



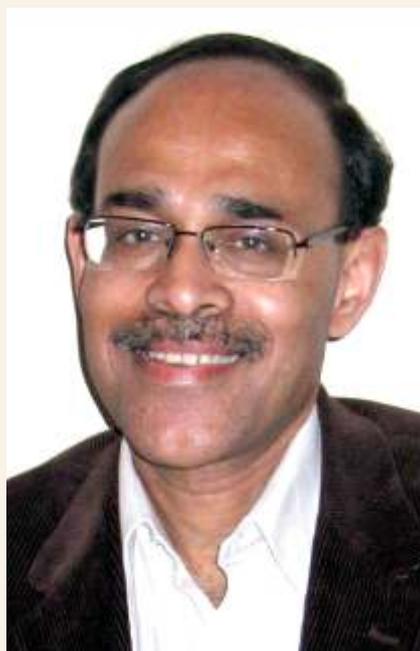
## Strengthening R&D in Steel Need of the Hour

- Prof. Dipak Mazumdar

### What is the rationale behind IIT to hold such an important conference like STIS-2017?

- Iron and steel production in India, has been growing steadily and is expected to touch the 300 MTPA mark by 2025. Research and development as well as steel education are therefore national priorities. As we all know, iron and steel education and research have, unfortunately, taken a back seat in the country. Also an exclusive institution like say, ISIJ or AIST to cater to the various needs of the iron and steel sector (production, education and R&D, all inclusive) is absent in the country. We, a group of educationists and industry personnel therefore, thought of bringing the stake holders under one umbrella periodically to discuss various issues of relevance and concern from the national stand point. STIS series of conference is therefore essentially a facilitating platform. Immense benefit is expected by having such a periodic conference in the country.

Since inception, IIT Kanpur has been in the forefront of Metallurgical Engineering education in the country. The conference held in a vibrant academic atmosphere, for sure, will be an excellent knowledge sharing platform



**P**rofessor Dipak Mazumdar has been engaged in teaching and research at IIT Kanpur for nearly thirty years. Author of two text books, over one hundred forty research publications, a patent and recipients of eighteen national and international awards, Professor Mazumdar is a globally acclaimed personality in the field of steel education and research. He currently holds the distinguished Ministry of Steel Chair Professorship in the Department of Materials Science and Engineering at IIT Kanpur and works as a consultant for more than a dozen domestic steel and refractory industries.

*"I personally believe that strengthening of indigenous R&D is the need of the hour and this alone can reverse the present scenario to a large extent. We are currently producing large quantity of steel which is further likely to grow in the years to come. Little or no innovation has taken place in iron and steelmaking and plants overwhelmingly depend on imported technology,"* said **Dipak Mazumdar** to **Sanjay Singh, Associate Editor of Steelworld** in an Interview. Excerpts

helping particularly domestic students, engineers and researchers remain up-to-date with various current issues challenging the steel industry.

**How much has the previous conferences helped academicians and researchers to gain knowledge and what contribution it has led to the growth of Iron and Steel industry?**

- From beneficitation to continuous casting, extensive deliberations were made on numerous topics and there were very eminent speakers from around the globe during the past STIS conferences (You will practically see all stalwarts present in the forthcoming STIS as well). Given such, ATIS09 and STIS13 could successfully provide a great learning platform to all of us. Conferences are organized to share information and to broaden our knowledge base. From my first hand experience, I am fairly confident that the quantum of knowledge participants carried back to their respective organization from the two previous conferences, must have been highly rewarding. Also, a large number of participants from domestic steel industry and academic institutions who participated in the previous conferences had, by and large, indicated positively on the outcome. This is encouraging and helps us move forward.

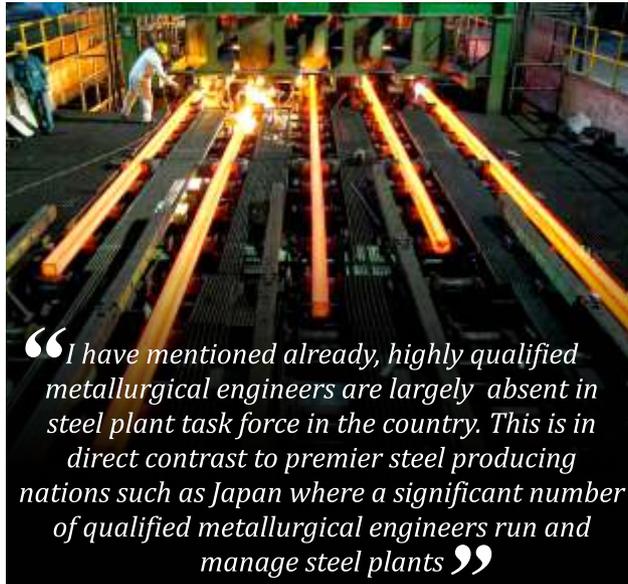
**As of today, Indian Iron and Steel industry faces its toughest challenges from China. What in your opinion needs to be done to make the domestic industry more price competitive and technologically advanced?**

- I personally believe that strengthening of indigenous R&D is the need of the hour and this alone can reverse the present scenario to a large extent. We are currently producing large quantity of steel which is further likely to grow in the years to come. Little or no innovation has taken place in iron and steelmaking and plants overwhelmingly depend on imported technology. Consequently, operating efficiency and product quality do not compare well with those of other major steel producing nations. The industry must shift its only production centric approach and be more creative; a proactive role of the industry can only reverse the existing scenario. Highly qualified metallurgical engineers, needed to propel innovations/improvements are largely absent in steel plant task force. Few academicians in the country are working in iron and steelmaking. Our visibility in various international forum has remained sub-optimal (viz., see the table below). It appears to be a monumental task to put steel production, education and research altogether on the right track.

Conferences	Number of Contributions from China	Number of Contributions from S. Korea	Number of Contributions from Japan	Number of Contributions from India
ICS-2015, China	126	18	17	9
Asia steel-2015, Japan	64	41	171	10

**Has the Indian steel industry kept pace with technological advances or in your opinion we need to further change our way of making steel?**

- I have mentioned already, highly qualified metallurgical engineers are largely absent in steel plant task force in the country. This is in direct contrast to premier steel producing nations such as Japan where a significant number of qualified metallurgical engineers run and manage steel plants. Furthermore, production and R&D sectors in Japanese steel



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plants employ engineers roughly in 1:1 proportion which is unheard of in the country. In domestic steel plants, emphasis on R&D has remained minimal and translational research therefore virtually absent.

Availability of good raw materials and bright engineers can provide the necessary impetus and change the scenario provided steel industries are willing to change their mindset. Good housekeeping, decent compensation package and a creative environment are our inherent weaknesses. Common perception that steel industry is “Dirty, difficult and dangerous” need to be changed as well.

For more detailed information on the issue, refer to the Ministry of Steel report “A study on the requirement and availability of technical manpower for steel industry in India”.

The report is available for reading in the website: <http://home.iitk.ac.in/~dipak/>

**How can a premier institute like IIT help the Iron and Steel Industry or the Ministry of Steel to adopt more proactive approach and produce better steel?**

- Academic institutions help industry through knowledge generation and by ensuring availability of quality manpower. It is the amalgamating effect of high quality manpower and knowledge that help steel plants remain competitive and innovative.

Unfortunately, domestic steel industries are not able to recruit and retain bright minds as challenges are few and far between and creativity is absent. Also, increasingly, bright students do not opt to study iron and steel making. These are of concern and I believe, steel producers have a key role to play to change the existing scenario.

**As our defense requirements are growing, how can the steel industry help the country to produce better grade of product for defense so as not be dependent on imports?**

- DMRL, MIDHANI etc. are involved in the development and production of high grade steel with superior properties, albeit in a small scale. Making high quality steel in large tonnage is by no means an easy task. Not only superior refining and processing technology are needed to develop such steel, but also highly qualified and capable engineers who can develop the grades and produce the same on a sustained basis are required. Plant discipline is also an important factor. There are no short cuts as existing producers are unlikely to share their secrets. Once again, I wish to emphasize the need for creative and translational steel research in the country.

**Automotive sector is witnessing a shift from steel to metals. Do you see a demand impact on steel in future?**

- To some extent, yes, but I do not really hear an alarm here. Steel researchers around the world are relentlessly working to produce superior grade steel with improved cleanliness and enhanced properties. Section size and component mass, as a result, are decreasing and I believe, these are likely to continue.

Thirty five years back, my friends at McGill told me not to go for a doctoral degree in steelmaking as they could foresee future demand of steel dwindling due to progressive replacement by Aluminium and composite materials. We know the rest of the story and no further elaboration is perhaps necessary.