



Indian Stainless Steel Development Association

-

Some Initiatives, Success Stories & Plans

12 – 14th May, 2014

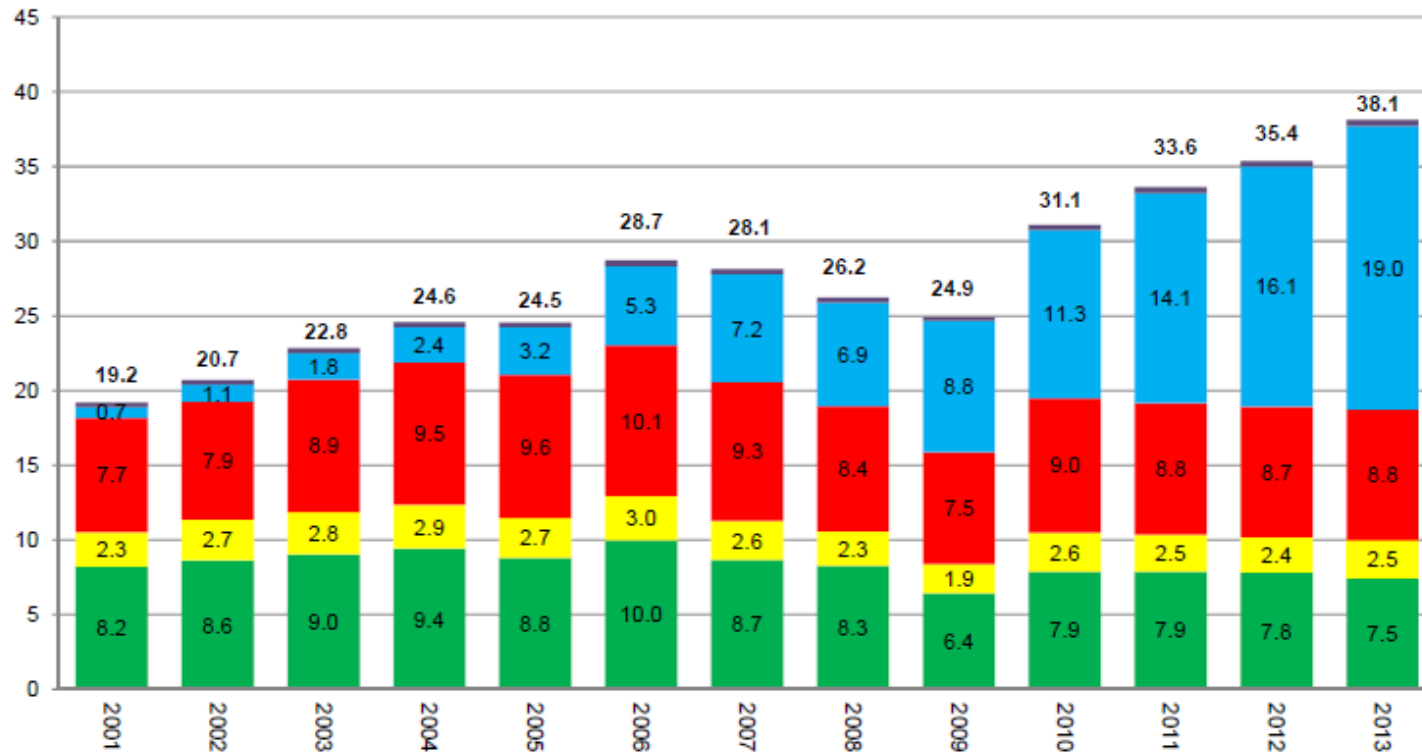


By
N C Mathur
President

Global Overview of World Production

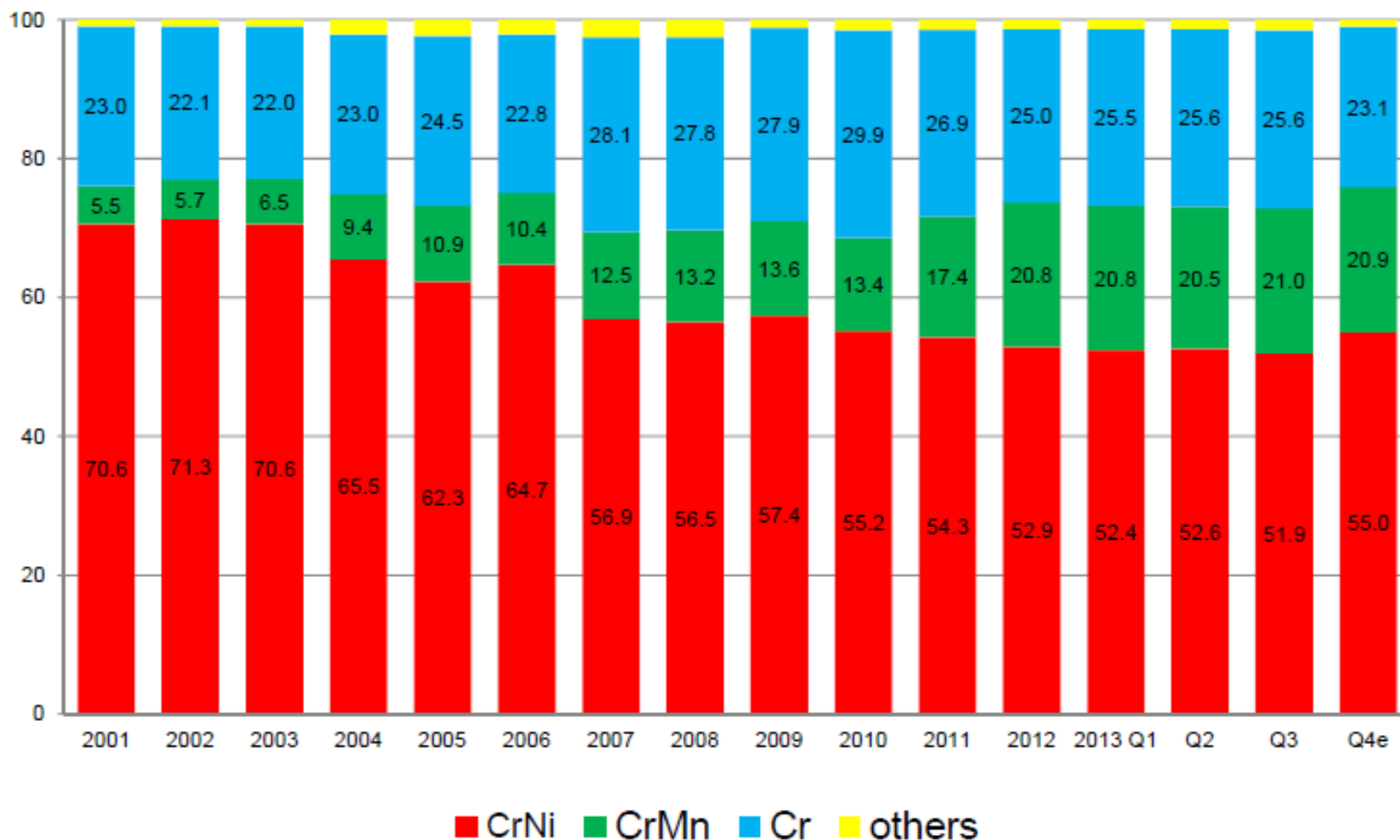
World: Stainless steel melt shop production

[mill t]



■ EuroAfrica
 ■ Americas
 ■ Asia w/o China
 ■ China
 ■ CEE

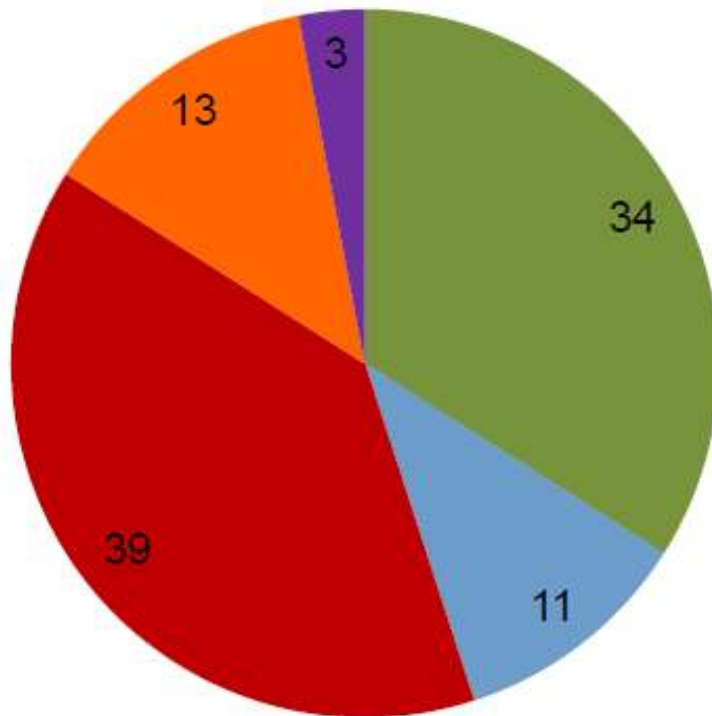
Stainless steel melt shop production by grade category [%]



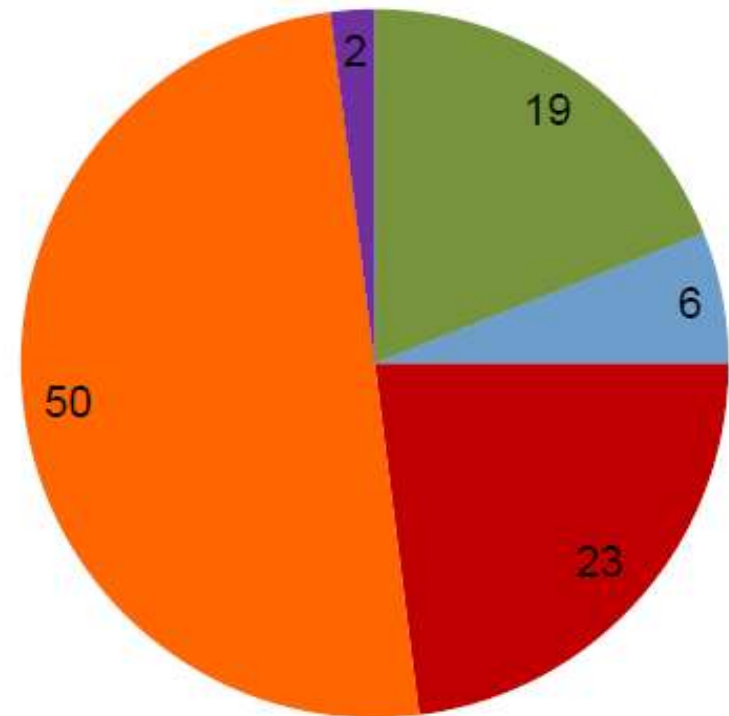
Regional share of stainless steel production [%]



2005



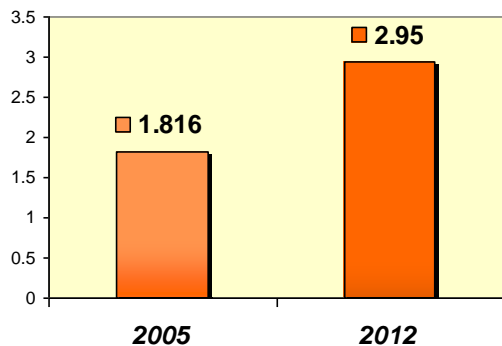
2013



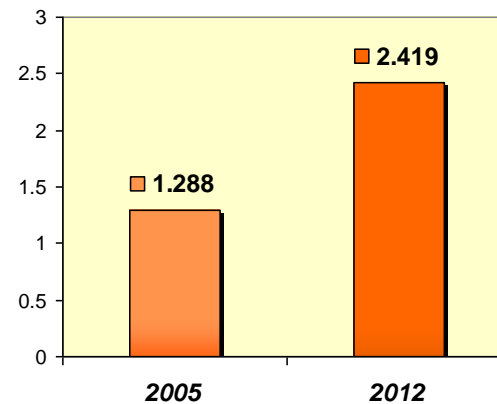
■ EU-27 ■ Americas ■ Other Asia (excl China) ■ China ■ RoW

Overview of Consumption Pattern in India

SS Melt Production trend - million tons

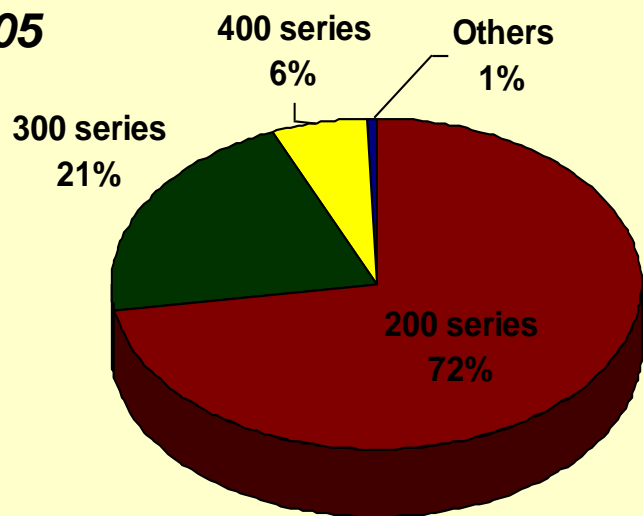


SS Apparent Consumption trend - million tons

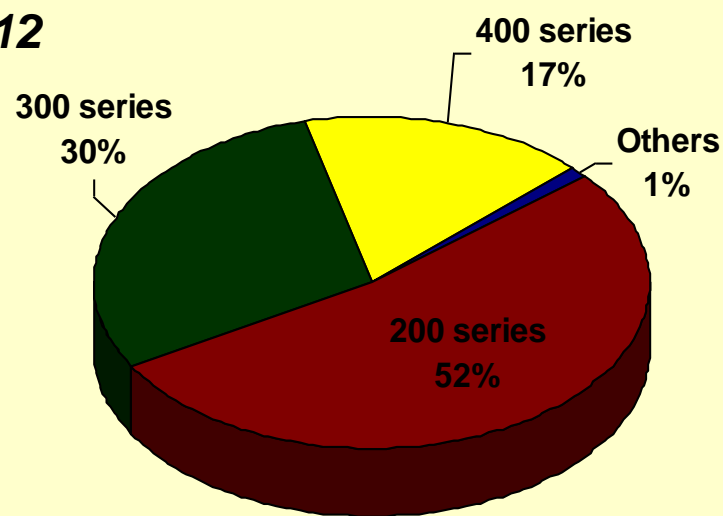


All India Consumption Trend of SS by Grades %

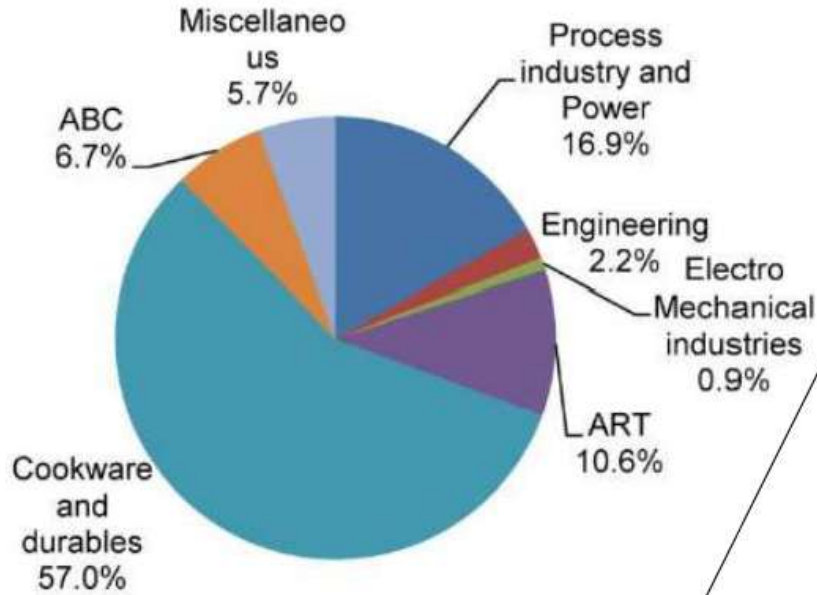
2005



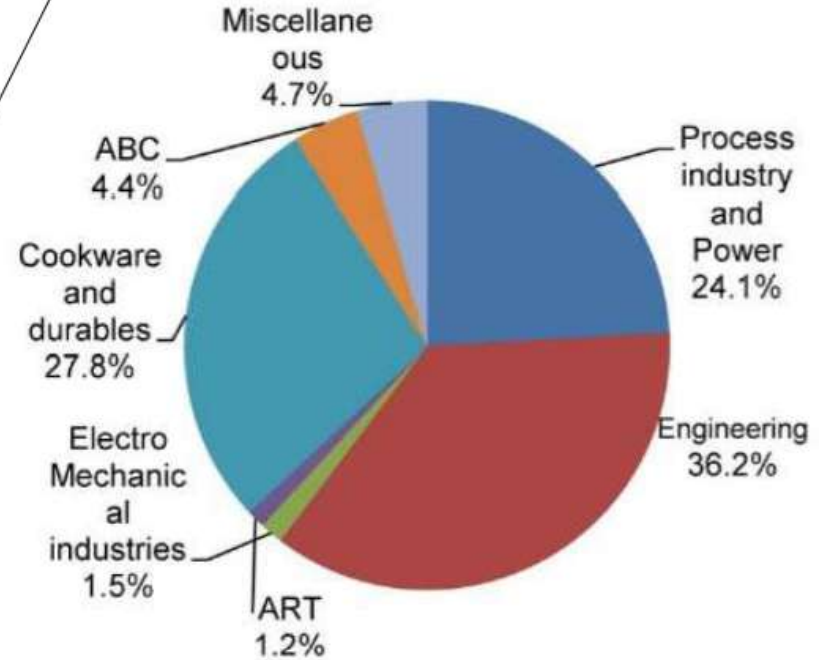
2012



Flat Products : Year 2012

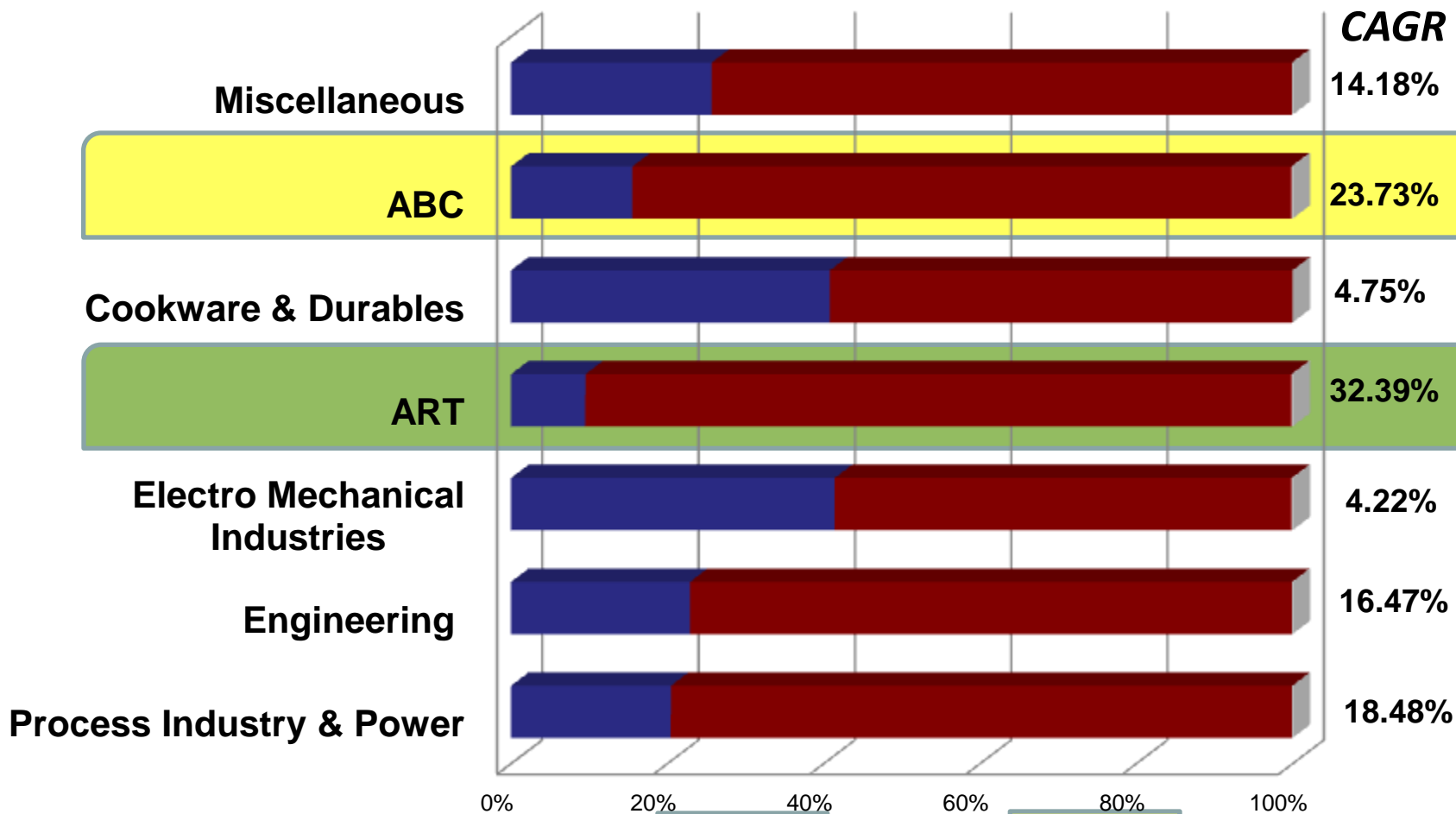


Long Products : Year 2012



Consumption Trend & Share of SS by End use sector

Consumption trends of SS by End use sectors - 000 tons



	Process Industry & Power	Engineering	Electro Mechanical Industries	ART	Cookware & Durables	ABC	Miscellaneous
■ 2004	113	58	17	23	868	28	46
■ 2012	439	195	24	218	1259	152	133
CAGR	18.48%	16.47%	4.22%	32.39%	4.75%	23.73%	14.18%



ABC Sector in India

Opportunities in Indian Infrastructure Structure

- **India plans to spend US\$1 Trillion on infrastructure in next five years.**
- **Indian airports require investments worth US\$13 billion in next five years; private sector to contribute US\$10 billion.**
- **Highways sector will attract investments worth US\$123 billion in next 5 years.**
- **US\$300 billion planned to be spent on upgrading rail infrastructure (including new rail lines, double/multiple lines, high-speed rail) by 2020.**
- **Around \$55 billion worth investments planned in major and non-major ports by 2020.**

Architecture Building & Construction (ABC)

Mostly driven by growth in Indian real estate & Infrastructure sector



Residential real estate, commercial real estate, Retail space, hospitality projects and SEZs



Shopping malls, Multiplexes, Airports, Rail Metros Stations, IT parks, Commercial Complexes, Hotels, Fast food restaurants, High Quality Residential accommodations, Hi tech town ships and showrooms



Products :

Sinks
Elevators and escalators
Street furniture
Builder hardware:
Architectural Products
Railings, Barriers, Signage's,
Spiders, Claddings
Facades
Plumbing
Roofing
Reinforcement bars
(Negligible)

Share of this application increased almost **3 times over the last 8 years** to reach 6.7% of the overall consumption of Stainless steel.

ISSDA Focus in ABC sector



Increasing Awareness through various workshops and seminars

Providing help with technical guidance, literature and sourcing

Separate workshops for fabricators to improve the quality of fabrication

Educational Programme for students , engineers and people working in the fields related to stainless steel.

Towards Standardization of products with BIS



Students Outreach Programmes all over the country



ABC Workshops across the Country : 2014

These workshops give strong upward push to ISSDA's market development efforts in the ABC sector - specifically in the form of newer products like roofing, sunscreens, building envelopes and structural applications.

School of Planning and Architect, Delhi

A Good number of students registered for the online SS course and several requests for new and innovative project ideas in SS.



Central Public Works Department, Ministry of Urban Development, Govt. of INDIA

The audience were senior government officials and engineers & designers from various departments responsible for all the major decisions taken for urban infrastructure development.



Central Public Works Department, Govt of India requested ISSDA to provide all help for the very prestigious **Presidential house museum project**



Evening Programme : with A+D (called chit-chat format)



Will be the first
LEED Platinum-
certified building in
India.

Planned Project : Maison Edouard
François Designs Luxurious
Skyscraper Trio in Gurgaon, India



*A massive luxury complex
crowned by three stainless
steel-clad skyscrapers.*



Senior Architects and builders working on some prestigious projects made contacts with ISSDA after Catherine presentation which included some innovative solution on energy savings in buildings

Mumbai

Mumbai is hub of construction and is considered to be trend setter in Indian construction industry



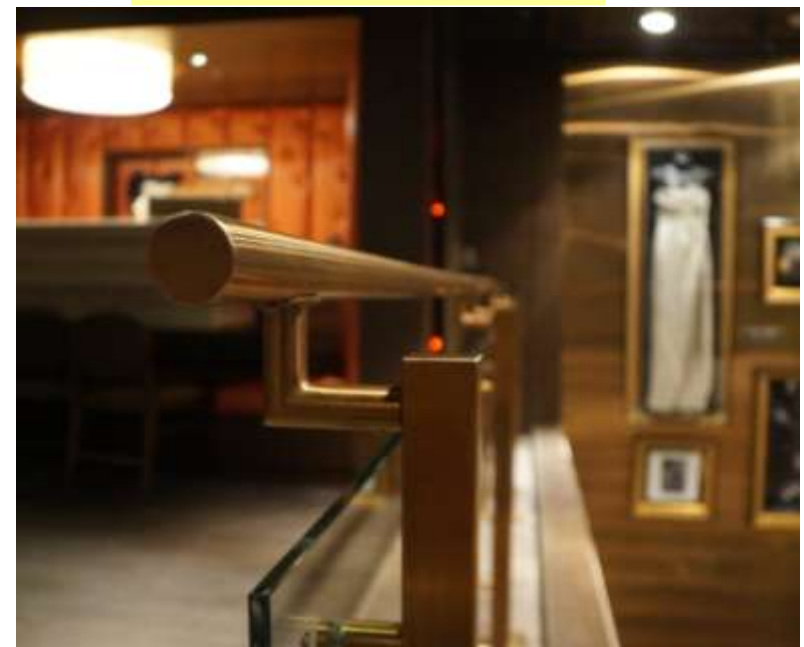
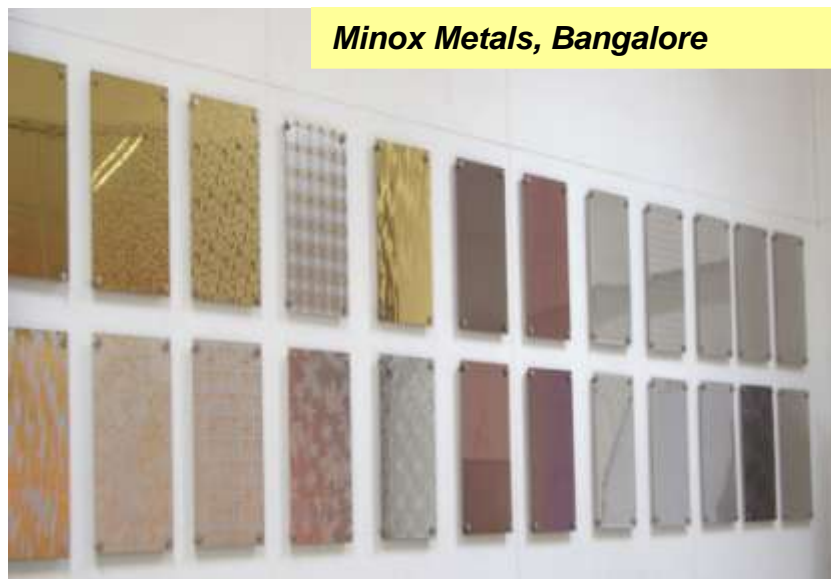
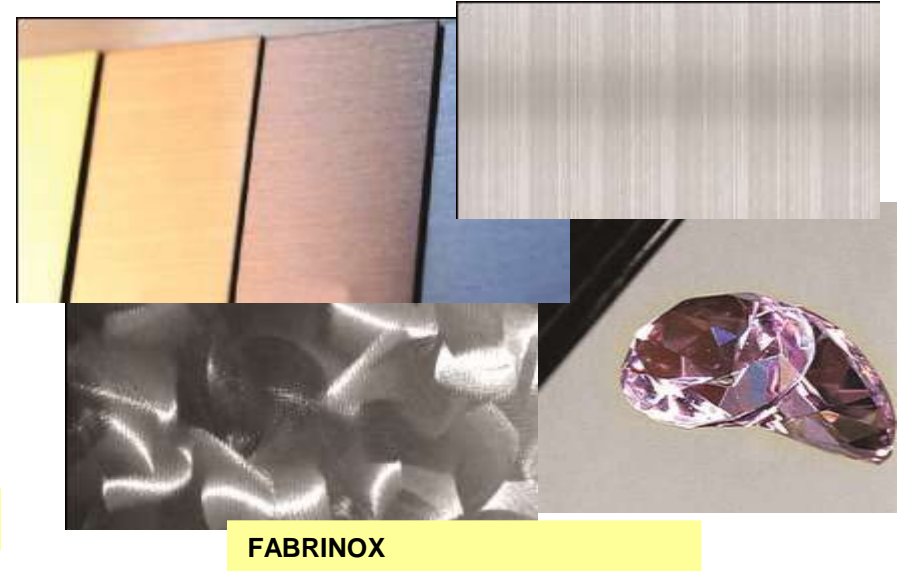
External cladding proposal in a 22 story building in Mumbai. ISSDA and its members are already providing necessary input to them.

Bangalore

Rapid urbanization of this IT city has great potential for further use of SS in ABC sector.



Various finishes are now available in India.



Bat of Honor

According to the designer Mr. Abhijit Bansod “We chose toughest, yet most beautiful material stainless steel, because of its strength, toughness, corrosion resistance and flawless finish. It also symbolize the flawless cricketing career of India's master blaster”



Sachin Tendulkar :
Legendry Indian Cricketer

Stainless Steel Bio Mass Stove

Designed by The Energy and Resources Institute (TERI), an autonomous, not-for-profit research organization working globally with headquarters in New Delhi

AISI 304 grade of stainless steel - inner core

AISI 202 stainless steel grade. – Rest

Total 7 kg of stainless steel per piece



Cost : 3200 INR (~ 38 Euro)



ART Sector in India

ISSDA Focus in ART sector & Success Stories

Delhi Metro is a good example :

Synopsis on Metro Market in India in last decade

Project	Supplier	Production	Qty
Delhi Ph – 1	ROTEM	Initial train from Korea & rest manufactured at BEML	280
Delhi Ph – 2	Bombardier	Initial train from Germany & rest manufactured at Savli, (Vadodra)	616 (BG)
	ROTEM	Initial train from Korea & rest manufactured at BEML	196 (SG) + 136 (BG)
Chennai	Alstom	Initial train from Brazil & rest manufactured at Siricity	168 + 16
Mumbai	CNR	At CNR China	108
Bangalore	ROTEM	At BEML , Bangalore Plant	150
Kolkata (E- W)	CAF	At parent company in SPAIN	84
Hyderabad Metro	ROTEM	Trains to be manufactured at ROTEM plant in Korea.	171 + 60
Jaipur	BEML	At BEML , Bangalore Plant	40

• Nearly 2000 Cars ordered in last one decade !!

Upcoming Metro Projects in India

	2013	2014	2015	2016	2017	2018
	486 cars	108 cars	400 cars	440 cars	520 cars	264 cars
750 VDC based projects		● =Kochi , 84 cars	● =Bangalore Ph II, => 200 cars	● =Gurgaon, =30 cars		● =Dhaka, =144 cars
25kV based projects	● Delhi Ph III, 486 cars	● Navi Mum, 24 cars	● Mum L3, 200 cars	● Chennai Ph II, 250 cars ● Mum L2, 160 cars	● Chandigarh, 120 cars ● Delhi Ph IV, 400 cars	● Pune, 120 cars
	● =Project under decision		● =Future Projects			

• Other than Delhi, more than 1700 cars to be bought in next 5 years!!

Proposed Mono Rail/ Light Rail/ eBRT Projects

City	System length (km)	No of lines planned	Remark
Mumbai	19.54 km	6	Under Construction
BKC, Mumbai	7 km	1	Ridership study with IIT Mumbai done. Financial model needs to be developed.
Pune	52 km	2	eBRT concept is being thought about
Kozhikode	14.5 km	1	DMRC preparing DPR
Delhi	90 km	6	One line of 15.5 Km to be undertaken by DMRC
Indore	31.1 Km	3	Mainly BRT
Trivandrum	41.8 km	1	State Transport Dept preparing DPR
Chennai	57 km	3	In Planning
Bangalore	82 km	5	In Planning
Kolkata	72 km	2	in planning
Patna	32 km	4	RITES doing Preliminary Work
Aizawl	5 km	1	RITES doing Preliminary Work

- Some of these projects are conceptualized as “Monorail” projects, which can be converted to “Light Rail” projects.







Metro man E Sreedharan



- Highest Level of Awards by Government of India
- Knight of the Legion of Honour by the government of France

“ When the Delhi Metro project was given to me I welcomed it as a test of my experienced. Having seen the successful completion of Konkan Railways just prior to joining the Delhi metro, I was sure we could achieve success.

The idea was to build something lightweight yet durable and safe in the

face of any eventuality. We therefore chose stainless steel for the body.

Using stainless steel has also ensured less maintenance and repair for the exterior and interior. **Inside the coaches also we have used stainless steel extensively for seats and poles.** With the ever increasing flow of passengers we have been proven right in our choice of stainless steel over other materials for the Delhi Metro. The metro has successfully provided a much needed alternate public transport in this growing city “

Indian Railways an Ever-Growing Sector

- Single largest railway network under one management in the world comprising 115,000 km of track over a route of 65,000 km & 7,500 stations
- Indian Railways have over 229,381 Freight Wagons, 59,713 Passenger Coaches and 9,213 Locomotives

- Indian Railway is currently procuring around 2500 coaches/yr. (trough floor SS)
- Nearly 750 Stainless Steel coaches added last year (LHB Design)
- 60 : 40 Ratio of 409 type and 304/301 type grades

**Coaches
Wagons
Accessories
Stations**

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Rail Coach Factory Kapurthala sets new record, rolls out 1701 coaches against installed capacity of 1500 coaches in a year

IP Singh, TNN | Apr 10, 2014, 06.49 PM IST

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Accessories

2096 bio-toilets have been fitted in 2013-14.

Several Thousands more to go ! - 316L SS



SS water Tank

Air Reservoir/Braking System

Retention tanks

Battery Box

Modular toilets (soon)

Station amenities



New Coach Factory at RaeBareli



All Shop View



Type-II Quarters



PRODUCTION

2011-12	18
2012-13	70
2013-14 (PLAN)	150
2014-15 (PLAN)	300
2015-16 (PLAN)	750-1000

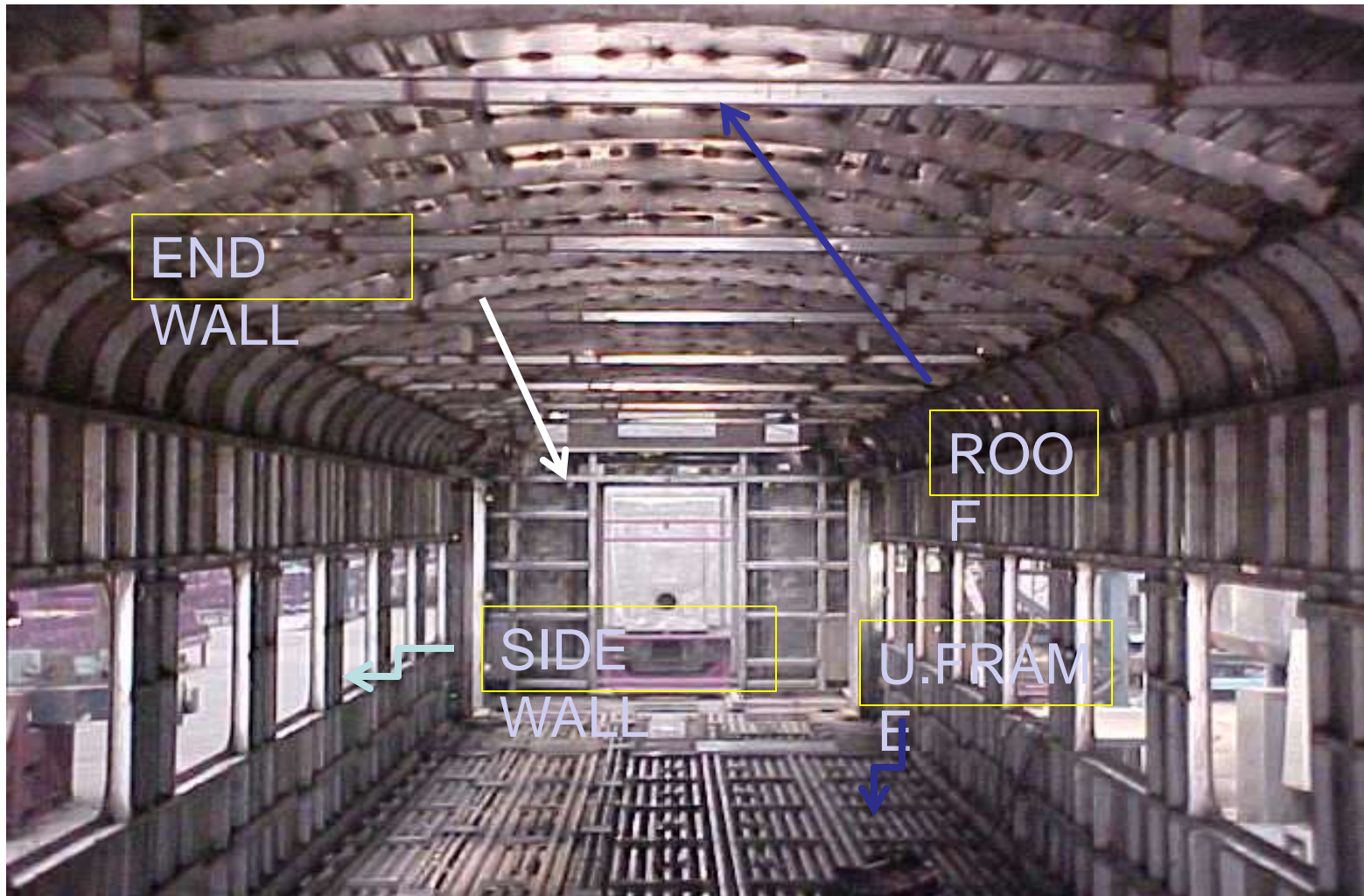


SHELL EXTERIOR





SHELL INTERIOR VIEW



New Dedicated Freight Corridor Coming Up - 3,300

km

A Very Big opportunity for St St Wagons Delhi-Mumbai & Punjab-Kolkata Corridors

Under the Eleventh Five Year Plan of India (2007–2012), Ministry of Railways is constructing a new Dedicated Freight Corridor (DFC) covering about 3300 km total of two long land mass routes

The Western corridor ~ 1499 km

The Eastern Dedicated Freight Corridor ~ 1839 km long

The total current use of Stainless Steel in wagons annually is almost **1,22,000 tons in 2012**

24000 to 25000 wagons every year in future



Indian Water Industry :

Opportunities to be tapped

Desalination Plants

Water Treatment Plants

Water Storage Tanks

Bottling Plants

Indoor Plumbing

-Rapid Urbanization : Over-exploitation of groundwater

- High salinity level in fresh water sources

Desalination Plant

India has a large coastline (more than 7500 km)

currently 182 desalination plants
operating in different parts

Expected to have over 500 desalination
plants by 2017

Tamil Nadu (over 900km of coastline) has
become a hub of desalination projects:
Over 70+ projects ongoing

Piping , Pumps, Valves,
vessels, Equipments

Piping constitutes **10 to 25%** of the water
treatment project cost . Penetration of
Stainless Steel only **25 to 30%**



*India's First and largest Desalination Plant in
Minjur, Chennai , Tamil Nadu – Operational
Since 2010 (100 MLD)*



25.2 MLD seawater reverse osmosis plant at
Mundra, Gujarat for the 4000 MW Ultra Mega
Power Plant

Effluent treatment, Municipal Waste and Sewage Treatment Plants

- About 80% of water supplied (especially in urban areas) becomes wastewater.
- Only 30% of Total Sewage Generated by urban India treated
- Massive investments (INRS 106 bn) for waste water treatment

Low penetration of stainless steel

- Estimated **7200 tons of Stainless Steel piping in ETPs and 700 tons in Municipal waste water treatment plants**

SS can become cost effective substitute to Cast iron, concrete and ductile pipes if more case studies are highlighted to increase awareness on life cycle costing

Water Bottling Plants

Bottled water industry in India is growing **19% annually**.

Global bottled water market, India only accounts for around 2%.

-3,300 registered bottling plants in country

- Highly Unorganized Sector
- Penetration of SS poor



Source: "Research report The Indian Bottled Water Market: Unveiling its Thirst" by Ikon Marketing Consultants

Photo courtesy : SAMR Industries

Overhead Water storage tanks

Market size of popular plastic
(High-density polyethylene - HDPE)
tanks estimated at ~15,00,000
tanks per annum

- **Price Sensitive**
- **Quality Sensitive**
- **ISSDA efforts to get the standard made
(under progress)**



Stainless Steel Water Tanker

- **First Trial recorded 20 years back in Salem**
- **DJB recently ordered 385 tankers**
- **Potential to replicate in all metro and other cities**



Plumbing in Stainless Steel

Delhi Schedule Rates 2013 : A benchmark for construction industry in India

Entrusted with construction maintenance of Heritage buildings, Buildings for most of the central Government, Ministries, departments, PSU's and autonomous bodies

Efforts to get it incorporated in Green building concepts

Hospitals & Hotel Industry

Case Studies : Life Cycle Cost & Project Cost



Central Public Works Department



IIT Delhi

Conclusion & Way Forward

India's per capita Stainless steel consumption at 1.9 kgs is much lower than the world average of 4.9 kg

- **Increase awareness of significant corrosion costs and potential cost savings.**
- **Efforts should be made toward modify the existing standards by also specifying / or making mandatory the use of SS for public utilities in the areas of construction of bridges, flyovers and multi-storeyed buildings in coastal areas, drinking water supply and plumbing applications.**
- **Improve education and training.**
- **Build more case studies to substantiate the high initial cost**
- **Develop advanced life-prediction and performance-assessment methods**



ISSDA 25th ANNIVERSARY CELEBRATION

Conference Venue : Hotel 'THE GRAND', New Delhi

- 6th November : 7:00 pm ,Gala Dinner
7th November : Conference - 9:30 am to 5:00 pm

Keynote Speaker : **Markus Moll on**
"Stainless Steel Strategy 2020: The Indian Way, the Chinese Way or a Third way?"

Speakers : Tim Aiken, President, Nickel Institute
Subhrakant Panda, President ,ICDA
Invited Industry Leaders and Senior Government Officials

8th November : Stainless Steel Plants Tour (Optional)

Registration Fee :
Euro 200