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DEPARTMENT OF MECHANICAL ENGINEERING

INNOVATIONS IN TEACHING AND LEARNING

Universal EG Kit - Interactive 3D Model Visualization Tool

Used to enhance the learning experience and facilitate easy visualization of 3D models (e.g., geometric shapes, engineering components, or glass models) by providing a clear view of their front, top, and side profiles. It also improves communication between students and faculty during teaching sessions.

Advantages:

- **Low-Cost, Manually Operated Structure:** The device is a fabricated wooden structure designed to hold and display 3D models. It is cost-effective and easy to operate, making it accessible for educational institutions.

- **Tilting Mechanism:** The model can be tilted to any angle between 0 to 180 degrees, allowing users to view it from different perspectives.

- **Rotating Base with Indexing Mechanism:** The base on which the model is placed can rotate between 0 to 360 degrees, enabling a full circular view of the object.

- **Visualization Tool:** A light is used to illuminate the model (e.g., a glass model), projecting its front, top, and side views onto a surface for easy visualization.

- **Portable and Easy to Install:** The device is lightweight and can be easily installed in classrooms. It can be wall-mounted, requiring no special provisions or additional space.

Applications:

- Ideal for teaching and learning in subjects like engineering, architecture, and design.
- Helps students understand complex 3D structures by visualizing their projections.
- Enhances interaction between faculty and students during demonstrations.

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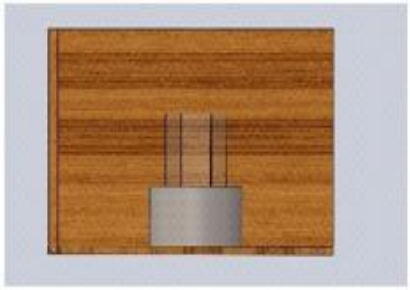
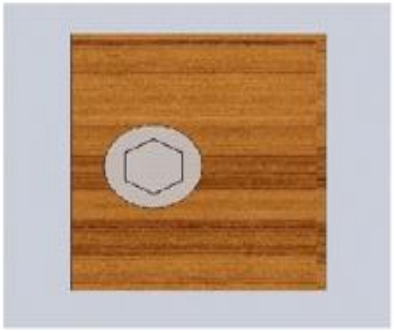
FRONT VIEW



SIDE VIEW



TOP VIEW

BOM:

S.NO	DESCRIPTION	MATERIAL	QUANTITY
1	PLATES	WOOD	3
2	WORKPIECE	GLASS	1
3	JAW	MILD STEEL	1
4	TILTING HOUSES	CAST IRON	1
5	INDEXING HOUSES	CAST IRON	1

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SLIP GAUGE SET CALCULATOR

DEPARTMENT OF MECHANICAL ENGINEERING | BATCH: 2022-2026 | SEPTEMBER 2024
U18MEI5202T-R21 : ENGINEERING METROLOGY AND QUALITY CONTROL
FACULTY GUIDE: **M.A.VINAYAGAMOORTHI**

ABSTRACT

A slip gauge combination calculator is a tool designed to simplify the process of determining the appropriate combination of slip gauges to achieve a specific measurement. Slip gauges, also known as gauge blocks, are precision tools used in manufacturing and engineering to provide accurate measurements. These gauges come in various standard sizes and can be stacked together to form precise lengths. The challenge lies in selecting the correct combination of gauges to match a desired length as closely as possible. The slip gauge combination calculator automates this process by allowing users to input the target length, and it then calculates the optimal combination of slip gauges from an available set. It minimizes human error and reduces the time needed to find the right combination. The calculator uses algorithms to ensure the selected combination fits within acceptable tolerance levels.

OBJECTIVE

* To eliminate the manual process of selecting blocks.
* To reduce the time consumption.

ADVANTAGES

* Manual calculation for selecting the suitable slip gauges is completely avoided.
* Increases Productivity.
* User friendly.

FUNCTIONALITY

The website has been designed for Grade 2 with 83 number of gauge blocks.

METHODOLOGY

Scan for website: https://

Link:
https://slip-gauge.streamlit.app/

CONCLUSION

The slip gauge selector software effectively automates and simplifies the process of selecting accurate gauge combinations, reducing manual errors and saving time. It enhances precision in measurement tasks, especially in industrial and metrology applications. Future improvements could include expanded features and integration with other tools for broader use.

RESULT

Outcome of the research.

Slip Gauge Combination Calculator

Enter the component length:

100.06

Enter additional slip gauges (comma-separated):

Calculate

Required slip gauges: 90, 9, 1.06 = 100.06

Calculated by Slip Gauge Set Calculator

INVENTORS

22BME304 - ANURANJITH R
22BME309 - DINUSH R
22BME313 - MITHILESH B
22BME315 - PRITHIVIRAJ R
22BME316 - RATHEESH P
22BME318 - SIDDHARTH P

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