

ANALYSIS OF CHARACTERISTICS TECHNIQUE IN 3D CAD MODELING OF RAPID PROTOTYPING WITH SLS

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Abstract:

Ever global competition forces manufacturers to deliver more competitive products with better quality, lower price and shorter fabrication time. Rapid Prototyping technologies have received significant interest from both research and industrial communities based on the above trend. As an advancing manufacturing technology, the Rapid Prototyping technology has a major concern in the accuracy issue. Overall to achieve complete accuracy with no error is impossible. The error can be reduced but will no error is impossible. The error can be reduced but will not be completely eliminated. It is important to understand where errors can occur and how it will affect the outcome. Usually, if the error is small, the outcome will not be affected. However, large error can change the final product drastically. There is continuing research on accuracy of Rapid Prototyping, and improved accuracy models are constantly devised.

Because of characteristic of Rapid Prototyping (by Selectiv Laser Sintering – SLS), the hardness and strenght of forming parts are not so high. Usually, these forming parts are used for new products testing, for casting of complicated shape, and making various economic mold (for example silicon rubber mold, metal spraying mold) and dies. In Rapid Prototyping process, it has the requirement for the building of 3D CAD model.

Before building the CAD model, the engineer should know about the characteristic of Rapid Prototyping (by SLS) and its difference between metal forming. According to the experience of building CAD model, the problems mentioned below need to be considered:

- *over small size parts;*
- *larger size parts;*
- *the thickness of model;*
- *suitable fillet;*
- *hollow parts;*
- *setting up precision of STL file form.*

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