INRODUCTION TO MANUFACTURING PROCESS (TA 202)

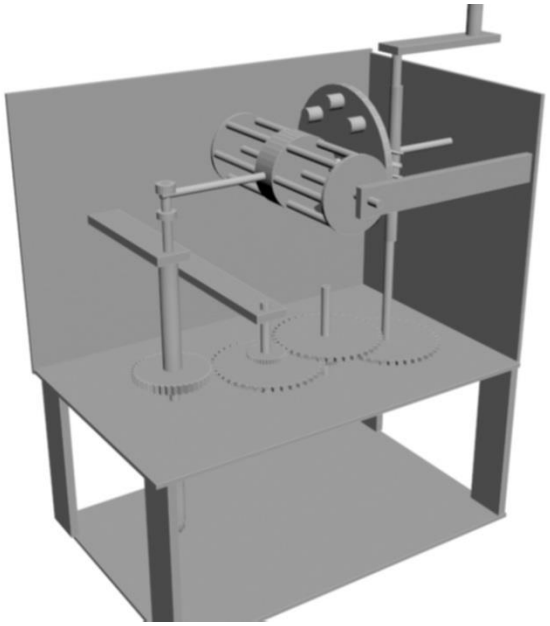
Project report 2012-2013 (1st Semester)

VERTICAL DRILLING MACHINE

ME PROJECT

Instructor in charge: J.R. Kumar
Mentor: Rakesh Thapliyal

Vertical Drilling Machine



Group number: 5

Project guide: Mr. Rakesh Thapliyal

Name	Roll number	Section
Rajat Varshney	11575	D9
Vikas Kumar Bharti	11802	D9
Rahul Kumar	11562	D9
Rahul Garg	11560	D10
Abhilash Chandra	11010	D10
Sachin Kumar	11622	D10
Ayush Aggarwal	11177	D10
Vishwas Jain	11815	D11

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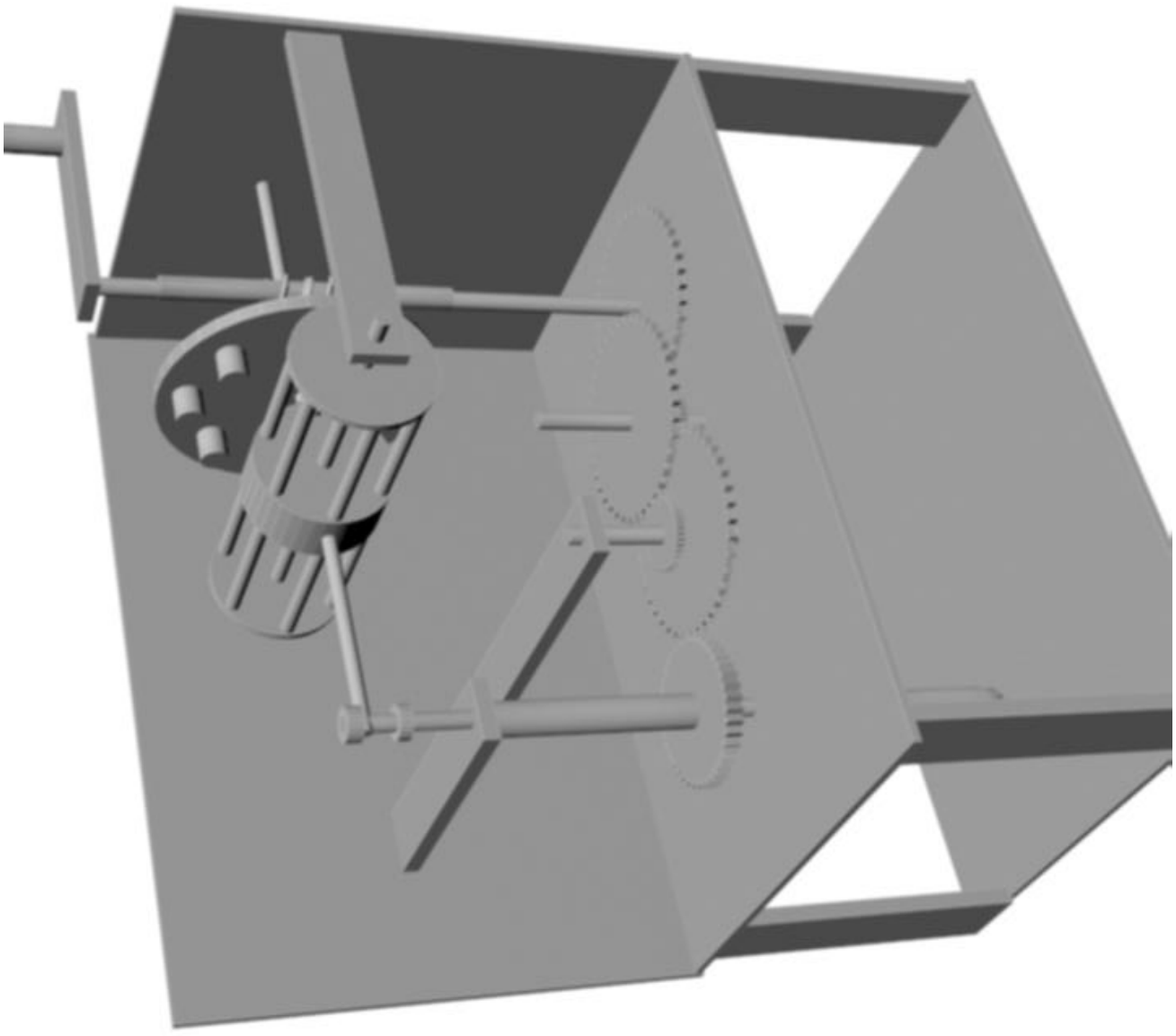

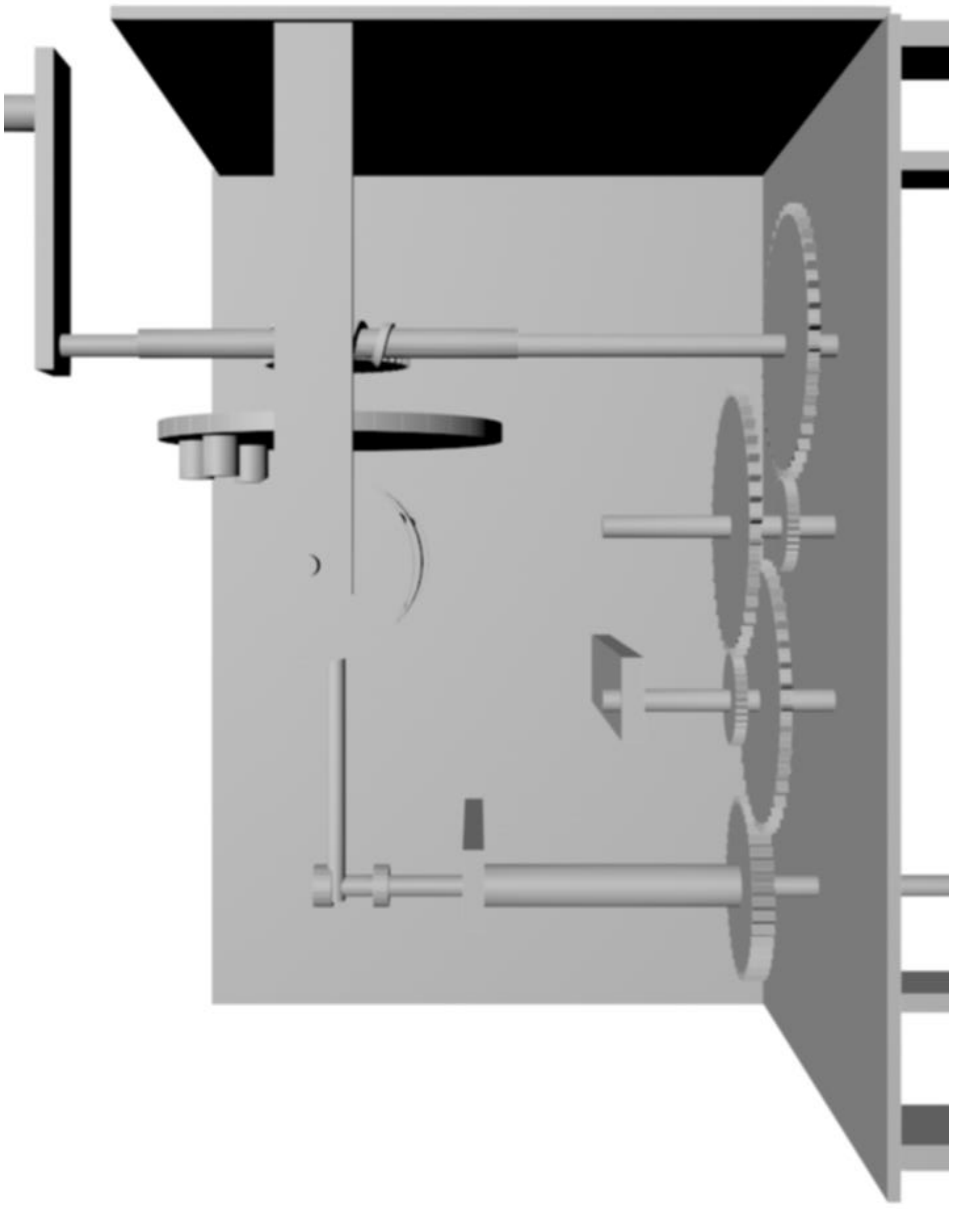

INTRODUCTION

The history of machining can be traced to the development of basic mechanical devices such as wheel, lever, winch, cam, screw, and gears in ancient times. These basic devices where refined and used to construct the mechanisms in wind mills, steam engines, etc., These machines generated the power to operate the other machinery of various kinds such as floor mills, weaving machines, machine tools, and rail road locomotives. Power and the capacity to generate it and transmit to operate a process is one of the three basic elements of an automated system.

But the power is going to finish soon, as our fossil fuels are going to extinct in the future. So, we all the people of the group come up with an idea of making a drilling machine which is inspired by the design of ”**LEONARDO DA VINCI**” .

We tried to give it a new form by using all the kind of major processes like:-

1. Lathe Machining
2. Drilling & Fitting
3. Milling

By making such a model we have tried to give people a new vision of future.

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my TA Mr Rakesh Thapliyal as well as our Instructor Mr J. R. KUMAR who gave us the golden opportunity to do this wonderful project, which also helped me in doing a lot of Research and we came to know about so many new things. We are really thankful to them.

Secondly I would also like to thank all other teaching assistants who helped us a lot in finishing this project within the limited time.

We are making this project not only for marks but to also increase our knowledge.

THANKS AGAIN TO ALL WHO HELPED ME.

CERTIFICATE

This is to be certified that this project is genuine and all the work is done by Sachin Kumar, Rajat Varshney, Rahul Garg, Ayush Aggarwal, Vikas Kumar Bharti , Vishwas Jain , Abhilash Chandra , Rahul Kumar. The project idea is original and does not have any parts from the previous projects.

Mr Rakesh Thapliyal

(SIGNATURE)

MOTIVATION

The working model is inspired from the design that is designed on a motive of reducing the work load on the humans. All parts are either handled or assembled by conveyors and or motorized vehicles like lift. Each worker typically performs one simple operation.

We have been inspired by observing a lot of machining work in the factories of different fields. So, we decide to make a project which is at small scale but it will help us in understanding one of the functioning of the manufacturing. Now days this is used in every manufacturing industry, we just try to do this in our way.

Focus and Objectives of Course

• Learn the fundamentals of machining, optimization, non-conventional machining, fixturing and metrology

• Develop first order mathematical descriptions for select Processes to analyse and calculate important quantities for the unit processes e.g., forces, power, time, final shape, etc.

• Develop an understanding of the capabilities and limitations of the unit processes in terms of quality and productivity

• Emphasis on understanding the physical principles underlying these processes

• Apply this knowledge to manufacturing process selection, part design for manufacture and quality control.

• Encourage teamwork

Possible Modifications: Changes Suggested on Completion

- There was a possibility of assembling one more gear as we had slot for putting that gear into so that we could get more power and thereby force.

- Preventing rust formation: more oiling could have helped to minimize rusting that can be observed to some parts.

- Drill rod holder can be better (by proper precise drilling) so that power can be transferred easily to adjacent/attached part.

- Holes made on disk (of gear changing mechanism) may be more i.e. it can be increased from 2 to 4.