

Presentation Title: Using Thermoplastic 3D Printers to Develop an Electrical Connector Prototype

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Abstract

How capable is a Fused Deposition Modeling (FDM) printer at making functional prototypes? There are constraints and design considerations that need to be taken into account when creating a functional part using extruded thermoplastic 3D printers. This presentation will explain the process the presenter used to create an automotive electrical connector and improve the quality of an automotive accessory installation. The part that was made had a very detailed shape that would be difficult to create using traditional low-cost methods and required a high degree of dimensional accuracy to interact with preexisting automotive components. Several versions of the part were designed and printed. Issues with accuracy, durability, and print quality required unique solutions. The most recent version of the prototype connector has been installed on a vehicle for almost 2 years. In that time, it has performed the intended task without incident. The presentation will also discuss alternative printing methods that were not used in this experiment but have become more realistic as other printing technologies have become more affordable and accessible. Attempts are being made to print a new prototype using a resin printer. Any progress made in that attempt may be shared as well.