was chaired by Prof. Rajiv Asthana, , IIT-Mumbai and had nine papers in total.

Figure 18: Prof. Rajiv Asthana chairing the technical session 1

Steel Policy 2017 and its implication on sector producing steel through electrical route by Mr. Anupam Prakash, Director, Ministry of Steel

The first presentation of the session was delivered by Mr. Anupam Prakash, Director, Ministry of Steel. Mr. Prakash presented the overview of the Steel Policy 2017. He highlighted that the economy grew at much faster rate of 8.5 % during 2004-05 to 2009-10, and demand of steel also grew at higher rate, estimated to be at demand elasticity of 1.1. As India has developed, there is now more focus on Infrastructure, greater urbanization, & a much more focus on better management of environmental and social infrastructure.

Figure19: Mr. Anupam Prakash, Director, Ministry of Steel

Besides this, there were a number of other factors like significant increase in capital inflow into the country, in infrastructure and manufacturing sectors; increase in per capita income and rising average salary of working class; issues regarding land acquisition; growing concerns about raw material security for steel industry; infrastructure development; human resources for steel sector; policy on secondary steel manufacturing and finance requirement of the steel sector etc., which needed to be addressed appropriately. There have been international developments/agreements for environmental protection, and also rationalization of excess steel capacity in China, and also need for much greater domestic R&D to be done under auspices of SRTMI etc. all of which necessitated the formulation of a new National Steel Policy.

Mr. Prakash highlighted the salient features of the National Steel Policy 2017 which are as follows:

- The National Steel Policy, 2017 aspires to achieve 300 MT of steelmaking capacity by 2030. This would translate into additional investment of Rs.10 lakh Crore and 1.1 million additional workforce getting employed in the steel sector by 2030-31.
- The policy seeks to increase consumption of steel and major segments are infrastructure, automobiles and housing.
- National Steel Policy 2017 seeks to increase per capita steel consumption to the level of 160 Kg by 2030-31 from existing level of around 61 Kg.
- Potential of MSME steel sector has been recognized. Policy stipulates that adoption of energy efficient technologies in the MSME steel sector will be encouraged to improve the overall productivity & reduce energy intensity.
- Steel Ministry will facilitate R&D in the sector through the establishment of Steel Research and Technology Mission of India (SRTMI). The initiative is aimed to spearhead R&D of national importance in iron & steel sector utilizing tripartite synergy amongst industry, national R&D laboratories and academic institutes.
- Ministry through policy measures will ensure availability of raw materials like iron ore, coking coal and non-coking coal, natural gas etc. at competitive rates.

With the roll out of the National Steel Policy 2017, it is envisaged that the industry will be steered in creating an environment for promoting domestic steel and thereby ensuring a scenario where production meets the anticipated pace of consumption, through a technologically advanced and globally competitive steel industry. This will be facilitated by Ministry of Steel, in coordination with relevant Ministries, as may be required.

Power Tariff and its implication in the electric induction furnace industry by Mr. Arindam Mukherjee, Sr. Program Officer, Energy & Environment, InsPIRE Network for Environment

Power is the key energy input for Electric Induction Furnace (EIF) sector. Almost 70% of the production cost in a typical EIF unit is the power cost. Under such scenario, the dynamic power market and rising power tariff is a key concern for the industry to survive. Mr. Arindam Mukherjee, while delivering his paper, drew reference from the research conducted in the rise of power tariff vis-à-vis the closure of EIF unit. He stated that close to 146 EIF has closed operation in the last one year; the major reason for the same being rising power tariff. Mr. Mukherjee presented the power tariff structure for all major steel producing states. While drawing the reference, he said that the states of Rajasthan and Maharashtra have increased their tariff by one unit during the last one year. This has resulted in unviability of operation leading to closure of EIF units. Mr. Mukherjee also presented case studies comparing the power tariff vis-à-vis the closure of EIF unit. During his presentation, he also presented the implication of power tariff disparity between neighboring states. He also highlighted the unviability of using open access power purchase scheme. Concluding his remarks, he presented some recommendations which can solve the problem of rising power tariff and provide relief to industry who in turn can focus on increasing production capacity. He also recommended "One Grid One Tariff" for the industry.

Figure 20: Mr. Mukherjee presenting his paper

Value addition of steel through electrical route by Mr. Anurag Agarwal, Director, M/s MS Agarwal Foundries Private Limited

In this presentation, Mr. Anurag Agarwal presented various innovative methods which can create a better viability for steel production through electrical route. In his presentation, Mr. Agarwal presented the concepts of "Cut & Bend", "Slag Granulated Iron", "Corrosion Resistant Steel (CRS)", "Castings" and "Ways & means to increase steel consumption".

While talking about the Cut & Bend technology, Mr. Agarwal referred to the forward integration techniques of provide 'as required' steel fabricated structure to the construction sites. Mr. Agarwal also presented the benefits of slag granulated iron as a replacement to river sand. He also suggested that value addition in steel can be done using corrosion resistant steel (CRS). He also suggested that induction furnace can be used for various castings. He also stressed on the increased usage if steel in innovative ways like in housing, infrastructure, ships, internal waterways etc. He also presented the usage of steel in crash barriers


Figure 21: Mr. Anurag Agarwal during his speech.

Utilization of slag to make paver blocks by Dr. V.K.Bupesh Raja, Professor & Head, Department of Automobile Engineering, Sathyabhama University, Chennai

Figure 22: Dr. V.K. Bupesh Raja, Sathyabhama Univerisity

Steel slag is a by-product obtained from Steel industries. At present, the amount of slag deposited in storage yard increasing, leading to the occupation of farm land and serious pollution to the environment. Improving the slag utilization is the only way to resolve these problems. During his presentation, Dr. Raja provided an innovative technique for Recycling, reusing and utilization of steel slag from induction furnace by pulverization and magnetic separation and Utilization of steel slag in the manufacture of paver blocks – by conventional concrete method and Geopolymer method and also Utilization of steel slag, from induction furnace for manufacture of slag foams - Geopolymer route. Dr. Raja presented a research case where the above was taken up for trial under laboratory case. He explained the Geopolymer method of steel slag foam making. He also explained that how paver blocks can be made using steel slag using Geopolymer route. He also presented the cost economics of using these blocks as replacement to concrete pavements.

Overview of MSTC Metal Mandi by Smt. Bhanu Kumar, Director (Commercial), MSTC Limited

Figure 23: Smt. Bhanu Kumar, Director (Commercial), MSTC

In her presentation, Smt. Bhanu Kumar presented a brief overview of MSTC Limited and its area of work. She also presented a detailed glance of the MSTC Metal Mandi. She explained in detail the various feature available in the portal and the advantages on enrollment for buyers and sellers separately. She also explained in detail the process of enrollment. During her presentation, Smt. Bhanu also explained the role played by MSTC in metal recycling in India. She also informed that they in collaboration with Mahindra Intertrade is in the process of setting up country's first automatic shredding plant. She also explained the benfits through 'End-of-life' for vehicles and also highlighted the process of implementation of metal scrap generation.

DIFOC – A Path breaking technology for melting by Shri Rahul Chaturvedi, Marketing Executive- International Business, Electrotherm India Limited

In his presentation, Mr. Rahul Chaturvedi explained the role of Electrotherm in developing the country's steel supply chain. After presenting the brief overview of the company, Mr. Rahul presented the latest technologies developed by Electrotherm to make steel making more competitive and cost effective. He explained about the new series of induction furnace which have been able to achieve 490kWh/t with 90-10 scrap-sponge iron mix. He explained that the technology is embedded with state-of-the-art automation and control system. He also explained that the benefits that can be achieved through the technology. The technology has been successfully implemented in almost 5-6 places and has a potential to make transformational change in the EIF sector.

Figure 24: Mr. Rahul Chaturvedi, Electrotherm during his presentation

De-phosphorisation of liquid steel by Dr. R.K.Minj, Sr. Principal Scientist, CSIR-NML

The presence of phosphorous is a key issue in the Electric Induction Furnace process. To resolve this issue, Ministry of Steel has undertaken a number of R&D exercise. Dr. R.K.Minj, Sr. Principal Scientist, CSIR-NML presented one such research activity which was jointly conducted by NML & NISST. Dr. Minj presented the laboratory scale results of a new flux which has been developed by NML-NISST and results of its application in neutral lining. After successful trial in laboratory scale, the flux was applied in commercial scale in 12 T furnace using nutral lining. Dr. Minj highlighted the result of trial and informed that trails were successful in bringing down the phosphorus to BIS specified limit. He also informed that the refining can be achieved within 25 min, and the refractory erosion are within acceptable limit. He informed that process is underway for patent of the product and process after which the technology will be available for commercial use.

Figure 25: Dr. R.K. Minj, Sr. Principal Scientist, CSIR-NML

Zero emission technology for steel sector by Mr. S.K. Mishra , Acting Director, IMMT- Bhubaneswar

Mr. S.K. Mishra, Acting Director, IMMT- Bhubaneswar presented an interesting technical paper on “Carbon capture and utilization”. He informed that IMMT-Bhubaneswar has taken up the R&D project in collaboration with M/s Zero GHG technologies, Bhubaneswar and M/s Emission Control Associates, USA. Mr. Mishra informed that the Zero Emission Technology (ZET) aims to convert 100% of COx, SOx, and NOx into chemicals in one step. It combines electrolysis & electrostatic induction to create covalent bonding and converts them into complex chemicals: For diesel / oil fired flue gas: Bis (2-ethylhexyl) Adipate or DEHA [C22H42O4] – an ester of diethyl-hexanol&adipic acid. Suitable for Transport Sector Emissions. For coal fired flue gas: the most likely major end-product is Coal Tar/ Asphalt (with PMs) and DEHA (without PMs), and other carbonaceous compounds. He highlighted that through this process conversion ofemissions into usable products is possible. This technology has the potential to take in much more of total emissions than any other available technology so far, and convert them into chemicals at a much lower capex. Presently, the paper has been submitted to Ministry of Steel for support. Mr. Mishra concluded his paper after explaining in detail the two processes of converting emissions into usable products.

Figure 26: Dr. S.K. Mishra, Acting Director, IMMT-Bhubaneswar

R & D perspective in Steel produced through electrical route by Shri VishvaBandhu, Sr. Deputy Director, NISST

Figure 27: Mr. VishvaBandhu, Sr. Deputy Director, NISST

Mr. VishvaBandhu in his paper presented the need for R&D in steel sector. He also presented the various initiatives taken up by NISST in association with other organization towards R&D initiative in Steel sector. He briefed about the flux which was developed with NML to bring down Phosphorous to permissible limit. He also explained the R&D taken up for computer simulation and e-demonstration of re-heating furnace which was carried out by NISST in collaboration with IIT-Mumbai. He also highlighted the other projects which are under streamline. Concluding his speech, Mr. VishvaBandhu stressed on the importance of R&D and highlighted areas which are of utmost importance.

Why Steel manufacturers are losing million by neglecting the latest innovation in Silica Ramming Mass by Mr. Rajesh Kabra, Managing Director, Raghav Productivity Enhancers Limited

In his presentation, Mr. Kabra explained the benefits of using latest innovation in Silica Ramming Mass in the EIF sector. He informed that the latest Silica ramming mass can give highest number of heats in an EIF furnace which can be correlated with extra productivity, lower specific fuel consumption and higher cost effectiveness. While presenting the cost benefit analysis, Mr. Kabra informed that Silica ramming mass can lead to a saving of Rs 45 lakhs per annum, when switched over from conventional system. He also explained that only 12 kg of silica ramming mass is required per MT compared to 21 kgs in other ramming mass. He concluded the session by presenting a brief about his company.

Figure 28: Mr. Rajesh Kabra, Managing Director, Raghav Productivity Enhancers Limited

TECHNICAL SESSION 2:

Session 2 of the conference focused on energy & environment. The session was chaired by Mr. Shri A.C.R. Das, Ex-Industrial Advisor, Ministry of Steel and had five papers in total.

Figure 29: Mr. A.C.R. Das, Consultant, Ministry of Steel chairing the Technical Session 2

Energy Efficiency for sustainable steel production in secondary steel sector- opportunities and future roadmap by Dr. S. N. Srinivas, Programme Analyst, EEU, UNDP

Figure 30: Dr. S.N. Srinivas, Programme Analyst, UNDP

The first presentation of technical session 2 was presented by Dr. S.N. Srinivas, Programme Analyst, EEU, UNDP. During his presentation, Dr. Srinivas presented the achievements of the 2 phases of the steel project executed jointly by Ministry of Steel and UNDP. Dr. Srinivas highlighted that the phase 1 of the project was successfully able to pilot energy efficient technologies in 34 steel re-rolling mill across the country. Further, a replication study showed that 116 SRRM had adopted the technology on its own. The 2nd phase of the project supported 283 steel units consisting of 279 SRRM units and 4 nos. of Electric Induction Furnace. He also stated that during the phase 2, piloting of energy efficient technologies was done in 4 nos. of Induction furnace which led to a saving of approximately 10 % in specific power consumption. He also explained the various energy efficient

technologies which were being promoted by the project for SRRM and EIF sector. Dr. Srinivas highlighted that the project intervention led to a saving of 93kWh on an average in the EIF units. The average investment made by the EIF units was Rs 2 Crore which was received with 15 months period. He stressed on the tremendous potential for further improvement of energy consumption in the sector. Dr. Srinivas highlighted that UNDP is in discussion with Ministry of Steel currently for the 3rd phase of the project. The 3rd phase of the project envisages energy efficiency intervention in the four sub-sectors of steel namely DRI, EAF, EIF and SRRM and is expected to benefit around 1100 units.

Quality and Special Grade Steel Production through Electric Induction Furnace Route by Mr. Pradeep Majumdar, Managing Director, Eastern METEC Private Limited.

The presentation by Mr. Majumdar stressed on the various ways of producing quality steel using the induction furnace route. He explained in details four ways of producing quality steel through the induction furnace. The following ways to produce quality steel was explained by Mr. Majumdar, in his presentation:

Figure 31: Mr. Pradeep Majumdar being felicitated by Mr. Ashok Garg

Phosphorous removal through LD Convertor and subsequent removal of Sulphur by

1. Ladle Furnace using raw material as Induction Furnace liquid metal.
2. Without power with chemical treatment and oxygen blowing,
3. Feeding liquid steel from Induction furnace and adding further DRI in Arc furnace.
4. Using Ladle furnace with tilting facility to do slag off and ladle treatment.

Mr. Majumdar also highlighted the cost impact of each of these processes. Mr. Majumdar also presented the ways of making special grade of steel using a "Vacuum Induction Furnace" wherein melting, processing and vacuum degassing is done in the same furnace.

Schemes and Financial Model for Implementation of Energy Efficiency Technologies for Steel Sector by Mr. Shankar Halder, Lead Technical Expert, EEC, SIDBI

Figure 32: Mr. Shankar Halder being

Mr. Shankar Halder, represented SIDBI and presented his paper on various schemes and financial models available with SIDBI to fund energy efficiency project for the Steel sector. Mr. Halder explained the 2 prone strategy of SIDBI, one through financial assistance through focused line of credit and Innovative models/schemes and other through developmental support to MSMEs. Mr. Halder informed that contracted lines of credit from international partners likeKfW, JICA, AFD, WB, etc. are available for financing Energy Efficiency/Cleaner Production projects. An Energy Saving Equipment List (ESEL), an exhaustive list of energy saving equipment for various MSME sectors has been prepared by the consultant appointed

by JICA. The branch officers are required to check only that whether the proposed equipment is included in the ESEL or not. He also informed that a Loan Eligibility Assessment tool has been developed by KfW. The branch officers are required to collect the input energy & production data (Prior and Post Investment) from the borrowers and the same will be used for the loan eligibility assessment. He also informed about the World Bank- GEF project which has created a revolving fund for energy efficiency funding. Mr. Haldar also informed about the 4E program to the participants. Mr. Haldar explained the Partial Risk Sharing Facility for Energy Efficiency (PRSE) scheme available with SIDBI. Various other financial models were also highlighted upon.

Power Quality and Its Impact on Steel Re–Rolling Mill Infrastructure by Mr. ManasKundu, Asia Power Quality Initiative (APQI) India Coordinator, International Copper Association India and Prof. M.V. Aware, Electrical Engineering Department, VNIT, Nagpur

In his presentation, Prof. Aware stressed on the importance of power quality in the steel processing field. A power quality audit was taken in the state of Chhattisgarh, the result of which was presented in the conference. Following were the observations made in the power quality audit.

Figure 33: Prof. Aware during his presentation

- RMS & THD variations of voltage and current have been observed for all three types of SRRMs and it has been found that the graphs are crossing the all harmonic limits as per IEEE 519 standard.
- The motor used for roughing mill is rated for 415 V (L-L). But, overvoltage operation leads to the saturation of the magnetic circuit of the motor and hence indicates the non-linear behavior of the motor.
- The micro and small SRRMs are having higher harmonic currents as compared to the medium SRRM.Motor should also be designed with derating factor same as transformer K factor.
- To reduce voltage sag up to large extent, operate transformers in parallel for better performance.
- To solve voltage distortion problem, it is suggested to connect AC & DC drives on separate transformers.

Some conclusions from the impacts of PQ issues are as follows:

- Voltage drop in transformer is increased by 0.8 V to 4 V due to harmonic currents.
- I2R loss increases in a cable owing to harmonics and it is 50 % more in case of aluminium cable as compared to copper cable. Therefore, it is suggested to make use of copper cable only.
- Capacitor bank works as harmonic filter and draws the 50 A to 200 A of harmonic current components.
- K factor rating is to be considered during design of a transformer. Its value varying from 1 to 13, it is very high derating of transformer in terms of harmonics.

Some of the measures recommended for the industry were:

- Operate motor at rated voltage under no-pass condition by suitable transformer tap selection.
- Transformer should have low impedance (less than 5%) and suitable for the harmonic currents. (Use of K factor rated transformer).
- Configure the electrical network for better the voltage regulation.(Parallel operation of the transformer, if more than one transformer is available).
- Power factor capacitors should be connected across the motor terminals and rated
- Voltage should be maintained across the terminal.
- Harmonic tuned filters to be designed and installed after the power quality audit.
- Monitor no-load current to ensure the mechanical alignment is correct.
- Always separate the supply feeders for roughening mill and DC/AC drive systems. Preferably they should be supplied through the separate transformers.
- Neutral current to be checked and conductor sizing should be appropriately rated.

Technological Advancement of EOT Cranes in steel industry by Shri Tejinder Singh, M/s ASIAN Cranes

Cranes is one of the critical equipment for the steel processing industry as it is used for all major material handing process. Since, crane is used in all critical process, safety and energy efficiency related to the same is important. Mr. Tejinder Singh in his presentation provided a brief overview of his company i.e. M/s Asian Cranes. He also outlined the various developments which have taken place in recent times related to the EOT crane. He also explained some of the best available crane Followed by the UNDP Country Director's address; the event was graced with latest technology available for the steel sector. He also stressed about the importance of automation and control system in crane operations.

Figure 34: Mr. Tejinder Singh, Asian Cranes

Opportunities for steel makers through Induction Furnace Route by Mr. Arpan Gupta, Deputy Director & Head (Mines & Metals), FICCI

The concluding remark for the session was presented by Mr. Arpan Gupta from FICCI. During his speech Mr. Gupta highlighted the current position of Indian steel industry in World's prospective and the future projection. He stated that the steel consumption in the country is poised to grow at an exponential way. He also stated that the importance of the steel producing fraternity producing steel through electrical route is also expected to grow also three-times 2030 even at the current share. He highlighted that it is important for the industry to come forward jointly.

VENDOR KIOSK

The conference also arranged for vendor kiosk of prospective service providers are government agencies.

Figure 35: Vendor Kiosk of JPC

Figure 36: Vendor Kiosk at AIIFA Conference

GLIMPSES OF THE EVENT

Registration

Registration

Inaugural Session

Address by the Chief Guest

Ministry presenting award

The conference

The technical session

The organizers

Memento presented to the Minister

Presentation of award

The delegates

Networking during conference

EVENT CONCLUSION

AIIFA's 31st conference on the topic "Strengthening Green Steel Production : Building Pillars for New India" held on 24th November, 2017 at Hotel Le-Meridien, New Delhi will be marked with golden letters in the history of steel reforms in India. This is the for the first time in the history where a generous effort made came to a reality when the entire steel fraternity producing steel through the electrical route came under a single roof and joined hand with the Government to begin a new era of sustainable steel production through the electrical route.

Steel has the unique property of being recycled again and again without losing its properties. When India is steadily moving towards a developed economy; use of steel in country in every aspects of life is poised to grow. Steel is indeed the greener alternative for construction and infrastructure building compared to its conventional alternative. The life cycle analysis of steel makes it a sustainable replacement for many conventional materials.

Steel produced through the electrical route is the most cost effective, flexible, energy efficient and prospective way of making steel. A significant share of country's steel production has been through the electrical route. This is expected to grow by three-fold by 2030.

Steel produced through induction furnace using scrap is the greenest way of producing steel. This not only saves the natural resources like iron ore but also makes an effective way of re-using the scrap for betterment of livelihood.

The conference had overwhelming from the industry and other steel association. It also had participation form the consultants and manufacturers of the sectors. Units from across the country participated in the meeting and provided their positive feedback.

The Ministry of Steel particularly extended their fullest support not only to make the event successful but also ensured their commitment to support the industry at all aspects. UNDP also ensured their fullest support to the industry. Thus the conference marked a new beginning for the steel sector and initiated the move to develop a sustainable road-map for the industry and its role in building Hon'ble Prime Minister's dream of building a new India.

MEDIA COVERAGE

MEDIA COVERAGE

THE TIMES OF INDIA
Business

Govt assures support to green steel production

PTI | Nov 24, 2017, 14:22 IST

New Delhi, Nov 24 () Steel Minister Chaudhary Birender Singh today assured all possible support to secondary steel sector, which uses eco -friendly electric furnace to produce the commodity.

Electric arc furnace route emits less Co2 and cost of production is also reduced compared to the blast furnace route.

The minister was speaking at 'All India Induction Furnaces Association Conference (AIIFA) on Strengthening Green Green Steel Production' here.

AIIFA Secretary General Kamal Agarwal enumerated the problems being faced by the sector including lack of financial support from banks, varying power tariffs in states, and non acceptance of the products by government bodies such as NHAI, CPWD, Railways.

Besides, there is shortage of scrap which is required for making steel through electric furnace route. Duty on import of scrap is another issue.

Responding to this, Singh said his ministry will take steps to address all issues of the sector which has the potential to create employment for 3 crore people.

"There are certain points which need attention of our ministry and also we can take some with other ministries."

He also urged the industry to work on technology."We are way behind in technology. You will have to think out of t he box. The ministry has also announced a competition to encourage innovative ideas."

The minister said he sees potential in the industry in terms of production and job creation and therefore he will provide all support to it.

Steel Secretary Aruna Sharma informed the members of the industry that the duty on nickel has already been removed and the ministry has requested the Revenue Department to remove the duty on ferro-nickel and stainless steel scrap. ABI ANU

indiatoday.in

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November 24, 2017 | UPDATED 14:25 IST

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partners and sponsors for maing the event successful.

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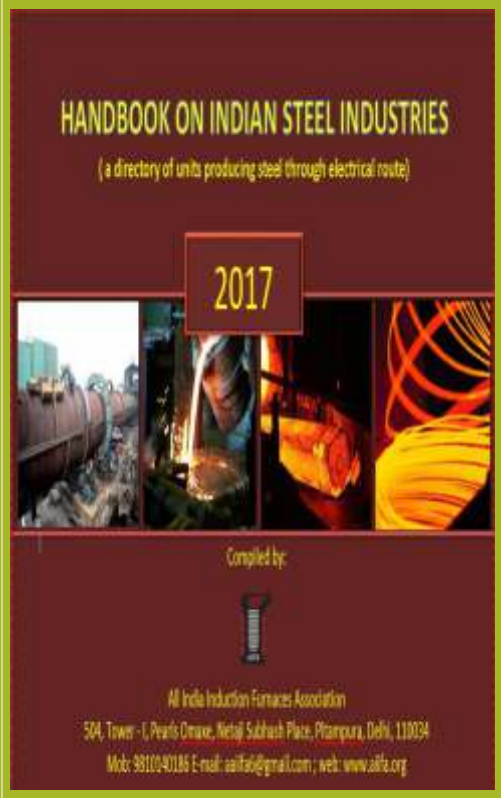

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