



KALYANI CHARITABLE TRUST'S
LATE G. N. SAPKAL COLLEGE OF ENGINEERING

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Date: 19th October 2022

Industrial Visit Report

TE-Civil

A VISIT REPORT ON DESIGN OF STEEL STRUCTURES

Department of Civil Engineering

Late G. N. Sapkal College of Engineering, Nashik.



DSS Industrial Site Visit at Kimaya steel

Venue: Kimaya steel, Dindori road, Nashik.

Date: 19th October 2022, Wednesday at 10:45 am.

Class: TE

Faculty coordinator: Prof. Kiran Deore,

Number of Students: 86

No. of Teachers: 03

Mode of Transportation: Bus

Travelling Distance: 50 km (One Side)

Guided by: Mr. Chetan Lomte (Managing Director), Mr. Saket Lomte (Plant Head),
Mr. Vishal Godbole (Project in charge), Mr. Amol Kulkarni (Senior HR),
Mr. Sunil Sahu (Senior Supervisor), Mr. Kiran Khurdal, (Design Engineer).



Figure 1: Group photo along with team Kimaya steel

Introduction

The Department of Civil Engineering of Late G. N. Sapkal College of Engineering, Nashik organized one day visit to Kimaya steel, Dindori road, Nashik on 19th Oct. 2022 for the third year student of Civil Engineering (BE) program.

The visit was organized with the prior permission and guidance of Respected Principal Prof. Dr. S. B. Bagal and HOD of Civil Department Prof. R. M. Jadhav. Along with the staff members, students of BE. Prof. Kiran Deore have taken hard efforts and initiative for the visit.

This visit was organized by Sapkal College of Engineering for the third year students of Civil engineering along with course instructors Prof. Kiran Deore and Prof Tushar Shinde at Kimaya Steel in Dindori Road, Nashik, in order to get knowledge about Manufacturing of steel Members and PEB Structures.

Kimaya Steel was established in the year 2014 at Nashik, Maharashtra. It is a Partnership based firm, engaged as the foremost manufacturer of Roof Sheds, Industrial Storage, Pre-Engineered Structures. These products are high in demand due to their premium quality, seamless finish, different patterns and affordable prices. Furthermore, they ensure to timely deliver these products to their clients, through this they have gained a huge clients base in the market. By providing quality product and having experienced knowledge of the market, they have been able to attain huge client base.

Factors responsible for their enormous success are as follows:

1. In-depth industry knowledge
2. Timely completion of orders
3. Transparent business dealings
4. Qualified and trained team of professionals Market leading prices.



Objectives of the Steel Industrial Site Visit

1. This course is designed to provide understanding of IS code provisions, fundamentals of structural steel design and its applications for design of various components.
2. Students should be able to understand components of steel structures and its arrangements
3. Student should be able to design beams, columns, column footings, roof trusses, gantry girder and plate girders

Permission for the Visit

The college wrote a permission letter to The Managing Director of Kimaya Steel to obtain permission. This process took about 4-5 days.

Kalyani Charitable Trust's
LATE G. N. SAPKAL COLLEGE OF ENGINEERING
(Accredited with Grade 'B' by NAAC)
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Dr. Sahebrao B. Bagal
M.E. (E & TC), Ph.D. (E & TC)
Principal

Affiliated to : Savitribai Phule Pune University (ID. No.PU/NA/Engg./152/2009 Ref.No.-CA/6501 Dated- 18/11/2009)
Approved by : A.I.C.T.E., New Delhi (F.N: 06/07/MS-Engg/2008/O-17, Dated- 11th June 2009)
Govt. of Maharashtra (No. GEC-2009/(67/09)/T.E.- 4, Dated- 15th June 2009)

Ref: KCT's/LGNSCOE/CNH/Visit/2022/22 **Date: Oct. 18, 2022**
AISHE CODE : C-42196

To,
The Managing Director,
Kimaya Steel,
Dindori Rd, Dhakambe, Nashik, Maharashtra 422004.

Subject: Help for academic site visit.

Respected Sir,

We would like to introduce ourselves as an emerging organization in Nashik district. We are affiliated to Savitribai Phule Pune University and we offer five engineering courses viz. Bachelors in Civil Engineering, Computer Engineering, Electronics and Telecommunication, Mechanical Engineering and Electrical Engineering.

In the third year of Civil Engineering of Savitribai Phule Pune University, there is a subject Design of Steel Structures. This is a very important subject in Civil Engineering and Different steel structures are studied in this subject like welded connection, bolted connection, beam design, column design, base plate design, roof truss design, gantry girder, plate girder etc.

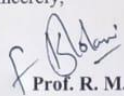
For that we need to visit some industrial sites, and for that the students will get all this in your company, so we humbly request you to give us an opportunity to study in your company.

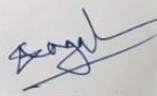
Kindly allow your company to visit on **19/10/2022**. A total of **40 students** will come for the visit and **3 professors** will accompany the students to maintain discipline and safety.

We hope that you will give us full cooperation and guide the aspiring and ambitious civil engineering students.

Details of Visit Coordinators:
Prof. K. M. Deore, 7249739924
Prof. T. R Shinde, 8975679390

Thanking You.
Yours Sincerely,


Prof. R. M. Jadhav
HoD, Department of Civil Engineering


Prof. Dr. S. B. Bagal
Principal, LGNSCOE, Nashik

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Figure 2: Wrote requesting letter to The MD of Kimaya Steel for visit permission

Steel structures

Steel structure is a metal structure which is made of structural steel components connect with each other to carry loads and provide full rigidity. Because of the high strength grade of steel, this structure is reliable and requires fewer raw materials than other types of structure like concrete structure and timber structure.

In modern construction, steel structures are used for almost every type of structure including heavy industrial building, high-rise building, equipment support system, infrastructure, bridge, tower, airport terminal, heavy industrial plant, pipe rack, etc.

It is steel construction material which fabricated with a specific shape and chemical composition to suit a project's applicable specifications.

Depending on each project's applicable specifications, the steel sections might have various shapes, sizes and gauges made by hot or cold rolling, others are made by welding together flat or bent plates. Common shapes include the I- beam, HSS, Channels, Angles and Plate.

Advantages of using steel structure:

1. Cost saving:

Steel structure is the cost leader for most projects in materials and design. It is inexpensive to manufacture and erection, requires less maintenance than other traditional building methods.

2. Creativity

Steel has a natural beauty that most architects can't wait to take advantage of. Steel allows for long column-free spans and you can have a lot of natural light if you want it in any shape of structures.

3. Control and Management

Steel structures are fabricated at factory and rapidly erected at construction site by skilled personnel that make safe construction process. Industry surveys consistently demonstrate that steel structures are the optimal solution in management.

4. Durability

It can withstand extreme forces or harsh weather conditions, such as strong winds, earthquakes, hurricanes and heavy snow. They are also unreceptive to rust and, unlike wood frames, they are not affected by termites, bugs, mildew, mold and fungi.



Figure 3: Students are learning the basics of Steel Structures

CNC plasma machine

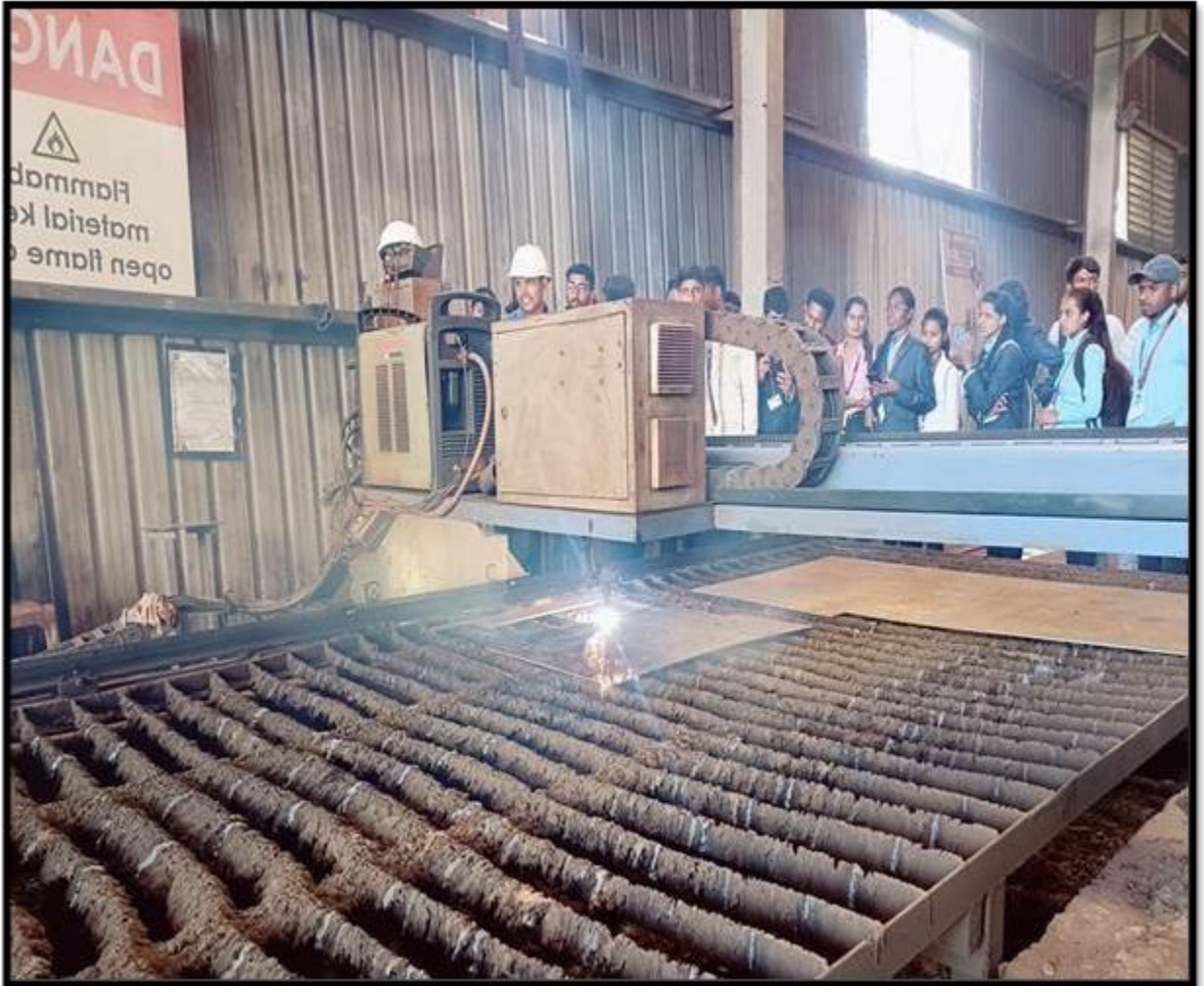


Figure 4: Students are taking information about Plasma cutting machine and learning the use of plasma cutting machine.

A CNC plasma machine uses a plasma cutter to cut thin to thick metals along a multi-axis grid. The CNC method provides an advantage over handheld plasma cutting tools due to the cut being programmed and controlled by a computer instead of human motion. CNC plasma is where high speed and precision meet low cost – among a vast array of additional benefits.

The CNC plasma machine's versatility is one of its key advantages, as it is an effective way to cut both thin and thick materials. It is commonly used to cut a wide range of metals, including:

- Steel
- Stainless steel
- Aluminium
- Copper
- Brass

Submerged-arc welding (SAW)

Submerged-arc welding (SAW) is a common arc welding process that involves the formation of an arc between a continuously fed electrode and the work piece. A blanket of powdered flux generates a protective gas shield and a slag (and may also be used to add alloying elements to the weld pool) which protects the weld zone.



Figure 5: Students are taking information about Submerged-arc welding (SAW) and learning the use of Submerged-arc welding (SAW).



Figure 6: Students are learning the use of Submerged-arc welding (SAW).

Welding is check by the welding gauge. Than provided the hole by machine for bolted connection.

They provide alternate welding, because they don't bend easily, and their life increase.

Blast cleaning

Blast cleaning is the most comprehensive method for the removal of mill-scale and rust on steel Surfaces. The method involves the use of high-velocity abrasive particles from a jet stream of Compressed air or centrifugal impellers to 'blast' clean the steel surface.



Figure 7: Students are learning the use of blast cleaning.

Painting



Figure 8: Students are learning the purpose and method of painting

Painting is a protective layer of base metal, which is also a cost-effective method to keep metal from rusting and corrosion. It can prolong the service life of the base metal. On the other hand, the steel will look great if it is painted with colorful coatings.

1. Things to Do Before Painting Metal Surfaces
 - a) Clean the Metal Surface. Prior to painting, metal surfaces must be free from any dirt, grease, old paint, and rust.
 - b) Eliminate Loose or Peeling Paint.
 - c) Get Rid of Rust Deposits.
 - d) Apply the Right Primer.



Figure 9: Students are learning design of PEB.

2. First apply the primer, after 4 to 5 hours apply paint. Primers serve as the foundation for the chosen coating system, and in the case of metals deliver corrosion protection for the asset. They help the final coating adhere to the surface, increase paint durability and can hide or fill in some surface defects.



Figure 10: Students are taking information about PEB Structure.

Before beginning to apply the primer and final coat on the structural steel, the first thing that you need to do is to clean the steel sections. Dirt, dust, debris, liquids, and other substances can cause damage to the steel surface, which can compromise different sections of painted steel if not cleaned properly. Using cleaning solutions like soap and degreasers would be able to remove any substance present on steel. For the best effect, using hand tools can help make the process more efficient, and ensure that the surface would be kept dry after cleaning.

It is best to thoroughly clean all parts of the steel section that will be painted to prevent any substances affecting the primer and paint during the process. Once it has been cleaned, the next step is to apply the primer to begin the painting process.



Figure 11: Students are learning the final coat of painting



Figure 12: Concluding remark of the Visit by Prof. Kiran Deore

Summary

This visit came out to be very useful in understanding how manufacturing of PEB structure is done in factory. Moreover, we got the knowledge about welding, blasting and painting of components more distinctly and clearly.

Special thanks to Kimaya Steel for letting us explore their factory and explaining working of each unit distinctly. And we express deepest sense of gratitude to the Principal Prof Dr. S. B. Bagal, HOD Prof. Rahul Jadhav, and our mentors Kiran Deore and Tushar Shinde for their careful and precious guidance which would be extremely valuable for our study both theoretically and practically.

This visit covers an all the points required for the students to know about how the steel structure is made or how does it looks. Even during the visit we got to know about the Gantry girder, gusset plates and how the wave theory works on it and how it gets corroded. The points on connections (bolts and weld) were discussed too.



Figure 13: Students are felicitating to the Engineers at Site



Figure 14: Students taking group photo with Team Kimaya Steel