

DESIGN AND MANUFACTURING OF BETYDLIG SCREW

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ABSTRACT

The aim of this review paper is to present the idea on development and manufacturing of betydlig screw in two dies. Since the screw was manufactured on four stations but now it is been manufactured on two station. Instead of four strokes, Two strokes are implemented where wire cutting and head formation of screw is done on first stroke whereas punching and knurling is done on second stroke. Application is to assemble furniture, kitchen appliances, home accessories etc. having such changes achieve high speed of production, low cost of production, high dimensional accuracy, less skilled manpower required and less possibility of failure.

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I. INTRODUCTION

The cold forging process was developed in Germany just before the end of World War II. It was used to produce artillery shells and other ordinance items for the war. After the war, a number of firms in the United States picked up the idea. At first, most of the work here was concentrated on the shell manufacture, but it didn't take long for the firms to realize the possibilities of cutting cost in the manufacturing of customer goods. By the early fifties, the process had attracted attention from car and truck manufactures and was being used to produce automotive parts such as brake light receptacles and spark plug bodies. It was a process that could be economically applied to almost any symmetrical part made in large quantities. More than 500,000 tons of steel parts were manufactured by cold extrusion in 1969. By comparison in 1950 the total was about one tenth of that.

II. PROBLEM STATEMENT

A four wheeler usually find difficulty to drive especially at sharp turn at night because of insufficient light. The model helps them to change the focus of headlight as the steering move on either direction.

Adaptive headlights react to the steering system of the car and automatically adjust to illuminate the road wheel. Turn the car left, the headlights angles to the left. Instead of moving the headlights, reflectors are fitted on the inside on either side of the headlamp casing. These reflectors are moved to direct a beam in the same direction as the movement of the vehicle .The power required to move the reflectors is transmitted using hydraulic linkages.

III. OBJECTIVES

The main aim to improve overall quality of products to facilitate mass production capabilities and to reduce production cost and time so that production lead time is reduced.

IV. WORKING METHODOLOGY

1. Prepare Research Paper and perform a literature review to provide background information of Design and Manufacturing of Betydlig screw procedures.

1. Selection of Material

2. Tool Designing
3. Shearing and Forging Mechanism
4. Knurling
5. Rolling and Plating
7. Final inspection

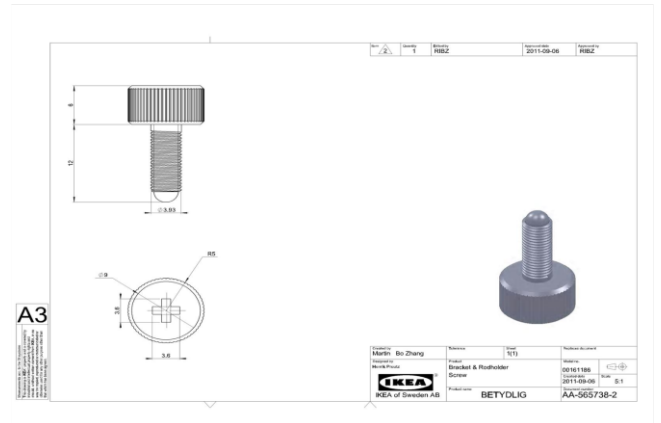
V. CONSTRUCTION

The main process used in this project is:

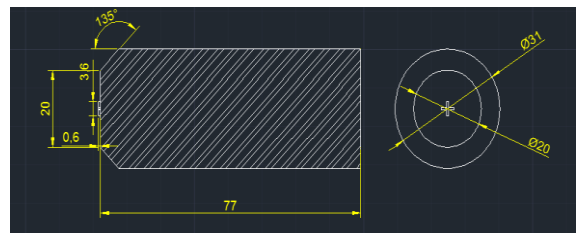
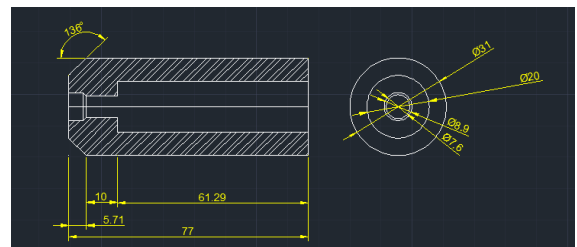
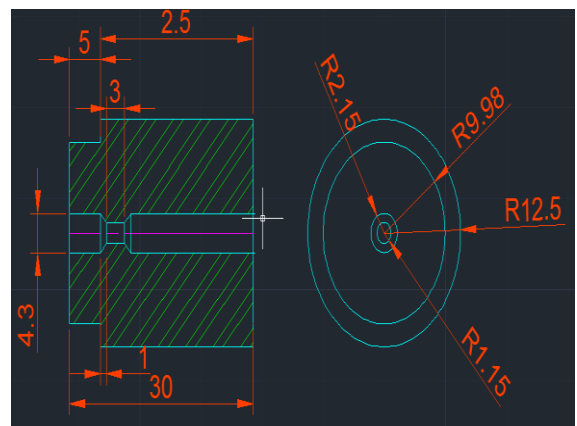
1) Forging: Cold Forging is the high speed forging process where coiled wire is drawn to close tolerance sheared to length, and then moved to succession of die cavities and tool at room temperature without any heating to dissipate the working metal. Metalist force beyond its elastic yield limit and retain it formed shapes upon removed from the die cavities.

2) Rolling: Thread and form rolling is a simple cold forging process confined almost entirely to external threads of superior physical qualities. Hardened steels are used to roller the thread. However Rolling of threads on heated blanks has been beneficial for some application.

3) Knurling: It is most commonly used for decorated purpose and for serrating surfaces where component part are locked or keyed together in unit assemblies. Knurling is obtained by displacement of material when knurled is traced against the surface of a rotating work blank.



VI. CAD DESIGN



STATIC DATA

1) COMPONENT:

- a) Screw material: SAE1010 (phosphate)
- b) Cut of length – 35mm

2) TOOLINGS:

- a) Dies:
 - i) Material – carbide
 - ii) Extrusion angle – 15 degrees

- 3) Punches:
 - a) Material- carbide
 - b) Screw Head- Philips Head
- 4) Heading Machine:
 - i) One die
 - ii) Two punches
- 5) Rolling Machine:
 - i) Two dies of M4
 - ii) One moving and one stationary

VI. ADVANTAGES AND APPLICATION

1. **High speed production:** cycle time of bolt former machine is relatively very high as compared to head machine. As operation of bolt former takes place progressively on four dies it requires more time than header machine due to single station working technology on header machine. Thus due to developing betydlig screw on header machine the production time is greatly reduced.
2. **Low cost of production:** More cycle time means more cost of production damn high speed process so obviously cost of production on bolt former is more than manufacturing same product on header machine. So, biggest advantage of the project is low cost of production.
3. **High Dimensional accuracy:** Due to simple manufacturing process on header machine the dimensional accuracy are easy to maintain on header machine. On bolt former due to four operations there is more chance of problems or dimensional error.
4. **Less skilled manpower required:** Due to simple operations on header machine the skill to operate header machine is less as compare to more complex process on bolt former machine.
5. **Less possibility of failure:** Due to less moving parts and less tooling in header machine than bolt former there is less possibilities of failure and thus ideal time of machine and maintenance cost is less.

APPLICATION

1. Can be used in furniture and kitchen appliances.
2. Home accessories

VII. CONCLUSION

In this project we conclude that changes are necessary in design and operating conditions to reduce the cost and time taken for manufacturing of product. Now the

same product is manufactured in same machine but on single die, due to which the cost as well as possibilities of failure of product and tooling are reduced hence there is reducing in manufacturing time.

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