

# Bachelor-/ Masterarbeit

Aushang ab:  
Aushang bis:

Status: offen  
Forschungsgruppe: Konstruktionsmethodik

## Kontakt

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## Sustainability in Design for Manufacturing and Assembly - DFMA

Nowadays sustainable design is a mandatory requirement in the product development process. For this reason, design methodologies are addressed to establish a close relationship between environmental, social and economic impact indicators and product features from early design stages, especially in those features related to its manufacturing.

In this thesis, the design for manufacturing and assembly — DFMA methodology shall be investigated to sheet metal devices, integrating functional and component relationships to minimize particular sustainability indicators such as energy consumption, carbon footprint, number of parts, required amount of material, assembly time and manufacturing costs.

You shall be open to discuss with suppliers their energy consumption and compare various manufacturing process possibilities based on their carbon footprint and other sustainability indicators. The aim of this thesis is to support the design engineer with a guideline of how to be able to develop not only cost efficient concepts but in the same time be able to reduce the carbon footprint and other sustainability indicators of their product.



### Task:

- Analysis and description of sustainability indicators in the early stage of product development
- Analysis of sustainability indicator calculations of design and manufacturing process
- Comparison of manufacturing processes and their sustainability indicator based on a real product
- Development of individual procedures during the creation of the product design for sustainability

Mesa, J., Maury, H., Arrieta, R. *et al.* A novel approach to include sustainability concepts in classical DFMA methodology for sheet metal enclosure devices. *Res Eng Design* **29**, 227–244 (2018). <https://doi.org/10.1007/s00163-017-0265-4>

### Profile:

- You work single-mindedly and independently.
- Are you creative and looking for challenges?

Then send me an e-mail [Markus.Doellken@kit.edu](mailto:Markus.Doellken@kit.edu)