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3D PRINTING MODULE FOR DESIGN INJECTION MOULD FOR HOSE CONNECTOR

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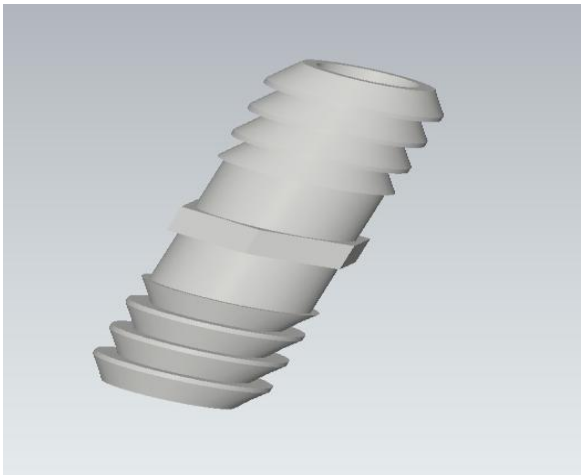
Abstract - Tool Design is the process of designing and developing the tools, methods and techniques necessary to improve manufacturing efficiency and productivity. It gives industry the machine and special tooling needed for today high speed, high volume production. It does this at a level of quality and economy that will ensure that the cost of the product is competitive. Since no single tool or process can serve all the forms of manufacturing, tool designs an ever changing, growing process of creative problem solving.

Plastics did not enter our lives with the fanfare of other revolutionary inventions, but more by the process of infiltration. Plastic being the synthetic materials where at first considered to be cheap substitute for them better knownand more expensive materials.

Plastic articles are not only replacing wood, metal and other materials but because of their particular qualities. They function better than other materials for specific process. Through the years plastics have curved the right as material themselves and not as substitute for their materials. Not only are plastics more useful, adaptable and practical than the material. They have supplemented, but usesof plastics have been found for which no other material can be used.

AIM: By this project we are trying to design an angle lifted injection mould product and mould for that particular product “HOSE CONNECTOR”. The main target of this project is to analyze the product design, mould design and selection of suitable materials for both the plastic productand the mould. The estimation of the mould, is to calculate the approximate mould cost for this product

INTRODUCTION OF PRODUCT AND APPLICATION



Application:

- The **HOSE CONNECTOR** is used as for connect a piece of hose to a tap connecter often at the start of system

Introduction:

- They can also be used to extend or connect two pieces of hose together or even split hose in two different directions when extra length is required
- simplicity in mind and are made using ultra tough engineering plastics for a long leak free life
- To connect your hose to your watering tool, have both your female and male connector to the end of your hose then twist the male connector to your watering tool

Problem Definition :- PRODUCT DESIGN

Design, it represents nothing but the art of giving shape to our ideas. It can also be defined as that it is the product of creative thinking. It is actually gives a complete description of an object and prescription for its production.

INJECTION MOULD:

The injection mould consists of two main parts – core and cavity. It helps in getting the desired shape of the component. The material gets the shape of the space between the core and cavity – impression. The material reaches to theimpression through the feed system – sprue, runner and gate. Automatic degating is also possible. The components are ejected by the various ejector elements. To freeze the component quickly cooling is provided in both sides of the mould.

CLASSIFICATION OF INJECTION MOLD:

It depends upon the design features:

- The types of gate and the means of degating.
- Types of ejection used for the mould part.
- Presence of external and internal undercut in component.
- The manner in which the part is released.

PRODUCT DESIGN CONCEPT:

The art of designing a product could be defined as the intellectual process of applying scientific and technology in order to original a product which not only meets the stipulated conditions successfully at the time of its service, but also enables the cost, effective manufactured and maintained economically.

WHY PRODUCT IS MADE OF PLASTICS:

- Light weight.
- Good chemical resistance.
- Better finish.
- Easy to process by various technique..
- Easy interchangeable of parts.
- Low cost.
- Easy handling.

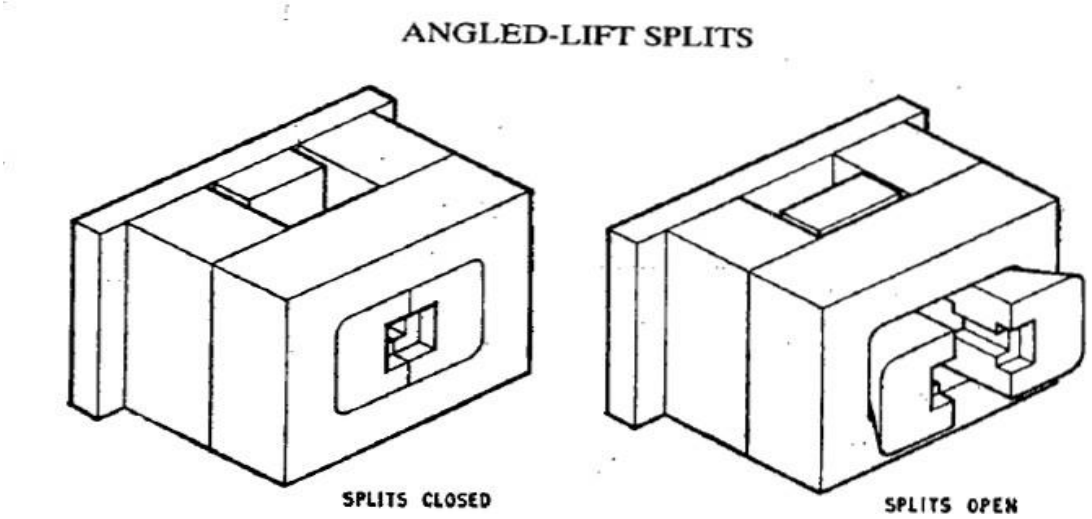
WHY DESIGN A PRODUCT:

- To create new product
- To create something similar to exiting and modification of old product which give more appearance
- To change its shape and size.

ANGLED-LIFT SPLITS

In this the splits are mounted in a chase bolster which forms the part of the moving half of the mould. The splits are caused to move out with an angular motion, the outward component of which relieves the undercut portion of the moulding. The splits are normally actuated by the ejector system. A typical design is shown in figure 8.35. This shows the moving half of an angled-lift split mould for producing a spool. It will be noted from this illustration that the guiding of the angled-lift is not as critical as for guiding the sliding spilt. The alignment of the splits, when closed, is accomplished by their seated in the chase bolster. The main requirement of the guiding system is that the split must be restrained to move smoothly in the required plane.

A substantial chase-bolster, which may be of the enclosed or open channel designs,locks the spilt against the applied injection force. When the open channel design is used it is necessary to provide some means of alignment between the two split halves as the ends of the splits are not located. Alignment is normally accomplished by incorporating dowels in one split which fit in to holes in the other.



- Benefits:-
- Housing with integral hinges
- Luggage, house wares
- Toys
- Interior parts of car
- washing m/c parts
- bottle caps
- Disposable syringe.
- Crates
- Battery boxes.
- Bobbins
- Dyeing cones.

3. CONCLUSIONS A complete mould designer must have a thorough knowledge of the principles of the mould making as the design of the various parts of the mould depends on the technique adopted for its manufacturer. Case studies of the various moulds same kind have been conducted prior to the design process. Proper evaluation of the previous designs were performed and created something even better instead of simply keeping to what was done previously. The various demands of the customer were considered while designing of the tool. The final mould design is prepared after the part design has been specified and all requirements affecting the design of mould have been clarified. The outcome is a near perfect design and trail made on the mould just about confirms it.

In One year training I have learned / done following things:-

- Designing process of a tool.
- Basic cycle of making of in various department like marketing, design,production and assembly shop.
- Documentation of a design file.
- Quotation of a press tool, mould and die casting dies.
- Live project on press tool and mould.
- Learn usage of AutoCAD and Pro-E for designing tool.
- Modelling of different component of press tool, mould and die casting diesusing Pro-E.
- Studied various parameters, design considerations & calculations involved inthe Press tool design, Mould & DCD's.
- Studied usage of various materials and their applications in Tool design
- Introduction to the ISO procedure in design department

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Finally, we would like to thank to our parents for love, encouragement and support from their hearts. We dedicate all my success to each one of them.

TOTAL DESIGN COST

MODELLING OF PART- 16 HOURSDETAILING OF PART – 8 HOURS

MODELLING & ASSEMBLY OF MOULD PART - 24 HOURSMOULD PART DETAILING - 20 HOURS

TOTAL HOURS - 68 HOURS

DESIGN COST = 68 X 1000 (1000 Rs PER HOUR) = 68000/-

DIRECT LABOUR COST = 50000/-

INDIRECT LABOUR COST = 10000/-

DIRECT MATERIAL COST = 123852.5/-

INDIRECT MATERIAL COST = 12000/-

NET COST OF MOULD = 456272.9/

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BIOGRAPHIES

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