Prioritization of Failure Modes in Manufacturing Processes

A Fuzzy Logic-based Approach

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About the Book

In the contemporary automotive manufacturing industry, service providers are continuously working to improve system optimization in order to remain competitive in the market and deliver quality products to satisfy their customers. With this comes the possibility of failure, rejection and reworking of the components or services in the system, which can incur high costs and impact the reputation of an organization. This book uses Failure Mode and Effect Analysis (FMEA) to assess, investigate and predict the Risk Priority Number (RPN) of potential failures for three companies within the manufacturing industry:

- A metal component supplier in the automotive sector
- Part manufacturer for the automobile and engineering industries
- Manufacturer of suspension components for commercial vehicles

Integrating human expertise and artificial intelligence on a single platform, the authors use fuzzy logic as a tool to overcome the vagueness associated with traditional methods of assessing potential failures. The book also details the procedure and scales of how to conduct FMEA, offering guidance on how to input and rank each risk within manufacturing processes across a range of sectors. Each of the three real-world cases offer suggested improvements for the companies themselves, alongside takeaways for researchers and professionals within the fields of manufacturing and supply chain management.

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