RESEARCH AND TECHNICAL ASSISTANCE FOR IMPROVING THE GEOMETRICAL PRECISION OF AUTOMOTIVE PRODUCTS

Goal of the project

To improve the quality of the drawings representation and hence the dimensional and geometrical precision of the injected plastic parts used especially in the automotive industry.

Short description of the project

Geometric product specification (GPS) is a language for communicating engineering design specifications. In this research have been studied different ways of representation of molded parts in accordance with the principles of GPS and a method of tolerance allocation that uses optimization techniques to assign component tolerances that minimize the cost of production of an assembly.
3D measuring principle of the plastic parts has been also analyzed. For each plastic parts studied, used in the automotive industry, has been developed the optimal reference system and strategy for measuring according to the characteristics of the part and dimensional and geometrical part precision requirements.

Project implemented by

Design Department, S.C. Continental Automotive Romania S.R.L.

Implementation period

03.03.2014 - 30.05.2014

Main activities

In a dynamic area as the automotive is difficult to keep up with all the requirements and technical news occurring. The research mission is to overcome these difficulties by an optimisation approach in the design phase of the plastic parts, that combine the following major activities:

- analyzing and deepening the different ways of drawings representation of molded parts accoding the GPS principles, that includes all the symbols, definitions, mathematical formulae, and application rules necessary to embody a viable engineering language
- tolerance allocation using least cost optimization
- 3D measuring principles of the plastic parts.

Results

Transfer to the technical staff of the company the design metods according to the GPS, ISO standards, tolerance analysis and 3D measuring principle in order to improve the quality of the products.

Applicability and transferability of the results

All the research results are useful, especially, in the design department. The methods developed can be used for design optimization of different plastic parts even in other companies.

Financed through/by

S.C. Continental Automotive Romania S.R.L.

Research Centre

Integrated Engineering Research Center

Research team

Assoc. Prof. Aurel TULCAN, PhD
Assist. Prof. Dan Teodor MĂRGINEANU, PhD
Assist. Prof. Liliana Georgeta TULCAN, PhD

Contact information

Assoc. Prof. Aurel TULCAN, PhD
Materials and Manufacturing Department
Adress: Bld. Mihai Viteazu nr.1, RO300222, Timisoara
Phone: (+40) 256 403 619;
Email: aurel.tulcan@upt.ro