Department of Mechanical Engineering
NEWSLETTER

ISSUE 9: Summer 2023

Mr. S. K. Mohite
Head (Mech. Engg. Dept.)

VISION:

To provide technical education and values in areas of Mechanical Engineering to create professionals to meet the needs of industry, business and society

MISSION:

- **To provide skilled manpower to the industry**
- **To educate students to be Entrepreneurs and Team leaders with ethics**
- **To motivate students for research and innovation for humanity**

PEO's:

- **To develop ability to work as Supervisor, Manager and Entrepreneur**
- **To present themselves as responsible Mechanical Engineering professionals with ethics**
- **To inculcate ability to develop Mechanical product and processes by considering social and environmental aspects**

NEWS FROM THE DEPARTMENT:

It is with great pleasure and pride that I address you as the Head of the Mechanical Engineering department in this edition of our newsletter. In the year 2022-23 our department has achieved remarkable milestones by getting second time Accreditation from National Board of Accreditation (NBA), New Delhi. Mechanical Engineering Department completed MODROB (Modernization and Removal of Obsolescence) Project and SPDP (Skill and Personality Development Program Center) is ongoing. Both projects are sanctioned by AICTE, New Delhi.

Our faculty members continue to distinguish themselves through their innovative teaching, and I commend them for their tireless efforts in pushing the boundaries of knowledge. Currently all 11 faculties of our department completed post graduation. In strive of knowledge, our faculties not only published research papers in national and International Journals but participated in different workshops and trainings.

To our students, your enthusiasm and commitment to learning are truly commendable, and I am confident that you will become the future leaders and innovators in the field of Mechanical Engineering. Total 15 students published research papers in Technical journals.

Patent:

Mr. Sandeep Kumar Ram, Mr. Puneet Kumar, Mr. Anshu Kumar Tiwari & Mr. Ramanand Kumar filed a Patent under the guidance of Mr. J. G. Mulla, named as "Design of Spring Remover for Bike stand" and is accepted and Published in Design patent Journal No. 29/2023 and Journal Date is 21/07/2023.

I would like to express my heartfelt gratitude to each member of our department for your hard work, passion, and dedication. Your contributions make the Mechanical Engineering department a hub of creativity and excellence.

2022-2023

TY

Aarati Bharle
84.37%

Nikita Chavan
83.79%

Aman Mulla
83.28%

SY

Pavan Mulade
84.16%

Aditya Chavan
82.85%

Gautam Kumar
80.35%

FY

Trupti Gudda
80.37%

Rajani Chavare
80.21%

Sakib Patil
78.27%

Expert Lectures

1. **Importance of marketing in business & industry as well as in e-marketing by Mrs. Arpita Gogari, (Alexa Team Head, Amazon India)**
2. **Entrepreneur versus Intrapreneur by Mr. Amit Kamatkar (Vidya Computers)**
3. **Alumni Guest Lecture by Mr. Virbhadra Patil (Dy. Manager (Marketing & Tech. Application) Rotocast Industries Ltd, Kolhapur)**

1. **Om Pipes, Industrial Estate, Hotgi Road, Solapur**
2. **Irshad Industries, Industrial Estate, Hotgi Road, Solapur**
3. **Leena Engineering Works, Industrial Estate, Hotgi Road, Solapur**
4. **Precision Camshaft, Chincholi MIDC, Solapur**
5. **Venkateshwara Polymers, Chincholi MIDC, Solapur**
6. **Doodh Pandhari, Chincholi MIDC, Solapur**

Industrial Visits

“Hand Operated Punching Press”

SUBMITTED BY
Ms. Aarati Bharle
Ms. Manisha Bansode
Mr. Aman Mulla
Mr. Samarth Gaikwad
Mr. Akash Chougule

Under The Guidance of
Mr. Pinjar J. P.

INTRODUCTION

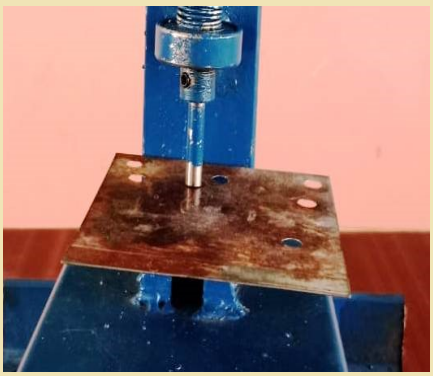
Press tools are used to produce a particular component in large quantity, out of sheet metals where particular component achieved depends upon press tool construction and its configuration. The different types of press tool constructions leads to different operations namely blanking, bending, piercing, forming, drawing, cutting off, parting off, embossing, coining, notching, shaving, lancing, dinking, perforating, trimming, curling etc. Generally metals having thickness less than 6 mm is considered as strip. Metals having thickness greater than 6 mm is considered as plate.

The whole process of punching may be straightforward. However, a successful punching can be difficult to achieve if some of the required elements are not optimized for the said process, so fabricators that maximize punching should know the basic principles to achieve satisfactory results. Knowing these principles can also help the fabricators become more productive and efficient in the long run.

Our main objective of the Capstone Project Work is to fabricate a punching press tool of portable size that will be helpful for Workshop practical’s of Sheet Metal Work, in order to eliminate the conventional hammer and punch method for getting the rivet fix.

Design of press tool for Piercing and notching made for sheet metal component (plate) has been developed by following the fundamental die design principles. The press tonnage required for the punching operation is above the capacity of the machine which exists. So it is required to use some design to make it simple and portable in design so that it is suitable for its existing press ton machine.

Moreover the geometrical compatibility of the mechanical press and the designed combined press tool is excellent. The punching tools generally made from steel alloys.



Sample Testing

Punching on a Steel Plate

"Material Transfer using Geneva Mechanism"

SUBMITTED BY
Mr. Rahul Yalsangi
Mr. Shubham Ubale
Mr. Kedarnath Dhadde
Mr. Vishal Yalsangi
Mr. Akshay Durgude

Under The Guidance of
Mr. Motgi R. S.

ABSTRACT

During industrial visit to various industries, we observe different operations those are carried out. In one of the industry, we observed that raw material was kept under waiting. Such halting of material reduces overall efficiency of the industry by increasing the unprocessed inventory, area for storage. Such problem is called bottlenecking, hence we decided to solve such problem for material handling/transferring process. The initial idea is to prepare simple mechanism which can deliver/segregate the material to two lines. After extensive literature review, we identified a simple mechanism for such task, which was Geneva Mechanism. After multiple iterations of design, a final draft of Geneva mechanism is prepared and manufactured and with some minor corrections final design was deployed for manufacturing. Intermittent motion really helped to transfer the material to conveyer line which are aligned in 90^{o} to each other. By adjusting the revolutions per minute, the segregation time can be adjusted as per our need.

ABSTRACT

A bottleneck is a point of congestion in a production system that slows or stops progress. A production line is said to be in balance when every worker's task takes the same amount of time. Line balancing is a manufacturing-engineering function in which whole collection of production-line tasks are divided into equal portions. Well-balanced lines avoid labor idleness and improve productivity. To solve bottlenecking problem and for balancing the line in material transfer Geneva Mechanism is used in this project. Geneva mechanism is commonly used indexing mechanism where an intermittent motion is required.

MANUFACTURING

Driving and driven wheel of Geneva Mechanism, Stand are manufactured in institute workshop using different machines and tools like lathe machine, drilling machine, bench grinder, wood cutter machine, welding machine, hacksaw, files etc. While Bearings and Spur Gears are purchased from market. Later all the parts manufactured are assembled as per prepared drawings and a trial test is conducted. It is found that as per expectation the assembly is now able to switch its angle in 90o in each revolution of driver and driven.

CONCLUSION

Through various industry visits it is observed that in industry, where there is continuous movement of material by conveyer belt takes place. The problem of bottle necking exists if the line is not balanced properly hence, we prepared a proto type model which can transfer / segregate the material to belts which are aligned in 900. After Completion of capstone project, we are now able to:

- Identify different parts of the Geneva mechanism.
- Perform Carpentry Operation.
- Perform simple arc welding operation.
- Assembly the parts.
- Prepare a report in required format.
- Suggest suitable solution for identified problem.

"Design and Manufacturing of Swivel joint"

SUBMITTED BY
Ms. Gauri Lanke
Ms. Apurva Raut
Mr. Ram Ilkal
Mr. Vaibhav Zunjare
Mr. Parshuram Kulkarni

Under The Guidance of
Mr. Dhalait J. G.

INTRODUCTION

Swivel joints are precision machined components that are used to connect and prevent bends in stationary loading hoses that can reduce flow, tear, or rip, releasing harmful chemicals into the air. Also known as rotating pipe joints, swivel joints that rotate on ball bearings can provide many planes of rotation and stress relief to a product line; whether it is a loading arm, pipe, or hose. Constant transmission of fluids from a stationary source to a rotating source is required without cross-contamination or leakage. Typical applications use swivel joints to allow for 360-degree rotation while preserving hoses from getting tangles as components turn. In return, mechanical stresses that would result from hose twisting, bending, and stretching can be relieved. A swivel joint, also known as a rotary joint, is a mechanical component that allows two connected parts to rotate relative to each other. It is a type of coupling that enables flexibility and movement in a variety of applications where fixed connections would be impractical or impossible. Swivel joints can be used in a wide range of industries, including oil and gas, chemical processing, food and beverage, and automotive manufacturing, among others. They are often used in applications such as fluid transfer, hose assemblies, and piping systems, where they allow for greater flexibility and range of motion. Swivel joints come in a variety of designs and materials, and can be configured to allow for rotation in single plane or multiple planes. The durability and reliability of a swivel joint is critical to its performance, particularly in applications where harsh environments and high pressures are present. Overall, swivel joints play a crucial role in enabling rotational movement and flexibility in a variety of industrial and mechanical applications.

CONCLUSION

- A swivel joint is a type of mechanical joint that allows for rotational movement in two or more planes between two connected components. It is commonly used in applications where there is a need for movement or rotation in multiple directions, such as in piping systems, industrial machinery, and vehicles.
- Swivel joints are designed to withstand high pressure and temperatures, and they come in various sizes and materials to suit different applications. They are typically made from materials such as stainless steel, carbon steel, brass, or aluminum, and can be used in corrosive or harsh environments.
- The key advantages of swivel joints are their ability to provide unrestricted movement, reduce stress on connected components, and simplify the installation and maintenance of complex systems. However, they can also be prone to leaks or failure if not properly designed or installed.
- Overall, swivel joints are an important component in many mechanical systems and have proven to be an effective solution for applications requiring rotational movement

GLIMPSES OF TRAINING AND PLACEMENT ACTIVITY

EDITOR'S TEAM
Mr. Dawankar S. R. (Lecturer)
Mr. Kedar Dhadde & Ms. Aarati Bharle (Third Year)