Tempus

CREO as a tool for virtual prototyping.

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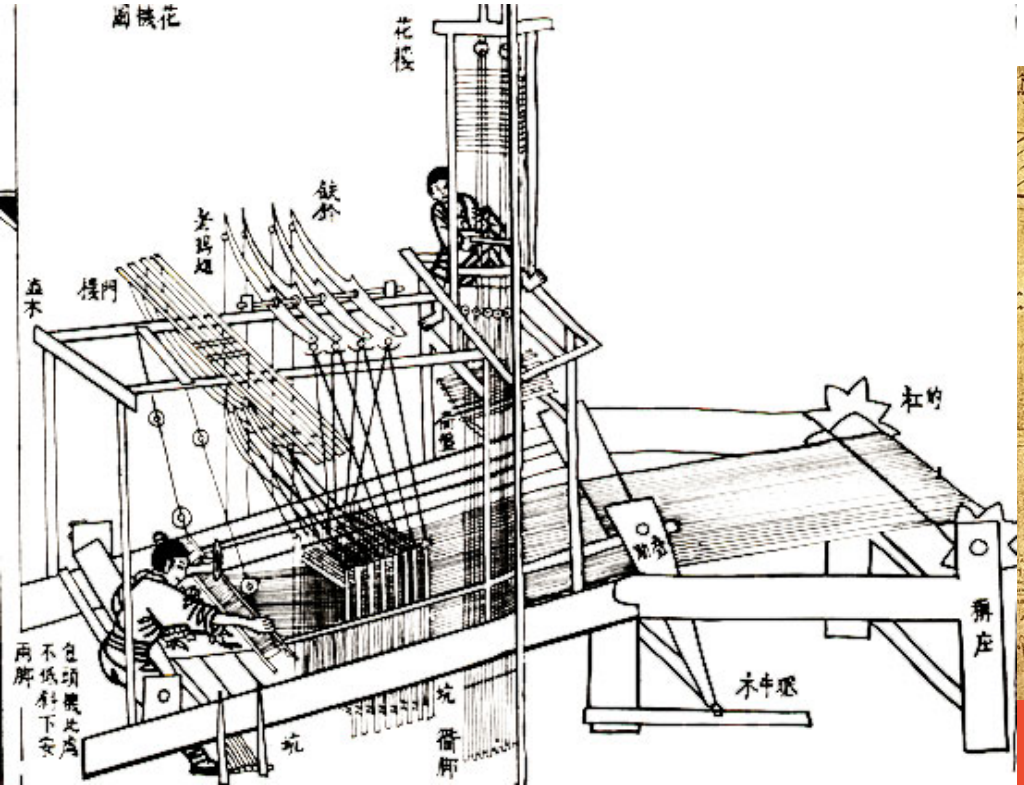
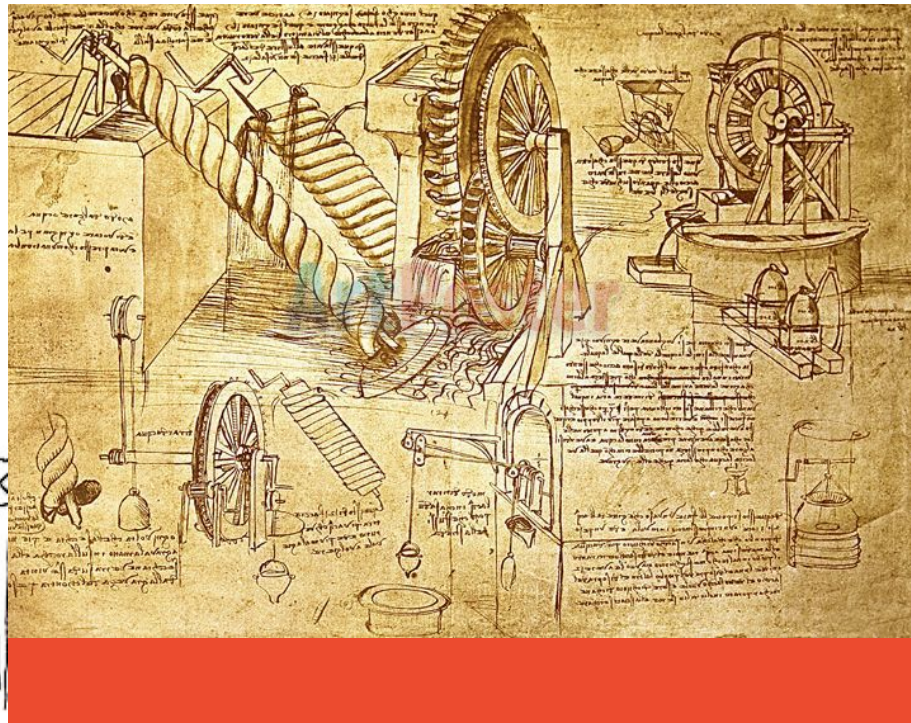
Contents

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

History of design.

- Drawing is method of communication.

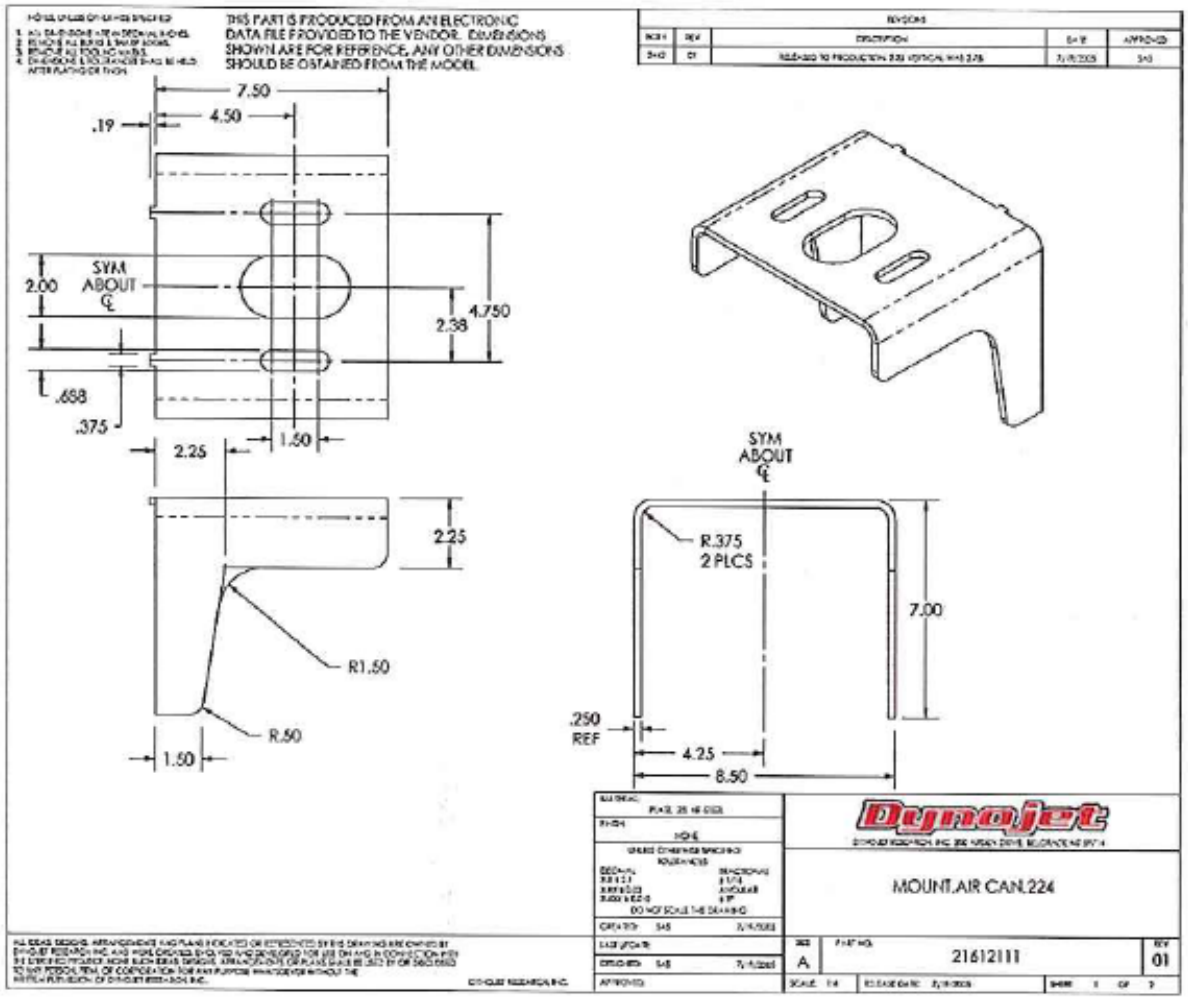




Tempus

DesIRE

Drawing containing a lot of information:



- Calculate
- Manufacture
- Document
- …..

> many documents, many possible errors

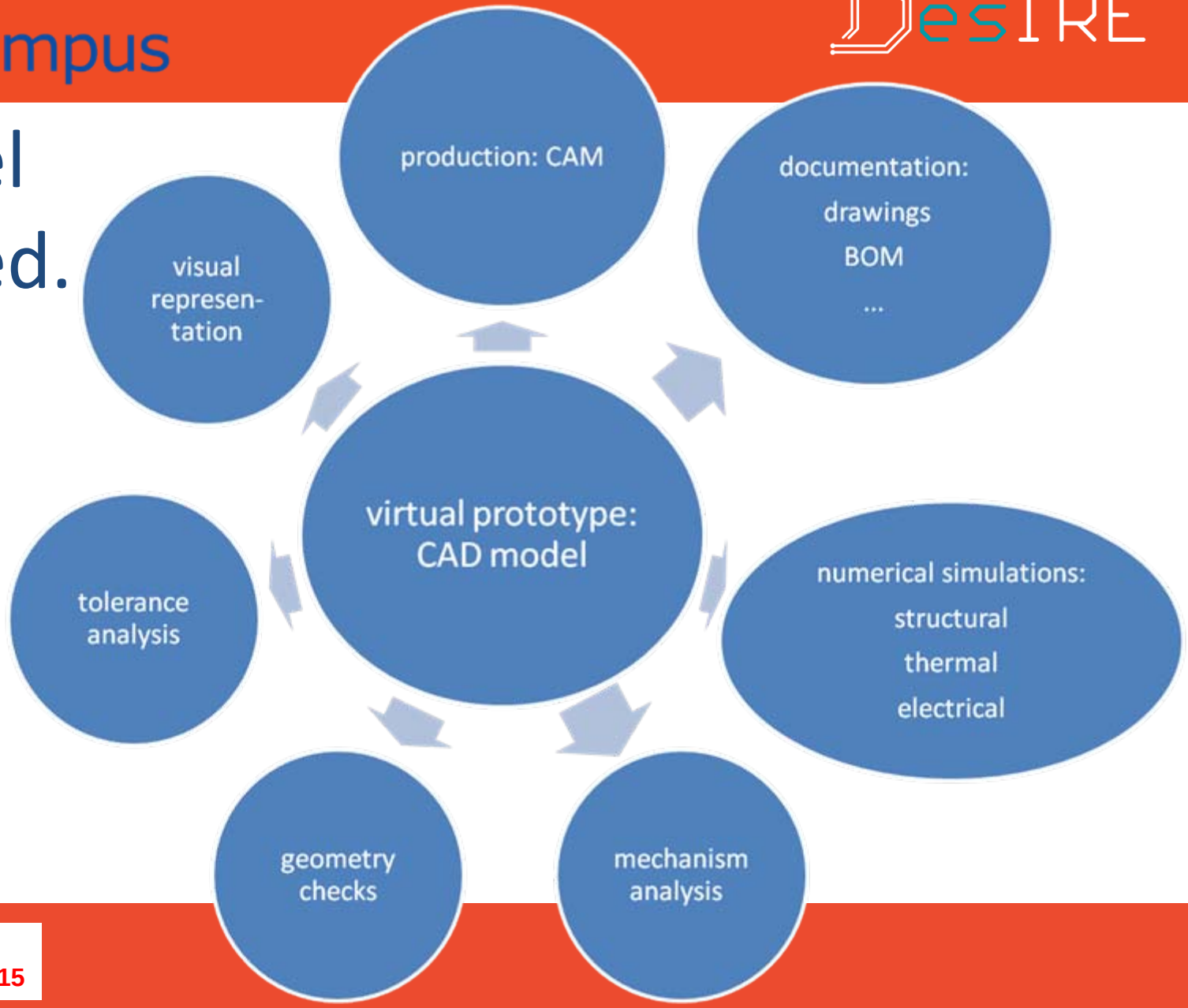
History of CAD.

- <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.

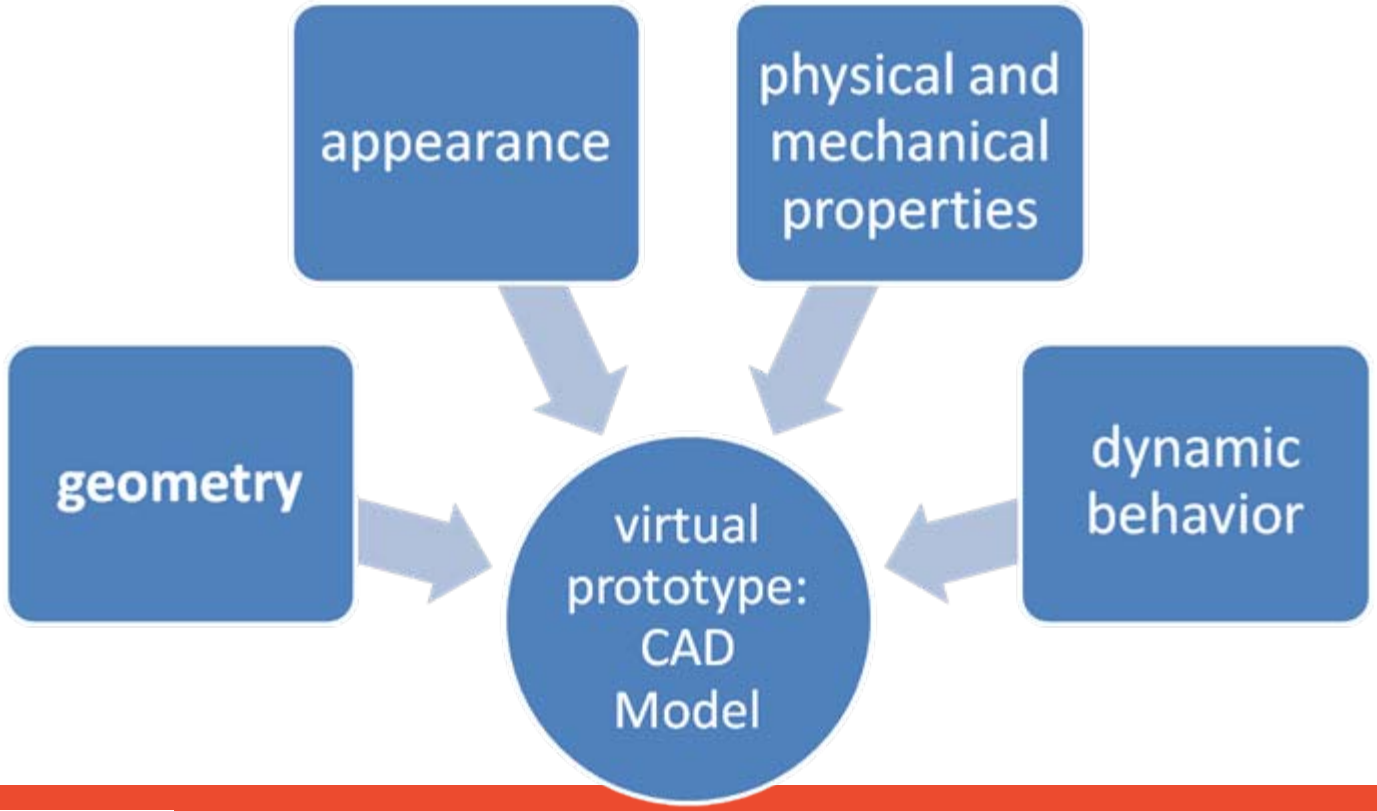
From drawing oriented to model oriented design.

- Drawing oriented:
  - Paper model
  - Only on paper
  - Multiplication of data
- Model oriented:
  - CAD-model
  - Virtual prototype
  - 1 source of data

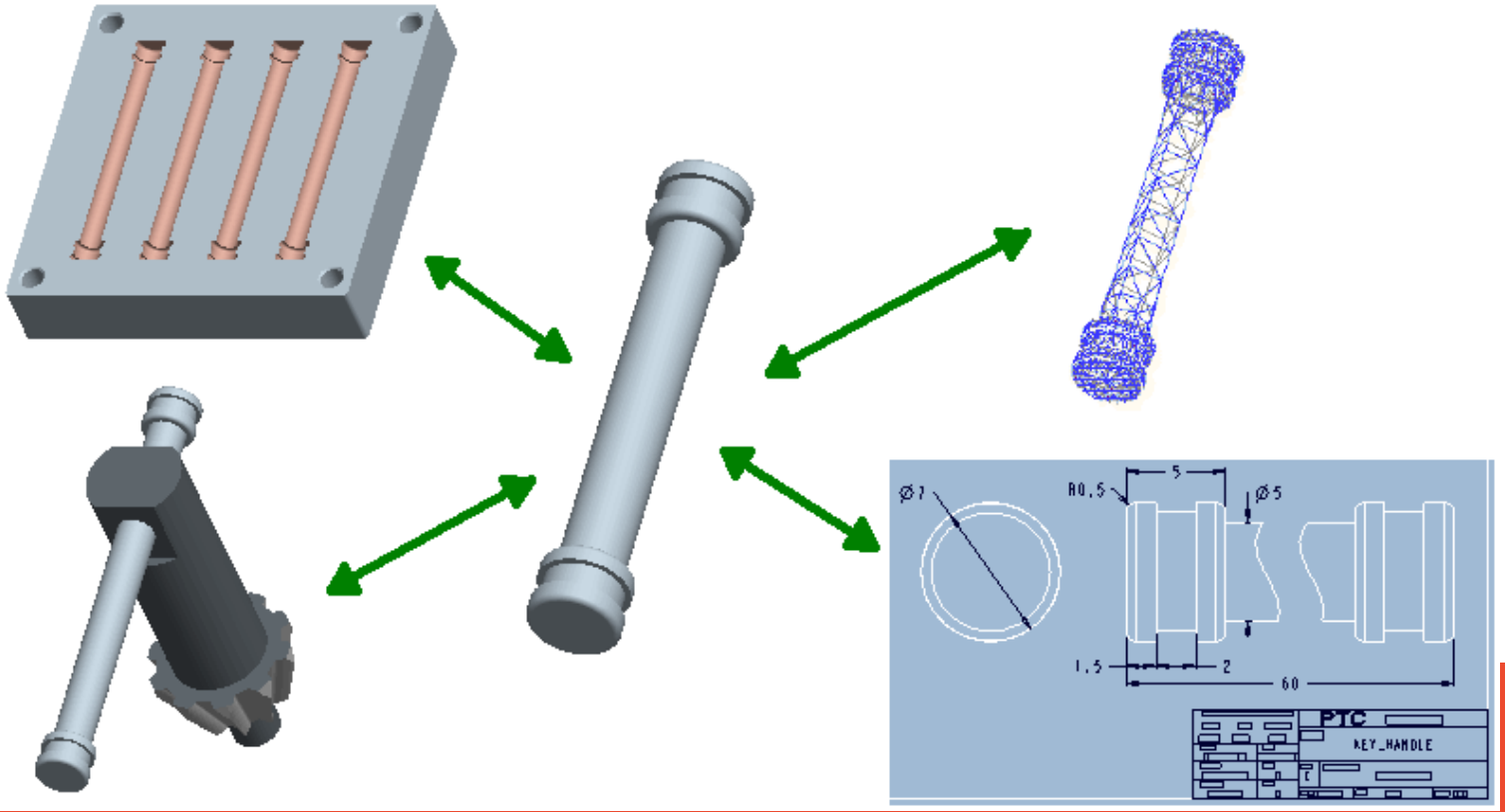
Model oriented.



Virtual prototype.

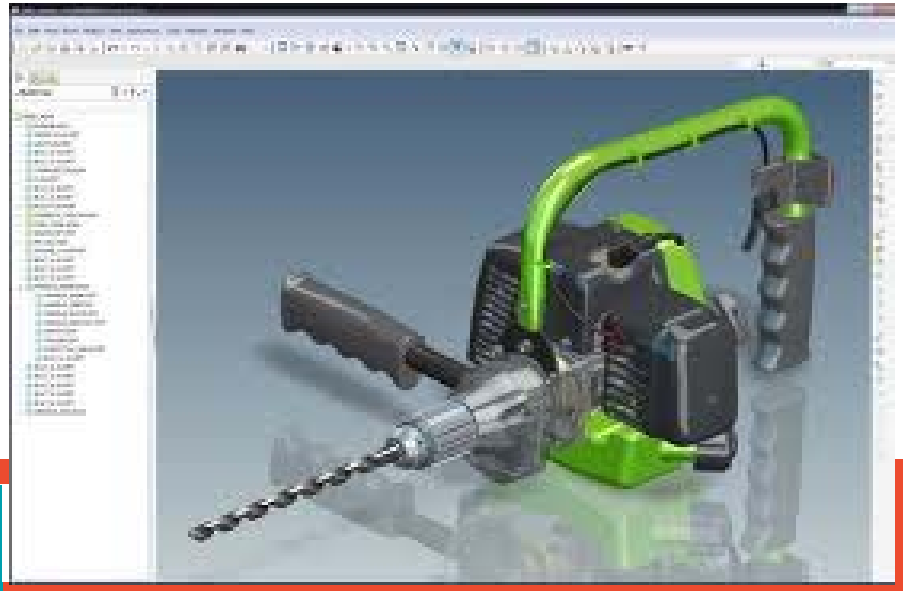


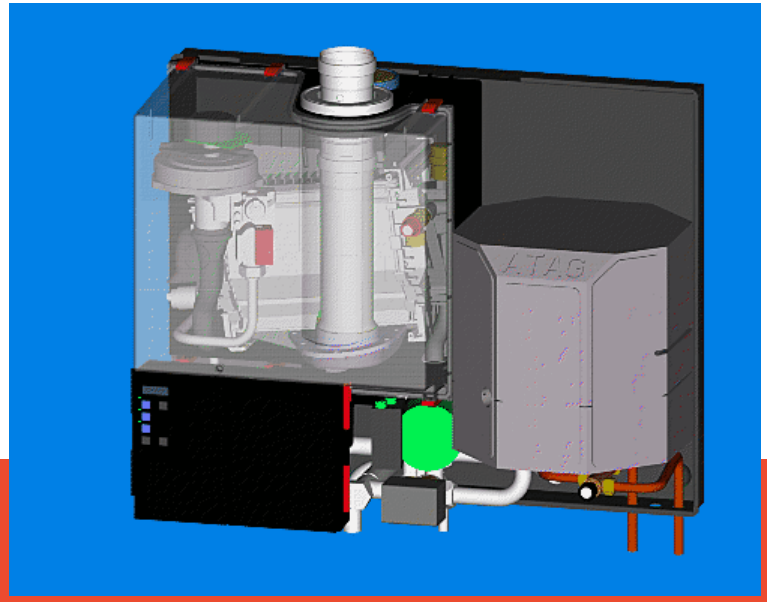
MCAD (Mechanical CAD): CREO/ProEngineer: Model oriented.

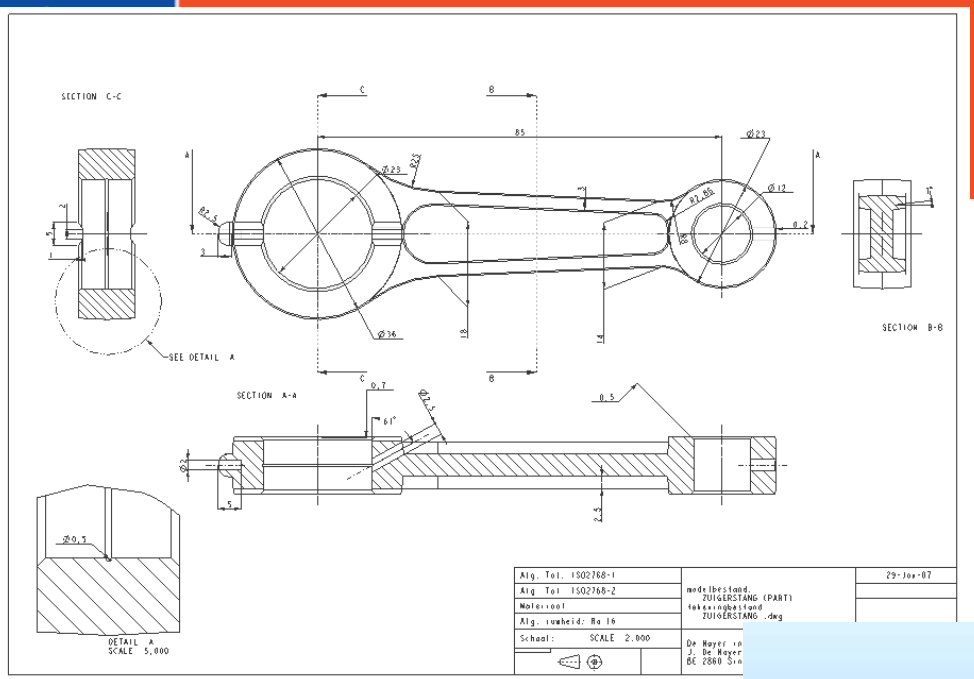


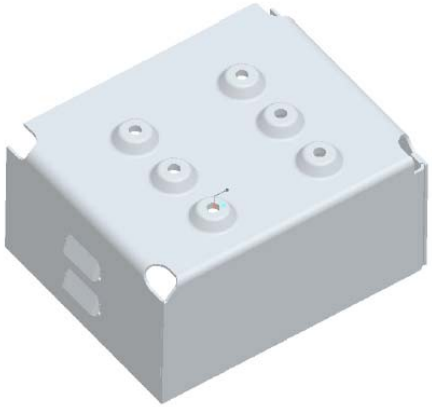
MCAD (Mechanical CAD): CREO/ProEngineer

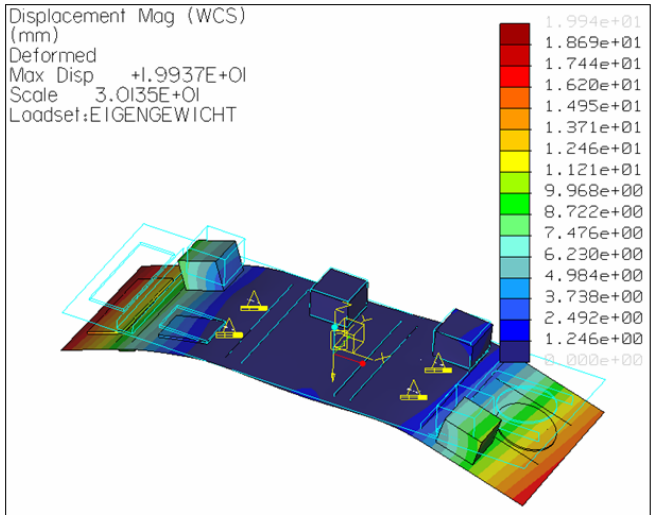
- No compromise on design
- From simple to complex design






SECTION C-C
SECTION B-B
SEE DETAIL A
SECTION A-A
DETAIL A
SCALE 5,000
Alg. Tol. ISO2768-1
Alg Tol ISO2768-2
Alg. ruwheid: Ra 16
Schaal: SCALE 2.000
29-Jan-07




Displacement Mag (WCS)
(mm)
Deformed
Max Disp +1.9937E+01
Scale 3.0135E+01
Loadset:EIGENGEWICHT
1.994e+01
1.869e+01
1.744e+01
1.620e+01
1.495e+01
1.371e+01
1.246e+01
1.121e+01
9.968e+00
8.722e+00
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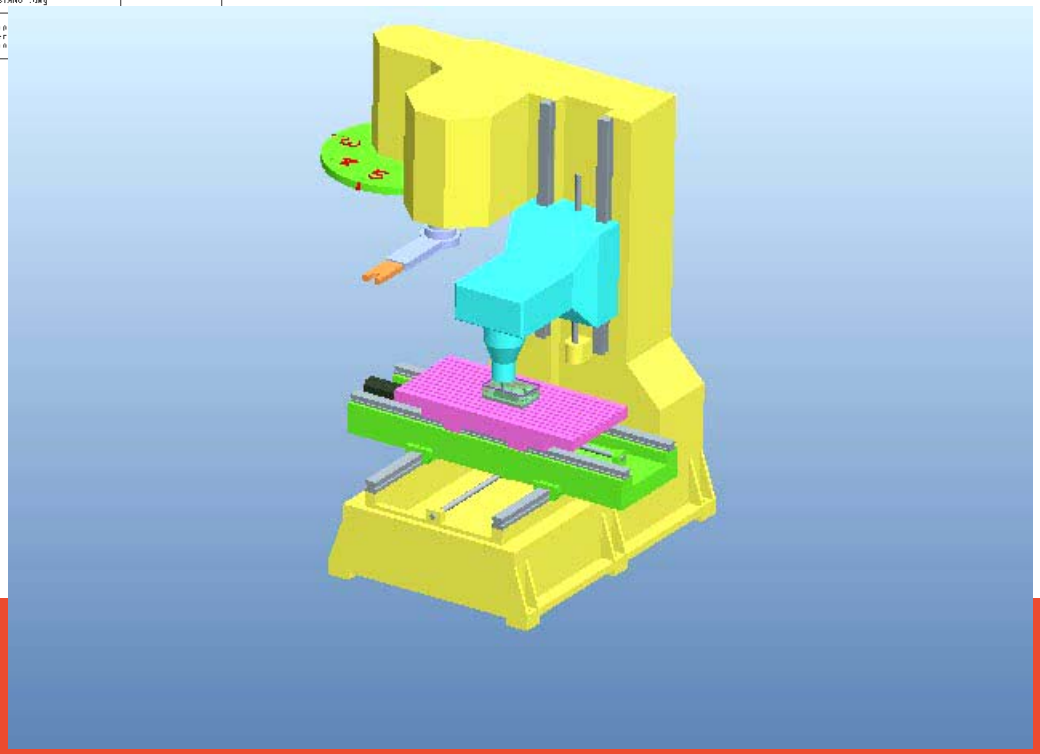
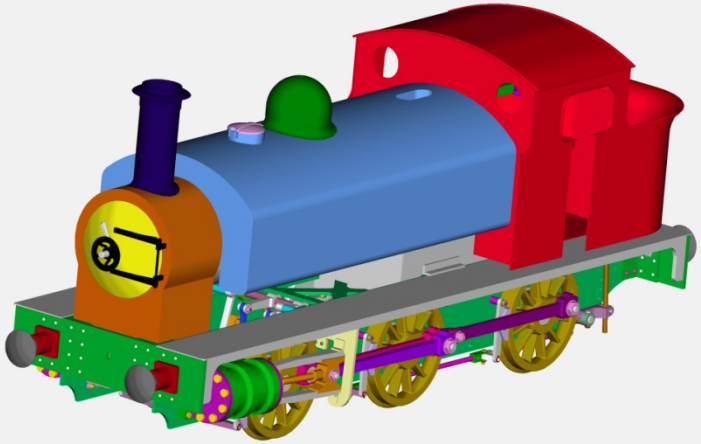
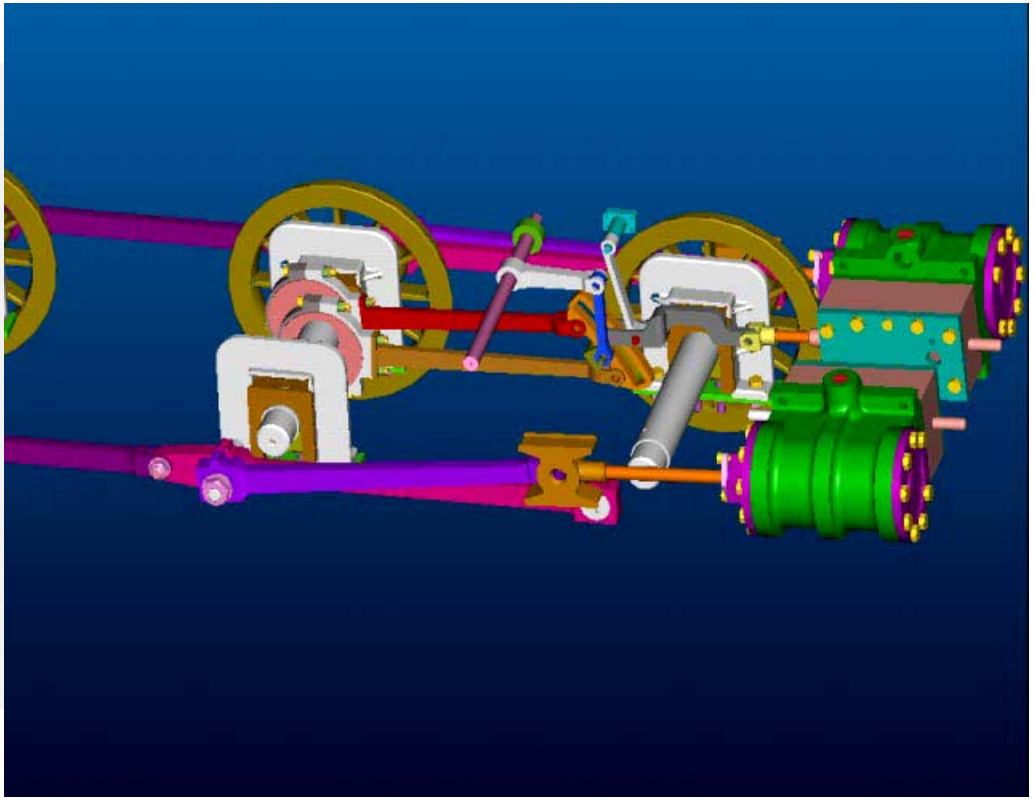


- Scalemodel 1/10 steam engine

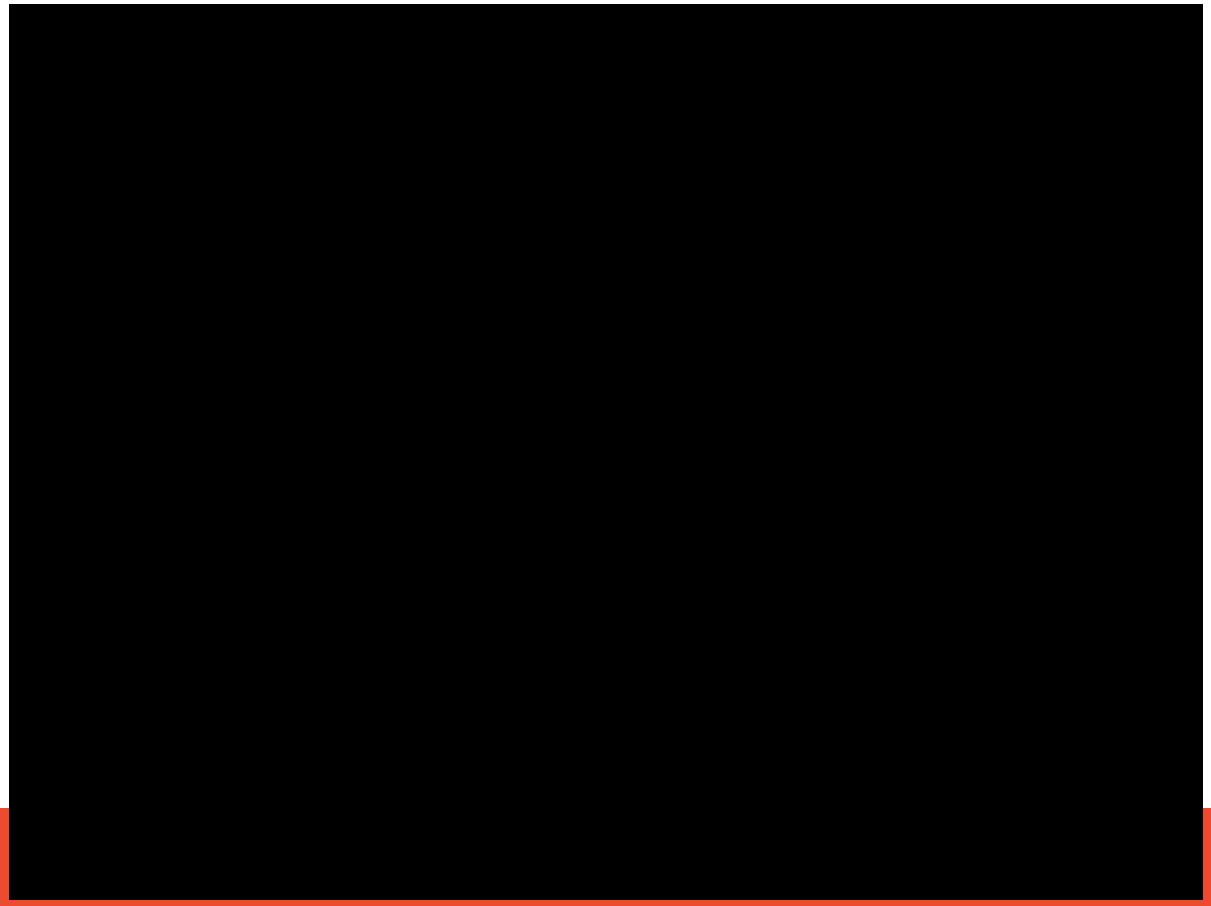
Complex design study



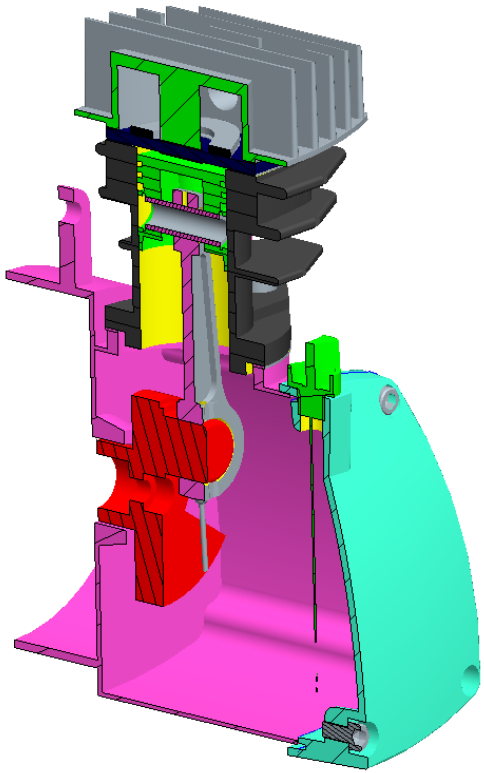


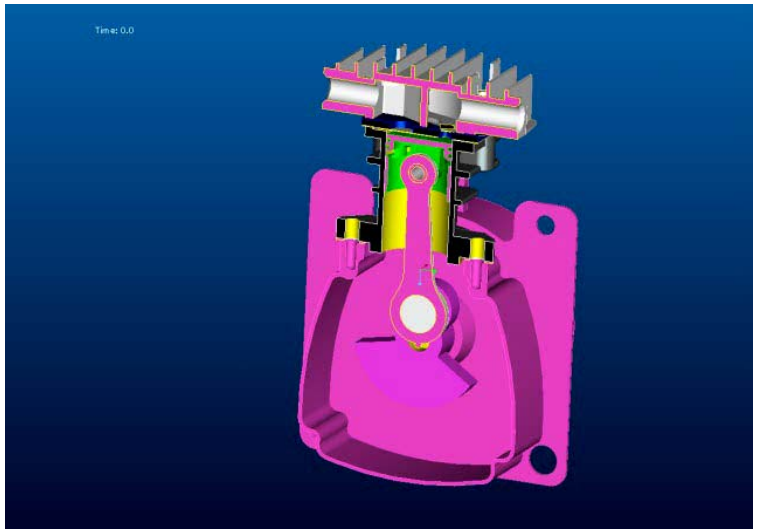
Manufacturing.

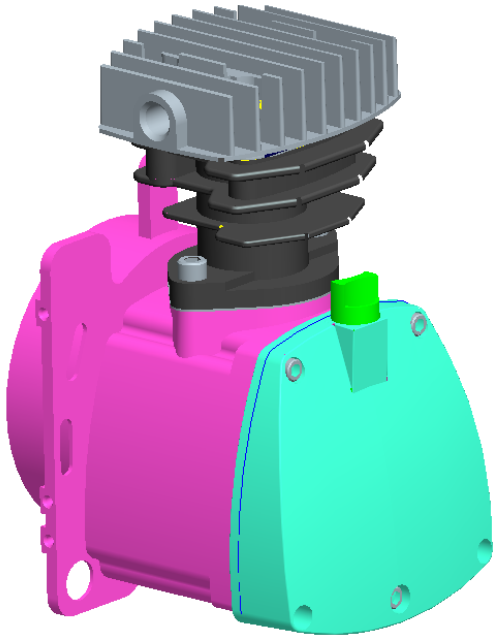
- Creating toolpaths
- Simulation
- First-time right



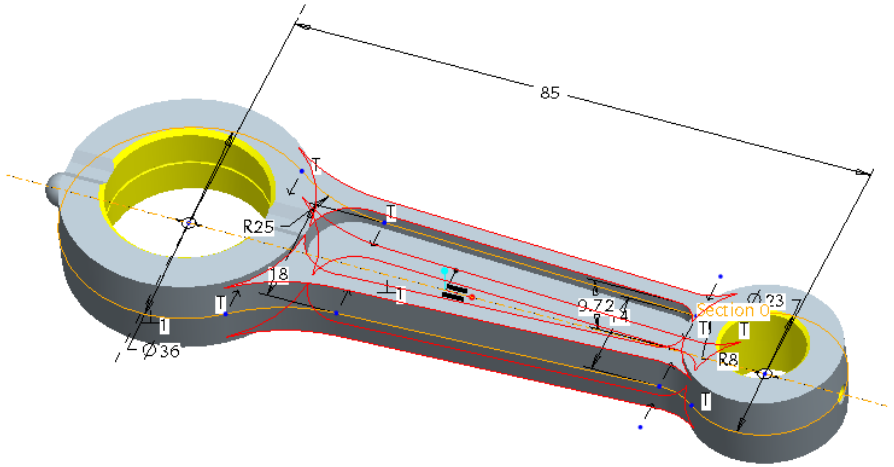
Air compressor

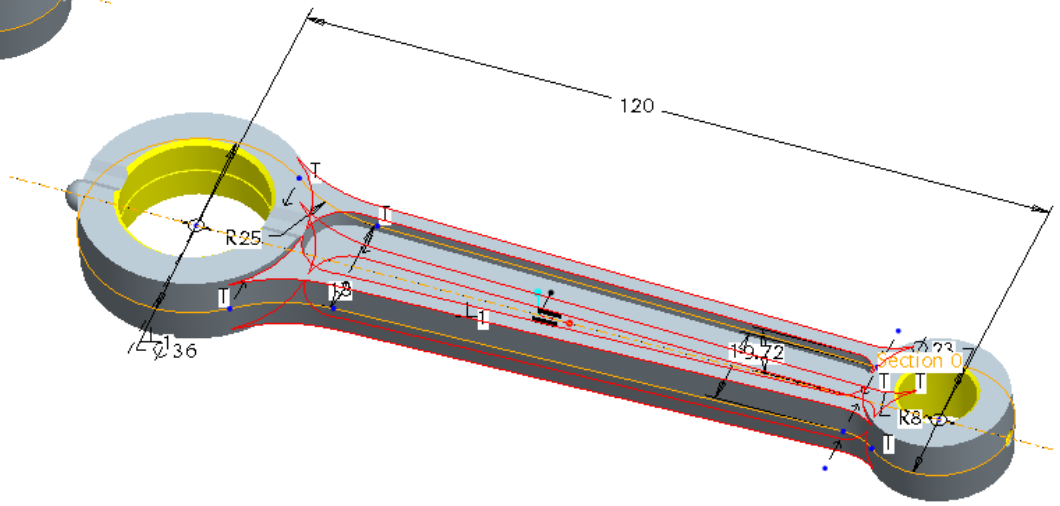




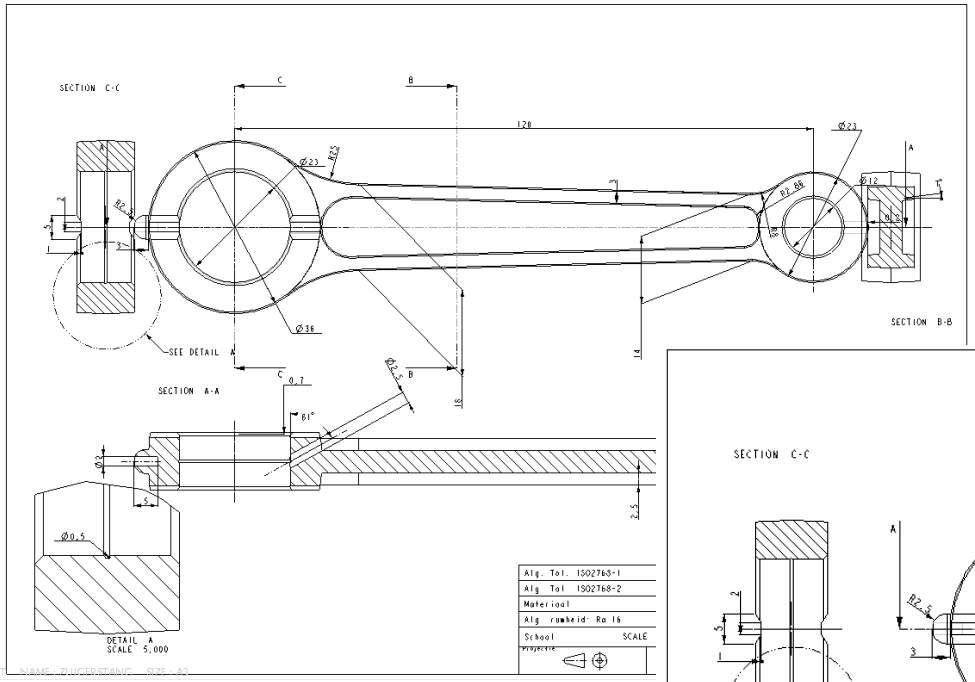


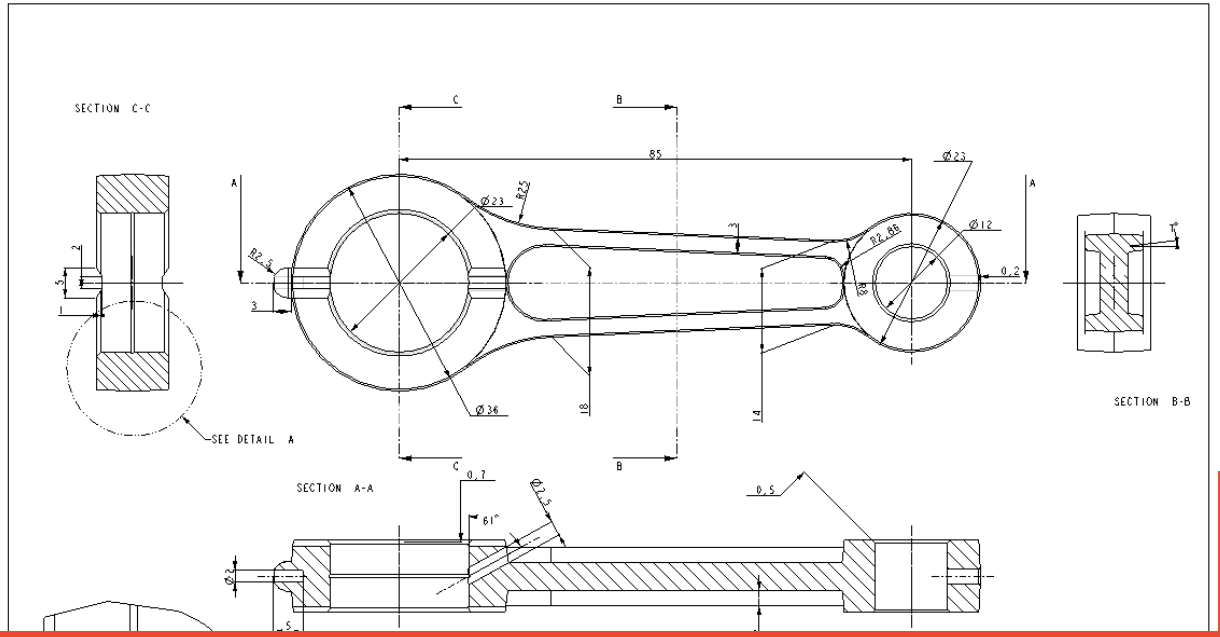
Parametric: dimensions drive the design



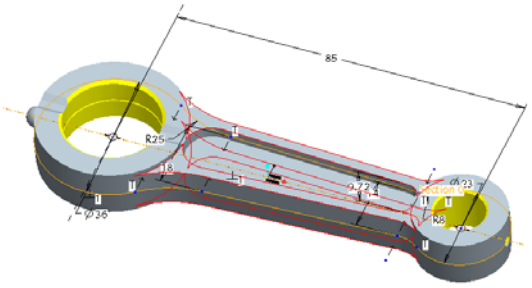


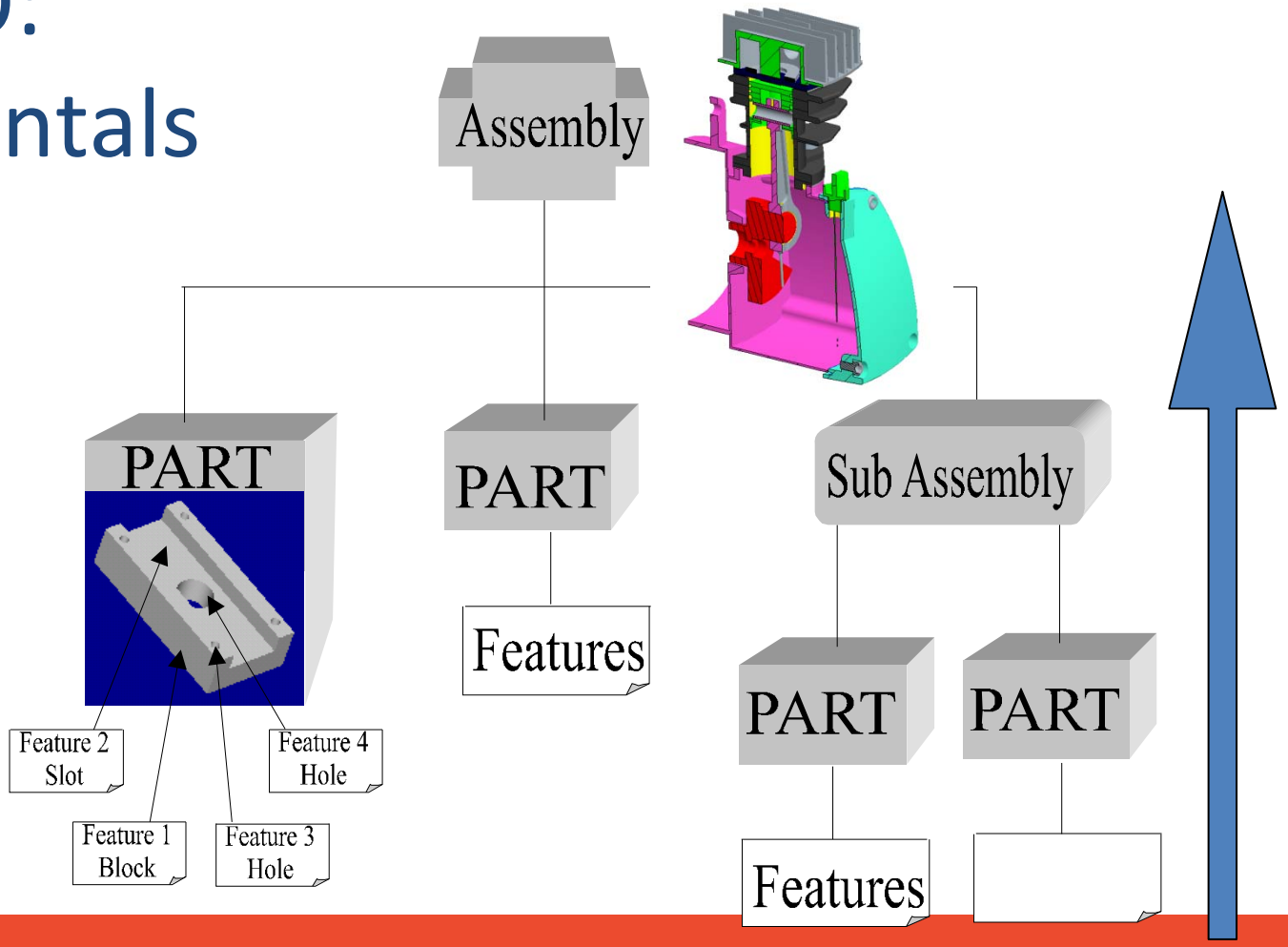
Associative





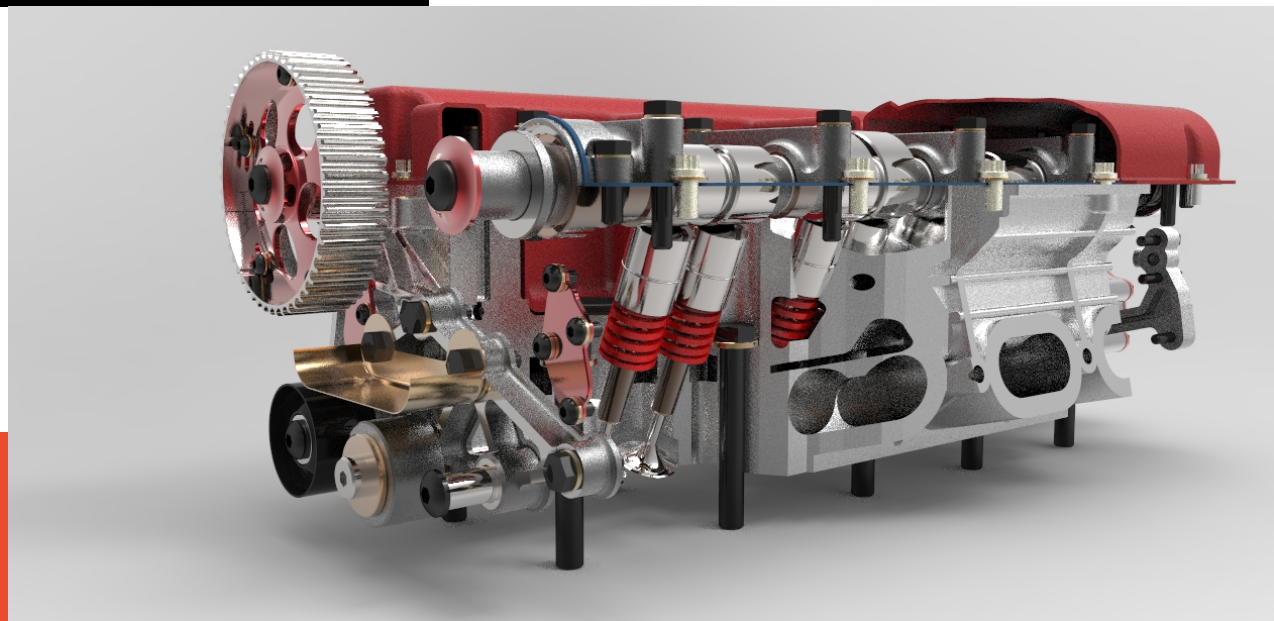
CREO: fundamentals





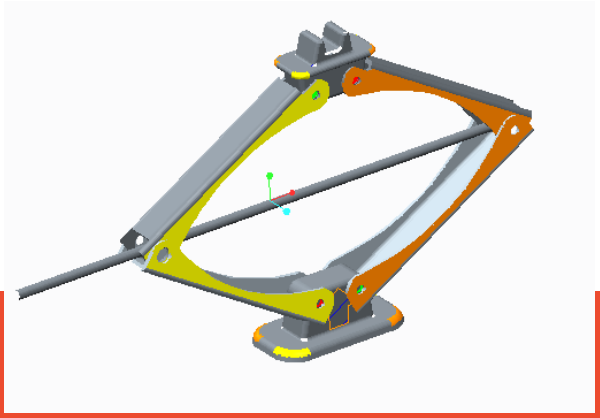
Some student examples:


GARNIER
Ultra
DOUX
SHAMPOING

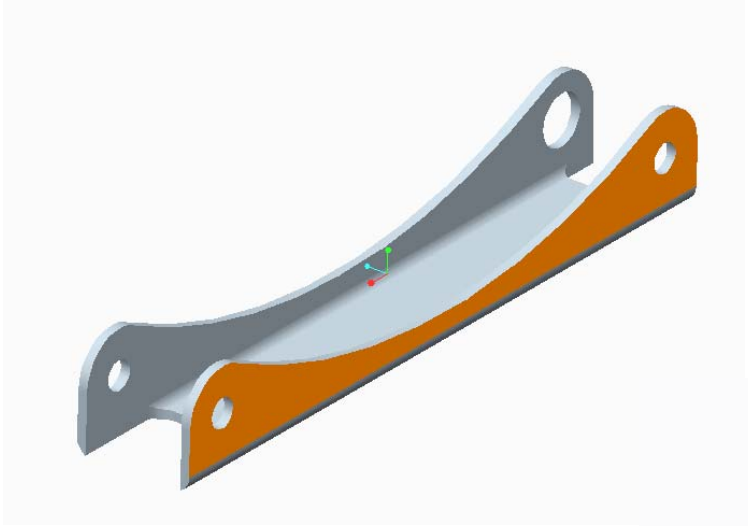


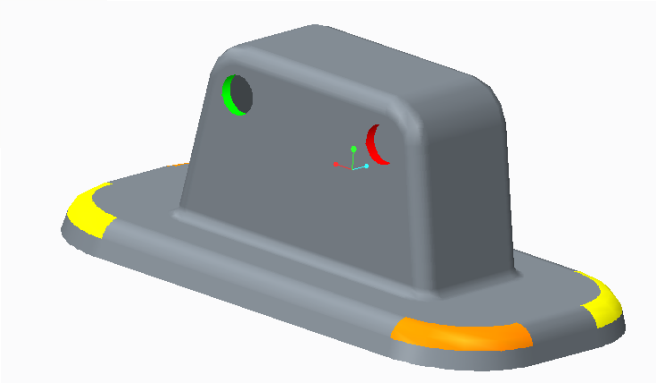
Case study: car jack.

- 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

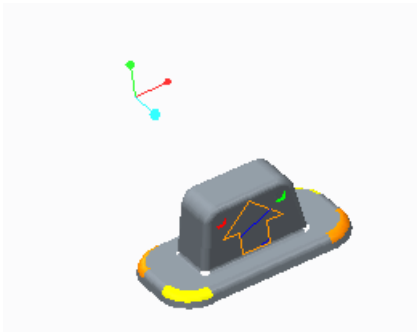


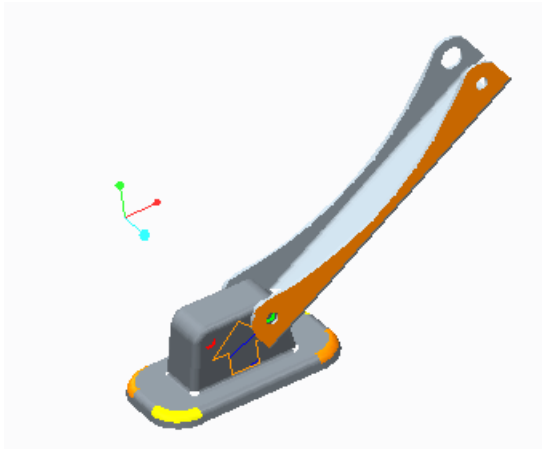
Design parts

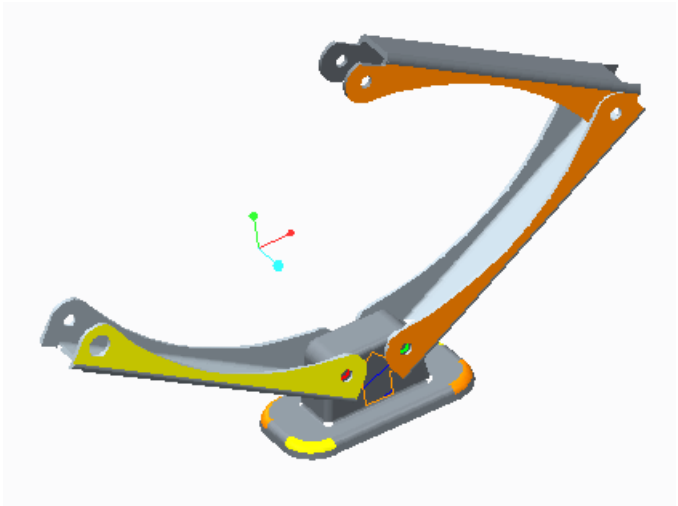


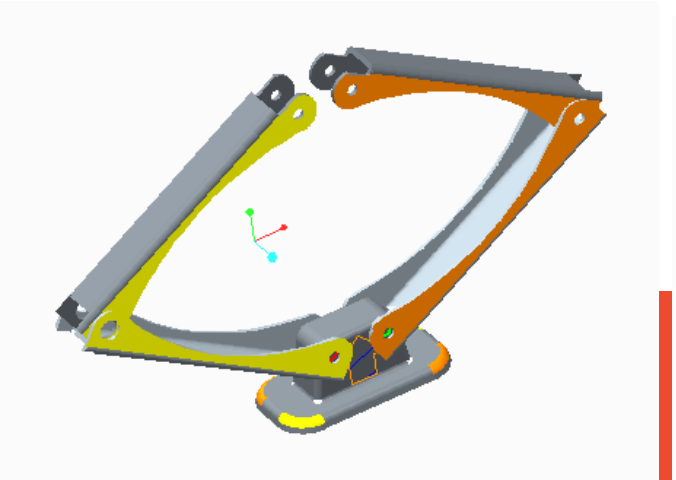


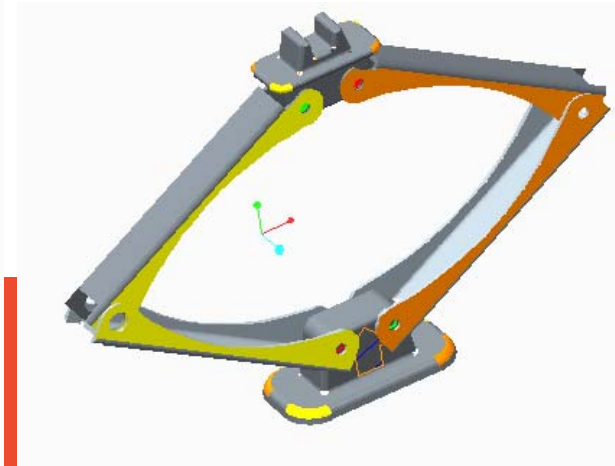
Make assembly

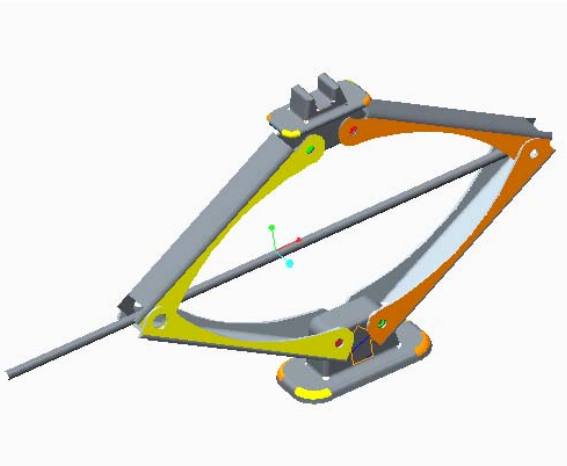






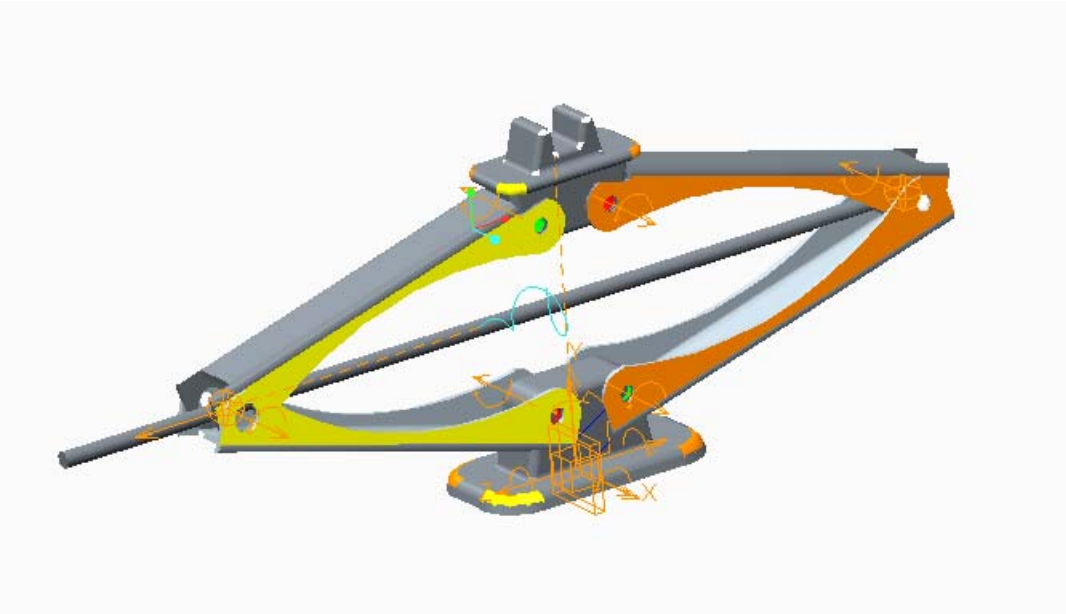




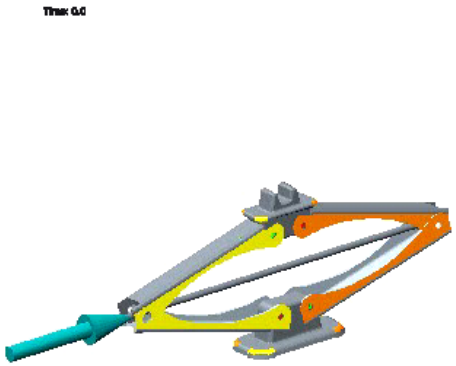


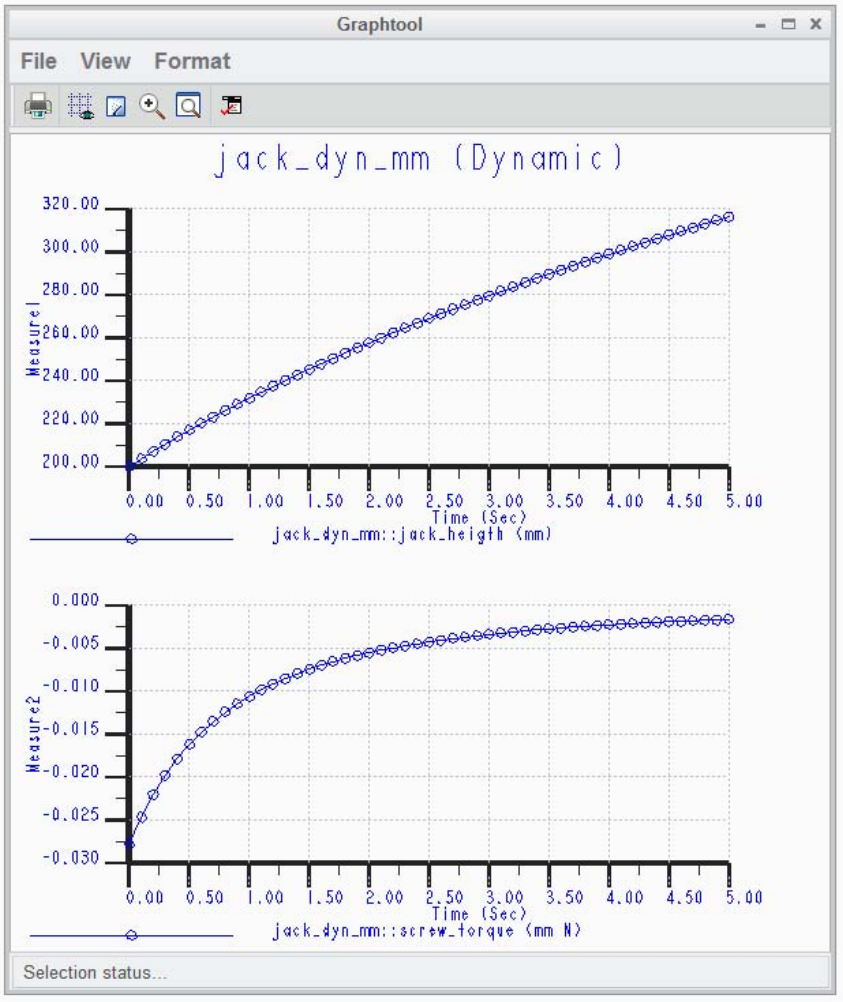
Make mechanism

- Include:
  - Motors
  - Measures
  - Conditions
  - …

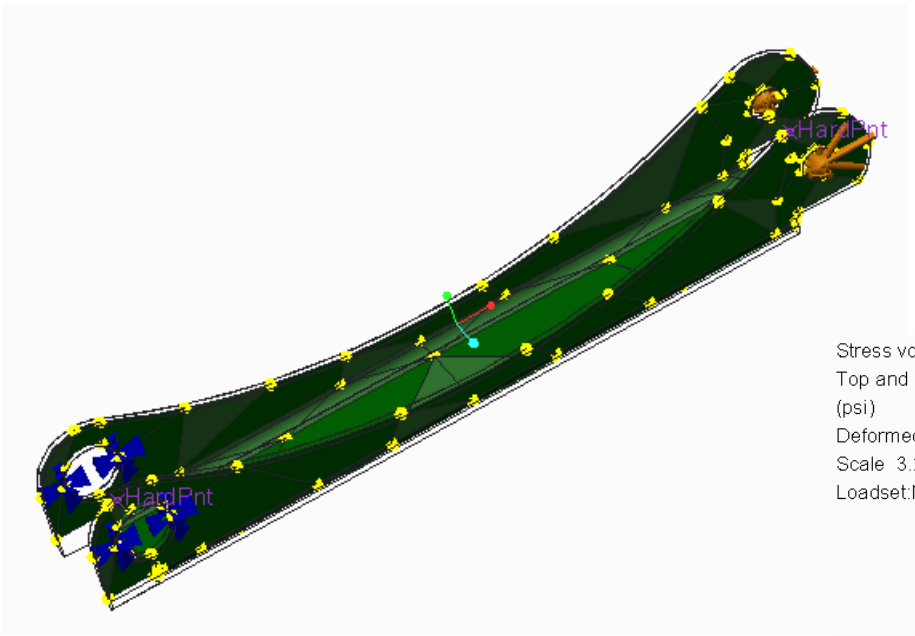


Mechanism analysis.

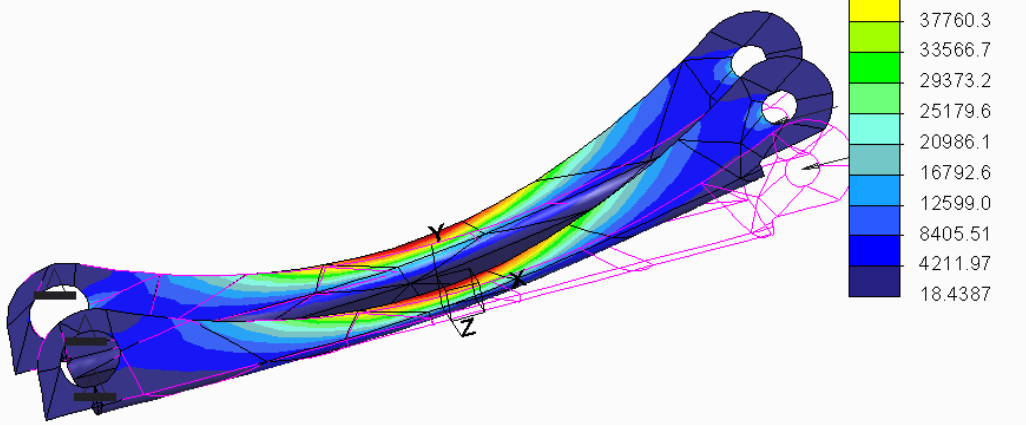




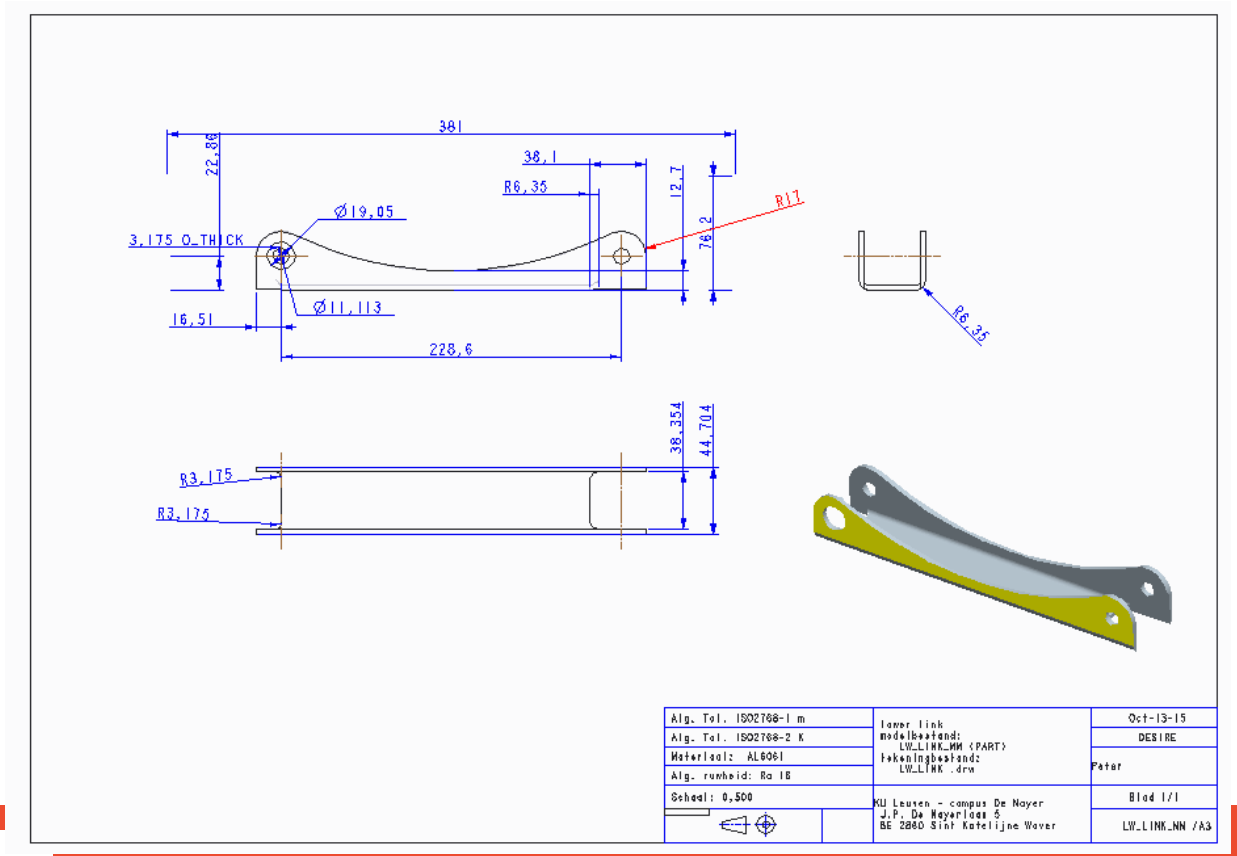
Strength analysis



Stress von Mises (WCS)
Top and Bottom of shell
(psi)
Deformed
Scale 3.2416E+00
Loadset:MechanismLoadSet1 : UP_LINK



Make documentation



Time for a demo.

Questions?

Contact

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