

STAINLESS INDIA

100
YEARS
OF
STAINLESS
STEEL

A MAGAZINE PUBLISHED BY

**Indian Stainless Steel
Development Association**

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A Magazine Devoted to Stainless Steel Applications

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Stainless Steel Centenary Celebration (1912-2012)



Mr. N C Mathur speaking at the inaugural of the event. Seated beside him from left are Mr. Ramesh R Gopal, Executive Director, ISSDA, Mr. Markus Moll, Managing Director, Steel & Metal Market Research (SMR), Mr. S K Roongta, Chairman, Steel Committee FICCI, Dr. Peter Cutler, Director (Promotion), Nickel Institute and Mr. Thomas Pauly, Managing Director, Euro Inox.

In a grand event in New Delhi on October 9, 2012, ISSDA celebrated the **hundred years of stainless steel (1912-2012)**. This event was supported by the Federation of Indian Chambers of Commerce and Industry (FICCI) and was attended by the prominent personalities from International Stainless Steel Forum (ISSF), Stainless Steel Development Associations from around the world, stainless steel industry and users of stainless steel.

In the opening address, Mr. S K Roongta, Chairman Steel Committee FICCI, welcomed the participants. In his address, he highlighted the role played

by ISSDA in laying the foundations for continued prosperity of the stainless steel industry in India, and how it enabled the Indian stainless steel industry to be counted among the top countries in the world.

The speakers and special guest were honoured with a **'Green Certificate'** stating that a grove of 10 trees have been planted in their names at the periphery of Kumbhalgarh sanctuary, Udaipur, Rajasthan, India, symbolizing the green credentials of Stainless Steel.

Expert speakers from around the world enlightened the audience on the hundred

**Good News for stainless steel kitchen
utensil and appliance manufacturers**



New standard for **"Low Nickel Austenitic stainless steel sheet and strip for utensils and kitchen appliances – Specification"** released

Continued on page...3

years journey of stainless steel and the road it has traversed. They also brought them up to date on recent developments and success stories related to stainless steels. They shared their views on past, present and future growth potential of stainless steels in the world. The speakers enthralled and successfully captivated the attention of almost two hundred Indian and overseas participants present.

On the occasion of the centenary celebration, ISSDA with the help of Media Transasia Ltd., launched a special issue of Architecture+Design magazine completely devoted to stainless steel and its applications in Architecture, Building and Construction (ABC), from around the world, including India. ISSDA places on record its gratitude to team of Architecture+Design magazine led by Editor-in-Chief, Mr. Suneet Paul, for their great effort in publishing this world class publication.



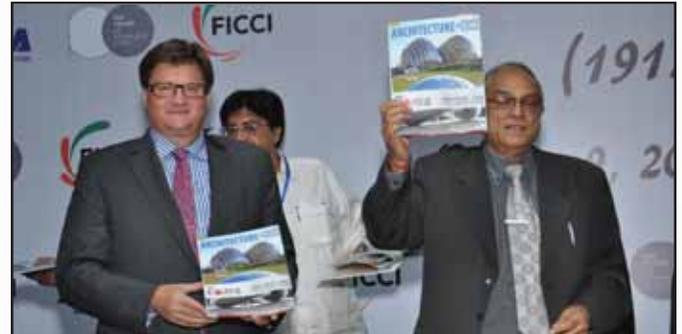
A section of the audience



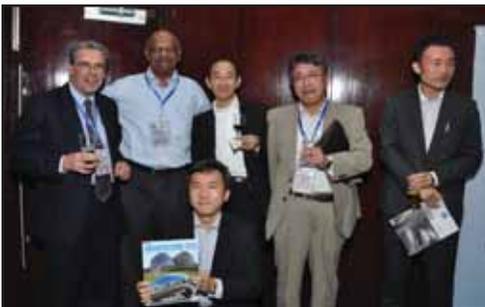
Speakers receiving the 'Green Certificate' from Mr S K Roongta : From left (Dr. Peter Cutler, Mr. Thomas Pauly, Mr. Markus A. Moll, Mr. Suneet Paul)



A section of the audience



Release of Special issue of A+D magazine



Standing from left : Dr. Peter Cutler (Nickel Institute), Mr. Ramesh R Gopal (ISSDA), Mr. Tatsuya Kawamoto (ISSF), Mr. Misuo Kobayashi (JSSA), Mr. Toshiaki Miyamoto (ISSF). Sitting Mr. Takehito Nzuka (ISSF)



From Left : Mr. Richard Matheson (ASSDA), Mr. Ramesh R Gopal (ISSDA), Dr Nicole Kinsman (IMO)



From Left : Mr. S C Parija (FACOR Steels Ltd.), Mr. Ramesh R Gopal (ISSDA), Mr. Markus Moll (SMR), Mr. Peter Kaumans (ISSF), Mr. Pascal Payet-Gaspard (ISSF)

ISSDA thanks all its members and participants from around the world for making this celebration a memorable one. We thank our guest speakers who shared their experience and insight on global stainless steel scenario and more importantly the success stories highlighting the various applications of stainless steel.

Note : Presentations are available at www.stainlessindia.org

A new standard ‘Low Nickel Austenitic stainless steel sheet and strip for utensils and kitchen appliances – Specification’ released

ISSDA is very pleased to inform its readers that the Indian Standard IS 15997 : 2012 “Low Nickel Austenitic stainless steel sheet and strip for utensils and kitchen appliances – Specification” has been released by Bureau of Indian Standards.

This Indian Standard was adopted by the Bureau of Indian Standard, after the draft finalized by the Alloy Steels and Steels sectional committee was approved by Metallurgical Engineering Division Council.

In India, utensils and kitchen appliances are manufactured in large quantities by using low nickel austenitic stainless steel. Keeping the interest of the consumers in view, a need was felt to formulate an Indian Standard to facilitate manufacture of low nickel austenitic stainless steel sheets.

Although Low-Nickel stainless steel was introduced in the 1980’s, the formulation of a standard for the use of these grades in utensils and kitchen appliances has taken a lot of time, energy and money to establish. ISSDA has been at the forefront, attending BIS committee meetings, organizing a battery of tests related to mechanical, chemical, corrosion and ion leaching. The metal ion leaching tests and study for food compatibility on these grades were done from the reputed Central Food Technological Research Institute.

ISSDA is very thankful to all those who have contributed over the years in making and shaping of this standard. In particular, ISSDA sincerely thanks Mr. K R Ananthanarayanan, a stainless steel consultant, based in Bangalore for his commitment and use of his extensive technical expertise in accomplishing this Indian Standard. He has been instrumental in the preparation of numerous samples for mechanical, chemical, corrosion, leaching and other tests and personally monitoring them. He was formerly with SAIL, Salem Steel Plant in their Products & Applications Department.



Mr. K R Ananthanarayanan (Extreme right) , a stainless steel consultant and Mr. N C Mathur (second from right) , President ISSDA receiving the CFTRI final Report in August 2008 at CFTRI office in Mysore.

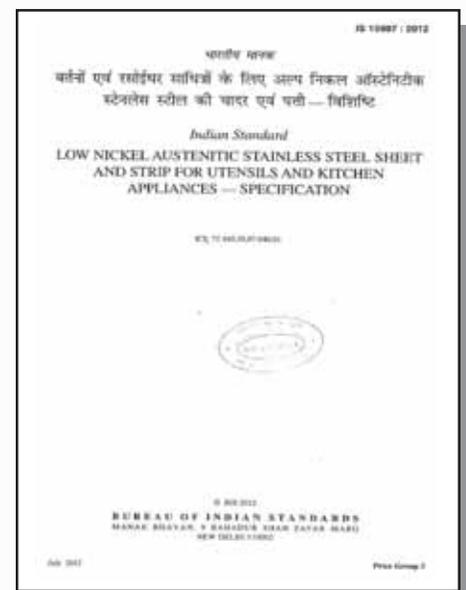
The inclusion of these grades will help exporters of kitchenware and appliances to convince importers that they are supplying materials complying with Indian Standards.

The following three grades of Low-Nickel Austenitic Stainless Steel are approved by the Bureau of Indian Standard

Grade	Nominal Composition
N1	C max 0.12, Cr 14.5-16.0, Ni 1-2, Cu 1.5-2.5, N 0.08-0.2
N2	C max 0.10, Cr 15.5-17.0, Ni 1.5-3.5, Cu 2-4, N 0.1-0.25
N3	C max 0.09, Cr 16-17.5, Ni 4-6, Cu 1.5-2.5, N 0.05-0.15

This standard is exclusively for Low-nickel austenitic stainless steels. Another standard - IS : 5522 (Stainless Steel sheet and strips for utensils – second revision) exists. In this standard AISI 304 & AISI 302 have been prescribed for manufacturing of utensils. At the request of ISSDA, a panel of three was appointed to revise IS: 5522 to include AISI 430 and the revision is still awaited.

The standard can be purchased online from the BIS e-sales web portal <http://www.standardsbis.in/Gemini/home/Home.action>



Stainless Steel Reinforcement Bars in Building and Construction

India has a very long coast line and many RCC structures alongside are badly affected by corrosion. This has become a cause of great concern, since frequently they encounter high cost of maintenance, and sometimes, inevitable accidents.

and this creates a pressure which causes cracking and subsequent spalling of the surrounding concrete as shown in Fig 1.

Building construction in Mumbai has been facing this problem for a long time and we frequently hear tragic news of old buildings collapsing due to distress in

nature and re-forms immediately even if the surface is cut, scratched or machined.

The suitability of stainless steel reinforcement bar in building and construction has started drawing attention of building contractors and



Fig 1. Cracking and spalling of concrete due to rebar corrosion

The reason for such quick deterioration of reinforced concrete is primarily because of corrosion of the carbon steel reinforcing bars. Corrosion of carbon steel rebar is enhanced by chlorides in the concrete, which may come from the original mix due to their presence in the sand, aggregate, water or it can penetrate through the concrete mix when the external surfaces of the concrete are exposed to seawater, marine atmospheres or de-icing salts. The corrosion product, rust, occupies a greater volume than the original steel bar

concrete on account of rebar corrosion. This has forced governing authorities, structural engineers, architects and builders to put a greater emphasis on using construction material which can help in avoiding corrosion of structures. Stainless steel reinforcement bars exhibit a much higher corrosion resistance than ordinary black, galvanised or epoxy-coated rebars. Stainless steel has inherent property to resist corrosion since it forms a passive layer of chromium oxide on the surface which prevents rusting. This layer is self-passivating in

government authorities. M/s Orbit Corporation Ltd is one of the very first builders in the country to use the stainless steel rebars in their premium construction projects, at Napeansea Road, Mumbai. They have already completed two of their premium projects using stainless steel reinforcement bars, named Villa Orb & Orbit Arya (Fig 2.)

Orbit has ascribed following unique properties of stainless steel rebar which has encouraged them to use it in their building construction.



Stainless Steel at Actual Construction Site – Beams & Columns

- Due to its non corrosive nature, the life of the building increases manifold.
- By its use, the maintenance cost of the building is vastly reduced and effectively increased the life of the building.
- The cost of interiors of the buildings is also reduced by using the material and the consequent maintenance inside the building due to leakage in kitchen indoor plumbing, bathroom etc.
- Extra cost for different types of treatments such as epoxy coating/ usage of rust resistant chemicals / galvanizing of bars, etc. which are used during normal construction is avoided.

Orbit Corporation has informed that “These stainless steel rebars are supplied by the stainless steel manufacturer M/s. Sunflag Iron & Steel Co. Ltd. based at Nagpur. They are pioneers in manufacturing different quality of stainless steel products. By the constant innovative efforts of top management (especially Chairman Mr. Ravikiran Aggarwal, M.D. & CEO Mr. Pujit Aggarwal), consultant M/s. Mahimtura Consultants Pvt. Ltd. and technical team, we have achieved new heights of developing & using such S.S. bars in our projects and delivered unsurpassed quality to our customers”

Orbit has announced that one of their project, Villa Orb, has won two awards “The Best Residential Property of the year - 2010 award in the category of building less than 1 lac sq ft of area rated by CNBC AWAAZ CRISIL - CREDAI Real Estate Awards & presented in DUBAI & “Premium Residential project of the year 2009 rated by ACCOMMODATION TIMES” for the primary reason that it has used stainless steel rebar for reinforcement of concrete

In addition to this, Orbit is using S.S. couplers of same physical and chemical composition to achieve stronger lap joints and to avoid any galvanic corrosion between dissimilar metals. These quality couplers have been specially manufactured for them by M/s. G. Tech Splicing. New Delhi

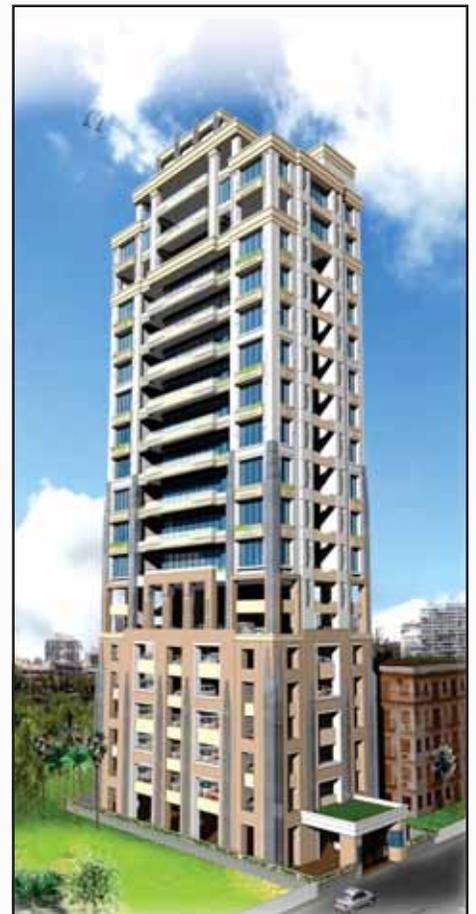
Orbit is coming up with more projects where they have decided to use stainless steel rebars.



Stainless Steel at Actual Construction Site – Slabs



Fig2. Villa orb



Orbit Arya

Welcome New Member

PROGRESSIVE Surface Systems Pvt. Ltd.

is an ISO 9001:2008 certified company manufacturing surface finishing chemicals since last 35 years.

The company has developed a new method to improve the corrosion resistance of stainless steels. General corrosion resistance of stainless steel comes from the formation of a thin passive layer of chromium oxide on its surface. This new method is used as the final surface treatment operation after production of the component. The new process increases the chrome/iron ratio with the passive layer by extraction of Iron and Iron oxide thus enriching the passive layer with chromium oxide. Then a controlled heat treatment is done to change the structure and thickness of the passive layer. This application can be done on all type of finishes and almost all commonly used grades of stainless steel.

This process can also be applied effectively in the restoration of corroded surface thereby further increasing the service life of the stainless steel. This treatment can also be applied to remove scale and discoloration without using pre-treatment such as pickling or mechanical de-scaling.

This process is based on surface treatment with a water based solution of a specially developed organic compounds, which are biodegradable and produce no harmful waste.

Progressive Surface Systems Pvt Ltd. offers a wide range of applications for these surface treated stainless steels. They have been supplying surface treated stainless steel parts in applications such as in Automotive, Architecture, Food processing machines, Steel furnitures, Fasteners and Springs, Pharmaceutical and chemical processing plants, swimming pools etc.

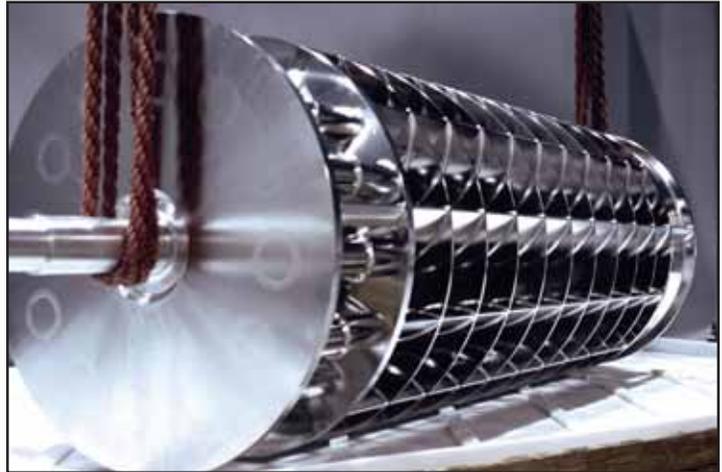
Case Histories

Hand rails made of S S tube, material AISI 304, polished grain 240 Grit, placed along the Atlantic seashore stained and corroded heavily and had to be cleaned every 4 - 6 weeks. After cleaning with POLINOX Protect for more than 1 year no corrosion has reappeared.

Rolls Royce body parts including bonnet made of S.S. 304 with brushed surface are passivated by POLINOX Protect. During a period of four years no corrosion either on top or on the rear side appeared despite exposure to deicing salts.

For more details call us : 022-4237 2222 or support@progressivechemicals.net

New Process to increase corrosion resistance of stainless steel





Good Luck Engineering Co. is a professionally managed company, having state of the art plant for Forging and Long Products. An ISO – 9001:2008, PED and AD2000 certified company from TUV – Germany, it is one of India's fastest growing names in the field of Stainless Steel Bright Bars and Forgings. Good Luck Group has made its presence felt worldwide, with exports to more than 60 countries.

With complete in-house facility for Open Die Forging, Close Die Forging and Bright Bar facility with state-of-the-art equipments like Schumag, Good Luck Engineering provides material with improved machining condition, ultrasonically tested and free from any radioactive contamination.

The company produces following popular grades and size range of stainless steels

Grades:

ASTM: 304/304L, 316/316L, 316Ti, 321, 303, 403, 410, 420 A/B/C, 430F, 416, 431, 17-4PH, F51 and more
EN: 1.4301/1.4307, 1.4401/1.4404, 1.4571, 1.4541, 1.4305, 1.4021, 1.4028, 1.4034, 1.4104, 1.4057, 1.4542, 1.4462 and more

Specifications As per ASTM, ASME, EN, DIN, JIS, BS, NACE, QQS, AFNOR, API, MSS, AWWA and more

Range of Products:

Bright Round Bars

Size Range : 4.76mm to 100mm (3/16 to 4 inch)

Tolerances : h8, h9, h10, h11, K12, K13, EN10060

Square and Hexagonal Bars

Size Range :12mm to 50mm (1/2 to 2 inch)

Tolerances :h9, h11, ASTMA484



Forged Flanges

Types: Slip-on, Weld Neck, Lap Joint, Blind, Threaded, Socket Weld, RTJ, Orifice, Tongue and Groove, Customized Flanges.

Size : 1/2" to 60" (10mm to 1500mm)

Pressure :150lbs to 2500lbs

Forged Round Bars

Size Range :150mm to 400mm
(6 to 16 inch)

Contacts:

Administrative Address:

Good Luck Engineering Co.
II F 166-167, Goodluck House,
Nehru Nagar, Ambedkar Road,
Ghaziabad (U.P.)
INDIA

Tel.: +91 120 4196600, 4196700 (200 Lines)

Fax : +91 120 4196666, 4196777

Website: www.goodlucksteel.com

Email: hccpl@goodlucksteel.com

Plant:

Good Luck Engineering Co.
Khasra No. 2839, Gram Dhoom
Manikpur,
G.T. Road , Gautam Budh Nagar,
Dadri (U.P.), INDIA

Tel.: +91 120 2666896

Exports & Domestic Sales:

Forgings: trivedi@goodlucksteel.com

Longproducts:

acharya@goodlucksteel.com

Technical Services from ISSDA

If you have questions regarding grade selection, fabrication or failures in service, please write to nissda@gmail.com. A good number of end-users and fabricators use our services which are free of charge. ISSDA is the storehouse of authentic technical information on stainless steels. We have technical back-up support from raw materials associations of Nickel, Chromium and Molybdenum and close working relationships with a large number of stainless Steel Development Associations around the world who freely share their knowledge with ISSDA.

Attention ISSDA Members

Publish Articles in 'Stainless India'

If you have any worthwhile new product or service, a news item, or bagged a prestigious project, or won an award, you are most welcome to publish it in the pages of 'Stainless India'. A high density image to accompany the write up would be appreciated. The only condition is it would be related to stainless steel and verifiable.

Stainless Steel Bus Bodies : Cost Less & Last Long

A presentation on the "Stainless Steel Bus Bodies : Cost Less & Last Long" was made at the 232nd Meeting for Supply & Contracts of ASRTU held at Mussoorie (Uttarakhand) on 19th July 2012. Association of State Road Transport Undertakings (ASRTU), which is an association of all the State Road Transport Undertakings of India having 62 members, called ISSDA for a presentation. Over 34 senior officials from various state road transport undertakings were present under one roof.

The main aspect of the presentation was to draw the attention of the officials towards the advantages of using stainless steel in bus body. First they were updated on the extensive use of stainless steel worldwide in bus bodies on account of its longer life, life saving properties and lighter weight. A life cycle cost analysis of a model of the bus comparing stainless steel and other materials was presented dispelling their notion that stainless steel is 'costly'. It was proved to them that by using stainless steel in bus body structure,

panels, floor etc., the additional cost of the bus can be recovered in 4 years.

The presentation was well received and is likely to spur interest in the use of stainless steel in bus body which was clear from the interest shown by representatives of state road transport undertakings after post presentation breaks. ISSDA is already meeting several state road transport undertakings to satisfy their queries.

Note : You can get a copy of the presentation at ISSDA website under the title "Stainless Steel Bus Bodies : Cost Less & Last Long".



Mr Rohit Kumar, Sr. Manager, ISSDA



A section of the audience

Welcome New Members



**BS SHAKTI
STEEL
PVT.LTD.**

B.S. Shakti Steel Pvt. Ltd. is a producer of quality stainless steel wires. It came into existence in the year 2011. Their manufacturing facility is located at 5 K.M Stone, Sample Beri Road, Village Ismaila, P.O Kultana, Distt. Rohtak, Haryana

Their Manufacturing Facility :

1. Continuous Straight Line Wire Drawing Machines with in-line cleaning process
2. Wet Drawing Machines
3. State of the art Tube Annealing Furnaces.
4. Bright Bar Machines

The company produces the following grades and size range of stainless steel.

Product Range:

1. Grades (AISI): 200 Series: 201,202, 204, 204 CU, 300 Series: 302, 304, 304L, 304 CU, 304 HC, 316, 316 L, 316 HC,

321, 316 Ti, ER 308 L, ER 310 L, ER 316L

2. Size Range: 0.10 to 16.00 mm

3. Surface Finish : Bright Drawn, Bright Finish, Matt, Coated, EPQ

4. Tensile Strength: Soft Annealed, ¼ Hard, ½ Hard, Full Hard

The company is fully equipped with following quality control & testing facilities

1. Mechanical Tests
UTS, Elongation, Yield Strength, Torkque Test, Bend Test, RA
2. Dimensional and Metallurgical Tests
Diameter, Chemical Composition
3. Aesthetic Tests:

Final Finish, No die scratches, No cracks.

The company provides following types of packing with provision of customized packing to suit customer requirement

Packing Norms:

Fine Wire on Spools: DIN 80, 100, 125, 200, 250

HDPE wrapped coils (upto 400 Kgs)

Coils on Carriers (upto 800 Kgs)

Customer specific requirements.



Contact details :

Mr Ritesh Bansal, Director
B.S. Shakti Steel Pvt Ltd
125-A, Ekta Enclave, Peeragarhi Chowk,
Delhi-110 087.
Tel: 98120 22632, 98966 34000
ritesh.bansal1978@gmail.com,
www.bsshaktisteel.com

RECOVERY AND RECYCLING OF ARGON GAS IN STAINLESS STEEL MANUFACTURE

Today stainless steel is manufactured all over the world. India has become the third largest market in the world. Minimizing manufacturing cost by introduction of new technologies for processing stainless steels is furthering this growth.

AOD is an important process in manufacturing of stainless steel. The basic principles of manufacture of stainless steel is to melt the steel charge in an electric arc / Induction furnace, add the required alloying elements, transfer the melt charge to a converter and blow oxygen to burn out the carbon present in the bath. Carbon is oxidized to carbon monoxide. This is a reversible reaction and if carbon monoxide is not removed from the reaction zone, chromium present is oxidized to chromium oxide. This can be avoided by bubbling inert gases like argon through the bath so that carbon monoxide formed is immediately swept away thus leading to further oxidation of carbon and minimising the oxidation of chromium. This process is called the argon-oxygen decarburisation process (AOD). Fig. 1 illustrates a typical AOD converter.

COST OF ARGON GAS

Though argon is the gas of choice in steel and stainless steel making, it is the most expensive gas used in the steel industry. Argon could be priced 8 to 15 times higher compared to oxygen. More than 70% of stainless steel is produced by the AOD process. About 10 Nm³ of argon is required per tonne of stainless steel. About 225 million Nm³ of Argon at a cost of about Rs. 2.25 billion or US @ 45 Million is needed for SS production per year. Thus argon contributes significantly to the cost of manufacture. Hence, recovery, purification and recycle of argon from the AOD process should be considered. Argon remains unchanged after the process by its very inert nature though it would be mixed with the product gases such as CO, CO₂, O₂ and N₂ and also will have considerable solid particulate contamination. What however

is significant is that this gas has argon at about 15 to 40% and hence, this

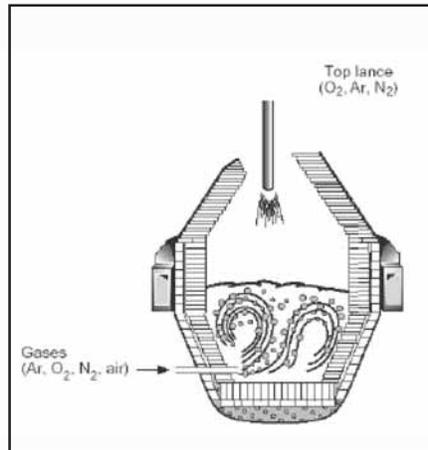


Fig. 1 AOD Converter

should be a much better source of argon than air which contains hardly 1%!

The present author has expertise in recovering and reuse of argon gas from silicon single crystal growing furnace by the Czochralski technique and has

developed a simple, cost effective and non-cryogenic process for this purpose. This is in use for more than 15 years. The same process suitably modified could be used for recovering argon from the AOD off-gases. A schematic of a simple argon recovery process proposed by the author is depicted in Fig. 2.

Recovery involves collecting the vent gas in a gas holder, compressing it to appropriate pressure and removing impurities by suitable techniques. About 50 to 80% of argon could be recovered and reused. This leads to many advantages including reduction of cost of manufacture, carbon capture making the plant green, and availability of extra argon when capacity is expanded. The process would be cost effective and easy to operate. Today, argon recovery is not being practised by stainless steel manufactures in India. However, the above process could be implemented to reap good benefits.

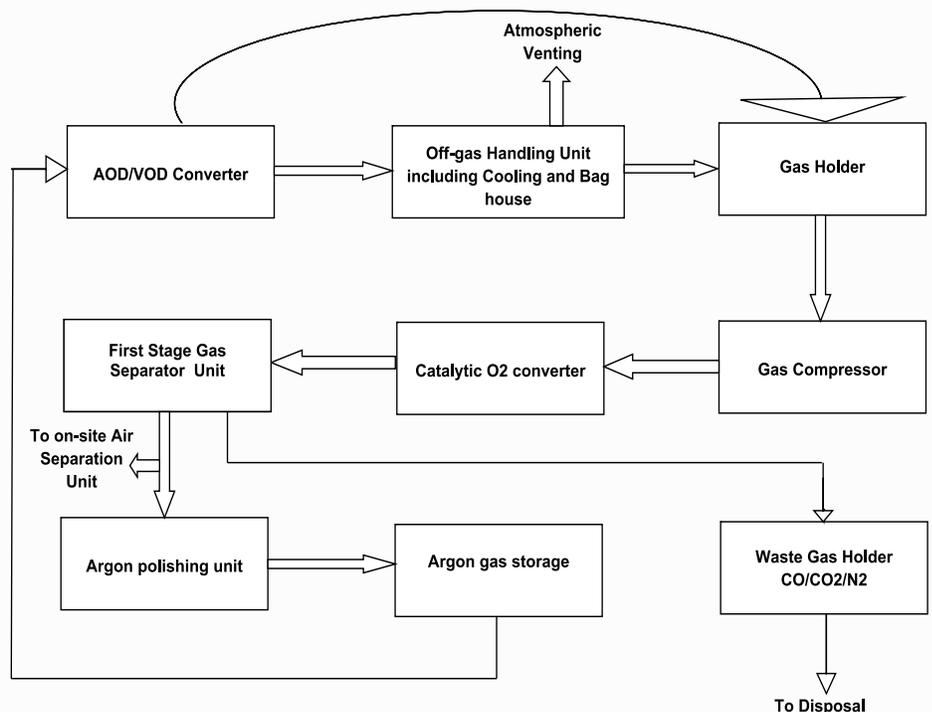


Fig. 2 Schematic Diagram of Argon Recovery Process

Article contributed by Dr. H.S. Gopala Krishna Murthy, Ph.D., Director, ShanGo Technologies Private Limited, 566, 2nd Cross, Girinagara 4th Phase, Behind Hoskerekhalli Bus Stop, Bengaluru 560 085, landline : 08026422554, Mob: 09449850875 email: hskmurthy@googlemail.com



Osborn is the global leader in surface finishing and polishing solutions. Since its inception in 1887, Osborn success has always been about ensuring that you finish first. They have more patents on products and processes than all other brush companies combined.

In addition to more than 10,000 standard products sold in more than 120 countries, they offer local support throughout the world. So, no matter where you or your customers are located, you'll always have access to Osborn's application expertise and the industry's best, most practical solutions.

Their worldwide presence with 15 plants in 12 countries and 3000 persons working across the globe, make them a most reliable and customer friendly company. They are proud to be associated with many stainless steel producers; downstream converters such as manufacturers of SS tubes, pots and pans, cutlery & SS sheet processing units, SS fabricators which undertake operations such as finishing, buffing and polishing.

They provide solutions to all the industries associated with stainless steel right from the handling of the iron ore to the finished steel product.

"At Osborn, we understand the problems you face when it comes to metal finishing.



We know the challenges of surface contamination that can crop up when rolling steel, aluminium or other primary metals."

They are experts in stainless steel surface finishing. They develop, manufacture and market polishing wheels, compositions and industrial power brushes for grinding, de-burring, and polishing.

Few products from their range are mentioned below:

- **Power Brushes**
 - Roller brushes (Hot & cold rolling mill application – Pickling line)
 - Weld cleaning stringer bead brush

- **Load Runners** – Factory automation & material handling systems.
- **Polishing & Finishing tools**
 - Buffs, Mops, Cool Air
 - Flap Wheels – coated abrasive
 - Non woven flap rolls & unitized wheels
- **Polishing Compounds** (Solid & Liquid)

For further details please visit their web site www.osborn.com

Or **contact at :**

Osborn Lippert (India) Pvt. Ltd.

Plot No. E-66, MIDC Waluj, Aurangabad - 431 136, India.

Mobile : 0091 93260 33373

Telefax: 0091 240 2552530, 2556538

Email : pverma@osborn-lippert.co.in

New Executive Director for Salem Steel Plant



A. Bandyopadhyay

Shri A Bandyopadhyay has taken over the charge of SAIL, Salem Steel Plant (SSP) as Executive Director from September 3, 2012. Former Executive Director of SSP, Shri S Chandrasekaran has been elevated and posted as Chief Executive Officer of SAIL, Bhilai Steel Plant.

Shri Bandyopadhyay who was the General Manager (Projects & Steel) at Salem Steel Plant has been recently promoted to the post of Executive Director of SSP. Earlier, under

his able leadership as General Manager (Project), Salem Steel Plant's modernisation and expansion project for the establishment of Steel Melting Shop (SMS) was completed in time. His rich experience of around three decades in steel melting and continuous casting at Bhilai Steel Plant was instrumental in SSP's achieving the milestone to become an integrated stainless steel plant with steel melting facilities.

STAINLESS STEEL IN SMALL QUANTITY

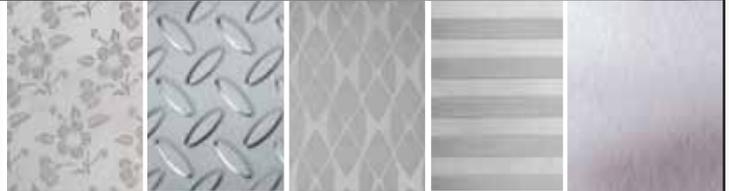
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YOUR GRADE*
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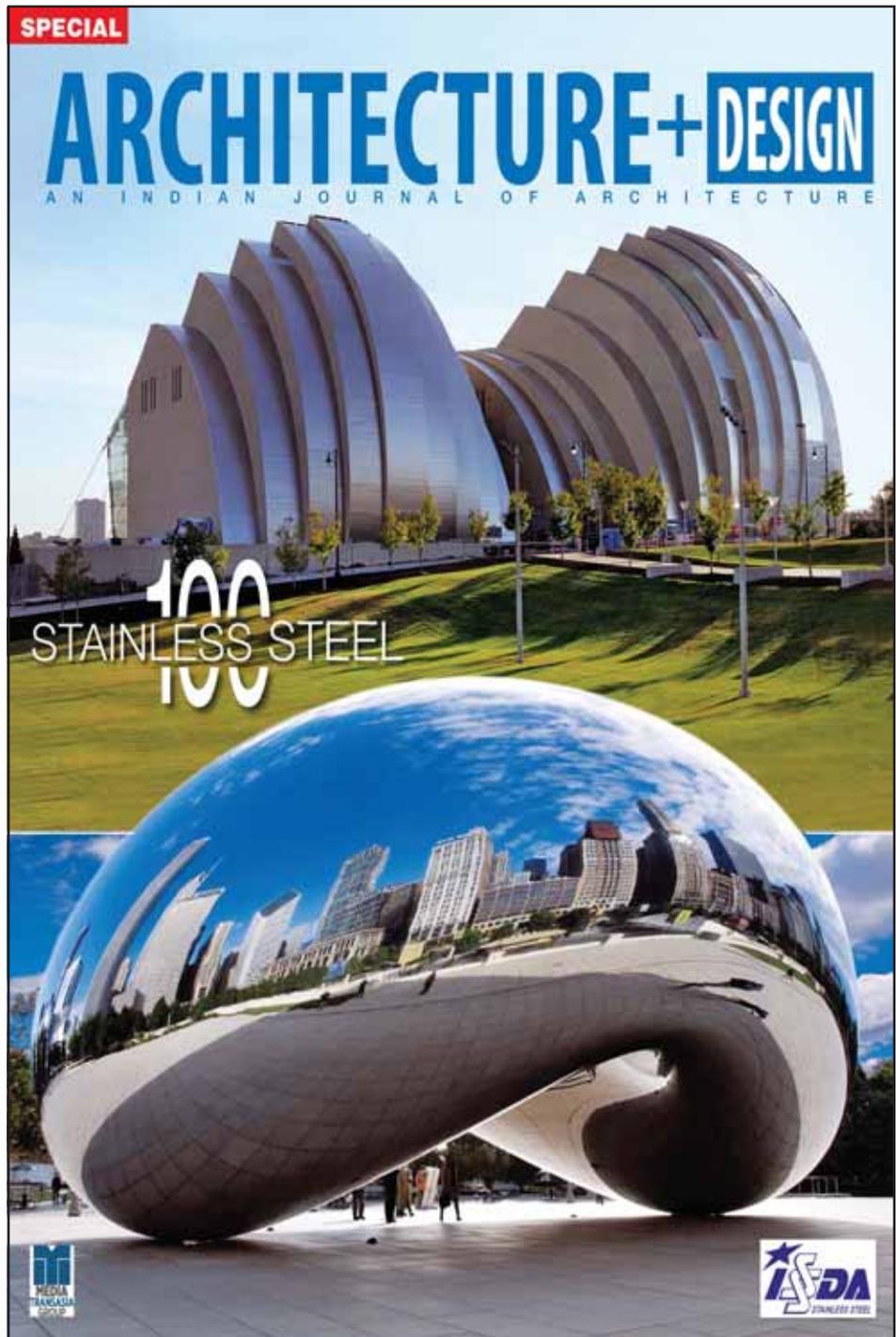
www.jindalsteelway.com

Centenary Special – Release of Architecture+Design Magazine

On the occasion of the Centenary Year of Stainless Steel, the Indian Stainless Steel Development Association (ISSDA) has come out with a special issue of Architecture+Design magazine devoted entirely to stainless steel, released on October 9, 2012. Architecture+Design is a highly respected architectural magazine in English and is widely circulated to Architects, Designers, Sculptors & Professionals in the Building and Construction industry, with a circulation of about 55000 copies and a readership of over 3 lacs.

This special issue has captured the attention of architects and designers about classical as well as new and emerging concepts on the use of stainless steel for ABC applications. The special issue of this prestigious magazine will enhance awareness about the benefits and versatility of stainless steel as well as inspire the readers to explore new possibilities with stainless steel.

ISSDA would like to place on record the effort and dedication shown by the Editor-in Chief, Mr. Suneet Paul, Architecture+Design magazine and his entire team in shaping this issue. ISSDA gratefully acknowledges the effort and support extended by Ms Catherine Houska, Consultant to the Nickel Institute, based in the US in collating the material for this issue. In addition to the above, ISSDA would also like to thank all those who have contributed to make this a world class publication.



Attention Readers !

You can receive your personal copy of 'Stainless India' by sending your complete postal address and contact details to:
nissda@gmail.com

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