CREO as a tool for virtual prototyping.

Dr ing. Peter Arras

*KU Leuven – technology campus De Nayer*
Contents

• History of design
• History of CAD
• From drawing oriented design to model oriented design
• Introduction to CREO
• Case study
History of design.

- Drawing is a method of communication.
Drawing containing a lot of information:

- Calculate
- Manufacture
- Document
- ....

> many documents, many possible errors
History of CAD.

• <1980
• 1980: introduction of Autocad, first wide spread 2D drawing software
• 1985: introduction of 3D software, first steps towards model oriented software
• 1989: introduction of Pro/Engineer, first commercial parametric modeler.
From drawing oriented to model oriented design.

- **Drawing oriented:**
  - Paper model
  - Only on paper
  - Multiplication of data

- **Model oriented:**
  - CAD-model
  - Virtual prototype
  - 1 source of data
Virtual prototype.

- Appearance
- Physical and mechanical properties
- Geometry
- Dynamic behavior

Virtual prototype: CAD Model
MCAD (Mechanical CAD): CREO/ProEngineer: Model oriented.
MCAD (Mechanical CAD): CREO/ProEngineer

- No compromise on design
- From simple to complex design
Complex design study

- Scalemodel 1/10 steam engine
Manufacturing.

• Creating toolpaths
• Simulation
• First-time right
Air compressor
Parametric: dimensions drive the design
Associative
Some student examples:
Case study: car jack.

• Aim: make a car jack, able to lift the car.
  – Force to operate not too big
  – Light weight (cost, maneuverability)
  – Strong enough to withstand operation
Design parts
Make assembly
Make mechanism

• Include:
  – Motors
  – Measures
  – Conditions
  – ...

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Mechanism analysis.
Strength analysis
Make documentation
Time for a demo.
Questions?
Contact

Dr. Ing. Peter Arras
contact
MCAD/CAE
Peter.Arras@kuleuven.be