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5. Notification Government of Finance Department of Revenue
6. (Existing Members of The National Council 2017-18 & 2018-19)



हमारे सभी सदस्यों को
71वें स्वतंत्रता दिवस
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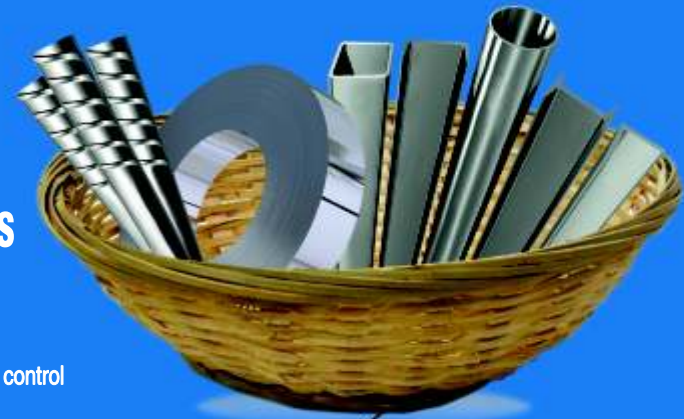


MSTC



METAL Mandi

The key to an online market place for medium and small scale steel manufacturers and traders



A brief portfolio of MSTC

- ✓ Commenced operation in 1964
- ✓ Mini Ratna Category-I PSU under the administrative control of the Ministry of Steel, Government of India
- ✓ Numero Uno position in e-Commerce with 500+ Principals and 50,000+ Buyers
- ✓ Created history through successful conduction of Coal Block Auction in 2014-15
- ✓ Mastered providing seamless and hassle free services in e-auction and e-procurement
- ✓ Launched MSTC Metal Mandi "M3" a virtual B2B and B2C Market place for Metal sector

Features of M3

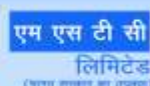
- ✓ An initiative of Ministry of Steel, Govt. of India, M3 is an effort of Central Govt. towards convergence of "DIGITAL INDIA", "MAKE IN INDIA" and "EASE OF DOING BUSINESS"
- ✓ M3 portal offers BIS certified metal products
- ✓ MSTC has tie-up with various banks and NBFC's for extending Credit facilities
- ✓ M3 provide a transparent secure and user friendly interface
- ✓ Wide range of Non-Ferrous Metal Products

Advantage to Sellers

- ✓ Enjoy the wider market exposure and expand your business and customer portfolios
- ✓ Enjoy selling on a digital platform and reduce tedious and cumbersome paper work
- ✓ Saves operation cost towards advertising/branding/promotional publicity
- ✓ "MSTC Metal Mandi" platform supports "pull" type supply management, where a business process starts, when an order comes from a customer and uses just in time manufacturing process. Thus it increases the productivity of the organization
- ✓ Options for price change available on 24X7 basis
- ✓ Opportunities for MSMEs

Advantage to Buyer

- ✓ Shopping in an open, competitive and fully transparent digital environment to get the best price
- ✓ Get detailed information on product, quantity and price at a simple click of the mouse
- ✓ Enjoy the larger spectrum of products to compare and select the cheaper and better "Made in India" type
- ✓ Hassle-free shopping experience saving time and cost
- ✓ 24X7 support service. Operate at any time, from anywhere, about any product
- ✓ Option of door delivery





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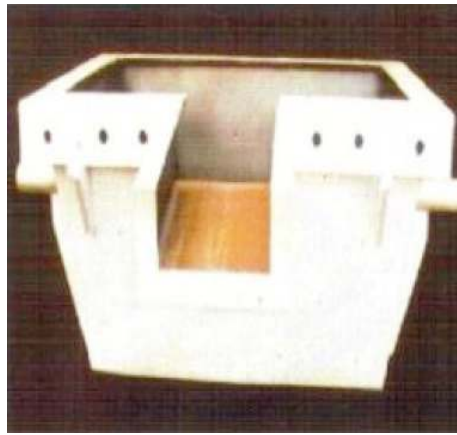
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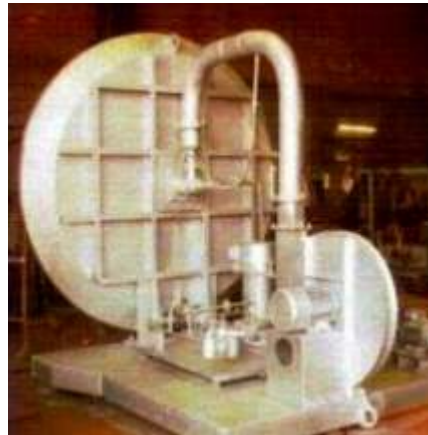
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From President's Desk

Dear Members and Colleagues,

As you are aware that the Government of India has implemented the Goods & Services Tax (GST) effective July 1, 2017. GST is a single tax regime and has replaced various indirect taxes such as Central Excise Duty, Service Tax, CST, VAT, Octroi, Entry Tax, Cess, etc.

Our association welcomes the implementation of GST and it will definitely prove to be a boon for steel industry which was struggling because of unfair competition within the industry because of many reasons which need not be elaborated.

AIIFA has always been demanding early implementation of GST since last 3-4 years and also withdrawal of various indirect tax exemptions to industry, on the basis of annual sales (SSI), area/location based exemptions and product base etc. which now stands abolished in the GST regime. This will surely help to have a level playing field for all.

Honorable Prime Minister Mr. Narendra Modi Ji has described GST as Good and Simple Tax.

Yes, it is good but not simple, as GST tax law structure is most intriguing for tax experts, what to say about the common man registered under GST. Certain provisions are still being deciphered by the tax experts and industry from last 6 months and particularly since 1st July. To name a few, Reverse Charge Mechanism (RCM), no ITC on GTA, arrest and prosecution provisions, ITC denial for full month on mismatch of transaction data uploaded by the supplier (who is assessee/tax payer of the Government and not of the buyer), besides this, supplier, transporter and buyer also responsible if goods apprehended with no or incomplete documents, GST on advance received from buyer and many more. Many such provisions amount to double taxation.

Besides this, many slabs of GST rates ranging from 0 to 28% and also different GST rates on same item on the basis of value of goods is unheard of in the countries in the world with GST. This may and will lead to malpractices to avoid higher tax slab.

The most disturbing is RCM particularly on goods purchased from unregistered or exempted dealer. This besides making every person to have knowledge of HSN and GST rate of all the commodities will also increase work load and paper work. Paying GST under RCM and issuing a self-invoice and then taking ITC on the same is like taking responsibility of other tax payer on to yourself.

Our association has already sent many representations to finance ministry on the GST issues being noticed by AIIFA but till date we have not received any replies as well as any notifications to rectify the provisions.

AIIFA as representative of the Induction furnace and related industry is trying to do whatever is best for all of us and I request all of you to come forward with your suggestions and inputs so that we can serve you better.



Sandeep Jain

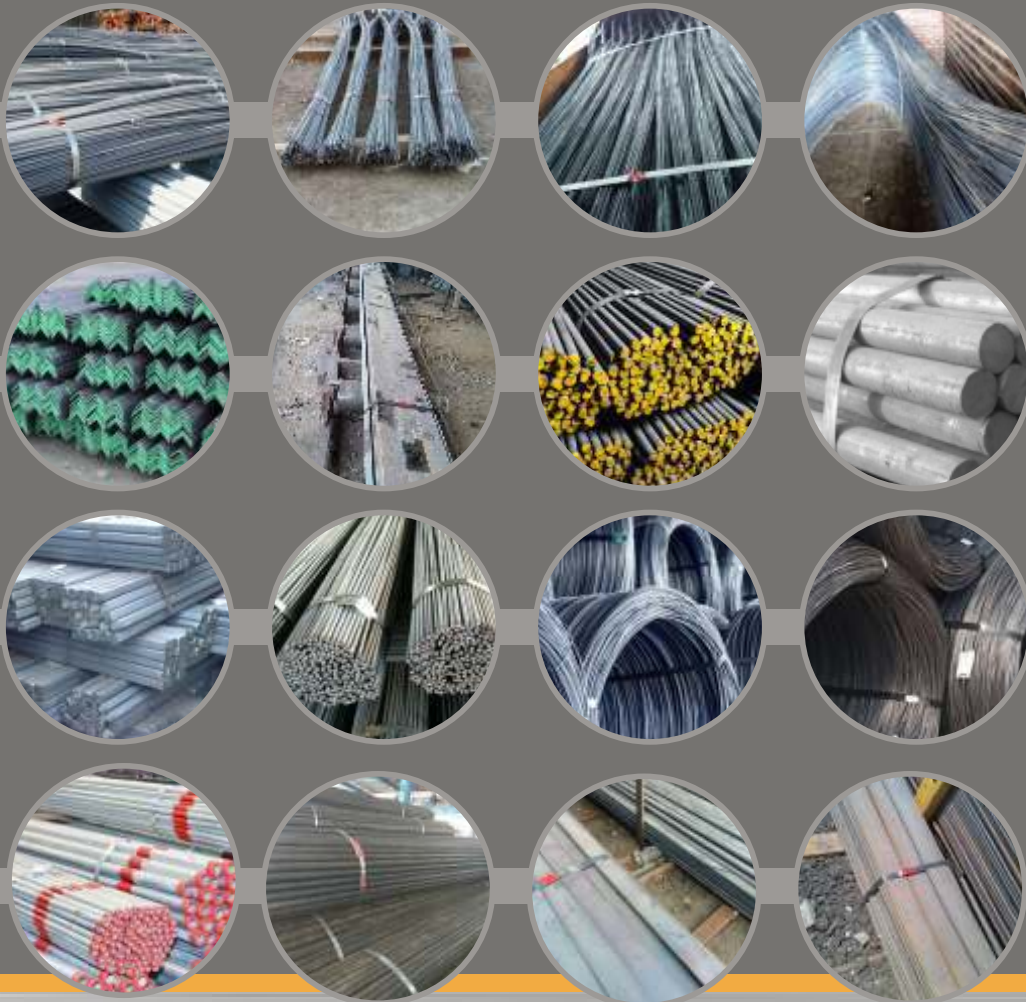
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Medium Carbon - Low Alloy Cr-Mo High Tensile Steel With Good Balance of Strength, Toughness & Wear Resistance

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Introduction : Medium Carbon Cr-Mo low alloy steels have characteristics and properties that make them identified as best choice for selection of producing various equipments and parts used in construction and engineering industries from forged, rolled bars and plates. Good balance and combination of different properties like high hardness, high strength, ductility, toughness/ fatigue and optimum corrosion resistance under extreme working conditions have helped engineers and metallurgists to select and choose these grades for manufacturing products in different application areas. The common grade preferred in this family is AISI 4140/42CrMo4/En19 or nearer grades in equivalent standards. Due to high hardenability, Medium Carbon - low-alloy Cr-Mo steels can be quenched and tempered to give a wide range of favorable mechanical properties in combinations. This class of steel, therefore, plays a principal role in many applications requiring different strength and toughness.

International specification of Medium C-Cr-Mo low alloy grade in equivalent specification followed by different countries are (US: AISI 4140, Standard - ASTM A29/A29M: C 0.36-0.44, Si 0.10-0.40, Mn 0.65-1.10, Cr 0.75-1.20, Mo 0.15-0.35, P & S 0.035 max)

Country	Equivalent Grade
USA	AISI 4140
Great Britain	En19 Series,709M40
Japan	SNM4,SCM4,SCM440
Germany(DIN)	41CrMo4,42CrMo4
France(AFNOR)	42CD4u
Italy (UNI)	42CrMo4
Spain(UNE)	40CrMo41
Russia(GOST)	40HFA/38HM

Characteristics of this Grade : In the designation of AISI/SAE terms, the first two digits in 4140 refer to alloy type Cr-Mo, and the last two digits refer to the carbon content as 0.40 percent. Cr-Mo alloys, often, are grouped in a single category and names for this category are nearly as numerous as their uses. Some of the names are chrome moly, croalloy, chromalloy, and CrMo. The chromium content in this grade provides good hardness penetration whereas the molybdenum content ensures uniform hardness and high strength as well as corrosion resistance. In cold finished annealed condition, this grade can be heated using various methods to yield a wide range of properties and capable of resisting creep in temperatures up to 538/540°C maintaining its properties even after long exposure at comparatively high working temperatures.

The alloy additions employed in medium carbon, low-alloy steels enable the use of oil as a quenching medium to obtain full hardening. However, the use of oil is inevitably accompanied by staining the steel surface, which may require cleaning after the hardening process. Micro alloying elements, sometimes, in these grades with Nb, V, Ti, B and N may be used in specific areas for steel purity, micro-structure/ fine grain and improved mechanical properties to make wind turbines, mining equipment and also for the production of high pressure steel cylinders and vessels, including compressed natural gas (CNG) transportation and storages units.

The properties of this grade create “fitness for use” commonly as Shaft, Crank & Cam Shaft, Gear, Machinery Parts, Nut/Bolts, Mining Spindle, Steel Piston/Ejector/Collet/ Coveyor, Stud, Connecting Rods and many other parts in many applications. Images of few critical items produced from AISI 4140 are shown below in the major application areas:

 Crank Shaft	 Gear	 Nut & Bolt	 Steel Coupling	 Steel Stud
 Cam Shaft	 Connecting Rod	 Gear Shaft	 Steel Roll	 Mining Spindle

Construction Area - Some innovative engineers and researchers realized that use of material in this grade possibly could have saved hundreds of lives in the twin tower massacre of 9/11, had the towers been constructed with the alloy steels having properties like Cr-Mo steel or similar quality steels. The theory is that the Cr-Mo steel would have retained approximately 50 percent of its strength at about 500-600° C and, therefore, would not have collapsed so quickly. It is possible that the material could be used in constructing skyscrapers and other buildings in the future.^a

Automotive, Engineering and Heavy Equipment Areas - Cast-iron crankshafts and many other products were used in automobiles, railways, ship industries well for many years when the RPMs were relatively low and also highway conditions not developed like present and the horsepower was not great enough to cause product failure building up heat in the engines. Present day's crankshaft and other similar natured products are very good example of the benefits of Cr-Mo steel against wear, heat resistance, and strength with all other needed properties for an efficient and long-lasting engines and related parts.

Hydraulic system of earthmoving machinery - High horsepower and torque is essential to enable in moving massive amounts of earthen materials very rapidly requiring good tensile strength and wear resistance to lift the large buckets and shovels where

Cr-Mo steels are the ideal grades to be used. Axles and roller pins on track machines (bulldozers) are nearly always made of this material or with some modification. Case hardening of this grade in few areas allows the surface to be wear-resistant and the interior to be relatively ductile and less brittle. The torsion strength, inherent in this grade, is extremely important in modern high-performance engines. Some of today's street automobiles now have more than 300 HP and high torque that was unimaginable some years ago but this grade can meet the present day's requirements.

The torsional strength, inherent in this grade, is extremely important in modern high-performance engines. Some of today's street automobiles now have more than 300 HP and high torque that was unimaginable some years ago.

Fabrication & Welding Engineering - Cr-Mo frames have become an industry of its own, and some shops are dedicated to building and rebuilding them with this grade. The endeavor is very lucrative because the frames often survive only one or two races. Also, racers constantly redesign their cars to make them faster or stronger or more stable in the turns.

Many Cr-Mo fabricators do not use preheat to weld any Cr-Mo parts, but it has been observed that pre-heating helps for smooth operation without failure as slow heat input and hydrogen diffusion in the welding process provides help to slow-cool preventing cracking of the material. In 4140 grade, carbon

content of around 0.4% and carbon equivalent (CE) value about 0.6 and more are highly susceptible to cracking (according to literature and practical experiences). This steel requires choice of proper filler material and welding needs pre-heating.

Probably the most important part of welding Cr-Mo steel structure is to slow-cool after welding instead of rush (sometimes, followed by fabricators). Many heavy industrial fabrications are 100 percent built from 4140 grade for heat resistance and superior creep strength for manufacturing material suitable for parts in material production furnaces that utilize moderate to extreme heat. Furnace cars frequently are fabricated from this grade which is very strong at elevated temperatures where furnace car materials usually are 1-1/2 in. thick or even thicker. The welding procedure normally requires at least a 200-250°C preheat and a post-weld heat of about 400-450°C followed by a slow cooling in still air or covered by a heat blanket.

Some fabricators produce multiple intersections products facing multi-axial stresses where distortion control is very difficult even in this grade also but post weld heat treatment solves the problem. It is observed that fabricators/ processors in many cases, bluntly, blame steel makers pointing towards steel defects for facing such problems without investigating the root cause.

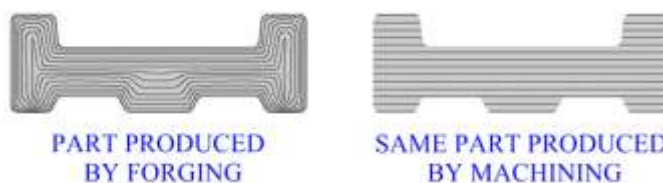
Steel Making & Hot Working : AISI 4140 is, mostly, made in induction furnace by melting sponge iron/HBI, home/ return scrap, cast iron and Fe-alloys where the magnetic fluxes generated out through the scraps inducing eddy current in the scrap with tremendous heat and melts the charge with heavy stirring action, Melting temperature in these grades lie between 1450-1510°C. As soon as the charge has melted and de-oxidising ions have ceased, the slag is skimmed off and the necessary alloying elements are added in the melt. Variety of micro-alloying elements like Nb, Ti, V, N respectively are added in liquid steel for improving grain size, micro-structure at product stages. Adjusting the composition of steel, the furnace is tilted for pouring liquid steel into a ladle, super heat to be kept calculating expected loss in tapping, degassing, teeming etc. In induction furnace, there is hardly any melting loss compared with the arc furnace. Argon is purged in the ladle.

Further, secondary refining of liquid steel like VD, LRF is done at places to get clean/ ultra-clean steel.

At the teeming platform, liquid steel is poured in the mould fitted with hot top. Bottom pouring flux and anti-piping compounds are added. Up-heel teemed ingots released from molds are slow cooled and then charged in the re-heating furnace in proper ways maintaining proper stack so as to heat stocks uniformly and soak at the specified temperature. Preheat the steel stock carefully, then raise the temperature to 1150-1210°C (higher side for lower carbon and lower side for higher carbon in the spcn.) for forging. Preferably forging to be finished in range 850-900°C. After hot working operations, products are slow cooled or disposed at proper temperature to avoid thermal stresses resulting cracks. Further, forging defects include internal bursts, poor grain structure, laps of folded-over metal, and cracking may happen for non-standard operating practice. Fabrication defects include improper welding, lack of weld penetration, stress cracks, and distortion may also take place. Ingot castings exhibit defects such as shrinkage, trapped nonmetallic elements, distortion etc. and other solidification defects.

At many places, die-forging methods as near-net forging techniques have been introduced to manufacture crankshafts, camshafts and many other critical intricate parts for automobiles and ships offering considerable improvements in design, fatigue strength in comparison to the conventional

GRAIN STRUCTURE OF A FORGED PART COMPARED WITH A MACHINED PART



forging process reducing losses. In this technology, stock metal as input is pressed, pounded or squeezed under great pressure into high strength parts which are normally carried out in hot condition above re-crystallization temperature by preheating the stock and soaked to a desired temperature before the operation. This process technology refines the grain structure improving physical properties of the products as the grain flow during forging is oriented in the direction of principal stresses encountered in actual use improving the physical properties such as strength, ductility, and toughness. Here the stock materials are fully constrained in the

cavity created by upper and lower dies.

Both in automobile and ships, the long stroke engines are getting popularity in few areas to bear higher load stress on the crankshaft and high bearing loads. As an integrated process, this area needs to be developed covering all the processes of clean steelmaking, forging, machining and inspection incorporating the new forging method to ensure higher reliability of products. The stability of die forgings allows designers to trust the steel and products made to adhere to the safety factors of the design providing more uniform response to heat treatment and machining operations at lesser cost.

Further, research and development in the area of forging for critical parts for these types of critical grades like Cr-Mo or Ni-Cr-Mo grades has made tremendous progress in precision or flash less forging which are used for the manufacture of high accuracy and complex forgings and are in the class of near-net shape or net shape forged parts requiring almost zero or minimal machining. Development of such products and their applications led to high economical, technological and ecological improvements in forging process bringing many benefits to manufacturers. Studies have shown that, compared with shapes machined directly from billet / round or plate as critical parts of intricate design, precision forgings can reduce the cost by 80 to 90 percent and decreasing machining labor by as much as 95 percent with dimensional accuracy.

Heat Treatment & Properties Achieved : These grades show positive response to all variety of heat treatments w.r.t. good ductility, hardness, toughness, shock resistance but low wear resistance. However such properties can be further improved through various heat treatment processes. The desirable properties of the AISI 4140 include superior toughness, good ductility and good wear resistance in the quenched and tempered condition. Medium carbon low alloy steels exhibit better mechanical properties after heat treatment to attain dual phase ferrite-martensite structure. Mechanical Properties of Dual Phase AISI 4140/ EN19 steel ensure increase its use in various industrial and non industrial applications for improved customer satisfaction and safety exhibiting high yielding with increase in annealing temperature.

For hardening & tempering operations, forgings of AISI 4140/En19 should be heated slowly to 870 to 890°C, held until equalization of temperature, then

quenched vigorously in oil with vigorous quench rate. It is usually a final operation in heat-treat hardening of steel and is used to impart required mechanical properties into the products that require high strength, toughness, high resistance to shock, and improved wear characteristics.

An important principle in heat-treating is that the faster the cooling rate during quenching, the higher will be the part's mechanical properties and performance characteristics. On the other hand, the faster the cooling rate the greater the probability of part distortion or cracking. For example, quenching in water provides better part hardness compared to a slower quench in oil, but the probability of part cracking or distortion when quenching in water is higher as such, balancing is to be done between desired hardness and acceptable distortion in choosing the heat-treatment conditions during their processing.

Immediate re-heating of quenched products is to be done in warm condition to attain tempering temperature, hold one hour per 25mm of section, preferably keeping for 2 hours minimum and then cool in air. The tempering temperatures are selected according to the required mechanical properties. Tempering in range between 230 to 370°C should be avoided due to possible temper embrittlement i.e Blue Brittleness to avoid cracking problem. However, as per choice of customer, treatment may be done in the following ways –

1. For yield strengths above 1380MPa, tempering temperature may be kept between 175 and 230°C keeping tempering time ½ to 2 hours at between,
2. For yield strengths below 1380MPa, tempering temperature may be kept in the range 500 to 680°C, Different Yield Strength at different Tempering Temp observed as : 1050 to 1100 MPa – 600°C, 850 to 900 MPa – 650°C, 700 to 750 MPa – 700°C.
3. For surface hardening of, Steel Bar 4140 Surface, Nitriding may be done at approximately 510°C for 10 to 60 hours, depending upon required case depth. Surface hardness achievable is 600 to 650HV. Hardness at different Tempering Temp observed as: 38 to 42Rc – 600°C, 36-40Rc – 650°C, 30 to 34Rc – 700°C

4. Induction or Flame Hardening of 4140 can surface harden to 58HRC (typical value).
5. Welding is not recommended in 4140 grade products because of the likelihood of occurrence of quench cracks at weld areas.
6. If welding is necessary, pre-heat stock to 200 to 300°C and maintain this during welding and immediately after welding stress relieve at 500 to 600°C. Typical components include transmission shafts, spindles and small gears, threaded fasteners such as bolts, nuts and studs.

In annealed condition, mechanical properties achieved in this grade:

1. Hardness (Brinell) – 197, Hardness, Knoop (converted from Brinell) - 219
2. Hardness, Rockwell B (converted from Brinell) – 92, Rockwell C (converted from Brinell, for comparison only) - 13.0, Vickers (converted from Brinell) – 207
3. Tensile Strength – 655 MPa, Yield Strength – 415 MPa
4. Elongation (while breaking) -25.7% , Reduction in Area – 56.9%

5. Modulus of Elasticity – 205 GPa, Bulk Modulus – 140 GPa., Shear Modulus – 80.0 GPa
6. Machinability Index of this steel – 65% (Based on S or Se added Mild steel as 100% & Stn 416-95%).
7. Density – 7.7 to 8.03 Kg/m³

CONCLUSION:

Usage of this medium carbon low alloy grade AISI 4140 in engineering and various manufacturing is one of the highest among all low alloy grade steels more than for its unique properties like high tensile strength and toughness achieved by heat treatment over a wide range to give the combined advantages of proper hardness, strength, ductility, corrosion, good fatigue and impact resistance. For critical shaped parts, close / impression die technology is followed to achieve better yield and improved properties.

References:

1. Metals Hand Book, 2. Heat treaters' Guide, 3. Experience in Mini Steel Plant.
- * Formerly of ASP Durgapur, Member of Metallurgical Consulting Team.
- ** Formerly DGM I/c(RC&RD), ASP and Consultant, Dasturco, Head Metallurgical Consulting Team.

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Energy Audit for Cost Optimization in MSME Steel Sector

Arindam Mukherjee, Sr. Program Officer (Energy & Environment Unit)
InsPIRE Network for Environment, New Delhi

BACKGROUND

Steel making through electric route has become a significant contributor to the overall steel production in the country with a production of 46.23 million tonnes (mt) in 2014-15. Sponge iron sector itself contributes over 45% of the total crude steel production in the country. Sponge Iron produced through DRI process is further processed in melting furnace i.e. Electric Arc Furnace (EAF) or Electric Induction Furnace (EIF) before being processed in a Steel Re-rolling Mill (SRRM) unit. In addition to the use of sponge iron as a raw material, a large section of the units also uses reusable steel scraps which are generated in large scale from various process industries & residential / commercial bodies.

The steel re-rolling mill & allied sector produces over 65% of the total long finished product in the country. However, these small and medium sector units have haphazardly grown; using inefficient technology and are unaware of latest technological development. These units are therefore inefficient resulting in high consumption of energy.

Considering the ambitious target of Government of India to produce 300 million tonnes (mt) of steel by 2025, the role of the secondary steel sector are to grow exponentially in the near future. Historic data reveals that these sectors of units are unable to grow on their own and required

developmental support from external agencies on time to time basis. Thus, with proper support from Government and other developmental organization, the secondary steel sector has a huge potential to lead the country's steel production.

SECONDARY STEEL SECTOR AND ENERGY EFFICIENCY

Energy is one of the major inputs for the secondary steel sub-sectors. Both thermal and Electrical units are used in these units. While electrical energy consumption dominates in the Electric Arc Furnace (EAF) and the Electric Induction Furnace (EIF) sectors; thermal energy consumption is significant in the Steel Re-rolling Mill (SRRM) and Direct Reduced Iron (DRI) sector. The historic development of the secondary steel units has been haphazard in nature. Also, such small size units are uniquely located in the south-eastern countries predominantly in India. Due to the above sited reasons, the technology adoption has been limited to indigenously developed technologies. Also, due to the low financial capacities of the entrepreneurs to invest, there has been limited adoption of technologies from the bigger steel plants in lower capacity. The technologies adopted by the secondary steel sector during its initial phase thus leads to high potential for upgradation. Due to the poor quality of equipment used, the energy

consumption level has also been in a higher side for these units.

Energy is one of the key economic factors for running a steel business. Other important consideration are manpower and raw-material cost. The energy cost comprising of thermal and electrical cost jointly accounts for 30% of the conversion cost in a typical secondary steel unit. Coal is the major fuel used in the

sector followed by furnace oil and natural gas. During the last decade, a few industries have also adopted biomass based gasifier as a fuel to heat their furnaces. Coal is used in different forms viz. lump, pulverized and coal based producer gas in the secondary steel units.

The various forms of thermal fuel used in the four sub-sectors have been depicted in the table below:

Table 1: Fuel used for secondary steel sub-sectors

Sub-sector		Fuel Type	Consumption Range
Direct Iron	Reduced	Coal Fines; <5mm size (Average CV: 3600 kCal/kg)	1000-1300 kgs/tonne
		Natural Gas (Average CV: 10500 kCal/kg)	350-450 NM ³ /tonne
Steel Re-rolling Mill		Lump coal (Average CV: 3600 kCal/kg)	120-150 kgs/tonne
		Pulverized Coal < 200 mesh size (Average CV: 5500 kCal/kg)	70-100 kgs/tonne
		Coal Based Producer Gas (Average CV: 4500 kCal/kg coal CV with gas Cv: 1200 kCal/kg)	90-140 kgs/tonne
		Furnace Oil (Average CV: 9800 kCal/kg)	32-45 ltrs/ tonne
		Natural Gas (Average CV: 10500 kCal/kg)	30-40 NM ³ /tonne
		Biomass (Average CV: 3600 kCal/kg)	120-150 kgs/tonne

In addition to fuel, electricity is used in all four sub-sectors. The variation in electricity use is depicted in figure below:



Figure 2: Sector-wise usage range of electrical energy

ENERGY AUDIT: DEFINITION AND TYPES

An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s). In commercial and industrial real estate, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprints.

The type of Energy Audit to be performed depends on: - Function and type of industry ; Depth to which final audit is needed; and Potential and magnitude of cost reduction desired. Thus Energy Audit can be classified into the following two types. i) Preliminary Audit ii) Detailed Audit.

Preliminary energy audit is a relatively quick exercise to:

- Establish energy consumption in the organization
- Estimate the scope for saving
- Identify the most likely (and the easiest areas for attention
- Identify immediate (especially no-/low-cost) improvements/ savings
- Set a 'reference point'
- Identify areas for more detailed study/ measurement
- Preliminary energy audit uses existing, or easily obtained data

A comprehensive audit provides a detailed energy project implementation plan for a facility, since it evaluates all major energy using systems. This type of audit offers the most accurate estimate of energy savings and cost. It considers the interactive effects of all projects, accounts for the energy use of all major equipment, and includes detailed energy cost saving calculations and project cost. In a comprehensive audit, one of the key elements is the energy balance. This is based on an inventory of energy using systems, assumptions of current operating conditions and calculations of energy use. This estimated use is then compared to utility bill charges. Detailed energy auditing is carried out in three phases: Phase I, II and III. Phase I - Pre Audit Phase Phase II - Audit Phase Phase III - Post Audit Phase.

NEED FOR ENERGY AUDIT

In any industry, the three top operating expenses are often found to be energy (both electrical and thermal), labour and materials. If one were to relate to the manageability of the cost or potential cost savings in each of the above components, energy would invariably emerge as a top ranker, and thus energy management function constitutes a strategic area for cost reduction. Energy Audit will help

to understand more about the ways energy and fuel are used in any industry, and help in identifying the areas where waste can occur and where scope for improvement exists. The Energy Audit would give a positive orientation to the energy cost reduction, preventive maintenance and quality control programmes which are vital for production and utility activities. Such an audit programme will help to keep focus on variations which occur in the energy costs, availability and reliability of supply of energy, decide on appropriate energy mix, identify energy conservation technologies, retrofit for energy conservation equipment etc. In general, Energy Audit is the translation of conservation ideas into realities, by lending technically feasible solutions with economic and other organizational considerations within a specified time frame. The primary objective of Energy Audit is to determine ways to reduce energy consumption per unit of product output or to lower operating costs. Energy Audit provides a "bench-mark" (Reference point) for managing energy in the organization and also provides the basis for planning a more effective use of energy throughout the organization.

BENEFITS OF CONDUCTING ENERGY AUDIT

A typical secondary steel unit spends almost 30-70% of its operating expenses in the form of energy i.e. fuel cost and electricity. In the highly competitive market today, it is important to run your business in an energy efficient manner.

Let us take the example of a typical 10 TPH steel re-rolling mill running on pulverized coal. Let us consider the plant operated for 12 hours daily and 300 days in a year.

In similar line, adoption of energy efficient technologies can bring in substantial benefits in all sub-sectors of steel i.e. electric induction furnace, electric arc furnace and direct reduced iron sectors.

SN	Parameter	Unit	Value
1.	Specific fuel consumption (Indonesian coal of 5800 CV is used)	kg/t	80
2.	Specific Power consumption (plant produces TMT bars)	kWh/t	110
3.	Annual cost on account of fuel (considering cost of fuel as Rs 7/kg)	Rs in lakh /year	201.6
4.	Annual cost on account of power (considering cost of power as Rs 7/kWh)	Rs in lakh/year	277.2
5.	Annual cost on account of burning loss (considering 1.5% burning loss in furnace and cost of raw material as Rs 35000/t)	Rs in lakh/year	189
6.	Total Annual cost on account of energy and burning loss	Rs in lakh/year	667.8
7.	An energy audit in the plant can lead to reduction in specific fuel consumption by 20%; specific power consumption by 10% and burning loss by 20%. Thus, net annual saving on account on energy and burning loss	Rs in lakh/year	105.84
8.	Investment required toward energy efficient technology (assumptions for typical unit)	Rs in lakh/year	40.00
9.	Simple pay-back	months	4.5
10.	Net annual profit (1 st year); the same would grow from 2 nd year	Rs in lakh/year	65.84

An energy audit is the first step to understand the prevailing operating condition of a plant; evaluate the existing performance level of critical equipment and identify potential energy saving opportunities. An energy audit is typically carried out for a period of 2-3 days depending on the size of the plant. The cost towards carrying out the energy audit is minimal when you consider the large amount of benefits envisaged through the same. Energy audit can lead to following benefits in your plant:

- ➔ Document the existing performance of your plant.
- ➔ Set internal benchmarks on energy
- ➔ Improve the operating conditions
- ➔ Reduce operating cost through no investment measures, minimum investment measures and long-term high investment measures.
- ➔ Help you plant personal be trained on best operating practices.
- ➔ Provide you knowledge about latest trends and technologies.

WHO WE ARE

InsPIRE Network for Environment is a non-governmental not-for-profit organization registered under the Society's Registration Act in 1998. We are one of the premium energy audit firms in the country. We are one of the accredited energy audit firms under Bureau of Energy Efficiency, Ministry of Power. We have till date conducted over 300 energy audits in varied sector and capacities.

Our special proficiency lies in conducting energy audit in MSME steel units including steel re-rolling mill, induction furnace, arc furnace and direct reduced iron units. We have till date conducted over 25 detailed energy audits in these units, wherein the units have immensely benefited.

For details regarding energy audit and energy saving measures, you may contact:

Arindam Mukherjee, Senior Program Officer (Energy & Environment Unit), InsPIRE Network for Environment, S-235, Panchsheel Park, New Delhi 110017 | Mobile: +91-9910671956 | Email: arindam@inspirenetwork.org

F.No.450/131/2017-Cus IV
Government of Finance
Department of Revenue
(Central Board of Excise and Customs)

New Delhi, dated the 1st August, 2017

To

All Principal Chief Commissioners/Chief Commissioners of Customs/ Customs (Preventive).
All Principal Chief Commissioners/ Chief Commissioners of Customs and Central Excise/ GST.
All Principal Commissioners/ Commissioners of Customs/ Customs (Preventive).
All Principal Commissioners/ Commissioners of Customs and Central Excise/ GST.

Sir/Madam,

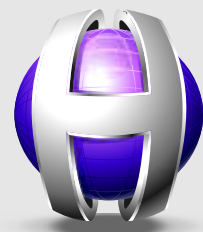
Subject: Leviability of Integrated Goods and Services Tax (IGST) on High Sea Sales of imported goods and point of collection thereof-reg.

Reference has been received in the Board regarding clarity on **Leviability of Integrated Goods and Services Tax (IGST) on High Sea Sales of imported goods.**

2. The issue has been examined in the Board, 'High Sea Sales' is a common trade practice whereby the original importer sells the goods to a third person before the goods are entered for customs clearance. After the High Sea Sale of the goods, the Customs declarations i.e. Bill of Entry etc is filed by the person who buys the goods from the original importer during the said sale. In the past, CBEC has issued various instructions regarding high sea sales appropriating the contract price paid by the last high sea sales buyer into the Customs valuation [Circular No. 32/2004-Cus., dated 11-5-2004 refers].
3. As mentioned earlier, all **inter-state transaction are subject to IGST**. High sea sales of imported goods are akin to **inter-state transaction**. Owing to this, it was presented to the Board **as to whether the** high sea sales of imported goods would be chargeable to IGST twice i.e. at the time of Customs clearance under sub-section (7) of section 3 of Customs Tariff Act, 1975 and also separately under Section 5 of The Integrated Goods and Services Tax Act, 2017.
4. GST council has deliberated the levy of Integrated Goods and Services Tax on high sea sales in the case of imported goods. The council has decided that IGST on high sea sale (s) transaction of imported goods, whether one or multiple, shall be levied and collected only at the time of importation i.e. when the import declaration are filed before the Customs authorities for the customs clearance purposes for the first time. Further, value addition accruing in each such high sea sale shall form part of the value on which IGST is collected at the time of clearance.
5. The above decision of the GST council is already envisioned in the provision of sub-section (12) of section 3 of Customs Tariff Act, 1975 inasmuch as in respect of imported goods, all duties, taxes, cesses etc shall be collected at the time of importation i.e. when the import declarations are filed before the customs authorities for the customs clearance purposes. The importer (last buyer in the chain) would be required to furnish the entire chain of documents, such as original Invoice, high –seas-sales-contract, details of service charges/ commission paid etc, to establish a link between the first contracted price of the goods and the last transaction. In case of a doubt regarding the truth or accuracy of the declared value, the department may reject the declared transaction value and determine the price of the imported goods as provided in the Customs Valuation rules.
6. Field formations are requested to decide the cases of high sea sales of imported goods accordingly. Difficulties, in the implementation of this circular may be brought to the knowledge of the Board.

Yours Faithfully

(Zubair Riaz)
Director (Customs)



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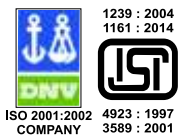
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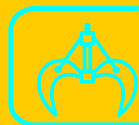
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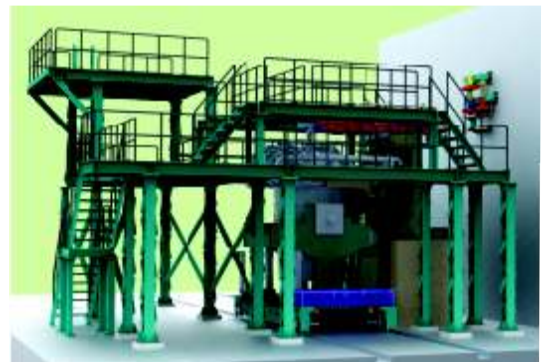
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