

Research on Optimizing of the Failure Mode and Effects Analysis Using Advanced Expert Systems

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Abstract:

Failure Mode and Effects Analysis (FMEA) is one of the most efficient and effective methods of preventing defects and other nonconformities, by assessing potential failure of component functions during the fabrication process, their causes and effects, with the purpose of identifying preventive actions which could have the consequence a higher product reliability.

Modern FMEA procedures represent a new approach, in seven steps, for documenting technical risks, in order to achieve a more transparent process of design and execution of a new product. By using it in a correct and consistent way, FMEA allows the timely identification and avoidance of quality problems.

Beyond its indisputable advantages, FMEA also presents a series of disadvantages due to the rather complicated formalism that it imposes and the direct presence of experts.

In order to eliminate the deficiencies presented above, the paper proposes a solution for a new expert system which has the scope to optimize the Failure Mode and Effects Analysis. The application of research in the engineering of polymeric and composite products is being considered.