

A Report on an Industrial Visit to

**Theis Precision Steel India Pvt.
Ltd.**

Organized by

Training and Placement Cell

Department of Mechanical Engineering

M.Tech (2nd Semester)

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**ChhotubhaiGopalbhai Institute of Technology,
Uka Tarsadia University, Bardoli.**

About Company:

Theis Precision Steel India Pvt. Ltd. pioneered the specialty cold rolling of high / medium carbon steels in India, Today, it is a leading specialty cold rolled steel strips manufacturer in the country. It also is the only manufacturer of precision hot rolled solid steel profile sections, by a unique process, to satisfy the customers whose needs may be small in quantity but expectations are large. As an associate company of Friedr. Gustav Theis Kaltwalzwerke GmbH, Germany, Theis Precision India renowned for its traditions in maintaining the highest standards of product quality, reliability and customer service, remains committed to a continuous progress of technological upgradation of products and processes providing one-stop, one-window solution and integrated support



Originally the company was established in 1968 as the Metals Division of The Ahmedabad Advance Mills Limited (a textile company of the Tata Group). Prior to the purchase in April 2007 by Friedr. Gustav Theis Kaltwalzwerke GmbH, Germany, it was a part of Tata Steel (founded in 1907), Asia's first and India's largest private sector steel company. The Tata Group is one of the most successful companies in India whose history goes back to 1868, when Jamshedji Nusserwanji Tata started a private trading company, thus laying the foundation of the Tata Group. Friedr. Gustav Theis Kaltwalzwerke GmbH is one of the world's leading cold rolling speciality strip mills and provides the international market with engineered steels made specifically for the needs of the customer. Theis was founded in 1910 and belongs ever since to the same family. It is an exciting acquisition as both companies have a long tradition of core values and innovation. Throughout their long history the companies have adhered with tenacity to the strategy of their founding fathers.

The Cold Rolling Division, established in 1968, pioneered in India cold rolling of stainless steel and later focused on cold rolling of narrow width strips in mild, medium and high carbon and low alloy steels. The division produces in thickness range from 0.07mm to 3.2mm and a width range from 6mm to 460mm. It has a manufacturing capacity of 40,000M.T. per annum.

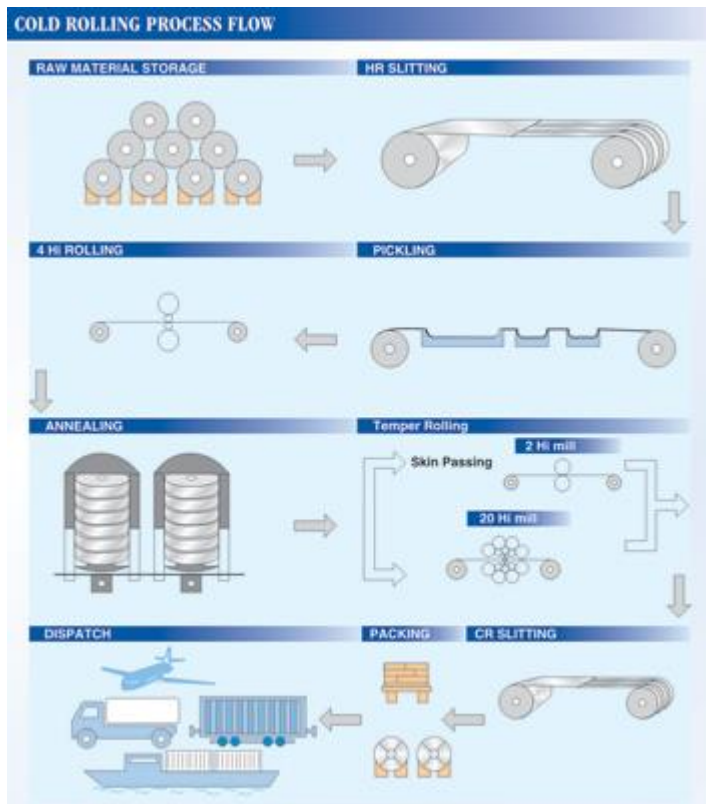
The Profiles Division, established in 1997 has a manufacturing capacity of 6000M.T. of custom made solid profiles/sections in various grades of steel. The equipment is state-of-the-art technology within the world for hot rolling steel sections and profiles. Rolled from wire rods, electrically heated., unlike conventional billet rolling, these sections have better dimensional tolerances and surface finish than conventionally manufactured sections rolled from billets.

Theis Precision Steel India Private Limited caters to the need of various market segments such as automotive, textile machinery, cutting blades/saws, office machinery, general engineering etc. It is specialised in catering to customized requirements such as desired surface finish, roughness, tempering, dimensional tolerances and packaging. In addition, the division has the capability of supplying hot rolled solid profiles, cold drawn profiles and profiles in ready-to-use form.

The cold rolled strips supplied by the company are tailor made for individual customers. Each product is manufactured exactly as per the customers' specifications, requirements and expectations. Therefore, for each order of all the customers a product specific Process Route is designed first, which consists of detailing of each and every process, the selection of raw material grade and size, the intermediate thicknesses to be rolled, intermediate annealing to be

carried out etc. Throughout during processing of the customers orders, the process route is followed to ensure that the material is produced exactly as per the customers' specifications.

COLD ROLLING PROCESS



Manufacturing of Cold Rolled strips :

The key plant facilities include a state of the art 4Hi Cold Rolling Mill, two 20 Hi Sendzimir Cold Rolling mills and modern Hydrogen Annealing set up. The combination of these manufacturing facilities enable the company to cater to a very large range of cold rolled products in thickness range of 0.050 mm to 4.0 mm in varieties of steel grades.



Photograph of Cold Rolling Mill

MILD STEEL GRADES

CATEGORY	STEEL GRADE	CHEMICAL COMPOSITION (%)					Nearest Equivalent Specifications
		C	Mn	S Max	P Max	Si	
MILD STEELS	D	0.12 Max	0.50 Max	0.040	0.040	Traces	DC 01 DIN EN 10139
	AISI 1010	0.08 - 0.13	0.30 - 0.50	0.040	0.040	Traces	C 10 E DIN EN 10132-2
	DD	0.10 Max	0.45 Max	0.040	0.040	Traces	DC 03 DIN EN 10139
	EDD	0.080 Max	0.30 Max	0.025	0.025	Traces	N: 0.007 max Al: 0.02 - 0.07 DC 04 DIN EN 10139

CAPABILITY

MILD STEELS

WIDTH: 6mm - 450mm Coil ID 150 / 300 / 400 / 450 / 500 mm depending on width and thickness

THICKNESS: 0.076mm - 3.5mm Sp. Coil wt. 0.50 to 7 kg per mm width depending on width and thickness

Surface Finish: Matt finish option for annealed and skin passed material.

PROFILES HOT ROLLING PROCESS

The Profiles division has a **state of the art** manufacturing facility for producing 6000 MT per annum of intricate custom-made hot rolled solid steel sections with close dimensional tolerances. The profiles plant, which is the only plant of its kind in India, consists of a **world class** profile hot rolling mill and an in-house tool manufacturing facility.



The uniqueness of this **latest technology** lies in the fact that the profiles are rolled from wire rods that are continuously heated on-line with electrical resistance heaters, unlike from billets that are heated in fuel fired furnaces in conventional rolling mills.

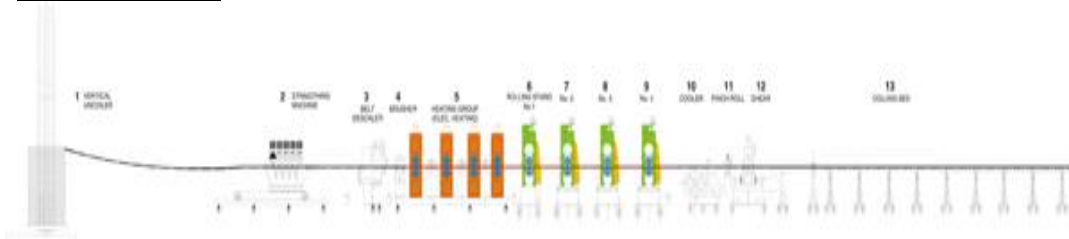
Advantages Over Conventional Rolling



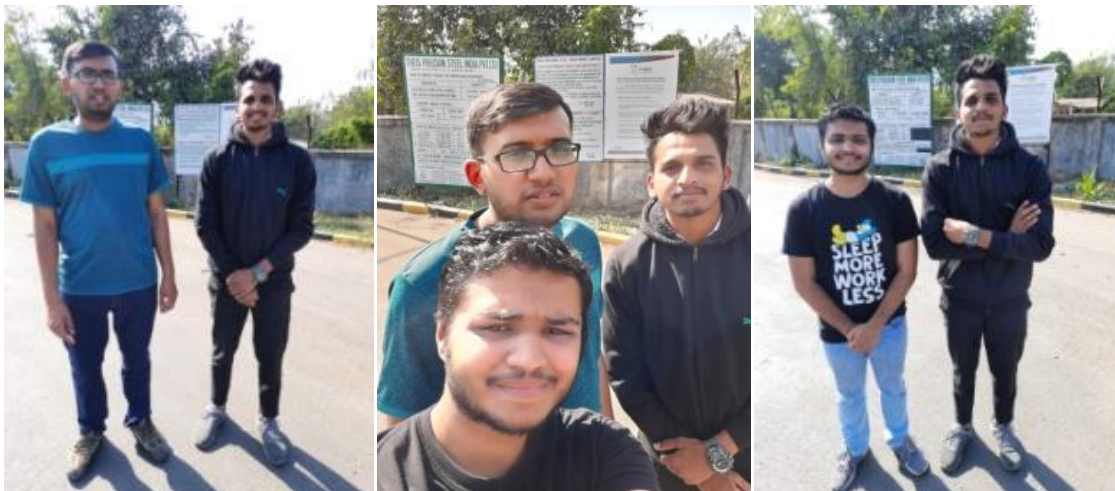
Such an arrangement of continuous heating & rolling has following advantages over conventional rolling:

- Reduced scaling on account of electrical heating.
- Better dimensional tolerances due to reduced scaling.
- Consistency in dimensions due to continuous rolling.
- Reduced material wastage on account of better tolerances.
- Reduced cost of machining operations and saving in time.

Profile Process



The custom-made solid profiles/sections in various grades of steel are manufactured through a **state of the art technology** by hot rolling process. The profiles sections are rolled from wire rods, which are electrically heated on continuous line, unlike conventional billet rolling. The profile sections rolled by us have superiority over the sections conventionally rolled from billets for dimensional tolerances and surface quality.



Photograph of the Students at Company site