STAINLESS INDIA

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Stainless Sculpture "The Sky is the Limit" Celebrates 50 years of the Indian Oil Corporation

Mr. Balan Nambiar, a sculptor of international reputation based in Bangalore, has designed and installed a 21-foot high monumental sculpture to mark the 50th anniversary of the Indian Oil Corporation (IOC). This sculpture, made in Type 304 stainless steel, is 16 feet wide at the base and weighs three tonnes. This sculpture is installed at the entrance to IOC's headquarters in South Delhi.

According to Mr. Balan Nambiar, this stainless steel sculpture having layers of 50 exquisitely designed plates forming a graceful spiral with an IOC's Golden Jubilee Logo at the middle of the sculpture and reaching out to the sky, visually represents 50-years of a growing, vital organization with unlimited potential for the future. Hence the sculpture is titled "**The Sky is the limit**".

This monumental sculpture is indeed very hi-tech. It has been made with accurate measurements and meticulous planning using the principles of trigonometry & mathematics, the Golden Ratio, Fibonacci sequences and equiangular spirals, application of latest computer software and laser & water-jet cutting to maintain accuracy to 0.5 mm, the latest in welding technology without warping, rough edges or discolouration, and structurally very sturdy, and last but not the least, principles of aesthetic composition. The spirals are assembled with equal space between layers to give an overall elliptical shape with the proportion of the Golden Ratio.

'Stainless India' is very happy that Mr. Balan Nambiar has very appropriately chosen stainless steel as the medium for such a beautiful monument which could awe and inspire generations to come.



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THE GOLDEN RATIO

Numerical proportion considered to be an aesthetic ideal in classical design: It refers to the ratio of the base to the height of a rectangle or to the division of a line segment into two in such a way that the ratio of the shorter part to the longer is equal to that of the longer to the whole. It works out to about 1:1.61803. This is called PHI (pronounced 'fee', and not to be confused with Pi which is 3.142). We may say that this Golden Ratio is the fundamental building block of the universe. Plants, animals and even human beings, all possess dimensional properties that adhere with uncanny exactitude to the ratio of 1:1.618.

For example, in humans, the ratio of the height from head to floor to the height from the belly button to the floor is 1.618:1. The same ratio is seen in the distance from the shoulder to finger tip to elbow to finger tip distance. Again the same applies for the ratio of hip to floor to knee to floor distance!!!

THE FIBONACCI SEQUENCE

In mathematics, a sequence of numbers with surprisingly useful applications in botany and other natural sciences: Beginning with two 1's, each new term is generated as the sum of the previous two: 1, 1, 2, 3, 5, 8, 13, the 13th-century mathematician Leonardo of Pisa (c. 1170 - after 1240), also known as Fibonacci, discovered the sequence but did not explore its uses, which have turned out to be wide and various. For example, the number of petals in most types of flowers and numbers involved in branching and seed-formation patterns come from the Fibonacci sequence. The ratio of any two successive terms approaches the value of the golden ratio (1:1.618) as the terms become large.

In art, man tries to imitate the beauty of the Creator's hand. Hence, the use of the Golden Ratio and the Fibonacci Sequence bring the work of art as close to the beauty of nature as possible.



Sculptor Balan Nambiar



Mr. Balan Nambiar is a Bangalore-based sculptor/ artist with an international reach. Fourteen of his sculptures are in Delhi – including five at the National Gallery of Modern Art (NGMA), and another five sculptures at the Max Mueller Bhavan. The other four are at private premises. The tallest of these sculptures, which is 3.3 meters high, is at the NGMA.

Over the past two years, Mr. Nambiar has been honoured with prestigious memberships / responsibilities in committees at the Ministry of Culture of the Government of India, NGMA and the Lalit Kala Academy in Delhi.

Mr. Nambiar's solo exhibition of stainless steel sculptures at ART HERITAGE on Tansen Marg in 2005 sparked a desire in him to execute a unique monumental sculpture in Delhi. The Indian Oil Corporation's 50th anniversary gave him this golden opportunity for executing his labour of love.

Mr. Nambiar is a firm believer that stainless steel is an ideal medium for sculptures - large or small.

Contact details : Mr Balan Nambiar, Bangalore, India. Tel. 91 80 2333 1536, Mob:0-94488 54141 <u>www.balannambiar.com</u>

Laser/water jet cutting & fabrication of this sculpture done by:

M/s Magod Laser Machining Pvt Ltd, Plot no. 72, Phase II, KIADB Industrial Area, Jigini, Anekal Taluk, Bangalore 562 106. www.magodelaser.in cell:9880478002. phone: (080)7826226

M/s SSU Fabricators,

69, 3rd Cross Road, Opp. VST, Garudacharpalya, Mahadevapura, Bangalore 560 048. Phone: (080) 41157934. Cell 09845802668

Stainless Sculpture at Central Bus Terminal, Chennai



The Corporation of Chennai is beautifying many areas of the city with stainless steel. One of them is a park opposite the Central Moufussil Bus Terminal (CMBT) at Koyembedu in the heart of Chennai.

The three meter high stainless steel sculpture is of a boy and a girl holding aloft a globe. This depicts empowerment of the present generation student population which will rule the world in the immediate future. This sculpture is lasercut from 6 mm thick 316 brush finished plates by M/s Sreevatsa Stainless Steel Fabricators Pvt Ltd., Chennai. email: <u>sreevatsa.stainless@gmail.com</u>

Chennai boasts many stretches of beautiful beaches which, together, are considered to be one of the longest in the world. The Municipal Corporation of Chennai has given a facelift to the highly frequented Marina Beach, the stretch from the Lighthouse to Madras University Campus. Stainless steel handrails have been provided along with renewed landscaping bordering the main boulevard.

This project of installing handrail for a stretch of three kilometers was executed by M/s Sreevatsa Stainless Steel Fabricators Pvt Ltd, Chennai. About 30 tonnes of stainless steel pipes and plates were used for this. This winding handrail decorates the beach side of the wide pedestrian pathway, while the road-side is already adorned by 4" diameter stainless steel guard rails supported at intervals with granite balustrades. *Fabricator* :M/s Sreevatsa Stainless Steel Fabricators Pvt Ltd, Chennai. email: sreevatsa.stainless@gmail.com

Marina Beach Gets a Facelift





A complete solution provider for Stainless...

Summer: Electrical tools of high performance with low weight makes our machine a partner you don't want to miss for all grinding, cutting and polishing applications.

Summer Flexible shaft grinding machines are Universatility, flexibility and convenience together with full power- from the most precise work in mobile operation to heavy work under extremely difficult conditions.-Suhner Flexible Shaft Machines offer multipurpose solutions in the field of cutting, grinding and polishing.

For more details:

SUHNER India Pvt. Ltd, 235 U2, Bommasandra Industrial Area, Bangalore - 560 099 Ph: 080 27831108, Fax: 080 27831109, Email: abrasive.in@suhner.com, Website: www.blroffice.in@suhner

Newber Member

J.S.S. Steelitalia Ltd. High Frequency Stainless Tube Mill in Gurgaon

JSS Steelitalia Limited is a joint venture of Inox Market Services s.r.l of Italy, Jindal Stainless Steelway and Jensita Holdings. Steelitalia have a state-of-theart High Frequency Welding Mill supplied by OTO Mills of Italy, one of the leading tube mill manufacturers of the world. Steelitalia is a dedicated stainless steel tube manufacturer producing round, square and rectangular tubes.

With this mill, Steelitalia is able to consistently produce perfectly rounded tubes and sharp edges in box sections at a very high rate of productivity. While a conventional tube producing mill having TIG welding technology might produce at a rate of 2-3 metres/minute, this mill has a capacity to produce tubes at an average speed of 80 metres/minute which can go as high as 120 metres/minute giving Steelitalia a production capacity of around 3500 MT/month. This is the highest for any stainless steel tube and pipe producing mill in India.

This mill has the ability to run non-stop even during change of coils. This is achieved by the Floop section which accumulates around 500 metres of slits giving enough time to continuously feed the mill by welding the leading edge of a new coil to the tail end of the coil under process in the tube mill at very high speeds.

Achieving such high production rate is complemented by on-line eddy current

testing facility so that there is no compromise on the quality of tubes being produced. The cut-off section is synchronized in such a way that even at speeds as high as 120 metres/minute the cut off section can precisely cut the tubes in 5 to 8 metre lengths as per the requirement of the customer. Online packaging and strapping system gives ready to ship bundles of tubes.

Steelitalia also have a state-of-the-art polishing machine for both round and square tubes. It facilitates the company to offer varied types of finishes upto 1000 grit mirror finish. Ultramodern testing and inspection ensure perfect quality of all the products.

Steelitalia have supplied more than 300 MT of round, square and rectangular 304 stainless steel tubes for the ongoing project by NDMC for the new street signage being put up on the roads of New Delhi. Apart from the use in the construction and the architectural segment, Steelitalia also produce tubes in ferritic grades which are used for manufacture of exhaust systems of cars and two-wheelers.

Standard Applications

Barricades and Handles; Railings, Furniture and Interior Fixtures, Street Furniture, Automobile and Machinery, Architectural structures.



Tubes used for NDMC Signage



Rectangular Tubes

For further details, contact: Mr. Siddharth Kaul, AGM (Marketing) JSS Steelitalia Limited Plot No. 64, IInd Floor Udyog Vihar Ph-IV, Gurgaon 122 016, Haryana, India Cell : +91-96502 93360 Land Line :+91-124 4127741 siddharth@jsssteelitalia.com www.jsssteelitalia.com



Stock of square tubes for shipment



Decoiler

Stainless Auto Components from Autonix



Founded in 1993, M/s Autonix Auto Industries Pvt. Ltd is a pioneer and leading player in the manufacture of stainless steel and special metals-based components which have extensive application in cars and motorcycles.

Based in Noida near Delhi, Autonix produces more than 10 million stainless steel components for automotive halogen lamps every month. Many of these components are wafer thin, about 0.2 mm only.



H13 Croawn & Spring



H4 Base, Ring, Adapter Ring : P45t, P43t , PX43t



Stainless Steel Fender



Stainless Steel Motor Bike Rims

Autonix also produce rims and fenders for motorbikes. These are in stainless steel, mild steel with Cr/Ni plating or powder coated. While production volume in mild steel rims is about 8,000 per month (covering all major domestic motorbike brands), their stainless steel rim production is about 25,000 per annum, a bulk of which is exported to major developed European union countries.

The domestic market off-take is only about 5-6,000 stainless steel rims per annum, mainly for the replacement market. They are still awaiting an opening from some original equipment manufacturer (OEM) of motorbikes to accept stainless steel rims.

Being corrosion resistant, stainless steel rims would be ideal for coastal cities like Mumbai, Goa, Chennai, Trivandrum, Kolkata etc. In corrosion resistance tests, plated rims are expected to withstand 50 hours of Salt Spray Test. Stainless steel rims have withstood 192 hours of this test, showing that they can resist corrosion and retain aesthetic looks over a much longer service life. Strength-wise stainless steel rims are also much more dent resistant compared to mild steel. In load tests, stainless rims show a significantly lower deflection than mild steel rims which are made of 15-20% thicker sheets. Given the long stretches of pot-holed roads in all cities and towns of India, stainless steel rims are the ones that will give you long life. All these benefits of stainless steel rims are available at an additional cost of only about Rs. 50 per rim, or only Rs. 100 for a bike.

In addition, avoidance of electroplating or powder coating is a very environmentally friendly act. Let us hope that motorbike companies would soon wake up to this fact and provide a **green option** to their customers. Such a switch by motorbike manufacturers would be reflective of their Corporate Social Responsibility in addition to providing long lasting wheels at a marginal increase in cost.



Stainless steel leg guard

India produces about 10 million motorbikes per annum. Even a small percentage of this market would give a significant boost to stainless steel volumes.

For further details, contact : Mr Alok Gupta, Managing Director M/s Autonix Auto Industries Pvt Ltd C-12 & 13, Phase-2, Noida 201 305, UP Tel: 91-120-4218 575/76 Fax:91-120-2460 766 email:info@autonixonline.com www.autonixonline.com



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Ahmedabad Gets 60 Stainless BRT Bus Shelters



Ahmedabad now boasts of 60 brand new stainless steel bus shelters on its BRT (Bus Rapid Transit) routes. The routes are RTO to Pirana -19 shelters, Pirana to Danilimda-Maninagar- Narol 18, and Narol to Naroda 23. These shelters have been commissioned by Ahmedabad Janmarg Ltd., under the aegis of Ahmedabad Municipal Corporation. These shelters have been designed by well known young Architect Mr. Vijay Arya and a band of young architects studying at CEPT (Centre for Environmental Planning & Technology), a deemed university in the city of Ahmedabad. These shelters have come up under the Central Government's Jawaharlal Nehru National Urban Renewal Mission (JNNURM). <u>This means</u> that there is good scope for a large number of cities in India to upgrade their bus shelters with stainless steel under JNNURM.

Each of these 55 meters long bus shelters use about 1300 kg of 304 stainless steel in the form of plates, tubes, wire ropes and door frames. The vertical structural members are 125 mm dia pipes prominently seen in the picture supporting the RCC roof.

55 out of the 60 shelters have been fabricated and installed by M/s Nila Infrastructure Ltd.

Contact details:

Mr. Jignesh Patel 1st Floor, Sambhaav House Opp. Chief Justice Bunglow Bokadev, Ahmedabad 380 015 E-mail: jignesh@nilainfra.com Website: www.nilainfra.com Mob : 99250 30642 Tel: 91-79 4003 6817.

COIMBATORE TO GET 200 STAINLESS BUS SHELTERS

The city of Coimbatore was the venue of the World Tamil Conference organized by the Government of Tamil Nadu. In connection with this, the city was spruced up to welcome the delegates. One of the important things in beautifying the city was to convert the bus shelters in the city into brand new stainless steel ones.

About 80 of these bus shelters were erected before the beginning of the conference. Each of these shelters is made of about 800 kgs of AISI 304 stainless steel. The balance 120 shelters will be installed in due course.

Seen in the photo is Mr. M K Stalin, Deputy Chief Minister of Tamil Nadu, inaugurating a shelter in Coimbatore before the conference made by Fabrica.

M/s Fabrica of the Sunrise Group designed, fabricated and erected more than half the installed 80 shelters in a record time span of 26 days.



For further details contact: Mr Pratik Shah, Director, 9099997654; Mr Nitin Shah 9377887077, **M/s Fabrica (Sunrise architectural division),** 3424, 3425, GIDC, Phase-IV, Chhatral, Taluka-Kalol, Dist. Gandhinagar, Gujarat, Tel: 91-2764 325001, Fax: 91-2764 232444; Email: <u>pratik@sunrisegroupco.com</u>; <u>nitin@sunrisegroupco.com</u>

REMI

REMI, established in 1970, is a diversified group engaged in manufacturing (1) Process equipments (2) Industrial Motors & Fans and (3) Stainless Steel Tubes & Pipes, REMI mainly serves industrial sectors like Petrochemical, Pharmaceutical, Power, Engineering and Fabrication.

REMI Edelstahl Tubulars Ltd (RETL), one of the REMI group of companies, changed it's name from Rajendra Mechanical Industries Ltd to adapt to what customers had started referring to as, 'REMI - one stop shop for all stainless steel tubes and pipes", Edelstahl means stainless steel in German language. This change in name reflects REMI's transformation to higher capacity, newer grades and bigger dimensions.

REMI, India's first tube manufacturing company, was established with technology transfer from Kobe, Japan.

REMI has been accredited ISO 9001-2008, PED 97/23, Merkblatt, AD2000/ WO approved by major clients like BHEL, NTPC, EIL, L&T etc. They are also planning to expand their market share in tubing & piping for the water and oil & gas industries.

Duplex Stainless Steel :

After delivering more than 150,000 Metric Tons of Austenitic & Ferritic Grades, RETL delivered its prestigious order of Duplex Grade UNS 32304, Welded tubes for a heat exchanger for UTKAL ALUMINA, within 3 months at a very

Nickel Magazine

'Nickel' is a magazine devoted to nickel and its applications, published by the Nickel Institute. After 24 years of being published in print and sent free-of-charge to over 32,000 persons across the globe (including 3,500 in India), it has now gone online. Those wishing to receive this valuable magazine, please register at: <u>www.nickelonline.org/subscribe</u> to receive email notification of future issues.

REMI – Rebranded after four decades



competitive price. Additionally, they have executed orders in seamless duplex UNS 31803 for various fertilizer companies viz. GSFC Methanol Project.

Now that patents on most duplex grades have expired, availability of such grades for Indian tube mills has improved significantly. This enables them to source raw material in strips or mother pipes from more than a few possible reputed suppliers and supply at more competitive terms to customers. REMI is quite accustomed to get repeat orders from clients.

RETL have increased their capacity to 12,000 TPA and also their size range from 6 mm to 1500 mm and thickness from 0.5 mm to 50 mm. They are confident that the investments already made and

those in the pipeline this year would saddle them back to the market leader position in stainless steel tubes and pipes. According to RETL, they will again be the first company from India to offer Welded, Diameter 8/10/12 inch SS Pipes up to 12 meters or more. Their Ultrasonic Testing & Helium Leak Testing has enabled them to enter nuclear tubing market which has bright prospects in India and abroad.

Amongst other production and testing facilities, they have Ultrasonic testing, Ubending and bright annealing facilities for heat exchanger tubes.

For further details, contact: Mr Vipul Sutaria, Sr. Vice President e-mail: vipul.sutaria@remigroup.com Cell : 9004495500

DISCLAIMER

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Q1--2010 World Stainless Production Returns to Historical Levels

Just under 7.5 mmt of stainless steel was produced during the first quarter of 2010, almost the highest ever volume for the first three months of a year. All areas of the world contributed to the increase in production.

	Quarter		Q-0- Q	Quarter 1		Y-0- Y
Region	4/2009	1/2010	+/- %	2009	2010	+/- %
Western Europe/Africa	1,807	2,070	14.5	1,315	2,070	57.4
Central and Eastern Europe	62	68	10.4	50	68	37.2
The Americas	465	733	57.5	409	733	79.1
Asia (excluding China)	2,130	2,165	1.7	1,289	2,165	68.0
China	2,236	2,436	8.9	1,769	2,435	37.7
World total	6,700	7,472	11.5	4,832	7,472	54.6

1st Quarter 2010 compared to 4th and 1st Quarters of 2009 Stainless crude steel production (in '000 metric tons)

While impressive, the year-on-year comparison should be reviewed in the light of the following points:

1. Production in the first quarter of 2009 was almost the lowest in a decade due to the effects of the global recession which was followed by heavy de-stocking.

2. The global economy began to recover in the second half of 2009 and



Incorporated in 1987, M/s Kesri Steels Limited is a manufacturer and Exporter of Carbon steel, Alloy steel, Manganese steel, Stainless steel and Special steel Castings, Ingots, Round Bars, Square Bars, Flat Bars and Forged Bars for diversified engineering applications.

Kesri Steels Limited is an ISO 9001 & 14001 Certified manufacturer of Carbon steel, Low Alloy steel, Manganese steel, Heat resistant, Corrosion resistant, Wear resistant, Graded Cast Iron Castings in the weight range of 5 kgs to 12000 kgs.

We are manufacturing Castings of Pumps, Impellers, Guide vanes, Labyrinth Rings, Valve Bodies and Bonnets, Valve Blocks, Turbine Casings, Blower Casings, Pallet Frame, Magnet Shells, Bumping Plates, Swing Jaws, Pit man, Jaw Crusher plates, Crusher manufacturing activity in stainless-using industries, such as the automotive sector, is increasing. 3. After a very strong destocking in 2009, better market conditions may encourage many fabricators and stainless steel stockholders to replenish their stocks.

ISSF expects that the stainless industry on a world basis will continue to return to

its normal production on a reasonable level over the following quarters of 2010 and 2011. For the full year, ISSF expects around 11 to 12% increase in the volume of stainless steel production.

Source : International Stainless Steel Forum (ISSF), www.worldstainless.org

M/s Kesri Steels Limited

Segments, Grinding Rolls, Ring Hammers, Crushing Rings, Blow Bars, Bowls and Mantles, Drag Line Teeth, Shovel Teeth, Rack & Pinion, Connecting Rods, Kevel Chocks, Roller Button Chocks, Mill Heads, Hubs, Mill Liners, Anchor & Shank Assembly, Fly Wheels, Support Rollers, Housings, Gears etc.

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Tyre Engineering Industry Wt. 4500 Kg



Impeller Power Sector Wt. 270 Kg

Industry, Earth Moving Industry, Mining & Mineral Industry, Heavy Engineering Industry. We entertain third party inspecting agencies like PDIL, TUV, LLOYDS, ICS, M. N. Dastur, etc.

Contact details :

Mr Amit Kumar Jain, Director Kesri Steels Limited, A-350, Phase-I RIICO Industrial Area, Bhiwadi Rajasthan 301 019 Tel: 91-1493-220142, Fax: 1493-220562 Mob 0-98101 12977 Email: info@ksl.in, Web: www.ksl.in



Lancer Laser Tech Pvt. Ltd. is an ISO 9001:2000 certified company in the field of sheet metal fabrication. Founded in the late 1990s with a CNC laser cutting machine, Lancer Laser was the first in the state of Gujarat and one of the few in this field in India at that time.

The Unique Selling Proposition of this company is its ability to provide total sheet metal fabrication solution under one roof with the latest technologies in cutting, bending, forming, tapping, drilling, gouging, pop riveting and welding. Their specialty is their ability to form very complex shaped products out of sheet metal. Amongst other state-of-the-art equipment at their facility at Khartal, Taluk Kalol near Ahmedabad, they have a 6-axis CNC press brake machine for making complex shapes. One of their CNC laser cutting machines can cut up to 12 mm in stainless steel with an accuracy of + / - 0.1 mm.

Their motto is to "move ahead with the times" and provide the Indian engineering sector services in conformance with global quality standards at cost-effective, affordable price and ontime delivery. They are now increasingly supplying stainless steel products to architects for building and construction sector.

For further information please contact:

Mr. Nitin Patel, Managing Director, Mobile 098258 02030 M/s Lancer Laser Tech Pvt. Ltd.,

17/B, 22 B Kamaldeep Indl. Estate, Opp. New Arvind Mills Khatraj 382 721, Tal: Kalol, Dist. Gandhinagar, Gujarat email: <u>nitin@lancerlaser.com</u>, www.lancerlaser.com

Lancer Laser Tech Pvt. Ltd.





Gold Matrix becomes an LME Member



GOLD MATRIX RESOURCES PTE. LTD.

M/s Gold Matrix Resources, a member of ISSDA, has been approved for membership of the London Metal Exchange (LME) as an Associate Trade Member with effect from 7th May 2010.

While Gold Matrix Resources is the 90th member of LME, it is the 1st merchant trader from Asia to become a member of the LME. Gold Matrix is only the second Asian domiciled company to become a member of this 130 year old exchange.

Being a principal-to-principal market, the only organizations able to trade in the LME are its <u>member firms</u>, of which there are various categories. LME members provide the physical industry with access to the market, to the risk management tools and delivery mechanisms. Trading takes place across three trading platforms: through open-outcry trading in the 'Ring', through an <u>inter-office</u> <u>telephone market</u> and through 'LME <u>select</u>', the Exchange's electronic trading platform.

Gold Matrix Resources is domiciled in Singapore and is a trader in all base metals, notably nickel as well as stainless steel scrap. It is counted amongst the best start-up companies in Singapore and is a recipient of the Global Trader Award conferred by the Singapore Government. Gold Matrix Resources is now counted amongst Singapore's Top Companies and is one of the fastest growing metal trading companies in the world.

As a member of ISSDA, Gold Matrix Resources will be happy to provide the facilities of the LME to other fellow members of ISSDA.

For any enquiries, you may contact : GOLD MATRIX

RESOURCES PTE. LTD 101 Cecil Street #25-12 Tong Eng Building Singapore 069533 Tel: +65 6491 1100 Fax: +65 6220 0400 Mob: +65 9112 4620 pinaki@goldmatrixresources.com www.goldmatrixresources.com



Fabrica is the stainless architectural division of Sunrise Group based near Ahmedabad. Sunrise Group is a trusted name in stainless steel business in India and has been supplying stainless steel products for the last 30 years, catering to the changing needs of business. **Fabrica** supplies diversified stainless steel products for the architectural and construction industry. They have ISO 9001:2008 certification by ISOQAR.

Fabrica is equipped with the most modern technology and equipment for fabrication. **Fabrica** derives its strength from the Sunrise Group which manufactures sheets, coils and tubes in stainless steel. This enables **Fabrica** to supply specialty products which are technologically advanced yet low in cost. A specialty of **Fabrica** is their ability to supply large volumes of products at relatively short times due to meticulous planning, easy availability of raw materials and high technology available within the group.

With their in-house design team, they are able to create designs that are aesthetically appealing and at the same time, functionally sound. They have a unique system of standard modular components which are engineered to accommodate various on-site conditions and installation is not only simple, but very rapid. For instance, about 300 bus shelters for Mumbai were designed, fabricated and installed within a surprisingly short period of five months!

Fabrica take pride in consistently using AISI 304 stainless with flawless finish. They have a wide range of products in stainless steel including modular railings, balusters, seats, bus shelters, signage, furniture accessories, cigarette ash waste bin, litter bin, door handle, water fountain and railway architectural products like grab pole, grab rail, trough floor profiles, handrails, partition frame, luggage rack etc.

Their current projects include those with Bombardier & BEML for Delhi Metro, Bus Shelters in Mumbai, Ahmedabad & Coimbatore, The Pacific Group projects in Ghaziabad Pacific Business Park,



Delhi Metro Coach Internal Furnishing





Dust Bin

Mumbai Bus Shelter

Dehradun & Khayala Pacific Fashion Mall where we designed and installed state of art railing and Integral Coach Factory of the Indian Railways in Chennai.

<u>For further details contact:</u> Mr Pratik Shah, Director 9099997654 Mr Nitin Shah 9377887077

M/s Fabrica (Sunrise architectural division)

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Bollards



Handrail

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Invitation to a workshop on Opportunities for Stainless Steel in Buildings

ISSDA is organizing a workshop on **'Opportunities for Stainless Steel in Buildings'** in Ahmedabad on **Saturday, 21st August, 2010**

Venue: Pepperazzi Banquets, C/o Venus Atlantis, Nandnagar, Prahladnagar Road, Ahmedabad.

The workshop will be held between 4 pm to 8 pm followed by Dinner.

WHO SHOULD ATTEND?

ISSDA is organizing this workshop to help fabricators learn in a very practical way how to fabricate good stainless steel products for buildings. This workshop is ideal for those who are already doing some fabrication and want to improve their product. It is also very good for those who wish to enter this business.

BENEFITS

This workshop will help Architects, Interior designers, Developers of Real Estate Government Departments, Municipalities and others in the construction business **how to identify**

Reprint available from ISSDA

Abstract:



Attractive, sustainable transit buildings are an important part of an efficient modern infrastructure. In addition to being attractive, properly specified stainless steels are durable, require minimal maintenance and provide long-term safety, security and traffic control. These factors and its a good product. Ways to identify substandard materials and short-cuts taken in fabrication methods would be explained. If you ever wondered why some fabricators ask for double the money than the lowest bidder, you will get your answers here. There is no fee for attending the workshop. Anyone interested in this workshop, please contact us with your professional background.

email: <u>issdastainless@gmail.com</u>, <u>nissda@gmail.com</u>.

Speakers at this workshop are veterans from member companies of ISSDA who have extensive knowledge of stainless steel grades, product forms, fabrication & finishing techniques and other related matters.

Saturday, 21st August, 2010 (Start 4:00 pm - Dinner 8:00 pm)

Topics to be covered:

- Selecting the right stainless steel grade Comparative evaluation of grades, properties, service environment and costs
- Stainless Steel Applications in Architecture, Building & Construction sectors
- **Fabrication:** Cutting, forming, tube bending, welding, surface finishing and practical guidelines on equipment selection
- Advances in Surface Finishing equipment
- **Products**: Wires, Bars, Fasteners, Angles, Profiles & Tubular Sections, Sheets & Plates, Rebar for concrete
- Good shopfloor practices
- New products for Buildings & Simple ways to differentiate stainless grades and quality of fabrication
- Open forum for Questions and Answers & sharing of experiences

Sustainable Stainless Steel Transit Station Design by Catherine Houska

inherent sustainability have made stainless steel an important design material for new transit buildings around the world. This review of stainless steel applications, benefits and specification will provide designers with the confidence to use it into designs capable of providing 50 or more years of service.

The Indian economy is growing at about 8%+ and there is a lot of emphasis on improving infrastructure at a fast pace. A few large airports have come up, many more have been revamped. Work on 12 new <u>airports</u> is to start soon (many more are linedup); a large number of <u>railway</u> <u>stations</u> being renovated and a halfdozen cities are on the way to getting their own <u>metro transit systems</u>. Many <u>modern bus stations</u> and thousands <u>of bus shelters</u> in stainless steel are also coming up. Given these circumstances, this excellent publication would be a very useful tool for urban planners, designers, architects and site engineers and builders construct attractive, long-lasting, cost-effective and environmentally friendly designs using stainless steel for transit buildings.

Apart from handrails, column cladding and counter tops, there are many new applications like roofing, curtain walls etc., which will add many decades of life to these structures.

For obtaining a copy of this publication, please write to ISSDA <u>nissda@gmail.com;</u> <u>issdastainless@gmail.com</u> OR can be downloaded from : <u>www.stainlessindia.org</u>

Special two-page supplement to 'Stainless India' Vol. 15, No.2, June 2010 Simple Ways to Identify Stainless Steel Grades Differentiate SS 430 from Chromium Plated Steel

1. <u>Magnetic attraction</u>: Type 430 is a Ferritic stainless steel having only 16-18% Chromium This is attracted by magnets. Chromium electroplated steel is also attracted by magnets and there is a chance that these two can be easily mixed up.

2. Copper <u>Sulphate Test</u>: First use emery paper on the surfaces No. 120 (rough) and then 320 (fine) to clean the surface of any impurities. Take 25 ml of clean water and add half a spoon of Copper Sulphate crystals to it and stir well.

Mix this copper sulphate solution <u>very very</u> <u>slowly</u> to 25 ml of concentrated sulphuric acid (specific gravity of 1.84) in a glass beaker. Stir well. We now have 'acidified copper sulphate solution'.

Put one drop of this acidified copper sulphate solution on the emery papered surfaces of SS 430 and the chrome plated



Test Solution

Immediately, you will notice that the electroplated surface will show a pinkish red colour on the drop. SS 430 will show no change in colour.

Reason: SS 430 presents a passive (i.e. non reactive) layer to the acidified copper sulphate and hence no reaction. The iron below the chromium plating will react with acidified copper sulphate solution producing a pinkish red colour.



(1) Chrome plated Stapler and (2) Knife blade. (3) SS 430 sample.

<u>CAUTION</u>: While mixing acid and water (in this case copper sulphate solution) DO NOT ever add the solution to the acid. IF YOU DO, there will be violent boiling and can cause an accident. You should slowly add acid to the solution.

Differentiating SS 304, 430 and those containing 1%, 2% & 4% Nickel

All these grades are used in many different applications. But it is difficult to differentiate between the above grades as they all look alike. Only 430 is attracted by magnets but not the others. Below we are suggesting a simple chemical test to differentiate and arrive at a qualitative estimate to which grade a given sample belongs.

Ferric Chloride solution etches these grades differently and is especially helpful in getting an idea of the level of nickel in the low-nickel stainless steels.

Procedure: Take 50 ml of clean water and add about two-thirds of a tea spoon (about 10gms) of laboratory grade ferric chloride and completely mix it in the water. Use a glass rod to put a drop of ferric chloride solution on a pre-cleaned surface of the stainless steel sample. Let it stay on for 2-3 minutes. Then wash away the ferric chloride droplet under running water. Do not wipe. The colours observed on etched surfaces of different grades are given in the images here.

It will be observed that SS 304 and SS 430 leave whitish patches. Low-nickel stainless steels leave a blackish-brown patch, the intensity of the colour increases with lowering of nickel content.



Solution preparation indicative of quantities



304





1% nickel



2% nickel



4% nickel

430

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Differentiate SS 316 from SS 304

Using a kit provided by M/s Met Associates of Navsari, Gujarat, SS 316 can be differentiated from SS 304.

Magnetic Test: Both these grades are non-ferromagnetic and will not get attracted to magnets.

Chemical Test: Clean the metal surfaces under test by an emery paper to make free from any grease or dust. Place a drop of Electrolytic solution provided by Met Associates for detecting the presence of Molybdenum in Stainless Steel on to the metal surfaces under test. Switch on the power unit so that green LED will glow. A flat electrode is touched

Directional 'dull' polished finishes are



Testing Procedure

against the metal and the pointed carbon electrode against the reagent/solution without touching the metal for 10 seconds. Note the colour. In the case of SS 316/316L the colour of the solution will turn pinkish red and remain so for 3-5 minutes. In case of SS



Note the pinkish red in 316. None in 304

304 and other 300 series, there will be no change in colour.

Contact details : Mr Arvind Hivalekar M/s Met Associates, 64, Snehsagar Society, Luncikui, Navsari 396 445 Gujarat. Tel: 91-2637-259251 Email: metassociates@rediffmail.com

Why surface finish is important

Surface finish lines should be vertical

b) Large Scale Effects

The above principles also operate on a much larger scale. The design of external architectural applications should avoid introducing features such as ledges, horizontal grooves and perforations. All of these features will increase the effective surface area that is available for harmful species to accumulate and, consequently, the natural washing-off by rainwater will be minimized.

c) Surface Reflexivity

In terms of reflectivity, a 'smooth' polished finish will produce a more reflective surface and this could give significant and unacceptable dazzle, in bright sunlight, if large flat areas are part of the architectural design. For this type of situation, it may be more appropriate to specify a 'matt' non directional surface, such as a glass bead blasted finish. However, as with dull polishing, it is important that a 'fine' glass bead option should be selected, to minimize the surface roughness and give the best possible corrosion resistance.



Good Performance





Ra - 0.3µm



Type 304 in Marine Atmosphere Left Pickled Finish, Right Mirror Polished

SUMMARY

The present day designer needs to be aware of the importance of surface finish in influencing the corrosion resistance of stainless steel and remove any adverse features from the design.

Extracted from an article by Dr Colin Honess, Swinden Technology Centre, Corus RD&T & Alan Harrison in 'Stainless Steel Industry', August 2006

often specified for external architectural applications but this type of surface finish can exhibit a wide range of surface roughness dependent upon the type of belt and polishing grit that has been used. Coarsed polish finishes, with transverse Ra values > 1 micron, will exhibit deep grooves where chloride ions can accumulate and destroy the passive film, thereby initiating corrosion attack. In contrast, fine polished finishes with Ra values < 0.5 micron will generally exhibit clean cut surfaces, with few sites where chloride ions can accumulate. If a directional polished finish is required, in a coastal/marine situation, it is important that the specification should include a 'maximum' transverse surface roughness requirement of 0.5 microns Ra (e.g. 2k surface finish in EN 10088-2). A simple description such as satin polish would be insufficient to guarantee a smooth polished finish with good corrosion resistance.

Other Considerations:

a) Orientation

A secondary effect in determining the corrosion resistance is the orientation of the polished surface. With a vertical direction of polish the opportunity for entrapment of harmful species is minimized and the natural washing effect is maximized. However, this may not always be feasible from an aesthetic point of view.