

New Developments in the Applications of Stainless Steel in India

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In 2005 and 2006, India's GDP showed a robust growth rate of 7.5% and 8.5% respectively. In the coming years, expectations are of consistent 8.5-10% growth in India's GDP. Along with the steady and robust growth in the economy, stainless steel usage in the country has also been growing at a faster clip of about 13%. Contributing to this rapid growth of the stainless steel industry is the growth in the construction, transportation and the process industry sectors.

The domestic cookware sector, which presently accounts for a dominant 70% of first use of stainless steel, remains strong through organic growth in the domestic market. But due to more rapid growth of use in other sectors, the percentage share of domestic cookware sector is shrinking, but not in tonnage terms. If anything, while the present status is good for stainless steel, the future looks even better.

In the previous issues of 'Stainless Steel Focus', we have chronicled the spread of use of stainless steel in new user sectors such as construction and transportation. This article focuses on the new applications emerging in these sectors. The continuous growth in the use of stainless steel in existing sectors and the spread of stainless steel into newer applications is driving the future of stainless steels in India.

Introduction

Gone are the days when stainless steel was relegated to being considered good only for kitchenware by the common man and professionals in the construction industry and the transportation sector. Now, ever increasing numbers of architects, designers, railway engineers, auto industry professionals, city planners, civic agencies, airport and railway station designers, and even city bus stops, malls, multiplexes, retail space designers etc., have realized that stainless steel with its elegance, durability and minimal requirement of maintenance is ideal for their use and in fact prefer this over traditional materials.

Delhi leads the way in Architectural use

In preparation for the Commonwealth Games in 2010, the New Delhi Municipal Council (NDMC) has embarked upon sprucing up of Delhi under its jurisdiction (Central Delhi). NDMC is replacing all the existing bus shelters in its jurisdiction (about 200), made of concrete and carbon steel with sleek stainless steel bus shelters. It has also decided that a good portion of road dividers, which are presently of carbon steel, would be replaced with stainless steel barriers. Other items slated for stainless steel replacement include playground slides, swings and seating in public parks and public spaces, handrails,

planters, litter bins, signage for marketplace and shopping areas, pictograms (indicating location of public utilities) etc.

In response, the Delhi Transport Corporation (DTC) replacing at least 225 old bus stops in its routes and replacing them with high-tech bus shelters in stainless steel. These are not only helpful for physically challenged people, but also provided with state-of-the-art GPS facilities for tracking the buses. Stainless steel usage per bus shelter would be about 900 kg. A good number of large capacity bus stops are also being designed. The Municipal Corporation of Delhi (MCD), on its part, is cladding about 800 painted carbon steel bus stops with stainless steel sheets. Most of this work will be completed by September 2007.

This drive of the municipalities and the transport corporation in Delhi will be so visible and vow the public and the visitors that this is bound to have its domino effect on municipal corporations and transportation authorities in other cities across the country and add up to very large volumes of stainless steel.



Left: A newly constructed bus shelter in Delhi; Centre: a sample public seating bench; Right: a sample pavement railing/road divider

Modernization of Airports

In Mumbai and Delhi existing airports are being modernized and new large capacity terminals are under construction with overseas participation. Similarly, new airports in Bangalore, Hyderabad, Chennai and Kolkata are coming up or yet to begin work. About 40 other airports in the country are also slated for up-gradation and modernization. Many established items like handrails, signage, column cladding, counter tops, door / window frames, baggage carousels and tens of thousands of baggage trolleys, interior and street furniture canopies, roofs, washroom facilities etc., will be in stainless steel for the revamped and new airports.



***Left: Column cladding at Ahmedabad airport;
Right: Staircase railings at the old Bangalore airport.***

Retail Revolution

Hundreds of shopping malls are sprouting all over the large cities in the country. Most of these malls sport stainless steel staircase handrails, handles, locks, public seating and balcony railings, food courts etc., which are becoming a standard feature. Some of them also extend the usage to wall claddings and landscape architecture. This market will grow further as malls, multiplexes and plazas come up in large numbers in tier-2 cities also.



***Left: A movie theatre in a shopping mall in Gurgaon, near Delhi;
Right: A silk saree show room in Kochi, Kerala.***

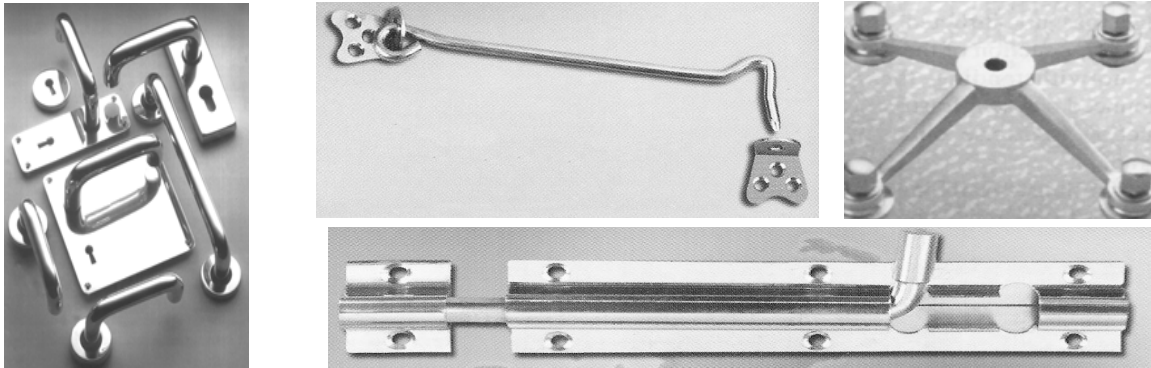


Beautiful Lamp Posts for a shopping mall in Delhi

A retail revolution of sorts is going on in our country for the past few years. Many shops, showrooms, eateries, restaurants are undergoing refurbishment and with that the attitude of the owners is also changing – *they have become more courteous!* Most of the eating joints and coffee houses sport light-weight stainless steel chairs for their customers. The refurbishments are usually with glass and stainless steel. With the government giving the nod for the entry of Wal-Mart, the 'revolution' is bound to trigger the entry of other majors too. The Indian chain stores are also expanding their horizons to give a run for their money to Wal-Mart and other entrants. All these mean that there is going to be a sea change in the way India does its shopping.

Stainless is becoming dominant in builders' hardware

The fact that stainless steel combines well with glass makes it suitable for builders' hardware items. There was a time when nails, tower bolts, spider fittings in stainless steel etc were hard to find. But now, all the builders' hardware is available in stainless steel and with more and more manufacturers entering the market, their volumes are large. This large scale switch over from other materials like carbon steel, aluminium and brass in the hardware sector is reminiscent of the kitchen sink sector where stainless steel has absolute dominance in India.



Clockwise from left: Door handles, cabin hook, spider fitting, tower bolt.

Railway Wagons

The Indian Railways had a fleet of 300 stainless steel coal wagons under trial. Having assessed their benefits, the railway budget for 2006-07 paved the way for introduction of light-weight, corrosion-free stainless steel (and aluminium) coal and ore wagons in place of corten steel wagons. There will be no new orders for corten steel wagons for hauling coal and ores. The better payload to tare weight ratio of 4:1 (2.5:1 for corten steel wagons) will greatly offset the higher initial cost of stainless steel wagons. Indian Railways expect to earn over Rs. 6 billion from this switch. ***This is an excellent example of doing Life Cycle Costing Analysis and realizing that though the initial cost is higher, much better profits are to be made by specifying stainless steel!***



A stainless steel coal wagon.

Railway Long Distance Passenger Cars

Plans are also afoot to replace the present corten-steel long distance coaches by light-weight all-stainless steel coaches. These will be in unpainted stainless steel grade (301LN) like the Delhi Metro rakes. Initially the replacement would be for the German-designed coaches but later would be extended for all long-distance passenger coaches. RCF and ICF roll out 1,000 coaches per year and with the consumption of approximately 6.5 tonnes of stainless steel per coach, the replacement can increase the stainless steel usage by 13,000 tonnes per annum in the railway sector.



***Left: A LHB stainless steel coach shell;
Right: A prototype showing the interiors of
a suburban train in Mumbai.***

Railway Stations

The railway budget (2006-07) also has plans for 'modernizing' thousands of railway stations with food courts, cyber cafes, excellent passenger waiting rooms and other amenities. As a start, the waiting area in Bangalore City railway station has seats in gleaming stainless steel. This and many such sprucing up efforts are being replicated in a good number of railway stations across the country. Hence there is plenty of room for stainless steel architectural products in railway stations too.



Seats at Bangalore City railway station.



Koparkhairane Railway Station in Navi Mumbai. 10,000 sq.m resin-coated curved roofing

Railways – Metro Coaches

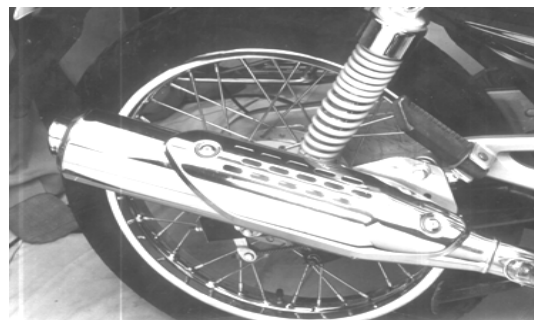
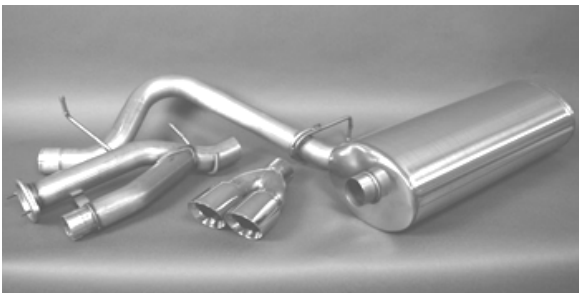
The Delhi Metro-type transport system, using all-stainless steel coaches, is being replicated in Bangalore and many other cities are lined up for this revolutionary change in city transport. In cities like Mumbai, Hyderabad and Chennai, the suburban train coaches already use stainless steel for internal furnishings.



Delhi metro coach – going places.

Automobile

The government has mandated that from April 2005 all cars and MUVs and all motor cycles in metro cities must conform to Euro II norms. This means that the use of catalytic converters and stainless steel exhausts is a distinct possibility. During 2005-06, India produced approx. 1.24 million cars and MUVs and approx. 6.2 c motorcycles. The approximate stainless steel usage for exhaust systems is 11 kg of for a car and 4 kg for a motorcycle.



A car exhaust (left) and a motor cycle exhaust.

Process industry

The process industry comprises of the food process industry, chemical & petrochemicals, fertilizers, power generation, oil & gas, sugar, drugs & pharmaceuticals etc. Although the present figures of fresh investment are not available, but as on January 2005, Rs 2,850 billion worth of projects were under implementation and Rs 2,149 billion worth of projects were being proposed. The process industry uses stainless steel for heat exchangers, tubes for conveying fluids and vats and process tanks for many applications. This is also true for the food process and the pharmaceutical industry where the use of stainless steel is mandated for all food/medicine contact parts of the equipment. ***The stainless steel tube industry for instance, has multiplied its capacity in recent years to 50,000 tpa. It is so busy supplying the process industry and the architectural sector that there are long lead times for filling orders.***

In the Pipeline

Indoor plumbing for safe, leak-free (guaranteed for 60 years) will shortly be introduced. With stainless steel plumbing, you can say goodbye to leakages for the life of the building. ISSDA plans to enter the water industry in a big way, addressing water and waste water processing plants and distribution systems. In the transportation sector, ISSDA will take up the matter of conversion of carbon steel buses to stainless steel ones.

With existing new sectors like construction and transportation widening and deepening the use of stainless steel, and its huge geographical spread all over India, the volumes for the stainless steel industry are rapidly increasing. The introduction of other new products like plumbing and some others, which are slated, would give further momentum to stainless steel usage in the coming years.

Conclusion

The production of stainless steel reached the historic 2 million ton mark last year. It is estimated that by 2010-11, India could be producing 4 million tones of stainless steel.



India's tallest stainless steel structure

*33m high gateway in 304 weighing 20 tonnes (mainly tubes) at the entrance to
M/s Jindal Steel and Power plant in Raigarh, Chhatisgarh.*
