

**Design and fabrication of injection moulding tool for solenoid wire connector****NALLAIYA. G¹****¹LECTURER /TOOL AND DIE MAKING, MURUGAPPA POLYTECHNIC
COLLEGE****Email id: ganesansakthi33@gmail.com****ABSTRACT**

Presently a day interest for the plastic items are consistently heaping up since they are of ease and have great life moreover. The costs of the plastic items are made less by creation utilizing different sorts of molds. Injection molding is a tool utilized for creation of thousands of component inside a limited capacity to focus time.

Keywords: *Solenoid, wire connector, injection moulding.*

1. Introduction

Plastics are man-made materials. Plastics have replaced customary materials like woods and metals [1,2] . Plastics contrast from different materials generally in view of the size of their molecules. Most materials have molecules comprised of under 300 atoms, plastics contain a huge number of atoms [3]. We call them Macromolecules. A few plastics are gotten from characteristic substances like creatures, creepy crawlies and plants yet most are man-made. These are named Synthetic Plastics [4]. Most synthetic plastics come from crude oil however coal and petroleum gas is additionally utilized. At the point when crude oil is refined gasses are emitted. The gasses are separated into Monomers [5]. These are chemical substances comprising of a solitary molecule. A large number of these are connected together in a cycle called Polymerization to frame new compounds called Polymers.



2. Methodology

The point of our undertaking is to Design and Fabrication of Hand Injection Molding "Solenoid Wire Connector" The Solenoid wire connector is comprised of two sections namely, the Upper part and lower part comprised of "Thermoplastic". It is chosen since it very well may be reused. The Upper Part is Head Part and the Lower part is threaded Part. The sort of molding measure utilized is "Hand Molding" Process. The mold tool is comprised of gentle steel. It comprises of top plate, bottom plate, core plate, ejection pin. An injection Molding Is utilized for Production of Plastic component in huge number in a brief timeframe

Material which is to be utilized for creation of the component is "POLYPROPELENE" Why did we pick it out or different polymers accessible in market. The molding material which we pick ought to have some particular properties as for component; some of them are as per the following:

+ It ought to have great fluidity and simplicity for creation, + It ought to be of practical cost. + It ought to be light in weight.

+ It ought not reason mischief to human. It ought not get influenced because of atmosphere impacts

Mechanical Loading Carefully assess a wide range of mechanical loading including shortterm static loads, impacts, and vibrational or cyclic loads that could prompt exhaustion. Find out long haul loads that could cause creep or stress unwinding. Plainly distinguish sway prerequisites.

Temperature Many material properties in plastics — sway strength, modulus, rigidity, and creep resistance to give some examples — fluctuate with temperature. Consider the full scope of end-use temperatures, just as temperatures to which the part



will be uncovered during manufacturing, completing, and shipping. Recollect that sway resistance for the most part decreases at lower temperatures.

Chemical Exposure Plastic parts experience a wide assortment of chemicals both during manufacturing and in the end-use climate, including mold discharges, cutting oils, degreasers, ointments, cleaning sol-vents, printing dyes, paints, glues, cooking oils, and car liquids. Ensure that these chemicals are viable with your chosen material and last part.

Others should have supreme size and resilience. Think about the impact of load, temperature, and creep on measurements. Over-determination of resistance can build item cost essentially. As can be found in the significant piece of the injection molding cycle is the cooling time needed for the plastic in the mold to diminish to a temperature where the part can be eliminated without huge mutilation. The primary variable that decides the cooling time is the thickness of the molded part. The figure 1 shows planned solenoid connector.

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1. Y. Chen, J. Chen and W. Wu, "Design of Monitoring System for Integrated Vertical Injection Molding Machine," 2019 Chinese Automation Congress (CAC), 2019, pp. 2627-2631, doi: 10.1109/CAC48633.2019.8997033.
2. Jin-wei Chen, Liang He and Bai-ping Xu, "The application of cavity pressure profile in the injection molding process parameters optimization," 2010 International Conference on Mechanic Automation and Control Engineering, 2010, pp. 5350-5353, doi: 10.1109/MACE.2010.5535917.
3. P. A. Hernandez, "Neural-Fuzzy Approach to Optimize Process Parameters for Injection Molding Machine," 2012 Eighth International Conference on Intelligent Environments, 2012, pp. 186-189, doi: 10.1109/IE.2012.72.
4. A. L. Storsanden, M. Våle and R. M. C. Ratnayake, "Use of additive manufacturing for polymer tooling: Case study from reaction injection molding," 2017 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), 2017, pp. 1607-1610, doi: 10.1109/IEEM.2017.8290164.
5. P. Zhang, P. Xie and W. Yang, "Study on mold separation-based precision injection molding method," 2010 International Conference on Mechanic Automation and Control Engineering, 2010, pp. 5257-5260, doi: 10.1109/MACE.2010.5536370.