

Indo-German Tool Room Industrial Visit

Visit Date: 10th and 14th March, 2022

Industry : IGTR , Vatva , Ahmedabad



Indo-German Tool Room is the Government of India Germany which involves a collaboration between and Government of exchange of Industry standard tools and machines. These institutes are located in several parts of India. Our college, Lalbhai Dalpatbhai College of Engineering organized an Industrial Visit at Indo-German Tool Room located at Vatva GIDC, Ahmedabad on 10th March 2022.

These institutes consist of the various industry standard tools and machines. There are conventional machines such as Lathe, Milling machine, Drilling machine and many more. There are computer operated machines such as CNC, FDM etc. Initially we were taken to a display room where they displayed various parts and designs which they produce. They were plastic caps, metal rotors, containers, and also blades along with some plumbing and agriculture based pipes, attachments and fittings.



For the design and manufacture of a part, once the design sheet or computer model is made and the material is selected then it is sent for various machining operations and treatments. This involves :-

- **Grinding / Polishing :-**

If metal is chosen as material first of all it is polished or smothered. It can be done manually through emery papers or machines. Here there was an automatic machine which consisted of a sliding bed onto which a workpiece is mounted and a grinding wheel. Also Lubricant/coolant is provided. The metal surface is smoothed and polished. After Grinding the workpiece is sent for various machining operations.

- **Computer numerical Control (CNC) :-**

A CNC machine processes a material or a piece to meet specifications by following coded programmed instructions. It is an automatic computer operated machine. IGTR consists of multiple types of CNCs such as -

1. 3 axis CNCs
2. 5 axis CNCs

And based on size there were large as well as small CNCs. It is used for making holes or intricate shapes out of a piece of material.

- **Electrical Discharge machining (EDM) :-**

It is also known as spark machining, it is a metal fabrication process where a desired shape is obtained using electrical discharges. These institute comprised of :

1. Wire EDM
2. Electrode EDM



These are non contact type EDMS. In Wire EDM, a copper wire is used for generating electrical discharges while in Electrode FDM the electrode is used. A coolant or lubricant is provided in wire EDM whereas a dielectric fluid is used in electrode EDM. They are used for making tiny holes such as 1 mm, and also for intricate shapes.

- **Quality Control and Quality Assurance :-**

It is the heart of any manufacturing company or unit. Once the workpiece is made. It is sent to QC/QA division where it is checked for defects, accuracy of cuts and holes and quality.



Various tools used were

1. Vernier Calipers
2. Vernier Height Gauge
3. Micrometer Screw Gauge
4. Vernier Bevel Protractor
5. Optical Bevel Protractor

After the workpiece is approved by the QC department, it is sent for mass production.



- **Injection Molding Machine :-**

It is used for production of plastic based products. It involves a feed hopper which contains tiny plastic balls which are then heated for melting them. Then this melt is poured in the mold and using high pressure presses, the product is manufactured. The excessive material is removed after cooling in water. It is used for making bottles, caps, containers and many more.

- **Assembly :-**

Once the parts are manufactured it is sent to assembly. Here the parts are assembled and the final product is prepared.



IGTR comprises workshops which consist of Conventional machines such as Lathes, Milling machine, boring machine and many more. Also there are various computer labs where they teach various softwares such as NX, AutoCAD and many more exciting programs. They teach various CAM softwares required for operating computer operated machines like CNC and EDM.



IGTR also consists of high technology machines, there is a Robotics lab which consists of various robots. Mechatronics Lab is also there in IGTR..

This type of institute provides various courses for engineering students to learn, practice and operate various Industry standard tools and machines. They also teach various CAD and CAM softwares and provide Internships. It inspires engineering students to develop skills required for industry manufacturing processes and operations.

This Industrial Visit was inspiring for all the students and gave us knowledge about various industrial machines, processes and tools. Thank you Prof. A G Momin sir for organized this visit for us as well as thanks to Prof. S. P. Shah sir , Prof. D K Patel sir .Prof. S B Shah sir and also behalf of 4th sem Mechanical students thanks to head of Department Dr. N. M. Bhatt sir.

