

Abstract:

Benefit-optimized use of preventive quality-methods in the development process in the automotive industry

Today the companies in the automotive industry face a number of challenges. Increasing global competition, rising prices of raw materials and partially saturated markets are accompanied by high customer expectations.

In addition, the increasing technical complexity must be brought in line with shorter developmental periods. A good quality of the products is more and more expected by the customers.

The stress field in which the manufacturers are, between cost, time and quality can just be positively influenced by an integrated preventive quality work, which takes already place during the product-development.

A significant contribution can be given by the target-orientated use of preventive quality-methods in the early stages of development, to find the right direction in definition and development of the final vehicle concepts.

In practice the use of quality methods is frequently faced with skepticism, especially as they cause costs at first and their benefits are both difficult to calculate and normally only ascertainable with a time offset.

In order to solve this problem, a process model was developed, which determines the expected benefits of the target orientated use of quality methods and which provides transparency regarding the potential benefits of an examined system at any time during the product development process.

At its core it is assumed, that the benefit of using a preventive quality method is closely related to the risk which is inherent to the analysed system.

Thus the process model combines the method planning process with a quality-based risk management.

Out of the the analysis of the problem-landscape of a car in series production, several criteria have been developed, that can affect the benefits both in a positive as well as in a negative way. In addition, it could be determined which quality related and also monetary effect can be expected by a stringent application of the methods with optimal implementation. In this context, the answers to the following questions and their influence to the potential benefit stood in the foreground:

- When is the best time for the use of a preventive quality method?
- What is the extent to which it is worth the effort? Which extent of planning makes sense?
- Which quality - method and which quality - problem do match?
- How are the procedural responsibilities structured?
- What are the benefits to be expected from the use of preventive quality methods?

With the help of the developed process model, a prioritized planning of preventive quality methods can be carried out with the target to raise the maximum possible benefit. The investigated technical systems or components are accompanied throughout the entire development process. In addition to the model, the work also includes a guide for the operationalization. Based on this guide, the model has been tested in practice.