Product Design Specifications

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Product Design Specifications (PDS)

- A list of requirements and constraints that defines the problem that the designer is trying to solve.
- States the requirements that a product must fulfill – not what the design is.
- Helps the designer gain a complete understanding of the problem before concepts are generated.
- Based on input from customer, market analysis, research on competing products, etc.

How to Write PDS

- Fully define the design problem
- List all specifications of the design
- List numerical values and tolerances for each
- Split the specifications into smaller categories
- Assign importance to different specifications

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Writing Good Specifications

- Be specific and quantitative when writing PDS
- Examples of poorly written specifications:
  - The product should be fast to assemble
  - The product must withstand high temperatures
- Properly written specifications:
  - Product assembly should take less than 10 minutes
  - The product will operate at a temperature of 400±10°C

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Example Categories

- Performance
- Size and weight
- Operating environment
- Product life
- Target costs
- Production quantity
- Aesthetics
- Ergonomics
- Standards
- Safety
- Packaging and transport
- Testing
- Documentation
- End of life disposal
- Installation
- Competition
- Reliability
- Maintenance
- Manufacturing
- Existing intellectual property

The relative importance of these categories and the specifications in them will vary for different applications

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References

- *Blueprint* website by the IDER group in the Manufacturing Systems Engineering Centre at the University of Hertfordshire includes an overview of developing PDS and a nice example of PDS for a portable winch:

  http://www.ider.herts.ac.uk/school/courseware/design/pds/

- K. Ulrich and S. Eppinger, *Product Design and Development*, 3rd ed., McGraw-Hill (2004).

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