IIM Metallurgy Materials Engineering

NEWSLETTER
THE INDIAN INSTITUTE OF METALS
(DELHI CHAPTER)

ANIL GUPTA
Chairman, Delhi Chapter

S. C. SURI
Chairman, Technical & Publication Cell

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INTRODUCTION

This News Letter is containing a brief of the 7th meeting of the Executive Committee of IIM-DC held on 28.12.2011. The News Letter also contains the following write-ups:

1. New Year Messages from Chairman of IIM DC and Chairman of Technical & Publication Cell of IIM Delhi Chapter
2. Role of Secondary Metallurgy in Clean Steel Production by Shri S C Suri, Chairman, Technical & Publication Cell & Vice Chairman, IIM Delhi Chapter
3. "Engineers-could be better administrators-are they different", by Shri K L Mehrotra, Vice Chairman, IIM Delhi Chapter
4. A brief on Technical talk titled "Role of Nickel in Stainless Steel"
5. A brief on Chapter Level NMD Celebrations held on 3.12.2011
6. The News Letter also contains National and International news relating to ferrous & non-ferrous sectors.

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Chairman's Message

On behalf of The Indian Institute of Metals, Delhi Chapter (IIM DC), I would like to convey a very happy and Prosperous New Year 2012 to the fraternity of IIM DC and to all the readers of the IIM DC News Letter.

The basic purpose of this News Letter, a monthly issue of IIM DC, is to disseminate information and bring out articles of national and international interest in the area of ferrous and non-ferrous sectors.

If we look back at 2011, the IIM DC has tried its best through its monthly issues to disseminate information in the field of ferrous, non-ferrous and material science areas. This has been possible because of the contributions from a number of active IIM members. IIM DC can always improve upon the coverage by increased contributions from its members. I would also request the readers of this Newsletter to send their suggestions/comments as to how IIM DC can come out with increased technical contents of this monthly publication.

The global economy is facing recession today. The Indian economy is not insulated from the world economy and is thus also facing the heat of the recession. The Indian economy is also facing the pains of interest rate hikes, inflation and slow pace of decision making at policy level. This has affected the growth rate of Corporate Sector. We wish and hope that this is a temporary setback and things would hopefully bounce back towards improvements in due course. We are optimistic that Mining and Metal Sector will be able to overcome this melt-down.

In 2011 IIM DC has taken several initiatives. It has accomplished the following important tasks:

a) Successful organisation of International Conference on "Indian Metals Industry – Shaping the Next Decade" held in February 2011, where thirty countries participated and 42 technical presentations were made. These included 18 presentations from International Speakers. This has widened the fame of IIM DC.
b) Increase in the technical activities of the IIM DC in the last 4-5 months
c) Collaborative programmes with different Industry Associations in Metals, Minerals field in Northern India
d) Starting Contact Programmes for AMIIM Examinations for prospective students. This is likely to take concrete shape in a month or two
e) Creation of physical facilities in terms of upgradation of auditorium, board room and library.

In 2012 IIM DC has planned to organise the International Conference on MMMM 2012 in September. IIM DC looks forward to active participation/ total commitment of its members to make this event a memorable and successful meet. This will help IIM DC to widen its reach in the international arena.

I once again wish all members of IIM DC and their families and to all the readers of this News Letter a happy and Prosperous New Year 2012.

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Message

S C Suri
Chairman, Technical & Publication Cell

The end of 2011 and beginning of 2012 is a period of reflection, stock taking and period of future planning. Normally on an occasion of year ending, we do a stock taking of the activities, we undertook in the previous year and review the plan of the activities in the ensuing year. Before I do that I wish to convey all the members of IIM DC a Very Happy and Prosperous New Year.

The objective of the publication of our monthly News Letter is dissemination of technical information of relevance to our members in the Mineral, Metal and Material Segments.

The quality of any technical publication depends on the inputs of the technical contents of the articles and information it disseminate to its members. Good deal of time and effort is spent in publication of this monthly News Letter. I would convey my sincere appreciation to the IIM members who contribute write-ups and technical articles published in the News Letter.

I shall greatly welcome feedback from the members as to whether the objectives of providing technical services to our members are being effectively fulfilled. I shall also greatly welcome greater contributions from fellow IIM members so that this technical publication becomes more informative readable and ultimately a reference document for future preservation.

The world economy is in its state of melt-down. As Indian economy is closely integrated with world economy, we are also facing its impact. The metal market has shrunk. On the steel front where the steel demand was growing at 10-11% per annum there is a sudden drop down to around 2%. There are serious challenges in the steel sector in the raw material availability and land acquisition fronts.

India which is the 4th largest producer of steel in the world and has the ambition to become the 2nd largest producer in 2015-16 is likely to face serious challenges on the capacity creation front.

In the year 2011, we have attempted increased technical activities in terms of technical presentations, workshops, interactive programmes. This has been possible because of the wholehearted participation/involvement of members of IIM DC.

A biennial programme of MMMM, which IIM DC has so effectively been organizing since 1996 is scheduled for September 2012. This is a land mark technical programme of IIM DC. It shall require total devotion and involvement of all IIM DC members.

I once again take this opportunity to wish all the members of IIM DC and their family, a Very Happy and Prosperous New Year.

Chapter News

Executive Committee Meeting

The 7th meeting of the Executive Committee was held on 28th December 2011. The following are the salient issues discussed:

(i) Progress on the International Conference on "Resurgent India – Vision 2020 in Metals and Minerals Sector" to be held by IIM DC in September 2012 in New Delhi

(ii) Six months statement of accounts of IIM DC for the period 1.4.2011 to 30.9.2011

(iii) Scholarship for Engineering Students pursuing Metallurgy & Metallurgical Engineering

(iv) Sponsorship support to M/s Steel Furnaces Association of India (SFAI) for organizing International Conference on "Indian Steel Industry – Challenges and Opportunities" in March 2012.

(v) Quiz Competition among school students of 10+2 classes in the area of metallurgy to be held on 28.1.2012 at IIM DC

Role of Secondary Metallurgy in Clean Steel Production

S C Suri
Life Fellow IIM, Vice Chairman IIM-DC

Clean steel making has different connotations for practising metallurgists. It means different things to different individuals. To some clean steel is low in residual elements. To others clean steel could also refer to the surface quality of an ingot, bloom, slab or sheet.
What is an inclusion?

Inclusions are non-metallic particles that are trapped in solid steel matrix of a rolled or a forged product. Exogenous inclusions are those that come from sources outside of the steel such as refractory bricks or flux used in the moulds and casters. Exogenous inclusions are typically large in size because they originate as "Crumbs" of these outside sources. They become entrapped in the steel while it is being produced or processed.

Indigenous inclusions are those that are formed from chemical reactions inside the liquid steel as it is under process, e.g. when manganese combining with sulphur to form small manganese sulphide inclusions. Indigenous inclusions are typically of the micro-scale. For production of clean steel it is important that we exercise control for removal and elimination of indigenous inclusions.

Indigenous inclusions can be categorized under two main heads.

1 Oxide inclusion
2 Sulphides inclusion

Oxides inclusions are generated by the addition of aluminium or silicon during secondary steel making. Sulphide inclusions are generated during solidification when sulphur combines with sulphide, most commonly manganese.

Oxygen is introduced in the Electric Arc Furnace and removed in the Ladle Furnace.

Electric Steel making starts with primary steel making in the Electric Arc Furnace when solid scraps gets converted into liquid steel. Oxygen is blown into the Electric Arc Furnace to accelerate the melting process and removal of carbon.

After primary steel making in the Electric Arc Furnace, the steel is tapped into a Ladle and then moved to Ladle Furnace for secondary steel making. In secondary steel making, alloys are added and the temperature of the liquid steel is adjusted by heating with carbon electrodes.

One of the main objectives in secondary steel making is to remove all the oxygen that was introduced in the Electric Arc Furnace. This is done by addition of de-oxidizing agents like aluminium and silicon. Both of these elements have a strong affinity for oxygen so once they are introduced, they begin to combine with oxygen dissolved in the steel to form aluminium oxide or silicon oxide.

Now after we have generated all these oxides, the idea is to remove them by moving them to slag. This can be done by stirring. This stirring can be done by magnetic induction or inert gas bubbles through the bottom of the Ladle. The oxide particles come into contact with each other and tend to agglomerate and form bigger oxides. These bigger oxides have greater buoyancy and tend to float to the slag on the top of the liquid steel bath. To accomplish this removal of oxygen by addition of de-oxidizers, we must have effective stirring to bring the oxide in contact to agglomerate and float to the top.

Sulphur Removal in the Ladle Furnace

While oxygen is being removed with the help of aluminium and silicon, other processes are necessary in the Ladle Furnace to remove sulphur. Sulphide inclusions are generated during solidification when sulphur combines with manganese to form manganese sulphide. The most effective way to remove the manganese sulphide inclusion in a final product is to reduce the sulphur contents of steel. For removal of sulphur, the most common compound used is calcium oxide. Sulphur combines with calcium to form calcium sulphide with generation of oxygen. It may be noted that a slag which is diluted with calcium oxides has a higher capacity to absorb sulphur.

Achieving the lowest possible inclusion contents.

It is impossible to achieve perfect steel by the above listed method and there will be some inclusions that will remain in the steel. The most important processing variable for inclusion removal is the lime and adequate mixing. It takes time for oxide particles to move in the liquid steel and agglomerate. Adequate mixing facilitates agglomeration of the oxide particles. Proper stirring of steel will increase the slag and liquid steel interaction.

To produce ultra clean steel the liquid steel has to undergo additional secondary melting operation such as vacuum, arc, remelting or electro slag refining. These remelting operations take an air melted under control conditions to refine the steel further resulting in steel with even lesser inclusion content.

ENGINEERS - COULD BE BETTER ADMINISTRATORS – ARE THEY DIFFERENT

K L Mehrotra
Vice Chairman, IIM DC

An Engineer has to make something happen. The main attribute of an engineer is his ability to synthesize a device or a system to perform a required function at a minimum cost. This ability distinguishes him from "SCIENTIST" who engages himself in trying to understand natural phenomenon, an "ARTITST" who explore reality and create work for literary and aesthetic enrichment and general public who utilize the output of both art and engineering for their functional use and needs. To be successful as an Engineer, one has to combine grounding in engineering analysis, Knowledge of materials and their properties, Expertise in synthesis and finally the use of Engineering Judgement in asking the right question (Problem/Identification) and getting the right answers (Optimization). Engineers who are trained in Analysis and Synthesis recognize the basic difference in these two activities. The former gives a unique solution and the latter offers a variety of possible options. A good Engineer uses his personal experience along with his knowledge to appropriateness could be Cost, Efficiency, Durability, Safety, Reliability, Quality, Ease of maintenance or a combination of these.

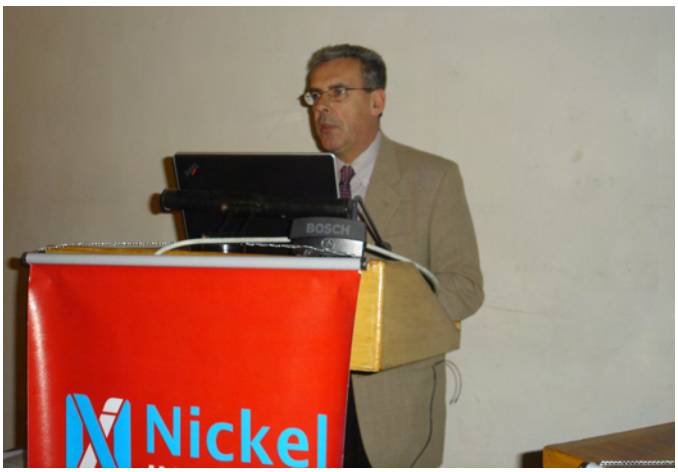
When an engineer begins his education, the emphasis is on-ICS eg: Mathematics, Physics, Acoustics, Elastics, Mechanics, Chemiques, Thermodynamics, Statistics, Dynamic, Hydraulics, Electronics. The –ics at the end of each word signifies that the subject is Scientific, Analytic, Synthetic, Mathematic and Academic. The Characteristic is the absence of concern of human values. The objective is to be able to describe and predict the outcome of well-defined actions in well-defined circumstances.

The second phase of development occurs when engineers move into gainful employment where they encounter what may be called the –ing phase, eg: Planning, Designing, Drafting, Drawing, Creating, Manufacturing, Erecting, Developing, Servicing, Optimising, Delivering, and above all managing it can note action. The ics subjects are concerned with Knowing and Understanding while the ing subject are concerned with Doing or more accurately with delivering to customers the promises of Engineering Education. At this point in all engineer's career, another important ics subject Economics comes into play along with its linkages with society.

For many engineers, the transition from –ics to –ing phase is traumatic. Too many engineers desire jobs in which they will be paid well for solving –ics type problem. Such problems are characteristical by phase "Given this-Solve that". Life does not give such problem and hence in the "-ing phase", problems are not simple –ics problems and cannot be solved in routine fashion but require putting information and skill in a new way. In a third phase, the –tion phase that best prepares engineers to play significant role in the governance of the complex system required to support society. The –tion phase, the engineers deal with society's function and institutions, which include Transportation, Communication, Construction, Habitation, Sanitation, Health Protection and system for Regulation. The Suffix –tion indicates a collection of activities that has some permanence. Human Value excluded in the –ics phase act as constraints in the –ing phase. At the –tion phase, human values, in all their complexity play the central role.

Engineers work on abstract mathematical models but are not Mathmaticians; they use scientific methods of analysis and evaluation but are not scientists, they are concerned in the reduction of the cost of their product and expenditure on their quality of human existence but are not social scientist. They often manage or administer large systems but are not Managers/Administrators and they also create objects of beauty but are not Artists, then what are they? They combine in their personality and action some parts of all the above type Mathematicians, Physical Scientist, Economist, Sociologist, Managers and Artist. By education and training, creativity and through constant interaction with the public and search for solution of societal problems, they work as applied social scientist helping through their endeavours in bringing about a better quality and life. So the engineers fit the bill of a better administrator as well.

A brief on Technical talk titled "Role of Nickel in Stainless Steel"



The Indian Institute of Metals-Delhi Chapter and The Indian Stainless Steel Development Association jointly organised a Technical Talk by Dr. Peter Cutler, Director, Promotion, Nickel Institute. UK. The talk was held on 14.12.2011 at India International Centre, New Delhi. About 50 members participated in the deliberations.

Dr. Peter Cutler is a PhD in metallurgy from Cambridge University, UK and presently he is the Director (Promotion) Nickel Institute. He has wide industrial experience in Nickel Alloys. He is responsible for coordinating world-wide promotional activities of Nickel containing Alloys, Stainless Steel constituting a significant share of his work.

Shri S C Suri, Vice Chairman, IIM DC introduced the speaker and briefly introduced the broad aspects of the topic of Nickel in Stainless Steel.

Shri N C Mathur, Advisor, JSL Stainless Steel and President of Indian Stainless Steel Development Association, briefed the participants regarding the present level of global stainless steel production and also the current status of stainless steel production in India. He also informed that India is the third largest steel producer of stainless steel in the world. The other two being China and European Union.

Dr. Peter Cutler in his presentation reviewed the product split, i.e, the categorization of different stainless steel grades and their performance parameters of corrosion behaviour, strength characteristic and end use applications for the major stainless grades viz austenitic, ferritic, martensitic grades and duplex grades. He also stated that it is the end use applications of this specific grade which will determine its cost of production and market applications.

In this context, Dr. Cutler deliberated in detail the corrosion characteristic, strength characteristic and the end use applications of stainless steel of 200 series, 300 series and 400 series for different purposes.

Dr. Peter Cutler also reviewed the recycling aspects and the life cycle costing aspects of various stainless grades.

There was a lively question-answer session after the conclusion of Dr. Peter Cutler's technical presentation.

As a mark of appreciation for his very informative and stimulating presentation, an appreciation award was handed over to Dr. Cutler by Shri S C Suri, Vice Chairman, IIM DC. Shri Ramesh Gopal, Executive Director Indian Stainless Steel Development Association proposed a vote of thanks to all.

The presentation was followed by dinner.

Chapter Level National Metallurgists' Day Celebrations

National Metallurgists' Day was celebrated by Indian Institute of Metals, Delhi Chapter on December 3rd 2011 at lecture hall in Jawahar Dhatu Bhawan, Tughlakabad Institutional Area, New Delhi.

Mr K. L Mehrotra Vice Chairman of IIM Delhi Chapter welcomed the participants and briefed the audience about the background of NATIONAL METALLURGISTS' DAY.

Mr Anil Gupta Chairman of IIM Delhi Chapter informed the members present about the activities undertaken in recent past by IIM DC as well as outlined the new initiatives to be rolled out in near future.

The Guest of Honour Dr Gokul Mukherjee, former Vice Chairman of SAIL, delivered a motivating and informative technical presentation titled "Genesis of Production and Processing of Alloy Steels for Critical Industry Segments". Dr Mukherjee started his talk by expressing concern that Indian steel sector, while multiplying the capacities did not consider investments in alloy steel area. He recollected the history of alloy steel development in India going back to the time when only few users like railways and defence consumed alloy steels and were totally dependent on imports. He said that the decision by the Indian Government in 1965 to set up Alloy Steels Plant under erstwhile Hindustan Steel Limited at Durgapur was taken keeping in mind the facilities available from Durgapur Steel Plant as well as proximity to Kolkata. He highlighted the efforts required not only in the technical skills required for producing alloy steels but "What to produce" and "Whom to sell." Another challenge was lack of available standards in India while handful of alloy steel users at that point of time followed various different standards of British, German, Japanese, American and Italian etc.

Next talk titled "Continuous Improvement in Steel Plants" was by Dr. R K Iyenger, a noted Metallurgist and President of US based Tecnovations International Inc. The speaker highlighted that why a steel mill should adopt the process of Continuous Improvement to stay healthy and profitable in the era of increasing competition.

His presentation was based on his experience of Technovations International. The highlights of his presentation included the steps needed for:

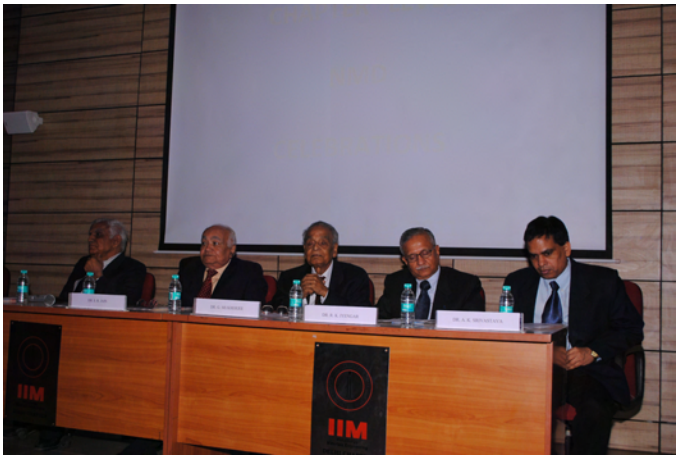
(i) Continuous improvement of performance of Steel Plants
(ii) Energy Efficiency Front
(iii) Productivity Improvement
(iv) Techno-economic parameters Improvement
(v) Interaction with R&D and Engineering Units
(vi) Management Front

The presentation was very well received by the audience.

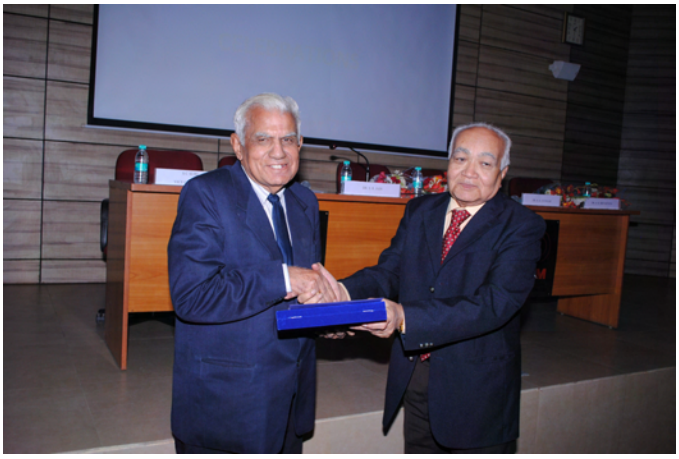
Dr AK Srivastava from National Physical Laboratory and recipient "Metallurgist of the Year" NMD Award at Hyderabad delivered a very informative lecture on "Complex Growth Morphologies, Microstructures & Properties of Advanced Aluminium Alloys, Composites and Nanostructures".

His talk was devoted to the research work carried out by him in this area. His talk evinced keen interest in the audience.

After the conclusion of the talk by Dr. Srivastava, Chairman, IIM DC spoke about the Chapter Level



NMD Awards introduced by IIM DC from this year. He informed that this year the IIM DC has decided to give only one award of "**Outstanding Dedication Services**". He announced that the recipient of this award is Shri S C Suri, Vice Chairman, IIM-DC. The audience greeted Shri S C Suri on receipt of this Award.



NMD Award and Mementoes were given to Shri S C Suri, Dr. G. Mukherjee, Dr. R K Iyengar and Dr. A K Srivastava by Dr. S R Jain.

Shri Suri was handed over the Outstanding Dedication Trophy and Certificate of Award by Dr. S R Jain, former Chairman SAIL. Shri K L Mehrotra, Vice Chairman IIM DC, presented a memento to Dr. S R Jain former Chairman, SAIL.

Shri S C Suri, Vice Chairman IIM DC and recipient of the Outstanding Dedication of Award, spoke on the occasion and thanked IIM DC and the metallurgical fraternity on bestowing this award.

Shri Neeraj Gupta, Treasurer, moved a vote of thanks after conclusion of the Celebrations.

The Celebrations ended with lunch.

Dr. Sanak Mishra receives Platinum Medal of the Indian Institute of Metals (IIM)

Dr. Sanak Mishra received the Platinum Medal of the Indian Institute of Metals at its Annual Meeting on November 13 this year, in recognition of his outstanding contributions to the metallurgical profession and metals industry. This is the highest Award conferred by the IIM. Dr. Mishra was the President of IIM during 2009-10. Dr. Mishra was bestowed with the National Metallurgist Award from the Government of India in 2003. He was conferred the Centenary Year Distinguished Alumni Award from the Indian Institute of Science in 2008 and the Distinguished Merit Alumni Award from the Department of Materials Science & Engineering, University of Illinois at Urbana-Champaign(UIUC), USA in 2010.

Dr. Mishra is a unique and iconic person in the spheres of science, technology, industry and management. Early in his career he made international mark as a scientist and academician through fundamental and seminal contributions in the fields of alloy magnetism, atomic short range order and crystallographic textures. Next, he plunged deeply into product development and technological innovations, becoming the holder of several Indian patents on steels for domestic cooking-gas cylinders, high-strength steels for construction, weather-resistant steels for railways, etc. He then moved as easily into the world of industry and management and left a remarkable footprint as a visionary leader of Corporate India.

Dr. Sanak Mishra is currently Vice President of ArcelorMittal, the largest steel company in the world, and Chief Executive Officer (CEO) of its Greenfield Projects in India. Prior to that, he was whole-time Director of the Steel Authority of India Limited (SAIL), India's $10 billion "Maharatna" company, and concurrently served as Managing Director of its Rourkela Steel Plant. He was one of the principal architects of the major turnaround of SAIL during 2000-02, as the Head of the Office of Restructuring. He is well known as the architect of the "SAMSKAR" concept of leadership practice, which he designed and implemented to bring about a dramatic transformation in the Rourkela Steel Plant and the Steel City, and which is now a case study in management books in USA and India.

Dr. Mishra is a Metallurgist of world renown and a leading steel technologist. He is the Chairperson of the International Organisation of Materials, Metals and Minerals Societies (IOMMMS). He was the Vice President of the Indian National Academy of Engineering for the period 2007&'08. He was AICTE-INAE Distinguished Visiting Professor at IIT Delhi during 2004-06. Dr. Mishra is Member, Board of Management of the Department of Atomic Energy's Nuclear Fuels Complex, Hyderabad.

A Gold Medallist and a Government of India National Merit Scholar, and known for his exceptional memory, he stood First in the whole State of Orissa at the Matriculation examination and obtained B.Sc.

Honours degree in Physics from the Ravenshaw College and Bachelor of Engineering degree in Metallurgy from the Indian Institute of Science at Bangalore. He then received the MS (1970) and PhD (1973) degrees in Metallurgical Engineering from the University of Illinois at Urbana-Champaign (UIUC) in USA, thereby completing a quartet of degrees at a young age. His thesis Advisor was Prof. Paul Beck, one of the founding fathers of the new field of Materials Science.

In 1979, Dr. Sanak Mishra was awarded the Alexander von Humboldt International Fellowship from Germany, which until then had rarely been given to a person from industry, and spent two years as a Visiting Scientist at the Aachen Technical University, collaborating with Prof. Kurt Luecke, a famous Metal Physcist of Europe. Dr. Mishra was one of the nucleus members of RDCIS, the Corporate R&D Centre of SAIL and rose to the position of its Executive Director. He also served at the corporate headquarters of SAIL as Executive Director of Corporate Planning before joining its Board as a Member.

For his outstanding contributions, he has received high honours such as the JRD Tata Gold Medal, Birla Gold Medal and Kamani Gold Medal from the Indian Institute of Metals; Prof. Jai Krishna Memorial Award from the Indian National Academy of Engineering.; Bharat Shiromani Award; Udyog Ratna Award from the Institute of Economic Studies; Visveswaraya Medal from the Institution of Engineers; Medal of the Materials research Society of india, etc. Dr. Mishra is Fellow of the National Academy of Sciences, the Indian National Academy of Engineering, All India Management Association, Institution of Engineers, Indian Institute of Metals, Computer Society of India and the Institute of Directors. He was awarded the Honorary Membership of the Indian Institute of Metals in 2005.

National and International News

Indian steel giant SAIL eying rural markets

BS reported that tapping the rural markets is currently on top of the agenda of all Indian steel makers. Given the slide in automobile sales, besides the drying of new infrastructure project pipelines and a fall in overall demand growth, steel makers are back at wooing the rural market. They have sensed it would help keep their sales ticking. Steel Authority of India is at the forefront of this plan. The state owned entity, apart from its aggressive plans to set up retail shops in rural areas, is setting up 1,000 dealerships in villages. The company already has 2,700 dealers spread in 630 districts of the country by far the most by any steel maker. SAIL's aim is to ensure the company sells more branded steel in rural areas and increases its reach all over the country. So much so, the company is ready to bear the transportation costs of delivering steel to its dealers. According to a top official, SAIL has charted ways to ensure that its steel is easily available and at competitive prices. The official told BS that "We will arrange transportation of the steel products from our nearest warehouses to the dealers' outlets. We'll bear the transportation costs ourselves." The country's steel demand growth during the first half of this financial year was a mere 2.9%. According to Mr S Machendranathan Additional Secretary and Financial Advisor to the Ministry of Steel, the country will not see double digit demand growth this year. The compound annual growth of steel demand over the last five years has been over 10%. A recent study on rural

Congratulations

Shri K L Mehrotra

The Indian Institute of Metals, Delhi Chapter (IIM DC), conveys its congratulations to Shri K L Mehrotra, Vice Chairman, IIM DC and former CMD, MOIL, for his appointment as an independent Director on the Board of Directors of National Buildings Construction Corporation (NBCC) under Ministry of Urban Development, Government of India.

Shri Mehrotra is already serving as an independent Director on the Board of Directors of Bharat Dynamics Ltd, under Ministry of Defence, Metals Scrap Trading Corporation (MSTC) under Ministry of Steel and Ferro Alloys Corporation.

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Dr. G N Mohanty

The IIM DC also conveys its congratulations to Dr GN Mohanty, Past Hony. Secretary, IIM DC and presently member of Executive Committee, for his nomination as a member of Top 100 Professionals 2011 by International Biographical Centre (IBC) Cambridge, England. This membership is conferred every year by IBC to a select few individuals who have made significant enough contribution in their field to engender influence on a local, national or international basis.

steel consumption by the Indian Market Research Bureau says the construction sector contributes to around 60% of total consumption in the rural area. This is followed by the consumer durables sector, at 30%.

Source: Steelguru

SAIL CSR contribution in Uttar Pradesh

The Minister of Steel, Mr. Beni Prasad Verma has said that during April to August 2011, an amount of INR 2.97 crore has been spent on various projects in different parts of Uttar Pradesh under Corporate Social Responsibility against allocation of INR 64.00 crores for undertaking CSR projects across the country for 2011-12. In a written reply in the Rajya Sabha Mr Beni Prasad said that major part of the CSR budget is allocated and spent in developmental activities in and around peripheral areas of plants/mines/units of Steel Authority of India (SAIL)/MOIL. SAIL is a PSU with multi location presence. SAIL has undertaken CSR projects for welfare and development of surrounding population near its plants/ units located in more than 10 states across the country. SAIL has a Steel Processing Unit at Jagdishpur and also many marketing establishments like warehouses, stockyards, dealer's network, etc. in Uttar Pradesh. He said that MOIL Ltd is implementing CSR projects in the surrounding areas of its operations and a major portion of the CSR budget is spent in the peripheral areas of its operation / mines.

Source: Steelguru

SAIL planning 15 million tonne pr annum iron ore from Chiria

The Telegraph reported that Steel Authority of India Limited's mining consultant Hatch has devised a strategy for a massive 15 fold jump in iron ore output from its Chiria mines. Hatch's plan, submitted to SAIL, envisages production from Chiria to reach 15 million tonnes per annum from 1 million tonnes now, which will make it the most productive ore mine in the country. Hatch has proposed that output be raised in phases first to 7 million tonnes per annum and then to 15 million tonnes per annum. The INR 5,000 crore investment proposal on mining facilities and an ore beneficiation plant will lead to Chiria meeting a third of SAIL's ore requirements. With reserves of 2.2 billion tonnes, Chiria has Asia's largest deposits of high grade ore. Officials said SAIL had obtained stage 1 forest clearance from the Forest and Environment Ministry for 595.075 hectares of Chiria covering the Ajitaburu, Budhaburu, Sukri-Latur and Dhobil leases. Separate environment clearances have been obtained in March for Chiria's Budhaburu and Ajitaburu leases. The Indian Bureau of Mines have approved the mining plans for Chiria's Ajitaburu, Budhaburu, Dhobil and Sukri-Latur leases. SAIL executives said the development of Chiria is crucial to its long term plans. They said "It's the only deposit in India capable of sustaining up to 30 million tonne to 50 million tonne of mechanized mining annually. Over the next half a century, around 40% of SAIL's iron ore requirement will be met from this one single field." Once the ore in the other mines in eastern India gets depleted, Chiria will be the sole supplier to it's four integrated facilities at Bokaro, Burnpur, Durgapur and Rourkela and to the new unit being built at Burnpur.

Source: Steelguru

SAIL, Kobe Steel JV in a month: Steel Minister

State-owned Steel Authority of India (SAIL) is likely to finalise within a month, a joint venture with Japan's Kobe Steel for a 0.5 million tonnes (MT) mill in West Bengal to manufacture special grade steel. "SAIL is finalising a joint venture with Kobe Steel and it's likely to be signed in a month's span. The total investment in the project will be $400 million (about Rs 2,000 crore)," Steel Minister Mr. Beni Prasad Verma said. The JV will help SAIL acquire the Japanese company's patented technology used for value added applications. The new unit will put into use Kobe Steel's iron-making technology to make nuggets. Verma said that after the initial 0.5 MT project to be implemented at Alloy Steels Plant at Durgapur, its capacity will be doubled to 1 MT by adding another 0.5 MT module. As far as technology goes, this will be a first-of-its- kind venture for SAIL. Verma said both the companies are likely to have equal stake in the JV. Meanwhile, SAIL is also in advanced talks to finalise a joint venture with South Korea's POSCO

Source: The Economic Times

Government update on setting up steel processing units by SAIL in India

The Minister of Steel, Mr. Beni Prasad Verma has said that Steel Authority of India Limited has accorded in principle approval for setting up of ten Steel Processing Units in the State of Bihar (Bettiah, Mahnar and Gaya), Madhya Pradesh (Hoshangabad, Ujjain and Gwalior), Assam (Guwahati), Uttar Pradesh (Lakhimpur), Jammu & Kashmir (Srinagar), Himachal Pradesh (Kangra).

In a written reply in the Lok Sabha he said that the SPUs at Bettiah and Kangra have been accorded final approval by SAIL Board. For the SPU at Bettiah, integrated trials have been completed successfully. Upon grant of quality certification the project would be made operational. For the SPU at Kangra, civil and structural works and erection of equipment is in progress. Trials runs are expected to start by March, 2012.

He said, in addition to the above, an SPU is also proposed to be set up by SAIL at Barabanki, Uttar Pradesh through Joint Venture. At present there is no proposal to set up SPU in Sirohi district of Rajasthan.

Source: Steelguru

Global Stainless Steel Market Upturn likely in early 2012

All the leading stainless steel producers in the United States have announced increases to basis values - or reduced discounts - for flat products, effective for January deliveries. European mills have either attempted unsuccessfully, to introduce higher basis figures already or indicated that they will be seeking hikes in the New Year. However, with demand very poor and raw material costs falling, customers are currently expecting lower transaction values. Producers are, in many cases, meeting these expectations in an attempt to secure sales tonnages. Distributors, meanwhile, are offering material from stock at bargain prices, to clear expensive inventory from their accounts before year-end.

So, what factors might support the producers' aspirations? Firstly, there has been a substantial drop in input costs and, therefore, alloy surcharges. The cost of nickel, most significantly, has fallen further than most observers predicted and, so far, there is no sign of a reversal in this trend. The extra for type 304 coil in Europe has fallen by more than €600 per tonne since March 2011, while in the US the surcharge for the same grade has dropped almost $US1000 since April. Both figures will slip further for December. Secondly, there will be an influence from the supply/demand balance, at least in the short term. Customers always reduce their purchase tonnages in the approach to year-end. This has been exacerbated, this time, by the reluctance to buy in a falling market, as well as extra caution arising from the parlous state of most western economies. Moreover, the mills are operating at substantially below their maximum capacity and are likely to cut production further by taking extended breaks around the Christmas and New Year holidays.

As a result, inventory levels will be low throughout the supply chain. Regardless of underlying demand, OEMs and stockists are likely to turn up their purchasing activity in the first quarter, both to return stock levels to near normality and in anticipation of rising prices. The mills, whose own inventories will be lean, may not be in a position to deliver the increased tonnages ordered. Indeed, they may not be prepared to ramp up their output to match what they will perceive as a temporary increase in demand. Supply would then be at a lower level than apparent and possibly even real consumption. The nickel miners are likely to restrict their output sufficiently to maintain LME values above the current level. If this is the case, and assuming that the western economies do not collapse, these factors should combine to support basis price hikes in the short term.

Source: MEPS Steel News

Indian steel sector growth to be below GDP growth in 2011-12

BS reported that while steel demand is quite sluggish globally but policy paralysis has worsened the situation in India. The historical relationship between gross domestic product and steel use growth in India indicates the latter has always been ahead, except during the slowdown in 2008-09. With its sluggish growth, steel consumption will once again lag behind the GDP growth rate. Cumulative figures till October show 2.9% growth in steel consumption, according to Joint Plant Committee data.

Mr Jayant Acharya Director (Commercial) of JSW Steel said that "Till November, the growth is 3.9% to 44.21 million tonnes. For the next quarter, if the steel consumption growth rate increases to 8% to 9% then the annual growth would probably be 5% to 6%." But, that would still be below the GDP growth projection for 2011. The government recently lowered its GDP forecast for the current fiscal from nine per cent to 7.5%, but it would still be way ahead of steel consumption growth, going by steel industry expectations. Mr Acharya explained that "The problem is both investment and consumption expenditure are down. Investment expenditure as a percentage of GDP is normally 32%. It has dropped to 28%."

A Mumbai-based downstream steel player said that "The demand is sluggish all over the world, but it's the policy paralysis in India that has added to the industry's woes. No major infrastructure project has been sanctioned by the government in the past six months." For the 11th Five Year Plan (2007-08 to 2011-12), the

government had planned to spend about INR 2,056,000 crore. For the first four years, however, the government has been able to spend 50% of the Plan funds in 2007-08, 49% in 2008-09 and 38% in 2010-11. Roads and bridges was the only performing sector, where most of the planned funds were spent, while the railways and ports were the major laggards. Spending in power has also come down since the beginning of the Plan period.

Source: Steelguru

Government measures to control steel prices in India

The Indian Minister of Steel Mr Beni Prasad Verma said that the price of steel in the domestic market was at its peak during April to July 2008. He said "During the last three years, the price of steel items in the domestic market has been fluctuating in accordance with the domestic market conditions, international steel market prices and price movement in raw material in the international market. In a written reply in the Lok Sabha he said "The price of steel in the country is deregulated and is decided by the individual producers based on various market conditions, such as demand supply scenario, movement in international steel market prices, cost of raw materials and other input costs. Considering the increasing steel demand in the domestic market, Government has taken various fiscal steps to maintain a steady supply position in the domestic market and also to boost steel production in the country."

He outlined following measures

1. Import duty on raw material such as coking coal and steel melting scrap is NIL.
2. Export duty of 20% has been imposed on export of all grades and varieties of iron ore (except pellets).
3. Import duty on steel items is 5% to 10%.

Source: Steelguru

Steel scrap market yet to taste blood in India

Rattle in the currency market with 18% decline in INR value since August is yet to echo in the scrap import market in India. International scrap prices have strengthened over the last couple of weeks by USD 20 per tonne sneezing in the cold winter. At the same time Turkey has become recalcitrant of late with transactions reported at USD 425 per tonne to USD 430 per tonne, CNF Turkish port. This has enlivened the proceeding in Gulf waters but the tides are yet to dash the Indian shores. It is reported that most of material booked over the last couple of months yet to be delivered the Indian importers have time to remain stay put till 2nd week of January 2012. With bulk of the material from previous booking yet to arrive there is no urgency for the players to open bookings when the quick downslide is exacerbating cost on one hand and the sluggish domestic market is reluctant to gobble previously imported volumes.

It is reported that Indian import market is plush with import offers at USD 415 per tonne to USD 425 per tonne CNF, but the transactions are few. The impact of the price escalation in scrap prices inherent due to winter shortage will exert in January when the new bookings at higher prices start arriving. Hence it won't be unlikely that the long product market in India might see roller coaster on cost push pressures in January. This is likely to embolden the domestic mills and re rollers to hike level for long products in January. If volatility in steel prices is affecting your business, keep tab on market realities and trends by subscribing to www.steelprices-india.com, which is a comprehensive portal that provides domestic pricing information for benchmark steel products in each category at select location in India on a regular basis 5 days a week and international price levels on a weekly basis.

Source: Steelguru

New mining bill tabled in Lok Sabha

The Mines Ministry tabled the new Mining Bill in Lok Sabha proposing coal miners to share 26% of the profit and non-coal miners' 100% of the royalty annually to project affected people. The Mines and Minerals (Development and Regulation) Bill, 2011, which will replace the over a century old, often amended Act of 1957, also seeks to empower state governments to constitute special courts for the purpose of providing speedy trial of offences relating to illegal mining. The Bill proposes that "The holder of a mining lease shall pay annually to the District Mineral Foundation...In case of major minerals [except coal and lignite] an amount equivalent to the royalty paid during the financial year." It added that "In case of coal and lignite, an amount equivalent to twenty six% of the profit. In case of minor minerals, such amount as may be prescribed by the State government with the concurrence of the National Mining Regulatory

Authority."

The long-pending Bill also envisages introduction of competitive bidding process to encourage participation of private parties and a change in the role of the Central and State Governments, particularly to incentivise them for investing in exploration and mining. The Mines & Minerals (Development and Regulation) Bill, 2011 provides for a simple and transparent mechanism for grant of mining lease or prospecting licence through competitive bidding in areas of known mineralization, and on the basis of first-in-time in areas where mineralization is not known.

Source: Steelguru

Government update on India mineral production

Mr Dinsha Patel Minister of State for Mines (independent charge) informed the Rajya Sabha that the overall index for mining sector has shown growth of 7.90% in 2009-10 and 5.25% in 2010-11, whereas non fuel and non-coal minerals, the index has declined marginally by 0.35% in 2009-10 as compared to 2008-09 and then increased by 0.41% in 2010-11. However, in the year 2011-12(April-September) the overall index for mining sector has decreased by about 1% and for non-fuel and non-coal minerals by 1.45%, as compared to same period in the previous year. As per returns filed by miners under Mineral Conservation and Development Rules,1988, the main reasons for decline in production are restrictions on export, temporary discontinuance of mining, lack of environmental clearance, shortage of labour, and restrictions on grant of transport permits by state government.

Source: Steelguru

Government update on production losses in NALCO due to coal shortage

National Aluminum Company Limited has informed that the following losses were incurred for a short period by the company due to shortage of coal during the financial year 2011 to 2012:

	Loss in Production (in Metric Tonnes)	Value (INR in Crore)
Alumina	22,970	22.71
Aluminum	15,900	22.07

The primary reasons for production losses in view of power crisis due to short supply of coal are as under:

1. Prolonged shut down of C3 conveyer, a coal conveying system from mines to silo at Mahanadi Coalfields Limited Bharatpur instead of scheduled 45 days.
2. Unprecedented heavy rains during August to September 2011 at Talcher and IB areas.
3. Supply of less scheduled linkage coal in Q2 (22 %).
4. Supply of wet, slurry and re handled coal from MCL in respect of e auction coal as well as linkage coal during monsoon.
5. Shutdown of surge bunker of MCL for maintenance from September 10th 15th 2011.
6. Frequent obstruction by villagers to the Merry Go Round rake movement by squatting on the MGR track.
7. Inconsistent allotment of rakes for e auction coal by Railways.
8. Inconsistent supply of washed coal ordered on private parties.

Ministry of Mines has been interacting with Ministry of Coal for augmenting coal supply to NALCO and with Ministry of Railways for giving priority to allotment of rakes for supply of coal to the production units of the Company. NALCO is also procuring coal from other sources for sustenance of pot lines.

NALCO has already completed its Phase II expansion project resulting in augmentation of production capacities of alumina refinery from 1.575 million tonnes per year to 2.1 million tonnes per year and aluminum smelter from 0.345 million tonnes per year to 0.46 million tonnes per year.

Source: Steelguru

17th Asia Construct Conference & Exhibition 2011

Construction Industry Development Council (CIDC) and Planning Commission organized the above event with the theme "Building Capacities Through Cooperation", at India Habitat Centre, New Delhi during 13-15 Dec 2011. Fourteen countries collaborated for this event, attended by over 600 delegates. The organizers held a Session "**Non Ferrous Metals in Construction**" on 13th Dec 2011 afternoon;

Mr. A C Wadhawan, Past President, IIM chaired the session and Mr.Anil Gupta, Chairman, IIM Delhi Chapter served as the rapporteur. The following technical presentations were made during the session:

1. Aluminium & Its Products in Construction Sector by Mr. P. R. Choudhary, Executive Director(S&P), National Aluminium Company Ltd (NALCO)
2. Aluminium in Building and Construction Industry, By Dr. J. Mukhopadhyay, Director, Jawaharlal Nehru Aluminium Research Development and Design Centre (JNNARDC)
3. Zinc –Emerging Prospects in Construction Sector by Mr. L. Pugazhenthy, Executive Director India Lead Zinc Development Association (ILZDA)
4. Vital Role of Copper in Building Construction" by Dr.D De Sarkar, Chief Executive Officer, Indian Copper Development Centre, presented by Mr P N Shali, Director, Engineering Council of India
5. Innovative Uses of Glass for Construction in Building Industry, By Er. O.P. Gupta, Er. Vijay Gupta & Ms. Chandan Gupta
6. Novel Ceramic Tiles from Industrial Wastes and Other Indian Raw Materials for Application in Construction Industries by Dr Swapan Kumar Das and Indranil Manna CSIR-Central Glass & Ceramic Research Institute

There were interesting questions from the floor which were ably answered by the eminent speakers.

THE NEW WORLD OF ZINC

Mr. Stephen Wilkinson, Executive Director, International Zinc Association gave a technical talk "The New World of Zinc" at a programme organized by India Lead Zinc Development Assn, on 8 Dec 2011 at New Delhi YMCA Tourist Hostel. The talk was attended by about 25 participants that included several members of The Indian Institute of Metals (IIM)

Mr. L. Pugazhenthy, Executive Director, ILZDA extended a warm welcome to Mr. Stephen Wilkinson and all the participants. The speaker highlighted the various applications of zinc, role of zinc in human health, sustainable development etc., There was a lively exchange of questions and answers. Mr. Anil Gupta, Chairman, IIM Delhi Chapter summed up the deliberations and proposed a hearty vote of thanks to everyone present. Mr. R. K. Bansal, Joint CEO, Sustainable Mining Initiatives gave a memento to Mr. Stephen Wilkinson, as an appreciation.

Global aluminium demand to reach 75m by 2020

HYDERABAD: Global demand for primary aluminium is set to reach 75 million tonnes by 2020 with China, India and Brazil becoming the growth centers for aluminium based products. The current supply is pegged at 60 million tonnes, including 10 million tonnes from recycling of industrial scrap and an equal quantity from recycling of aluminium while production reached 40 million tonnes. Per capita consumption of the metal in India was, however, low at 1.8 kg compared to the world average of 8 kg, notwithstanding the fact that domestic demand for aluminium reached its highest according to International Aluminium Institute (IAI) Global Projects Director Chirs Bayliss.

Mr. Baliss presented the global scenario of aluminium as part of the ongoing International Conference here on Thursday. He was optimistic that commissioning of several power projects could fuel domestic demand while indicators for electrical sector, one of the largest consumers followed by building construction and transportation were highly encouraging. Even as Mr. Bayliss expressed concern over the "poor capacity addition" over the last few years, aluminium major Hindalco, part of the $35 billion Aditya Birla Group, announced its entry into segments such as windows and door systems and building façade for residential and commercial properties. Hindalco Assistant Vice-President and Head-Central Market Development V. Ramaswamy said the company would introduce Eternia branded range of windows and door systems in addition to an all-aluminium façade for large buildings through its brand Novelis the domestic market.

Mr. Bayliss said one of the major concerns was the decision of China because of various reasons. "But what we hear now is that they will reverse the decision to increase smelting capacity significantly. Only Chinese have the capacity to add smelting capacity in quick time," he said. IAI anticipates that smelting capacity of 5 million tonnes would be added from western Africa and 2 million tonnes in India in the next five years, but still it would result in a deficit of 28 million tonnes to reach the expected 75 million tonnes.

Coupled with this was the concern over supply of bauxite while its mining had also been not developed properly.

Source: Economic Times

Hindustan Tin eyes non-food market

Hindustan Tin Works, a leading manufacturer, is looking at the non-food sector to drive its revenue in times to come. Atit Bhatia, senior vice-president, said, "The focus is now towards the non-food segment. We are looking at how we can capture the growing paints packaging sector.

HTW thinks non-food packaging will drive a lot of growth for the company. Food can packaging presently contributes to 90 percent of its total sales. The company said that with more and more processed food coming into Indian markets, the food can packaging sector will continue to grow, "Also, the company is shifting focus from being a very dominant food can maker. We are looking at tapping certain markets (non-food) where we are not present at this time. Like paints". he said.

Apart from paints, the company is looking at other markets such as pesticides, shoe polish and aerosols. "These are the markets that we think will help HTW go forward, "he said. Currently, the company consumes about 25,000 tonnes of tinplate per year. HTW was planning two new plants, one in the south and the other in the west. However, the south India plan remains shelved, as the geography generated only seasonal demand for cans and the company could not justify the financial costs to its board. The plan to set up a facility in West India to cater to the export market was a non-starter because of the European and North African crisis. In a joint venture with Rexam, the company is setting up an aluminium beverage can line. The HTW Rexam JV is focused for only the beverage market, i.e. carbonated soft drinks and beer. The company is investing Rs. 220 crore for a new aluminium line. This will come up next year.

"In the JV, we are currently making steel cans but the new line will be of aluminium cans. Currently, the capacity is to make 300 million beverage cans (Steel) which will go up to 900 million cans, post the expansion next year, "Bhatia said. The total beverage can market in India is around 700 million cans per year. There is already excess capacity and the situation is going to get worse. Bhatia said the beverage can market was growing at 15 percent per year. Novelis, the world's leading beverage can stock maker and part of Hindalco Industries, is setting up a plant in India. It will be ready in the next couple of months. Bhatia said, "Novelis coming to India is a good thing. It will be good that we will have indigenous supply, which was being imported. This will help the local industry to grow". On why HTW-Rexam chose an aluminium line to grow its capacity, Bhatia said both are better (steel and aluminium). "Both materials fit to purpose and both have advantages and disadvantages, Steel cans are stronger but the aluminium cans look better.

Source: Economic Times

Sundarm-Clayton gets into magnesium die-casting

Auto component maker Sundarm-Clayton (SCL), a TVS group company, has gone into pilot-mode magnesium die-casting production at its Padi plant here. It's a 1,000 tonnes a year capacity unit. It is expected to go fully commercial in 2013. Addressing a press on Tuesday, C.N. Prasad, Group President and Chief Executive Officer, said the plant would cater to the requirement of passenger car manufacturers. With car makers focusing on bringing out lighter weight vehicles, SCL thought it fit to look at hi-tech areas such as magnesium die-casting. To a question, he said the company was still negotiating with passenger car makers for supplier arrangement.

Mr. Prasad said the upcoming facility at Oragadam near here would go on stream in April next year. While civil works had already been completed, installations would commence at the 12,000 tonnes a year capacity plant in January. The plant involved an investment of around Rs. 85 crore, he said. SCL (Sales: Rs. 820 crore in 2010-11), he said, was exploring opportunities for setting up a unit outside India. Though it "still at an exploratory stage," the thinking on an overseas plant must be read in tandem with the fact that 30 percent of its revenue comprises exports. The company, it may be mentioned, supplier to illustrious names such as Cummins, Daimler and Volvo across the length and breadth of the U.S. and European countries "is causing concerns". However, SCL wasn't hit by these as it supplied parts to vehicles which were essential models'. In this context, the CEO said that growth and manufacturing excellence would go together and "enhance our ability to serve demanding customers". This would, in turn, help us secure more business, he added. SCL had manufacturing excellence award co-instituted by Frost & Sullivan.

Source: Economic Times

Gold in India's coffers makes government richer

India's gold holdings have surged to an all-time high. The value of gold in the Indian government's kitty has grown by over $19,353 million (Rs 1,00,000 crore) in a short span of two years. The sharp rally in the price of gold has helped bolster the overall value, as has the 200 tonne purchase by the Indian government from the International Monetary Fund (IMF) in November 2009. India's central bank, the Reserve Bank of India, bought 200 tonnes of gold for $6.7 billion from the IMF. The central bank keeps the precious metal as part of its forex reserves on behalf of the Indian government. A working paper by the central bank had advised the Indian government to go in for more purchase of the precious metal.

In 2010, while India held 558 tonnes of gold, the world had 30,463 tonnes of gold in official reserves. The gold holding of the Reserve Bank of India increased to 557.7 tonnes after accretion of 200 tonnes in 2009. According to available data, the appreciation in the gold bought from the IMF itself is about $5,799 million (Rs 30,000 crore), as prices have nearly doubled from Rs 15,100 ($290.10) per ten gram level at the time of the purchase to nearly Rs 30,000 ($576) per ten gram level. The value of gold held by the central bank, just before its 200 tonne purchase from IMF on November 3, 2009, stood at about $10.8 billion, as per the RBI data.

Based on the current price of about $560.59 (Rs 29,000) per ten gram in the domestic market, the total value of the gold held by the RBI at present stands at about $30,920 million (Rs 1,60,000 crore). While foreign reserves have increased substantially over the years, the physical stock of gold as part of official reserves has remained stable. RBI statistics show that the value of gold reserves remained unchanged at $30.92 billion. Incidentally, the Indian currency has depreciated massively against the US dollar. Last week, the rupee dropped to its lowest in 32 months, due to increased demand for the greenback from exporters, continued concerns over inflationary pressure and a slump in stock markets.

WORKING PAPER

An RBI working paper released late last month said that the central bank should go in for more purchase of the precious metal. "India's purchase of gold as a diversification strategy is fully justified and is in line with the global trend. There is scope to increase its holding," the working paper has said, while noting that the country's physical gold holding has remained static since the purchase from IMF in 2009. The paper noted in India's case, while foreign reserves increased substantially over the years, the physical stock of gold as part of official reserves, remained stable. Eventually, gold's proportion in the total foreign reserves came down sharply. In fact, even with the last purchase of gold by the Reserve Bank, gold accounted for just around 7.9% of the forex reserves, the paper noted. In the first half of 2011, the paper noted central banks were net buyers of over 155 tonnes of gold, almost double the 87 tonnes of net purchases in 2010. This signalled the end of an era in which the official sector had been a source of significant supply to the gold market.

To support its stand, the working paper showed how central banks in most of the emerging market economies and advanced economies had either bought fresh stock of gold or stopped selling their existing stock of gold in the wake of the recent global crisis.

The paper added that at this time, a number of investors including central banks seemed to augment their reserves of gold, perhaps affecting its price. India's purchase of gold apparently did not have any impact on the gold price trend and hence the stock of gold was in line with the global accumulation trend, the paper has said. India's last purchase of 200 tonnes, apparently, did not cause any aberration on the international gold price trend, probably as gold was not bought from the open market, the RBI's working paper has added. It has noted that it is difficult to address "the 'optimum level of gold' for India, though there is a strong economic rationale to hold sufficient quantity of gold as part of official reserves, especially during uncertain periods like global financial crisis."

In its conclusion, the paper has emphasised that the recent global financial crisis only reiterated that gold, as part of foreign exchange reserves, continued to play a key role in the macroeconomic management devoid of its erstwhile purely monetary role. The Indian government is to look into the findings of the working paper.

Mr. P R Chandna, Life Member, IIM DC