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INTRODUCTION

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7 Various news items relating to Ferrous and Non-Ferrous Sector.

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The Basic Metallurgy of Plain Carbon and Alloy Steels

S C Suri
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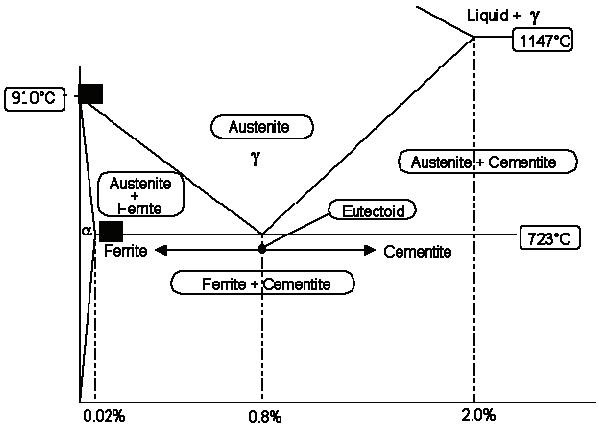
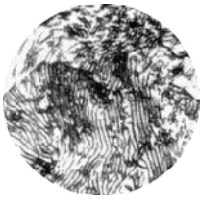
Chairman, Technical & Publication Cell

The best way to understand the metallurgy of carbon and alloy steel is to study the 'Iron Carbon Diagram'. The diagram shown is based on the transformation that occurs as a result of slow heating. Slow cooling will reduce the transformation temperatures; for example: the A1 point would be reduced from 723°C to 690 °C. However the fast heating and cooling rates encountered in welding will have a significant influence on these temperatures, making the accurate prediction of weld metallurgy using this diagram difficult.

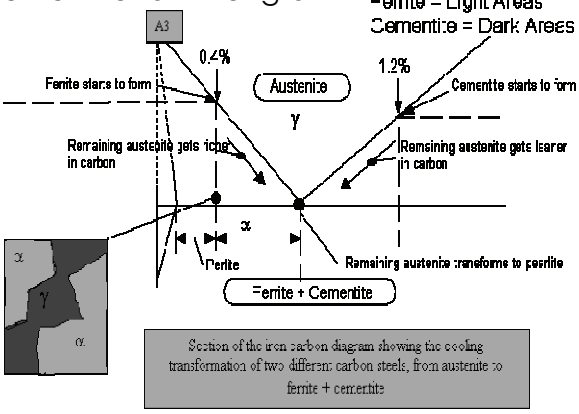


- **Austenite** This phase is only possible in carbon steel at high temperature. It has a Face Centre Cubic (F.C.C) atomic structure which can contain up to 2% carbon in solution.
- **Ferrite** This phase has a Body Centre Cubic structure (B.C.C) which can hold very little carbon; typically 0.0001% at room temperature. It can exist as either: alpha or delta ferrite.
- **Carbon** A very small interstitial atom that tends to fit into clusters of iron atoms. It strengthens steel and gives it the ability to harden by heat treatment. It also causes major problems for welding, particularly if it exceeds 0.25% as it creates a hard microstructure that is susceptible to hydrogen cracking. Carbon forms compounds with other elements called carbides. Iron Carbide, Chrome Carbide etc.
- **Cementite** Unlike ferrite and austenite, cementite is a very hard intermetallic compound consisting of 6.7% carbon and the remainder iron, its chemical symbol is Fe_3C. Cementite is very hard, but when mixed with soft ferrite layers its average hardness is reduced considerably. Slow cooling gives course perlite; soft easy to machine but poor toughness. Faster cooling gives very fine layers of ferrite and cementite; harder and tougher
- **Pearlite** A mixture of alternate strips of ferrite and cementite in a single grain. The distance between the plates and their thickness is dependant on the cooling rate of the material; fast cooling creates thin plates that are close together and slow cooling creates a much coarser structure possessing less toughness. The name for this structure is derived from its mother of pearl appearance under a microscope. A fully pearlitic structure occurs at 0.8% Carbon. Further increases in carbon will create cementite at the grain boundaries, which will start to weaken the steel.



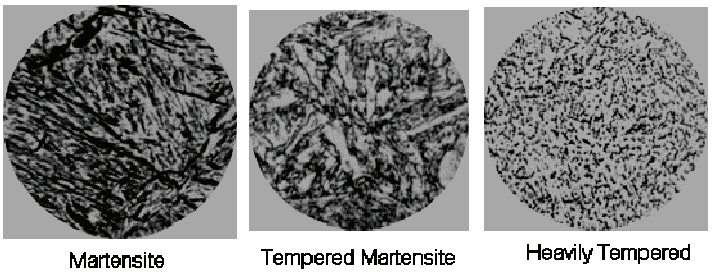
Pearlite.
Ferrite = Light Areas
Cementite = Dark Areas

- **Cooling of a steel below 0.8% carbon** When a steel solidifies it forms austenite. When the temperature falls below the A3 point, grains of ferrite start to form. As more grains of ferrite start to form the remaining austenite becomes richer in carbon. At about 723°C the remaining austenite, which now contains 0.8% carbon, changes to pearlite. The resulting structure is a mixture consisting of white grains of ferrite mixed with darker grains of pearlite. Heating is basically the same thing in reverse.

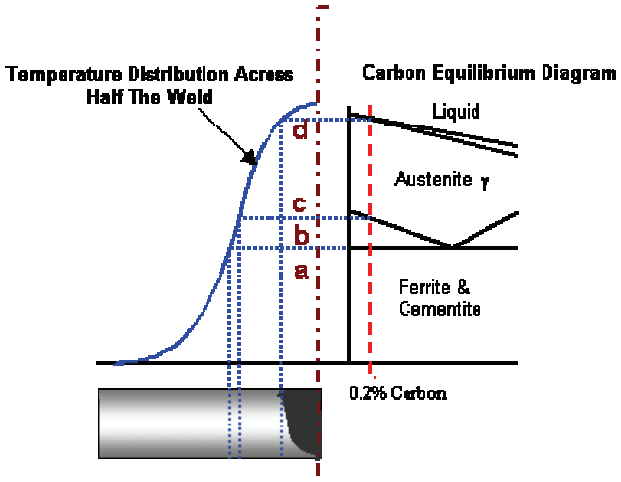


Section of the iron carbon diagram showing the cooling transformation of two different carbon steels, from austenite to ferrite + cementite

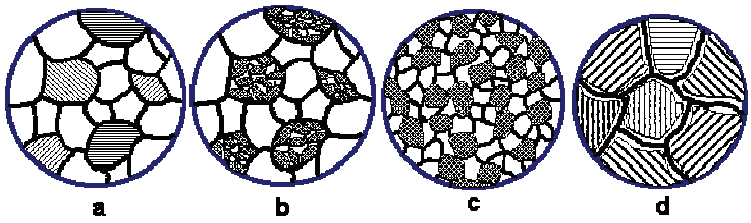
- **Martensite** If steel is cooled rapidly from austenite, the F.C.C structure rapidly changes to B.C.C leaving insufficient time for the carbon to form pearlite. This results in a distorted structure that has the appearance of fine needles. There is no partial transformation associated with martensite, it either forms or it doesn't. However, only the parts of a section that cool fast enough will form martensite; in a thick section it will only form to a certain depth, and if the shape is complex it may only form in small pockets. The hardness of martensite is solely dependant on carbon content, it is normally very high, unless the carbon content is exceptionally low.



- **Tempering** The carbon trapped in the martensite transformation can be released by heating the steel below the A1 transformation temperature. This release of carbon from nucleated areas allows the structure to deform plastically and relive some of its internal stresses. This reduces hardness and increases toughness, but it also tends to reduce tensile strength. The degree of tempering is dependant on temperature and time; temperature having the greatest influence.
- **Annealing** This term is often used to define a heat treatment process that produces some softening of the structure. True annealing involves heating the steel to austenite and holding for some time to create a stable structure. The steel is then cooled very slowly to room temperature. This produces a very soft structure, but also creates very large grains, which are seldom desirable because of poor toughness.
- **Normalising** Returns the structure back to normal. The steel is heated until it just starts to form austenite; it is then cooled in air. This moderately rapid transformation creates relatively fine grains with uniform pearlite.
- **Welding** If the temperature profile for a typical weld is plotted against the carbon equilibrium diagram, a wide variety of transformation and heat treatments will be observed.



Note: The carbon equilibrium diagram shown above is only for illustration, in reality it will be heavily distorted because of the rapid heating and cooling rates involved in the welding process.



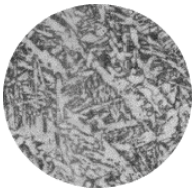
a) Mixture of ferrite and pearlite grains; temperature below A1, therefore microstructure not significantly affected.

b) Pearlite transformed to Austenite, but not sufficient temperature available to exceed the A3 line, therefore not all ferrite grains transform to Austenite. On cooling, only the transformed grains will be normalised.

c) Temperature just exceeds A3 line, full Austenite transformation. On cooling all grains will be normalised

d) Temperature significantly exceeds A3 line permitting grains to grow. On cooling, ferrite will form at the grain boundaries, and a course pearlite will form inside the grains. A course grain structure is more readily hardened than a finer one, therefore if the cooling rate between 800°C to 500°C is rapid, a hard microstructure will be formed. This is why a brittle fracture is most likely to propagate in this region.

- **Welds** The metallurgy of a weld is very different from the parent material. Welding filler metals are designed to create strong and tough welds, they contain fine oxide particles that permit the nucleation of fine grains. When a weld solidifies, its grains grow from the course HAZ grain structure, further refinement takes place within these course grains creating the typical acicular ferrite formation shown opposite.



Acicular Ferrite

Metallurgy of Alloy steels

Alloy steel is steel that is alloyed with a variety of elements in total amounts between 1.0% and 50% by weight to improve its mechanical properties. Alloy steels are broken down into two groups: low-alloy steels and high-alloy steels. The difference between the two is somewhat arbitrary: Smith and Hashemi define the difference at 4.0%, while Degarmo, et al., define it at 8.0%. Most commonly, the phrase "alloy steel" refers to low-alloy steels. Every steel is truly an alloy, but not all steels are called "alloy steels". Even the simplest steels are iron (Fe) (about 99%) alloyed with carbon (C) (about 0.1% to 1%, depending on type). However, the term "alloy steel" is the standard term referring to steels with *other* alloying elements *in addition to* the carbon. Common alloyants include manganese (the most common one), nickel, chromium, molybdenum, vanadium, silicon, and boron. Less common alloyants include aluminum, cobalt, copper, cerium, niobium, titanium, tungsten, tin, zinc, lead, and zirconium.

The following is a range of improved properties in alloy steels (as compared to carbon steels): strength, hardness, toughness, wear resistance, corrosion resistance hardenability, and hot hardness. To achieve some of these improved properties the metal may require heat treating.

Some of these find uses in exotic and highly-demanding applications, such as in the turbine blades of jet engines, in spacecraft, and in nuclear reactors. Because of the ferromagnetic properties of iron, some steel alloys find important applications where their responses to magnetism are very important, including in electric motors and in transformers.

Low-alloy Steels

Low-alloy steels are usually used to achieve better hardenability, which in turn improves its other mechanical properties. They are also used to increase corrosion resistance in certain environmental conditions.

With medium to high carbon levels, low-alloy steel is difficult to weld. Lowering the carbon content to the range of 0.10% to 0.30%, along with some reduction in alloying elements, increases the weldability and formability of the steel while maintaining its strength. Such a metal is classed as a high-strength low-alloy steel.

Some common low alloy steels are:

- D6AC
- 300M
- 256A

Principal low-alloy steels	
SAE designation	**Composition**
13xx	Mn 1.75%
40xx	Mo 0.20% or 0.25% or 0.25% Mo & 0.042% S
41xx	Cr 0.50% or 0.80% or 0.95%, Mo 0.12% or 0.20% or 0.25% or 0.30%
43xx	Ni 1.82%, Cr 0.50% to 0.80%, Mo 0.25%
44xx	Mo 0.40% or 0.52%
46xx	Ni 0.85% or 1.82%, Mo 0.20% or 0.25%
47xx	Ni 1.05%, Cr 0.45%, Mo 0.20% or 0.35%
48xx	Ni 3.50%, Mo 0.25%
50xx	Cr 0.27% or 0.40% or 0.50% or 0.65%
50xxx	Cr 0.50%, C 1.00% min

50Bxx	Cr 0.28% or 0.50%	
51xx	Cr 0.80% or 0.87% or 0.92% or 1.00% or 1.05%	
51xxx	Cr 1.02%, C 1.00% min	
51Bxx	Cr 0.80%	
52xxx	Cr 1.45%, C 1.00% min	
61xx	Cr 0.60% or 0.80% or 0.95%, V 0.10% or 0.15% min	
86xx	Ni 0.55%, Cr 0.50%, Mo 0.20%	
87xx	Ni 0.55%, Cr 0.50%, Mo 0.25%	
88xx	Ni 0.55%, Cr 0.50%, Mo 0.35%	
92xx	Si 1.40% or 2.00%, Mn 0.65% or 0.82% or 0.85%, Cr	0.00% or 0.65%
94Bxx	Ni 0.45%, Cr 0.40%, Mo 0.12%	
ES-1	Ni 5%, Cr 2%, Si 1.25%, W 1%, Mn 0.85%, Mo 0.55%,	Cu 0.5%, Cr 0.40%, C 0.2%, V 0.1%

Addition of Alloying Elements

Alloying elements are added to achieve certain properties in the material. As a guideline, alloying elements are added in lower percentages (less than 5%) to increase strength or hardenability, or in larger percentages (over 5%) to achieve special properties, such as corrosion resistance or extreme temperature stability. Manganese, silicon, or aluminum are added during the steelmaking process to remove dissolved oxygen, sulfur and phosphorus from the melt. Manganese, silicon, nickel, and copper are added to increase strength by forming solid solutions in ferrite. Chromium, vanadium, molybdenum, and tungsten increase strength by forming second-phase carbides. Nickel and copper improve corrosion resistance in small quantities. Molybdenum helps to resist embrittlement. Zirconium, cerium, and calcium increase toughness by controlling the shape of inclusions. Manganese sulfide, lead, bismuth, selenium, and tellurium increase machinability.

Effects of Alloying Elements

The alloying elements tend to form either compounds or carbides. Nickel is very soluble in ferrite; therefore, it forms compounds, usually Ni_3Al. Aluminium dissolves in the ferrite and forms the compounds Al_2O_3 and AlN. Silicon is also very soluble and usually forms the compound $SiO_2 \bullet M_xO_y$. Manganese mostly dissolves in ferrite forming the compounds MnS, $MnO \bullet SiO_2$, but will also form carbides in the form of $(Fe,Mn)_3C$. Chromium forms partitions between the ferrite and carbide phases in steel, forming $(Fe,Cr_3)C$, Cr_7C_3, and $Cr_{23}C_6$. The type of carbide that chromium forms depends on the amount of carbon and other types of alloying elements present. Tungsten and molybdenum form carbides if there is enough carbon and an absence of stronger carbide forming elements (i.e., titanium & niobium), they form the carbides Mo_2C and W_2C, respectively. Vanadium, titanium, and niobium are strong carbide forming elements, forming vanadium carbide, titanium carbide, and niobium carbide, respectively. Alloying elements also have an effect on the eutectoid temperature of the steel. Manganese and nickel lower the eutectoid temperature and are known as *austenite stabilizing elements*. With enough of these elements the austenitic structure may be obtained at room temperature. Carbide-forming elements raise the eutectoid temperature; these elements are known as *ferrite stabilizing elements*.

Principal effects of major alloying elements for steel

Element	Percentage	Primary function
Aluminium	0.95–1.30	Alloying element in nitriding steels
Bismuth	-	Improves machinability
Boron	0.001–0.003	A powerful hardenability agent
Chromium	0.5–2	Increases hardenability
	4–18	Increases corrosion resistance
Copper	0.1–0.4	Corrosion resistance
Lead	-	Improved machinability
Manganese	0.25–0.40	Combines with sulfur and with phosphorus to reduce the brittleness. Also helps to remove excess oxygen from molten steel.
	>1	Increases hardenability by lowering transformation points and causing transformations to be sluggish

Molybdenum	0.2–5	Stable carbides; inhibits grain growth. Increases the toughness of steel, thus making molybdenum a very valuable alloy metal for making the cutting parts of machine tools and also the turbine blades of turbojet engines. Also used in rocket motors.
Nickel	2–5	Toughener
	12–20	Increases corrosion resistance
Silicon	0.2–0.7	Increases strength
	2.0	Spring steels
	Higher percentages	Improves magnetic properties
Sulfur	0.08–0.15	Free-machining properties
Titanium	-	Fixes carbon in inert particles; reduces martensitic hardness in chromium steels
Tungsten	-	Also increases the melting point.
Vanadium	0.15	Stable carbides; increases strength while retaining ductility; promotes fine grain structure. Increases the toughness at high temperatures

Quality Issues of Indian steels

Sushim Banerjee
Director General
Institute of Steel Development & Growth

Traditionally Indian steel does not belong to the first tier steel as evaluated in the global market, not same in the league of Japanese, South Korean or German producers. The reasons are primarily two. The large domestic market shielded by a high tariff wall did not permit the consumers in the country to get exposed to foreign brand and the domestic producers struggling to keep pace with a plethora of legislative burdens remained contented with initial import of technology and gradually losing touch with the subsequent in the 90s and the drastic reduction in import tariff as a part of economic liberalisation process enabled the producers and consumers alike to appreciate the value of product and process quality in steel which has now become an integral part of economic development.

Given a chance the end users would like to procure steel with highest quality at an affordable price. The country has a few integrated steel producers and large capacity medium steel producers who are capable of producing steel of reasonably good quality that has also found established itself as a recognised exporter of Plates, HR, CR and GP coils and a few other long products like Wire Rods and TMT besides marketing Billets to the neighbouring countries. More than 31 per cent of steel in the country, however is supplied by widely spread small and medium units which follow induction furnace route based on primarily Sponge Iron as a charge mix (produced out of high silica iron ore), without any ladle furnace for secondary refining and rolling out finished products containing high Phosphorous and Sulphur (that cause brittleness of the product). But these groups clustered in specific regions satisfy localised demand. In order to provide sufficient time to these units for technology up gradation and get themselves registered with BIS and also to maintain the supply chain, two amended orders to the original quality control order has recently been issued by Ministry of steel. TMT Bar conforming to IS-1786 with BIS license would not be applicable for sizes below16mm for which another six months' time has been given. The same extended time frame would also be applicable for structurals less than 6mm, angles less than 50x10x6mm, bars/rounds/squares/ hectagons/octagons/rectangulars including flat rolled Bars/sheets/strips/coils all conforming to IS-2062 (mostly produced by small units). Considering indigenous non-availability of Universal Beam of sizes higher than 610mm and upto 1016mm and Universal column structural size higher than 305mm and upto 356mm, both these sizes have been taken out-of the purview of IS-2062 specification for a period of six months. The application of IS-2831 for production of low tensile structurals has been deferred by another six months. The specific requirements by the end using segments like power plant manufacturers, heavy machinery fabricators etc. have also been kept in view by taking Plates of thickness exceeding 80mm with weight of 12 tonnes and of less than 16mm with width more than 4000mm out of the purview of IS-2062/IS-2041/IS-2002.

The Transformer manufacturers have long been pursuing with the government about the non-availability of Cold Rolled Grain Oriented steel from the indigenous sources and therefore the foreign suppliers of CRGO steel which varies with the testing norms of BIS specification IS-648 have also been given six months' time to resolve the issue. On the same justification of non –availability from indigenous sources and facilities supplies from imports, Cold Rolled Non-Oriented (CRNO) Electrical steel sheets and strips with watt loss not exceeding by 5.3 watt/kg under IS-3024 have been permitted an extension for six months before application. The above shows that the Ministry of Steel has endeavoured to provide sufficient time to the large group of small and medium enterprises to upgrade their facilities and get registered with BIS to produce and market quality products. However, a long term solution to their end product quality conforming to chemical composition as given by BIS using the indigenously available sponge iron has to be found out. More use of melting scrap in the charge mix has to be encouraged. Ministry of Steel has also initiated a few projects under its R&D programmes out of SDF scheme to address the issue. On the other hand, a relaxed specification to accommodate the products not conforming to BIS specifications has also been brought out by the Agency. The latest quality order has also thrown up a challenge to the integrated producers to tone up their facilities to cater to the sophisticated requirements of electrical equipment manufacturers, heavy machinery fabricators. It is now expected that more steel producers like HR Coils, CR Coils would also be taken up for mandatory specification to further improve the image of Indian steel in the global market.

There remains the issue of disposal of the materials not conforming to BIS standards. It is to be appreciated that finished steel products consume costly raw material and pass through rigorous process of casting, refining and rolling. Instead of selling these residual products as scrap which would fetch hardly the cost, relaxed specification for non-critical, non-load bearing applications of these items may be thought of and BIS in association with Ministry of Steel may immediately address the issue. With the introduction of these quality standards India has progressed half way in its journey of restriction the free import of seconds and defectives which have already reached alarming proportion. Further, the long-time taken by BIS for filling up the data requirements, testing of the samples at the plants abroad by BIS officials, differentials in testing methodologies etc. are some of the factors that generate dissatisfaction among the exporters, some of whom are global majors. Some of the countries are also terming this measure as a non-tariff barrier despite being cleared by WTO. There is a need to create awareness among the users and the producers to produce and use clean and standard grade steel. Let us pledge to do the rest to complete the last leg of an arduous journey.

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Outokumpu: 80 years of duplex experience

While some people may perceive duplex stainless steel to be a relatively new phenomenon, Outokumpu has been producing grades of this leading material for over 80 years. Describing duplex as the most sustainable steel, the company supplies a wide range of industries and continues to innovate to provide the best possible value-added products and after-sales services to its diverse customers around the world. The article explains the company's long history, the many uses of this versatile metal and emerging applications for duplex stainless steels in the global market.

Outokumpu history in producing duplex dates back to the 1930s when the first grades were developed to overcome shortcomings in the austenitic grades available at that time such as limited strength, susceptibility to intragranular corrosion due to difficulties to reach low carbon contents and issues related to stress corrosion cracking especially in the pulp and paper as well as chemical industry, Originally production was focused mainly on castings for the pulp and paper, chemical and petrochemical industries. Today while the oil and gas and chemical processing industries are the main consumers of duplex stainless steels, significant quantities are also used for architecture and construction, pulp and paper, desalination plants and chemical tankers.

Technological developments for stainless steel production in the late 1960s and 1970s such as the AOD converter technology made it possible to have lower carbon contents and to put more

nitrogen into the steels and particularly into duplex, leading to the production of the so-called 'second generation' of duplex grades. These are renowned for their improved properties such as mechanical strength and corrosion resistance. Duplex grade 2205 is still the working horse in oil & gas applications.

In the past decade another trend has emerged: lean duplex grades. Duplex stainless steels with low contents of expensive and volatile alloying elements such as nickel and molybdenum content giving low alloying costs are starting to replace commodity stainless grades like 304 and even 316. It's also meant that it has become interesting to consider using duplexes for 'commodity' applications where the requirements for the corrosion resistance are moderate but where the customer can benefit from the outstanding mechanical properties of the steel. For example demand for duplex in the building and construction industry in particular has grown due largely to these latest developments. Outokumpu have also been promoting lean duplex grades for storage tanks, from food and beverage applications where tanks are used for anything from wine to olive oil, to tanks for the chemical and petrochemical processing industries where duplex performs extremely well."

Recent duplex projects

When considering where most duplex stainless steels are being used today there is no denying that tube manufacturers are placing very large orders, particularly those located in Germany and Italy. However new end-users are also turning to duplex. German pump and tank manufacturer Börger approached Outokumpu when they needed to fabricate larger biogas tanks than ever before, starting at 4,000 m3. The company chose the Outokumpu's proprietary duplex grade LDX 2404® for storage tanks and a combination of LDX 2404® and LDX 2101® for its process tanks. Switching from austenitic to duplex stainless steel reduced the weight of the tanks by 25%.

For a project for Dow Chemicals in the Netherlands, Outokumpu received an order for lean duplex material to be used in two tanks at Dow's Terneuzen plant, the first time they have applied this lean duplex material. While the weight saving potential is always a factor – the tanks measured Ø22 x 21 m – the main focus was to optimize maintenance and inspection requirements.

Terneuzen is located on the North Sea coast in a corrosive marine environment where carbon steel tanks need to be coated internally with epoxy resin and even stainless steel equipment is painted externally to prevent corrosion. Duplex stainless steels are not prone to chloride stress corrosion cracking like standard austenitic stainless steels, therefore painting can be avoided.

The choice of lean duplex LDX 2404 (R) for a fermentation residue tank in Borken, Germany reduced the weight by 25% in comparison to a 316 type stainless steel tank. Photo: by courtesy of Börger GmbH, Borken-Weseke, Germany.

The higher strength of lean duplex compared to carbon steel and austenitic stainless steel enabled the customer to down-gauge the wall thicknesses, saving both material and fabrication costs. Ultimately this results in lower life cycle costs as there is no need to renew the coatings, resulting in uninterrupted availability of the tanks as there is no longer a need to empty the stored water for maintenance purposes. It is this kind of life cycle thinking that makes duplex a sustainable material. Clearly there are applications around the globe utilizing carbon steel tanks and construction elements where lean duplexes could be used to eliminate painting and maintenance and improve availability.

The offshore industry is also driving developments in duplex grades. The ultra-deep oil reserves in Latin America mean the operating pressure for equipment is increased, the riser pipes bringing the to be longer and therefore heavier, and the wells are more corrosive. Simply put, which need materials with

higher mechanical properties that can carry their own weight, creating a need to look into higher mechanical strengths for duplex grades. Outokumpu is working in cooperation with oil and engineering companies to develop lean duplex grades for structural components on oil rigs. This is largely motivated by maintenance and safety issues; lean duplexes eliminate the need to paint equipment which is a costly exercise on an oil platform. The weight factor is also important in this environment; using a material with higher mechanical properties means you can decrease wall thicknesses and reduce weight.

Identifying the right grade

How to identify the right duplex grade to use is a multi-dimensional question, The most relevant factors are the combination of strength and corrosion resistance required for each individual application. Duplex grades cover a wide range of corrosion resistances, from grades that are 'only' as corrosion resistant as standard 304 stainless steel to super or hyper duplex that can withstand extremely harsh environments where a 6 Moly grade of austenitic steel would be needed. There is always a grade of duplex that is suitable for your specific environment. The main advantage for end users is that the strength of duplex is much higher than that of austenitic stainless steel, providing opportunities to save on materials because you can use less. Besides the reduction in the material required, there will be also less costs for transportation, material handling, fabrication, welding consumables etc. However, there are other situations as well where the higher mechanical properties and better wear resistance of duplex can be taken advantage of such as in applications with very abrasive conditions."

The use of light yet high strength duplex for sluice and flood gates in a Finnish hydropower project enabled material savings and meant less hydraulic force was needed to operate the gates.

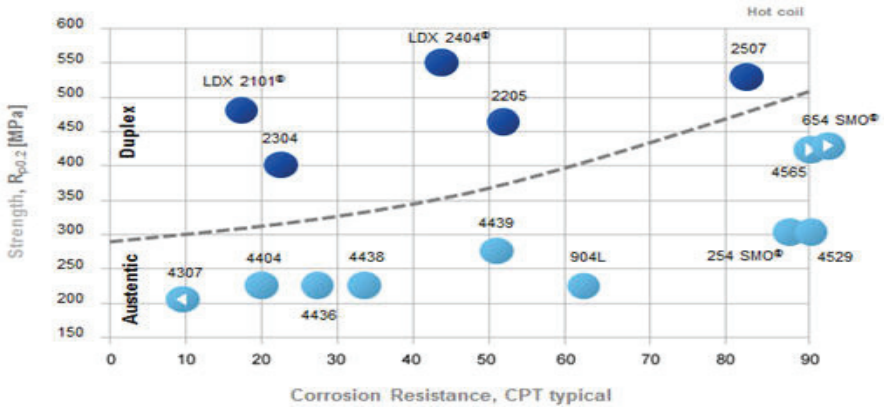
A good example of the benefit duplex offers is a rebuilding project of rapid channels in the Finnish city of Tampere where LDX 2101® was chosen for all main structural parts for sluice and flood gates used for hydropower generation. The high surface hardness of the material protects the gates against wear caused by ice and floating debris. In this particular project the benefits of using duplex were manifold: material saving by utilizing the high strength results in a lighter duplex structure needing less hydraulic force to operate the gates, adequate resistance to both pitting and universal corrosion, excellent resistance to stress corrosion cracking, and good machinability and weldability. Additionally, the relative price stability of lean duplex, owing to low nickel content, ensures that the stainless steel material costs are kept stable during long projects – an important factor for companies involved in public sector projects.

Overall, life cycle cost considerations are essential when evaluating a duplex solution. On top of direct material savings, duplex enables longer design life – 200 years in the case of the rapid channel project. Thus, you should not only consider the initial investment costs, but also any eventual costs for maintenance if you want to replace carbon steel. It's of benefit to the end user that there are so many grades available because together with the experts they can then choose the best option for their particular application. When we consider austenitic stainless steels most people only know about 304 or 316 but there is also a very wide range of austentic stainless steel grades available that have been developed to meet certain requirements, and this is now the same for duplexes. While we can see that there are a few commonly used duplexes, there are other grades that will remain niche products for very demanding or special applications.

There is still some room for new developments in Duplex. Certainly some new grades with tailor-made properties will be developed, however I don't foresee any radical new products emerging; rather

Outokumpu will continue to fine tune existing grades. This is especially true with the inclusion of alloying elements such as chromium, molybdenum, tungsten and especially nitrogen, which is an important alloying element in duplex grades because it increases the mechanical properties and corrosion resistance. I expect that we will see some fine tuning to further explore the benefit of nitrogen. The expansion of usage temperature range of duplexes might also be a focus area.

Looking to the lean compositions available today, the main room to develop lies in finding solutions which are cheaper than the standard grades we have today. Other developments will be in the range of products offered; for instance Outokumpu offers value-added products such as beams and profiles for construction elements. This is an area which we will continue to focus on in future, to bring more value to the customer.



A customer who is not yet using duplex should be open to listen to all the benefits duplex grades can offer. They should not only focus on the kilo price but grasp the whole story to understand the full solution.

Duplex offers excellent opportunities to constructing challenging and durable structures. However, due to the high strength of the material, the working process is in some points different than with austenitic steels.

Customers should keep an open mind to have a competitive edge. We are always willing to provide support wherever necessary for issues such as welding and fabrication. We have a lot of knowledge we are happy to share about this sustainable stainless steel."

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Visit to Oswal Castings and HGI Automotives, Faridabad on 09 March 2013 – A Brief Review

The Indian Institute of Metals – Delhi Chapter regularly organizes visits to eminent industries in and around NCR, for benefit of its members. In this series, a team of IIM-DC members visited Oswal Castings and HGI Automotives at Faridabad on 09March 2013, on personal initiative of Mr. M.P. Sharma, Hony. Jt. Secretary IIM-DC Chapter. The Visiting Team went around modern facilities at these two Units and had extensive deliberations with the senior officials.

Oswal Castings Plant II, Faridabad

The plant is part of `Oswal Group of Industries'. Mr. R.K. Jain, a first generation entrepreneur incorporated `Oswal Electricals', the first company of this Group, in 1967. Today after four decades, the Company has grown up to `Oswal Group of Industries', comprising four factories in Faridabad, having an installed

annual capacity of ~ 22,000 tonnes of Aluminum Castings. The Group basically provides total solutions on Aluminum Pressure Die Castings, comprising Tool design & Manufacturing, Simulation software for flow & thermal analysis, Die cast parts, Partial local squeeze & provision for vacuum in dies, Machine parts, Surface treatment (buffing & shot blasting), Painted parts (powder & liquid), Assemblies, etc. The Group is highly Quality conscious and have taken ISO & QS 9000 Certification (2002), TS 16949 Certification (2004) and ISO 14001compliance (2005).

Mr. T Krishna Kumar, Head (Manufacturing) took the Team around the Plant facilities and explained working of different Units.

The Unit has Die Casting Facilities (varying from 100 – 1,000 tonnes capacity), Machining & Assembly facilities (Turning Centre, Broaching Machine, Pneumatic/Hydraulic presses, Electro Chemical debarring etc.) and State-of-art conveyorized, positive pressurized Paint Shop with dust proofing facilities. Elaborate Tool Design, Tool Manufacture and state-of-art Inspection Facilities are also installed as support functions. Some of their products are shown below:

The products are supplied globally to leading Automotive and other manufacturers, viz. Maruti Suzuki, Hero Honda, Yamaha, TVS, Electrolux, General Electric, Huchinson, Honda, Mitsuba, Delloroto, Sona, ZF etc.

INTERACTIONS WITH SENIOR OFFICIALS

Activities of IIM Delhi Chapter were discussed with S/Sh. T.Krishna Kumar (Head-Manufacturing), Ramvir Singh (Head-Quality), Pradeep Tyagi (Head-PDC Operations), Ajay Sharma (Head-Production), Ashok Gupta (Head-Production), Sunil (Head-Production), Ajay Sagar (Head-HR) and Mukesh (Head-Machine Shop). Copies of IIM-DC Monthly Newsletter and IIM-DC Brochure were handed over. The visit to Oswal Castings, Faridabad, ended with thanks to their senior officials for facilitating this visit.

HGI Automotives (P) Ltd.

The Company was set up in 1995 by a first generation entrepreneur Mr. S.C. Garg and provides complete solution of Automotive parts. The Works are spread over in a Plot of 20,000 ft2, which houses state-of-art

facilities at a single venue. The annual Turnover is around ₹ 70 crs. The Unit is highly Quality conscious and has taken ISO 9001:2008 Certification in December 2011.

Mr S.C. Garg, Director and Mr. R.N. Yadav, Manager (Works) took the Team around the Plant facilities and explained working of different Units. The plant has dedicated team of engineers (comprising Mechanical Engineers, Technicians, Designers, Quality personnel, R & D professionals and skiiled labor) and equipment available to design a product from concept stage to full production, having State-of-art machining centres to improve accuracy, repeatability & speed. The systems are able to receive data in a wide variety of formats. Automatic programming & development assist conversion of basic designs to prototype within a short time. Complete in-house tool manufacturing facilities, in-house laboratory for inspection and fully equipped standards room are supplemented by 3rd party verifications from NABL approved sources. Internal SQA team ensures vender quality management. This team organizes inspection for incoming raw material, in-process material and end-products for all parts and tooling. Support is drawn from in-house testing and characterization laboratory for acceptance at all stages. Some of their products are shown below:




Some of their clients are – LG Electronics, Havell India, Honda Siel Power, Indo Autotech, Control & Switchgear Company, Sanauto Engineers, Avantek Precision, Minda Industries etc.

INTERACTIONS WITH SENIOR OFFICIALS

Activities of IIM Delhi Chapter were discussed with Mr. S. C. Garg (Director) and Mr. R.N. Yadav (Manager-Works). Copies of IIM-DC Monthly Newsletter and IIM-DC Brochure were handed over.

The visit to HGI Automotives, Faridabad, ended with thanks to their senior officials for facilitating this visit.

HOLI MILAN GET TOGETHER

The Delhi Chapter of IIM organised Holi Milan get together on 30th March 2013 at Vasant Vihar Club, New Delhi.

The members of IIM DC along with their families participated in the social get-together. The Chairman IIM DC welcomed the members and their families in the function. Holi-Milan greetings were exchanged among the members and their families by applying gulal to each other. Members of the IIM DC enjoyed the function through various jokes and anecdotes. Some family members recited poems in the function.

The family members of IIM DC were greeted with bouquets in the function. The function was very much appreciated by the members and their families. About 60 members including their families participated in the function.

The function ended with a dinner.

Electrosteel Steels commissioning puts Chinese technology on test

As per market reports, Electrosteel Steels Ltd Commissioned their Steel Making Shop on 4th March, 2013 and Caster on 12th March 2013. The steel plant is not just the first in India to be built entirely with Chinese collaboration but also probably the first to be constructed by a Chinese workforce almost 2,000 Chinese workers built it. The plant has a capacity of 2.5 million tonne a year. The company roped in Chinese steel major Laiwu Steel Group to construct the plant and maintain it till production is ramped up to capacity. 95% of the equipment was imported from China. As per a report in Money Control, The Chinese route has saved INR 4,250 crore in the setting up of a new steel plant for Electrosteel and also completed the construction of the plant and commissioning it within 5 years. Mr AV Shah, Chief Sales and Marketing Officer of Electrosteel Steels told Money Control "Traditionally, Indian steel companies have relied on German suppliers for equipment and technology to set up plants. Had we followed the same route, the equipment alone would have cost us at least 30% more. The Chinese are also known for fast execution of projects. If not for almost a year that we lost because of the work being held up we would have completed the project much earlier. Work had been stalled due to visa problems faced by the Chinese workers."

Source: Steel Guru

Government update on growth rate of Indian steel industry

The Minister of Steel, Mr Beni Prasad Verma has said that Joint Plant Committee data for April to November 2012 (provisional) shows that India's crude steel production stood at 51.65 million tonnes a growth of 5.7% compared to April-November 2011. In a written reply in the Rajya Sabha Mr Verma said, world crude steel production data, reported by the World Steel Association is on a calendar year basis (ie from January to December). Such data, for the period January to November 2012 (provisional) indicates that among the top ten global steel producing nations, crude steel production growth was highest for Turkey (6.6%) followed by India at 5.5%. However, in terms of volume of production, India (4th largest) was far ahead of Turkey (8th largest) during January-November 2012. The Government has taken the following steps to support the competitive production and capacity growth of the steel industry:

1. The Public Sector Undertakings (PSUs) namely Steel Authority of India Ltd, Rashtriya Ispat Nigam Ltd & NMDC Ltd are in the process of implementing significant expansion in the crude / finished steel capacities in their respective brownfield / Greenfield locations.
2. An Inter-Ministerial Group has been set up by the Government for effective coordination and to expedite implementation of various investment projects in the steel sector.
3. Import of critical raw materials for steel industry such as coking coal, non-coking coal, scrap etc. are subject to zero or very low levels of customs duty.
4. To encourage domestic value addition and improve domestic iron ore availability, duty on export of iron ore has been increased to 30 per cent.
5. The Ministry of Steel routinely consults the industry to be apprised of the constraints to growth and recommends necessary corrective measures as and when necessary, to other concerned ministries.

Source: Steel Guru

PSUs under Ministry of Steel need to take steps to remain competitive

The Minister of Steel, Shri Beni Prasad Verma has said that each public sector undertaking under the Ministry of Steel is required to take necessary measures to remain competitive and commercially viable. Accordingly, public sector undertakings under the Ministry of Steel are required to sign a Memorandum of Understanding (MoU) with the Government indicating annual physical and financial targets. Based on the same, their performance is periodically reviewed by the Ministry of Steel and finally evaluated & graded by the Department of Public Enterprises on annual basis. In a

written reply in the Rajya Sabha today Shri Verma said, at present, there are two loss making public sector undertakings under the Ministry of Steel, namely, Hindustan Steelworks Construction Limited (HSCL) and The Bisra Stone Lime Company Limited (BSLC) involving accumulated loss of ₹1630 crore approximately. Reasons for losses are unplanned induction of manpower, slowdown in steel sector, non-availability of mining equipments, irregular market demand etc.

Source: Indiamart SME News

Tata Steel recognised among world's most ethical cos

Tata Steel has stated that it has been recognized as one of the world's most ethical companies for 2013 by a leading international organization, Ethisphere Institute. The company stated, "the recognition was awarded post assessment on a number of parameters which included reputation, innovation and leadership, compliance and ethics programme, training and communication, corporate governance, corporate citizenship, sustainability and responsibility." Tripti Roy, Ethics Counsellor, Tata Steel received the award that was held in New York. Mr. H M Nerurkar, Managing Director, Tata Steel stated, "it is truly an honour to be recognized for our ethical practices which have always been the driving principle in the way we conduct our business." Ethisphere reviewed nominations from firms in over 100 countries and 36 industries via in-depth research and multi-step analysis. The steel maker stated that it was conferred with the Most Admired Knowledge Enterprises (MAKE) award for 2012 at Global and Asian level. Previously, the firm had been recognized by the Indian MAKE awards on six accounts since its inception in 2005. Tata Steel is second most geographically diversified steel producers in the world with an annual crude steel capacity of over 26.5 million tonnes.

Source: Indiamart SME News

Mr Ratan Tata sees India achieving economic growth of 7% in couple of years

Economic Times reported that, Mr Ratan TATA said that he expects India to re establish its economic growth at 7% plus rate in the next couple of years but it will not be able to achieve over 8% it had prior to the 2008 to 09 global financial crisis. TATA Group said that the recent steps by the government have restored investors' confidence in the country but more needs to be done. He noted that efforts to control inflation plus scams and other issues resulted in Indian economic growth slowing down to 5 or sub 5%. He said that "To many, it has been like a recession. I think we will re establish at 7 plus per cent growth rate in couple of years driven by the fact that we have got pent up demand in the country. "But it is not going to be as attractive as it has been in the past," said that Mr Tata, who retired from the group last year during a dialogue session with students at the Singapore Management University. Responding to a question on recent economic boosting measures in the Indian Budget for 2013 to 14 he said that "One must ask is it enough or is too late. My own feeling is that some of the confidence in the Indian economy perhaps amongst investors is restored. But there is a lot more that needs to be done if India is to be moving back to the visibility and the attraction that it had some years ago. May be just moderate moves are not going to be enough to undo the damage that has been done over the last few years."

Source: Steel Guru

KIOCL plans rare earth venture in Kerala with SAIL

Business Line reported that KIOCL Ltd plans to set up a rare earth joint venture project with Steel Authority of India Limited in Kerala and may also take state government as a partner. A senior official of KIOCL told Business Line "We have just expressed our interest in the project along with SAIL." He added that the joint venture could also rope in some state government units. The state units that may be involved in the proposed project include Kerala State Industrial Development Corporation and Kerala Mineral Development Corporation. The ministry of steel is understood to be involved in the deliberations on the project proposal. In January, the steel secretary, in a letter to the Kerala Chief Secretary, sought the state government's intervention in recommending suitable mineral rights in the state for the proposed venture. Last September, KIOCL had first announced to the Kerala

government its intention of taking up a titanium mining and mineral separation project. In October, as a follow up, the CMD of KIOCL, the Additional Secretary and Financial Advisor to the Steel Ministry, and a Director of SAIL had met the Kerala Chief Minister. An MoU was signed in September 2011 between KIOCL and KSIDC for iron-ore mining and the setting up of beneficiation and pelletisation plants in the Kasargod or Kozhikode districts of the State. However, KSIDC informed KIOCL in February last year that no iron-ore bearing area was available for exploitation in Kozhikode.

Source: Steel Guru

Strong policy initiatives to spur infrastructure financing – ASSOCHAM

Non-banking financial companies Infrastructure Finance companies should be permitted to access external commercial borrowing on liberal terms to make them globally competitive reveals the ASSOCHAM Deloitte study. While releasing the study ASSOCHM Secretary General Mr D S Rawat said that NBFCs IFC funding needs are limited to bank finance largely and the tighter prudential limits on bank lending and sectoral capps limited to access commercial bank funds. IRDA has set stringent guidelines towards investment in infrastructure bonds the rating quality of investment bonds should not be less than AA whereas a typical non-recourse infrastructure project is rated BB. Moreover 75% of all debt investments in an insurance company's portfolio must have AAA rating. Statutory restrictions imposed by government of India on infrastructure include minimum credit rating for debt instruments and minimum dividend payment record of 7 years for equity. ASSOCHAM also recommends that these are difficult conditions for private infrastructure projects to meet as they have been set up recently and do not enjoy high credit rating in the initial years. The study also mentioned that the sale of unlisted projects is subject to capital gains tax which acts as a disincentive to most equity investors. There is also a growing perception amongst the equity shareholders that the termination payments in the event of government agency defaults are not adequate in most concession agreements. The PFRDA guidelines allow investment in credit risk bearing fixed income instruments. However, at least 75% of the investment in this category is to be made in instruments having an investment grade rating from at least 1 credit rating agency.

The sartorial cap of 75% of the investment having an investment grade rating under Asset class C scheme has led to Pension Funds missing on the opportunity to invest in infrastructure projects. Also the Sovereign credit rating of BBB limits investments from foreign funds. The lack of derivative market and interest rate that implies that investors are unable to manage risks efficiently. External Commercial Borrowings imposes all in cost ceiling that allows access only to highly rated companies. Financial intermediaries such as banks, FIs, HFCs and NBFCs are not eligible to raise sums through ECB. ASSOCHAM paper also points out that almost one third of India's saving rate of 37% is directed towards physical assets. Also financial savings are not properly channelized towards infrastructure projects due to lack of long term savings options in the form of pension and insurance. The foreign exchange hedging is not available for long tenures especially for a period of more than 8 years and even if they are available they attract high premiums. Foreign investors are not comfortable betting on India for long tenures and this also restricts the long term lenders to invest in these projects. Mr Rawat said that funding gap of around 6.08 lakh crores proposed in the 12th 5 year plan should be assisted by the government through budgetary support. ASSOCHAM further said that the government should play a pivotal complementary role of a facilitator, enabler and regulator to allay down the apprehensions of the private sector. It should introduce innovative financial instruments for risk mitigation and should more closely align the nature of infrastructure development with funding sources. This will encourage private sector investment in infrastructure.

Source: Steel Guru

US Steel Industry outlook up to 2015

US steel industry is one of the world's largest steel industries both in terms of production and consumption. In 2011, the country secured third position, globally with nearly 5.7% share in crude steel production. The industry has benefited from soaring steel demand in the automobile and

construction sectors. Moreover, the cost effective and highly efficient steel making technologies worked as a catalyst and uplifted the US steel demand in the international markets. According to our new research report, "US Steel Industry Outlook to 2015", the US steel industry has been playing an important role in the overall economic development. This can be attributed to the increased production and consumption level in 2011 with respect to the previous year. Further, crude steel production increased more than 7% in 2011, while consumption increased around 11% during the same period. We expect that, the trend will continue in future also due to the increase in consumption from various industrial sectors. As per our research, continuous cast steel process accounts for major steel production in United Sates. Product wise, flat products' production accounts for the major share in total steel production, followed by long products and seamless tubes. Our report covers the further break up of long products production into concrete reinforcing bars, bars and wire rods and flat products into electrical sheet & strip, tinmill and other metallic coated sheet & strip. In addition, the consumption section in the report covers the consumption by type of product, which represents that flat products account for the major share in total steel consumption in the country.

Source: Steelonthenet.com

Enormous potential for US-India trade

A noted Indian-American economist has suggested initiating deeper bilateral trade integration between India and the US given the enormous potential for trade and investment because of India's unexploited growth opportunities. Growing close to nine percent in the last decade, India has emerged as a major power with an economy ($4.7 trillion) that in 2012 became the world's third largest in purchasing power terms, Mr. Arvind Subramanian told a Congressional panel. "Surpassing Japan and now behind only China and the United States, India's trade in goods and services is close to a trillion dollars, and expected to double every seven years," noted Subramanian, senior fellow, Peterson Institute for International Economics and Centre for Global Development. "This dynamism has expanded opportunities for US business," he said, noting US exports of goods to India have increased close to 700 percent in the last decade and exports of services have doubled in the last four years. "US foreign direct investment (FDI) has increased from $200 million to $6 billion," Subramanian said. "Moreover, trade and FDI flows between the two countries are balanced, minimising the scope for macroeconomic and currency-related tensions." To exploit India's potential of infrastructure investment of about a trillion dollars and its growing demand for services, he suggested a multi-pronged strategy for solving trade conflicts and maximizing the underlying potential. "There is merit in initiating deeper bilateral trade integration between India and the United States as a framework for giving recognition to the broader strategic imperative of closer cooperation between the two countries," Subramanian said. This may also be used "for pursuing further liberalisation in both countries and for reversing the discrimination that each is inflicting on the other", he said. However, in Subramanian's view "India's challenging regulatory environment is unlikely to see major improvements in the short to medium term". US business will thus have to learn to move outside its comfort zone to navigate an Indian market or risk "losing out to firms from other countries in one of the world's largest and most dynamic markets", he said.

Source: SME News

Tata Steel zooms in on SMEs to power growth next fiscal

Tata Steel will tailor products for the small and medium enterprises (SMEs) segment next fiscal to generate additional revenue of about Rs 5,000 crore. Speaking to *Business Line*, Mr. T.V. Narendran, Vice President (Flat Products), Tata Steel, said a recent study conducted by the company found that the local SME segment is under-serviced and largely untapped. We recently launched Tata Astrum, a hot rolled product, which will cater largely to the SME segment. We intend to sell one million tonnes next fiscal under the Astrum brand which will give us revenue of Rs 4,000 to Rs 5,000 crore," he said. The company will soon commission 1.6 million tonnes of additional capacity at Jamshedpur in West

Bengal. The size of the domestic market for hot rolled products in the SME segment is pegged at six million tonnes a year. Tata Steel intends to capture 18 per cent of this market by next fiscal. Hot rolled coils are used extensively in the automobile and white goods sector.

Tata Steel has appointed 42 authorized distributors who will tie up with the company-authorized service centre. The material will be processed at the service centre according to customer requirements. The distributors are from different sectors including beverages, paint and cement, he said. The Astrum product range will find application in the automotive, earth moving equipment, railways, fabrication, construction and industrial machinery segments.

Tata Steel plans to woo SMEs with ready-to-use high quality hot rolled products. Small companies currently source their steel from traders and others in the unorganized sector as large steel companies focus only on established players with large orders. "SMEs are mostly dependent on traders and local producers as their order sizes are small and not consistent. With the launch of Astrum, we want to assure them of quality products within optimal time (periods). We want to sell about two million tonnes in next two fiscals," he said. Tata Steel is confident that the SME sector will bear the premium that will be charged for its products. The use of branded raw material will not only reduce the risk on customers but will also cut their cost by 30-40 per cent in the long run, said Mr. Narendran. The company charges a premium ranging from 3 to 20 per cent depending on the brand and quantity. Tiscon, the company's TMT brand, enjoys the highest premium of 20 per cent. Some of Tata Steel brands include Tata Tiscon (rebars), Tata Shaktee (roofing sheets), Tata Steelium (cold rolled sheets), Tata Galvano (galvanized sheets), Tata Structura (hollow sections), Tata Bearings (bearings) and Tata Agrico (agricultural implements). "The worst may be over for the steel industry as far as demand is concerned. We expect it to revive with the RBI cutting key bank rates leading to improvement in liquidity. Traditionally, January to June is considered a busy season for the steel industry," said Narendran.

Source: Indiamart SME News

Odisha: Govt asks steel firms to submit progress report

With an aim to keep watch on steel companies performance, the Odisha government has asked 36 steel firms to immediately submit their physical and financial progress reports. "The submission of the physical and financial progress report up to December 31, 2012 has been inordinately delayed, which has been viewed seriously," Steel and Mines Department Under Secretary B Behera said in separate letters to the different steel companies. He said no response had been received from the steel companies despite letters and reminders. The state government required information on the physical and financial progress of the steel companies as it had been asked to supply data by Odisha Assembly as well as Parliament.

Source: Indiamart SME News

Tata Steel plans to raise 13,000 cr for new steel mill in Odisha

Tata Steel has announced that it is planning to raise up to Rs 13,000 crore in the coming six months for the first phase of its forthcoming 6 million tonnes new steel mill in Kalinganagar, Odisha. Koushik Chatterjee, CFO, Tata Steel maintained, "we are looking at closing our project financing for the Odisha project. It is an advanced stage... In phase-I, we will be funding around Rs 12,000 crore to Rs 13,000 crore on debt and then, after we complete (phase-I), we will take a call on (fund raising for) phase-II." Kalinganagar project is the first integrated Greenfield project by the company outside Jamshedpur. The project has been divided into two equal phases of 3 million tonnes per annum (MTPA) and is expected to need an investment worth Rs 35,000 crore.

Chatterjee expressed that the first phase of the project is likely to go on start by mid of this year. He further stated, "work is going on in full swing (at Kalinganagar project). We have significantly mobilised resources on-site and expecting to ramp up the same before the onset of monsoon

season, sometime in June-July." In 2004, the company had inked a memorandum of understanding with the Odisha government, however, in the wake of protests at the site few years ago, the project had been delayed.

Source: Indiamart SME News

FIMI projects higher operational costs for steel sector

Federation of Indian Mineral Industries (FIMI) anticipates the steel sector in India to face high operational costs because of their necessity to use low-grade iron ore as raw material, rising levels of power consumption and rising cost of financing. Companies will have to use low-grade iron ore in the coming years because operations of high-grade mines have come to a stop.

FIMI points out that issues with availability of raw material cropped up after a Supreme Court order that banned mining in Goa (earlier, the largest low-grade ore producer in India) and states such as Odisha and Karnataka putting an end to their mining activities. While Karnataka is reviving its mining activities with seven mines having opened recently, the state currently accounts for 3 million tonne iron ore production domestically. However, Basant Poddar, Vice President of FIMI clearly points out that the state could not produce iron ore over the 15 million tonne mark in the next fiscal. Initially, the steel industry of India used high-grade ore for its domestic production and exported low-grade ore. Such a lack of raw material could affect steel companies, having repercussions on small-scale players in the country.

Source: Indiamart SME News

National Steel Policy draft proposes e-window to ensure quicker project clearances

The new draft for modifying existing National Steel Policy suggests introduction of a virtual single e-window system in addition to proposing that the Inter-Ministerial Group be vested with more powers. The existing policy was formulated in 2005. These modifications in the existing policy could negate delays that are occurring in the context of agency clearances for new projects. High priority projects from leading steel industry players such as Posco and ArcelorMittal could not see initiation because of hassles over land acquisition and environmental clearance issues. The draft also pinpoints that agency clearances for steel projects come across as an obstacle in the "creation of green field steel capacities". The suggestion for providing more powers to ministerial groups is a way to bring about heightened coordination among authorities involved in steel projects. This could curtail delays in project sanctions and clearances. Expedient project sanctions could come about in the segment of small-scale enterprises also. The National Steel Policy draft pegs steelmaking capacity of India to reach the 300 million tonne (MT) mark by 2025-26. The mark has been set so that steel production level touches atleast 275 million tonne by then.

Source: Indiamart SME News

Indian steelmakers eying RG Steel assets in Mingo Junction in US

Tribunal Today reported that steelmakers from India are interested in restarting at least part of the silent RG Steel facility in Mingo Junction which contains the USD 115 million electric arc furnace. Mr Craig Slater general counsel and vice president of Frontier Industrial, owner of the Mingo site, said that several potential operators have looked at the plant, including some from India including Essar Steel, Jindal Steel and Tata Steel. Mr Slater said that "We know people are interested in what's going on. We are willing to wait to see what kind of deal we can come up with." Mr Slater also noted that the Mingo facility's blast furnace does not appear to be part of its future. He said that "We removed the old ore bridge. None of the folks we have been talking to plan to use the blast furnace." Essar Steel made a bid to purchase all the former Wheeling-Pittsburgh Steel Corp. facilities in 2008 then owned by Esmark Inc but United Steelworkers members eventually voted to sell to OAO Severstal for USD 4.7 million. Severstal later sold the plants to RG Steel which filed for bankruptcy and liquidation last year. Mr Slater's company purchased the entire Mingo plant property including the electric arc

furnace for USD 20 million as part of RG Steel's liquidation. Since the summer Mr Slater has been working with a number of potential partners that could help reopen the plant.

Source: Steel Guru

Slow down shatters auto steel dreams of Indian steel mills

Business Standard that it's not automobile makers alone worried at the continuous fall in car sales. The steel sector which has spent a lot of money to tap the automobile segment is nervous on its investments. TATA Steel had forged an alliance with Nippon Steel of Japan and the 2 are spending INR 2,400 crore to set up a facility at TATA's Jamshedpur plant for the automobile sector. The plant is expected to come on stream by December this year. JSW Steel in 2010 signed up with JFE of Japan to set up a 2.3 million tonne cold rolling unit to make steel for the auto sector. The company is spending INR 4,500 crore on the unit. The first phase will be commissioned this year and the rest in 2014. This would mean a fifth of the capacity at its Bellary factory would be exclusively for the auto sector. Asked to comment TATA Steel said that "We sell slightly more than 1 million tonne of steel to the auto industry, about 15% of our total sales. So while we have felt the impact of the downturn to some extent in HR sales to auto we had pro-actively developed other segments, particularly SME which has helped us to not only counter the slowdown in auto but also to sell the additional volumes that we have from our new mill." JSW Steel did not comment for the story. However an official from JSW on condition of anonymity said that "Steel demand in India is sluggish and we were hoping on the auto sector to boost demand. The projections don't look good but we are hopeful that in a couple of years the sector will bounce back." Essar Steel has also signed an agreement with Kobe Steel of Japan. An Essar spokesperson said that "Yes it is a matter of concern as our sales to the auto sector/ancillaries are down. However Essar is a versatile steel producer, capable of producing a variety of grades for applications across the flat steel segment. We are mitigating the downturn in auto sales by augmenting sales in other value added segments."

Source: Steel Guru

Specialty steel imports in US increase significantly in 2012

The Specialty Steel Industry of North America has released statistical data on imports, US consumption, and import penetration for year to date December 2012. The data represents US consumption, imports, and import penetration for December 2012 compared to the same 2011 12 month period.

The following data is presented by specialty steel product line, total stainless steel, and total specialty steel:

1. Stainless steel sheet/strip:
   Imports in year to date December 2012 were 452,475 tonne, a 15.3% increase compared to year to date December 2011; US consumption was 1,700,822 tonne, a 7.9% increase; 12 month import penetration was 26.6%, a 1.7% point increase from 2011.
2. Stainless steel plate:
   Imports in year to date December 2012 were 203,026 tonne, a 16.8% increase compared to year to date December 2011; US consumption was 412,431 tonne, an 11.6% increase; 12 month import penetration was 49.2%, a 2.2% point increase from 2011.
3. Stainless steel bar:
   Imports in year to date December 2012 were 146,097 tonne, a 2.4% increase compared to year to date December 2011; US consumption was 256,888 tonne, a 0.8% decrease; 12 month import penetration was 56.9%, a 1.8 percentage point increase from 2011.
4. Stainless steel rod:
   Imports in YTD December 2012 were 29,950 tonne, an 8.3% increase compared to year to date December 2011; US consumption was 71,095 tonne, a 1.4% decrease; 12 month import penetration was 42.1%, a 3.8 percentage point increase from 2011.

5. Stainless steel wire:
Imports in year to date December 2012 were 48,332 tonne, a 4.1% increase compared to year to date December 2011; US consumption was 59,864 tonne, a 2.1% decrease; 12 month import penetration was 80.7%, a 4.8 percentage point increase from 2011. Imports of total stainless steel in year to date December 2012 were 879,879 tonne, a 12.4% increase compared to year to date December 2011; US consumption was 2,501,101 tonne, a 7% increase; 12 month import penetration was 35.2%, a 1.7 percentage point increase from 2011.

6. Alloy tool steel:
Imports in year to date December 2012 were 124,742 tonne, a 11.2% increase compared to year to date December 2011; US consumption and import penetration were not calculable.

7. Electrical steel:
Imports in year to date December 2012 were 118,635 tonne, a 4.3% increase compared to year to date December 2011; US consumption and import penetration were not calculable.

Source: Steel Guru

Understand Chinese steel sector outlook to safe guard your business

What happened to Chinese steel industry in 2012? What will happen in 2013?

Chinese steel industry experienced the toughest year 2012 when steel demand was in lackluster, steel and steelmaking raw materials prices plummeted sharply, steel enterprises overwhelmingly fell into loss, steel trading companies suffered from the banks' credit restrains etc. How to survive and how to transform became the focus of 2012 Chinese steel market. International economic situation will be complex and full of wide cards in 2013. Chinese central government will insist on stable development, and achieve the growth via transforming the economic growth mode and restructuring. Steel industry, including steelmakers, distributors and end users, will pay attention on grasping the policy direction of government and realizing the restructuring of steel industry.

Besides, increasing raw materials issues attracted marketers' eyes, such as:

a) The growth of global iron ore capacity and production to falter or not
b) How international iron ore pricing alter
c) Development of iron ore spot trading platform and financial derivatives trading
d) Game between global steelmakers and iron ore suppliers
e) Scrap recollection development potentiality
f) How ferroalloy producers to enhance the competitiveness etc.

Source: Steel Guru

Is ArcelorMittal's Stake Sale in Canadian Mine Part of Its Bigger Plan?

ArcelorMittal is continuing with efforts to reduce its massive debt through stake sales in assets. It's selling a 15% stake in Canada's Labrador Trough iron ore mine for $1.1 billion, to a consortium comprising of South Korean steelmaker Posco and Taiwan-listed steelmaker China Steel. Earlier, ArcelorMittal had sold a 20% stake in the Mary River iron ore project, located on Baffin Island in Canada to its partner Nunavut. The consortium has already paid $810 million in cash for a 11.05% stake in the mine. It remains unclear as to how this amount was split between Posco and China Steel. The second installment, which will increase the consortium's stake to 15%, remains subject to various conditions and is expected to be paid in the second quarter of 2013. ArcelorMittal's wholly owned subsidiary ArcelorMittal Mines Canada, now owns 88.95% of the mine. ArcelorMittal's partial sale of iron ore assets seems to be influenced by a slowdown in the global economy as well as overcapacity in the European steel industry where a lot of the company's own manufacturing is also concentrated. The steel manufacturing capacity in Europe stands at around 210 million tonnes of which only 155 million tonnes is being utilized. Idle plants imply less requirement for iron ore. The mines in question in the context of the latest deal produce about 40% of Canada's total iron ore output. ArcelorMittal

currently produces about 15 million tonnes of iron ore concentrate and more than 9 million tonnes of iron oxide pellets annually out of Canada. The company is currently completing a $1.4 billion expansion of the mine to 24 million metric tonnes of iron ore output a year.

What Is Forcing ArcelorMittal to Sell Stakes In Strategic Assets?

1) Debt Burden

ArcelorMittal has been struggling with a heavy debt burden and weak steel prices for quite some time now. Its long term debt stood at $219.3 billion at the end of 2012. The company has seen its debt rating downgraded by all three major rating agencies – S&P, Fitch and Moody's. The agencies are not satisfied with ArcelorMittal's debt reduction targets and also believe that the weak market conditions will make steady cash flows unlikely. ArcelorMittal is likely selling non-core assets to reduce its debt burden.

2) Failure To Get Rid Of Production Overcapacity In Europe

ArcelorMittal reported a net loss of $6.5 billion in 2012, and admitted that conditions in Europe were unlikely to improve anytime soon. According to the company, demand for steel in Europe has slumped by 29% since 2007. The situation in Europe is so bad that ArcelorMittal had to write down the value of its European assets by $4.3 billion in the fourth quarter of 2012.

ArcelorMittal has been attempting to get rid of overcapacity wherever possible and shed non-productive assets. However, it has run into significant political opposition from irate politicians furious at job cuts resulting from sale of assets. The ire in France and Belgium over announced closure of facilities are well known examples. This may be forcing the company to compensate elsewhere in order to meet debt reduction targets which are absolutely imperative given the investment rating downgrades. Future growth may be compromised if ArcelorMittal is unable to access funds from the market at reasonable rates of interest.

What's The Long Term Plan?

Despite the partial stake sales, ArcelorMittal seems to be convinced of the long-term potential of the iron ore mining business. Its projected growth of iron ore output to 84 million tonnes in 2015 from 56 million tonnes in 2012 remains unchanged from last year. It is possible that selling a non-controlling stake is for the purpose of bringing in capital for development of mines and locking in customers for the iron ore produced. Steel companies like Posco and China Steel need copious quantities of iron ore for their operations.

Source: Steelonthenet.com

Asia continues to drive global steel growth

Chinese steel production continues its inexorable rise in 2012. The outcome is expected to reach 760Mt, 5.5% up to the out turn in the previous year. The three main drivers are increases in manufacturing, infrastructure investment and housing. Further, but more modest growth in steel demand is anticipated for the next five years? Pushing up production of steel to 895Mt in 2016. The future percentage rate of expansion in steel-making is forecast to be slower than in the recent past.

The rate of growth in steel output in India is starting to slow but will be recorded at a new all-time high in 2012. The, year-on-year, expansion is expected to be just 3%, whereas in the past decade the figure has been close to 10% Reasonable demand for housing and infrastructure will remain into the future leading to solid requirement for steel to 2016. The recovery of the Japanese steel sector from the 2009 global economic crisis was abruptly halted in 2011 by the March earthquake and tsunami. Modest growth in steel production is predicted in 2012 and beyond as reconstruction in the affected region takes place. The economy is slowly improving but exports are proving difficult to obtain. Steel output should continue to expand but in 2016 is likely to be below the boom year of 2007.

A new peak steel production level will be achieved in 2012 in South Korea. Domestic demand has

not increased significantly but the country's dependence upon imports of semi-finished products has been greatly reduced. Steel output is expected to increase marginally in 2013, and beyond. More new capacity is likely to come on stream next year; lifting domestic supply further. A slowdown in the rate of growth in steelmaking is anticipated in 2014 to 2016. After adjusting for Chinese under-reporting, Asian total output of raw steel in 2011 was in excess of one billion tonnes. This represents almost 65% of global production. In comparison, the figure ten years earlier was 42%.

Source: Steel Times International

Renewed interest seen in renewable energy

The role of new and renewable energy has been assuming increasing significance in recent times with the growing concern for the country's energy security. Energy self-sufficiency was identified as the major driver for new and renewable energy in the country in the wake of the two oils shocks of the 1970s. The sudden increase in the price of oil, uncertainties associated with its supply and the adverse impact on the balance of payments position led to think for alternate energy. The present installed capacity of power generation in the country is about 212,829 MW which includes 26,920 MW from renewable sources. The Ministry of New and Renewable Energy is targeting a capacity addition of 30,000 MW during the 12th Plan period (2012-17) from various renewable energy sources. It is expected that the contribution of renewable power in the total installed capacity would be in the range of 16 to 17 per cent at the end of 12th Five year Plan. While focusing on conventional sources of energy like oil and gas, the Indian oil sector public sector units (PSUs) have not lost sight of the increasing relevance of renewable energy in today's context.

According to the Ministry of New and Renewable Energy, leading PSUs like ONGC and IOCL have set up wind energy projects. ONGC has a 51 MW wind power plant project in Gujarat and IOCL has a 21MW project in the state. GAIL (India) has 118 MW of wind power project spread in states of Gujarat, Tamil Nadu and Karnataka while OIL has a 13.6 MW wind project in Rajasthan. HPCL and BPCL also have wind power projects. IOCL is also implementing a 48.3 MW wind power project in Andhra Pradesh. IOCL has commissioned a 5MW solar power project in Rajasthan under the Jawaharlal Nehru National Solar Mission. ONGC is also in the process of setting up a 5MW solar Photo-voltaic in Rajasthan. Indian Oil has formed a joint venture with CREDA Biofuels Ltd to form Indian Oil-CREDA Biofuels Ltd (ICBL) in 2009 for entering the biofuels value chain in the state of Chhattisgarh Renewable Energy Development Agency (CREDA), the nodal agency in Chhattisgarh for promotion renewable energy projects, hold 74 per cent and 26 per cent equity, respectively in this venture. Indian Oil - CREDA Biofuels Ltd. envisages production of 30,000 metric tonnes (MT) of biodiesel per annum from energy crop plantation on 30,000 hectare of revenue wasteland. The feedstock will be generated by undertaking energy crop plantations.

(Jatropha, Pongamia etc.) On revenue wasteland in various districts of Chhattisgarh. The JV completed energy crop plantations (Jatropha curcas) on 771 hectare revenue wasteland in districts of Bilaspur & Sarguja. The company is in the process of completing plantation on 5,000 hectares of revenue wasteland in the districts of Raipur, Korba, Sarguja and Bilaspur.

Source: Business Standard

India's SAIL to double US met coal imports to 4 mil mt/year, says official

India's largest steel producer SAIL is planning to double its imports of US metallurgical coal from the current 2 million mt/year within months as part of plans to diversify its sources of supply, a company official said Tuesday. "We have used US coking coal fairly successfully and with no adverse effect on coke batteries," Mr. Anutosh Maitra, managing director of the company's Bokaro steel plant, said at Coaltrans India. While Australia remained the largest source of India's coking coal imports, the steel plant was increasingly looking to other sources, he said. Credit Suisse in a recent report estimated India's total imports of coking coal in 2012 to be around 35 million mt, Platts reported earlier. "For Mozambique, India is a natural market, and the coking properties there are good," he said. "Our experience [with Mozambique coking coal] has been encouraging." Mr. Maitra also noted the low

ash content of Indonesian coal. "Strategic tie-ups for offtake are likely with major concession holders," he added. Even Mongolia was being considered, he said, adding SAIL was working on partnerships to bring coking coal to India from the landlocked country.

However, he said there were a range of challenges in bringing domestic Indian coking coal to market. The country has reserves of 32 billion mt, but remains the world's fourth largest importer of coking coal. This is because hard coking coal comprises only 16% of the domestic reserve total, around 20% is at depths exceeding 600 m, it has a high ash content and is located near highly populated areas, restricting access. India is also continuing to look to technological innovation to reduce coking coal-related costs, such as stamp charging and other technologies that enable greater use of semi-soft and other weaker coking coals, Maitra said. The Bokaro plant executive took the opportunity to highlight the striking progress of the Indian steel industry in recent years and the pipeline of expansions at major steel plants. With output having grown by 22 million mt/year since 2000 to 72 million mt/year in 2012, the industry is now targeting 150 million mt/year by March 2017 as part of the country's 12th five-year plan, Mr. Maitra said. He said demand would be driven by a range of factors including infrastructure spending, which he said should amount to 10% of GDP by 2017, from 5% currently. Increased steel consumption in rural areas would also be critical, he said. India's per capita steel consumption has lagged behind other major developing nations, he said, at 57 kg/capita in 2011, but the World Steel Association has forecast Indian consumption to rise to 115 kg/capita by 2020.

Source: Steelonthenet.com

India's Short-Term Iron Ore Supply Not Looking Promising at All

India's iron ore situation in the new financial year does not look very encouraging, with some predicting exports to remain range-bound between 8-9 million tons. India will end the year as a net importer of the ore, agree most analysts, bringing in about 20 million tons the next fiscal year. Federation of Indian Mineral Industries (FIMI) Vice President Mr. Basant Poddar told the Press Trust of India that iron ore exports would not go beyond a single-digit figure, but imports would. A court-imposed ban on mining in many producing regions like Karnataka, Goa and Odisha has severely impacted iron ore exports, resulting in a drop of 68.3 percent in shipments during the April-January period 2012-13 to 16.34 million tons. It is being predicted that India may finish 2012-13 with a net import of 20 million tons of iron ore. Experts like Mr. Podar do not see import figures dropping in the New Year. The ban on iron ore has impacted the index of industrial production (IIP) figures with contraction of 4 percent in mining output for December 2012 as compared to 3.3 percent in the same month in 2011, while the IIP for December, 2012 shrunk 0.6 percent. A report by research and analysis firm CRISIL Research also predicted that for the next couple of years, the iron ore demand/supply balance in India was expected to be tight, with production of iron ore expected to be in the range of 125-145 million tons. Domestic demand, on the other hand, would be between 130-140 million tons. Due to this, iron and steel companies could face an acute shortage of iron ore in 2012-13. The situation is expected to improve marginally in 2013-14, the report added, with prices easing up slightly.

Source: Steelonthenet.com

Steel minister to approach CCI to expedite projects

Indian Express reported that the steel ministry is knocking at the doors of the Cabinet Committee on Investment to iron out hurdles holding up nearly 24 steel projects including those of South Korean steel maker Posco and SAIL. The ministry has compiled a list of about 24 projects entailing an overall investment of over INR 2.60 lakh crore in the steel sector that are stranded for reasons ranging from delays in getting raw material to timely environmental clearances. After both foreign and domestic steel companies recently voiced their concerns over the delays that are leading to increasing costs the steel ministry had a day-long meeting recently to take stock of their problems. In the meeting the project promoters complained about lack of raw material security and difficult land acquisition

conditions. They also reiterated that the Union environment ministry must be asked to give timely clearances. A top steel ministry official said that "The steel companies expressed concerns that delays in projects have upset their plant commissioning schedules. The total envisaged investment in the steel sector is about INR 267,628 crore and most companies have invested substantial funds into their respective projects. For example POSCO said that the environment ministry is yet to re-validate the environmental clearance for its 12 million tonne steel project in Orissa. It said that the Orissa government should hand over the land acquired for its project."

Source: Steel Guru

Construction Equipment industry faces hard times

Amidst slow economy and almost construction projects being stagnant, the construction equipment manufacturers are facing big blow. Last decade has seen the rise of Gurgaon and Noida into the league of global cities with numerous infrastructure projects and innumerable real estate projects. Also, the real estate sector has given the equipment industry ample orders. However, scenario has been completely changed within 3 years. Before 2011, the industry witnessed healthy growth rate of 20 to 25 per cent, however, the demand for such construction equipment has seen a downfall. Many of the projects which were proposed have either not taken off or stopped midway. Besides, mining and road projects are almost on a standstill.

In an exclusive chat with SME News, S G Roy, Secretary Indian Construction Equipment Manufacturers' Association has said, "construction equipment industry has seen a sharp decline in the last 2-3 years as maximum infrastructure projects in the country are on a standstill." "Mining has been stopped across the country. Since most of these require usage of construction equipment, the turn of events has had a significant impact on players in the heavy construction equipment, he said. Post Noida extension episode, where all construction happening in the region was halted, impacted the business construction equipment manufacturers who primarily cater to real estate sector. It is also noted that the land acquisition problems have also created big challenge for real estate developers and the stoppage of all construction work impacted construction equipment industry very badly. When asked about china manufactured construction equipment being imported in India, Roy said, "Yes, Chinese second hand equipments are really big threat to our market as they are very cheap and can be easily imported." "Due to the slowdown in the real estate and construction activities, our business has declined over 20 to 25 per cent in 2012. However, we are looking forward to get good business soon," said Wasimualhaq, General Manager, Sana Industries.

Source: Indiamart SME News

Steel sector facing big challenge to find raw material for expanding capacity

Competitiveness is the key as new capacities are being added in the steel sector, according to Rashtriya Ispat Nigam Ltd (RINL) CMD A.P. Choudhary. Plants which cut down on costs and maintain quality parameters will have a bright future, as steel consumption in the domestic market is bound to increase substantially, he said. He was speaking as the chief guest at a one-day seminar on steel industry in Andhra Pradesh organized by the Confederation of Indian Industry here recently. He said the Union Government had a target that by 2020 India should reach the second position after China in steel production. "India is presently in the fourth position with 71 million tonnes (mt) and China in the first with more than 600 mt per annum. It will be a creditable achievement for India to get into the second slot, even though there will still be a vast gulf separating the first and the second," he said. He said the big challenge was to find raw material for enhanced capacities and upgrade infrastructure for production and consumption of the steel in the domestic market as well as for exports.

Special steels

He said India was in a position to produce special steels required for sectors such as ship-building and "we are inferior to none in technologies." There was, however, the need to spend more on R&D for more eco-friendly technologies of steel manufacture. He said the growth of manufacturing sector

was not taking place in Andhra Pradesh for the past four years and also not many industrial units (small and medium ones) were coming up in the vicinity of RINL. "There should be more SMEs and ancillaries here," he felt and added that RINL would support them. Currently, RINL was forced to source many components from other states, as there were no units nearby. Rear-Admiral N.K Mishra, CMD of the Hindusthan Shipyard Ltd, said more greenfield steel units should come up in the country. As for special steels required for ship-building, he said that for certain special steels the volumes required were so small it would not make sense to make them domestically. Former CMD of RINL Mr. Y. Sivasagara Rao said steel units should have to strive a lot to produce steel in accordance with the international benchmarks and till then our products would not be really be competitive. T.K Chand, Director (Commercial) of RINL and Chairman of the CII, Visakhapatnam zone, welcomed the gathering.

Source: Business Line

Steel demand will stay muted: ICRA report

Steel industry growth is set to remain muted with subdued demand from consuming sectors such as infrastructure and realty. Besides, constraints in sourcing iron ore and restriction on mining activities will pose a major challenge for the industry, said an ICRA research report. Steel consumption growth, which remained muted at 3.9 per cent between April and December, is unlikely to register any significant improvement in the fourth quarter given the control on expenditure exercised by the Government. The overall consumption growth this fiscal is likely to remain lower than the 5.5 per cent recorded last fiscal. This growth will be significantly lower than the 9.9 per cent and 13.3 per cent registered in the preceding two financial years, said ICRA.

Source: Business Line

Budget 2013: FM raises duty on steam coal

Cost of imported thermal coal is expected to go rise between Rs 45 per tonne to Rs 75 per tonne at current international prices, due to the changes in budget proposal, leading to higher cost of power generation and adversely impacting price pooling of coal. In the Budget 2013-14, the government has imposed a 2% customs duty on thermal coal and a 2% countervailing duty of 2%. Earlier it was just 1% CVD which could be claimed back by the company importing the coal. Untill now, there was just a countervailing duty of 1% on steam coal -- the coal used in power plants. Hence this budget there is a levy of 2% additional customs duty and another 1% CVD. Although CVD can be claimed back, the 2% levy in customs duty will affect coal prices and power generation costs. ""The cheapest variety of Indonesian coal which is ruling at $42 per tonne will see a rise of costs by Rs 45 and the costliest category which is ruling around $70 a tonne will see a Rs 75 rise,"" a coal importer said. ""Thermal power plants using imported coal will therefore see a rise in their power generation cost by at least 2-3 paise per tonne. However, without price pooling in place, companies that depend heavily on imported coal -- those in the coastal regions will be worst hit and the ones nearer to domestic coal mines will see less price rise," he said., which imports around 16 million tonnes of coal will also see a rise in cost of generation. However, they blend imported coal with domestic ones, hence the exact impact for the largest generator will be less. The country's dependency on imported coal is increasing at a very fast pace with a large number of power capacities coming up and not being able to supply adequate coal. It is also expected to result in an increased pool price of coal.

Source: The Economic Times

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