

Design of Multiple Spindle Drilling Machine

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Abstract— The growth of Indian manufacturing sector depends largely on its productivity & quality. Productivity depends upon many factors, one of the major factors being manufacturing efficiency with which the processes are carried out in the organization. Productivity can be improved by reducing the total machining time, combining the operations etc. In case of mass production where variety of jobs is frequent and quantity to be produced is maximum, it is very essential to produce the job at a faster rate. This is not possible if we carry out the production by using general purpose machines. The best way to increase the productivity along with quality is by using of special purpose machine. Usefulness and performance of the existing radial drilling machine will be improved by designing and development of multi spindle drilling head.

Key words: Physico-chemical, Ground water quality, WHO, BIS

I. INTRODUCTION

Multiple-spindle drilling machines are used for mass production. It is a great time saver where many number of pieces of jobs having many holes are needed to be drilled. Multi-spindle head machines are used in mechanical industries in order to increase the productivity of machining processes. The multiple spindle drilling machines are production type of machine. It is used to drill two holes in a work piece simultaneously, in one setting. The holes are drilled on various work pieces with equal accuracy, so as to make them interchangeable. This machine has multiple spindles driven by a single motor and all the spindles are fed in to the job simultaneously. Feed motions are obtained either by raising the work table or by lowering the drills head. The centre distance between the spindles can be adjusted in any position as required by the various work pieces. For adjusting the centre distance between the drill spindles, they are connected to the main spindle by universal joints. In mass production drill jigs are used for guiding the drills in the work piece so as to achieve precise results.

In today's market the customer demands the product of right quality, right quantity, right cost, & at right time. Therefore it is necessary to increase the productivity as well as quality. One way to achieve this is by using multi spindle drilling head. On the other hand, in order to meet quality requirements of final product.

II. VARIOUS METHODS OF MULTISPINDLE

The various methods of multispindle drilling head are:

A. Adjustable multispindle drilling head:

Can be used in many components, where we can change the centre distance to some range. It will increase drilling capacity in single special purpose machine.

B. Fixed Multispindle drilling head:

Design & development of multi spindle drilling head (msdh) Where we cannot change the centre distance to some range. Features of both the type multispindle drilling head are:

- 1) By using these multispindles drilling heads, increase in the productivity is substantial.
- 2) Time for one hole drilling is the time for multiple no. of holes drilling.
- 3) Multispindle drilling ensures the positional accuracy.

Multispindle heads can be of fixed centre type construction for mass and large batch production and for batch production, adjustable centre type design is offered.

III. CONCLUSIONS

Proposed Multi-spindle Drilling Attachment, increases productivity at low cost and in less time. Cycles of operations are reduced with the help of our equipment. Although these multiple spindle drilling attachment performs basic drilling operations but there are some specific functions that are performed more accurately and conveniently by each of these types. Possibility of hole missing is eliminated, because six holes are drilled at a time. By using multispindle drilling head, productivity will increase. Because with the present process one hole produced at a time requires 6.3 minutes for each component. i.e. 150 components are produced per shift. But by using multispindle drilling head, cycle time is reduced to approximately 73 seconds. i.e. 425 components are produced per shift.

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