Plastics on the test rig
Testing and simulation

3rd & 4th March 2020

TECHNOLOGIETAG

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TECHNOLOGY
GmbH

excellence in

plastics&simulation

testing equipment

lightweight products

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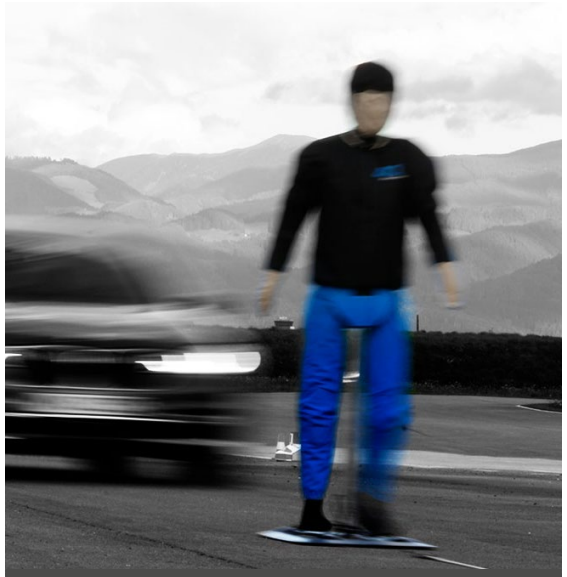
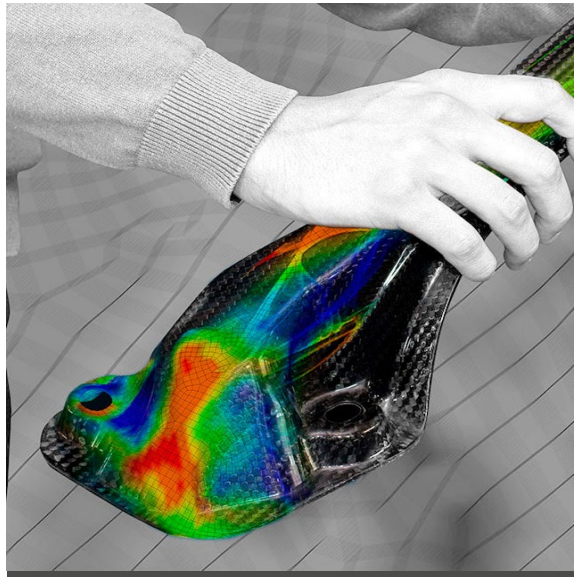
4a business units

Specialized thin foams and multi layer materials



Dummies and testing facilities for active vehicle safety

Testing equipment generating material data for the dynamic simulation of plastics



Engineering and simulation for plastic products and composites

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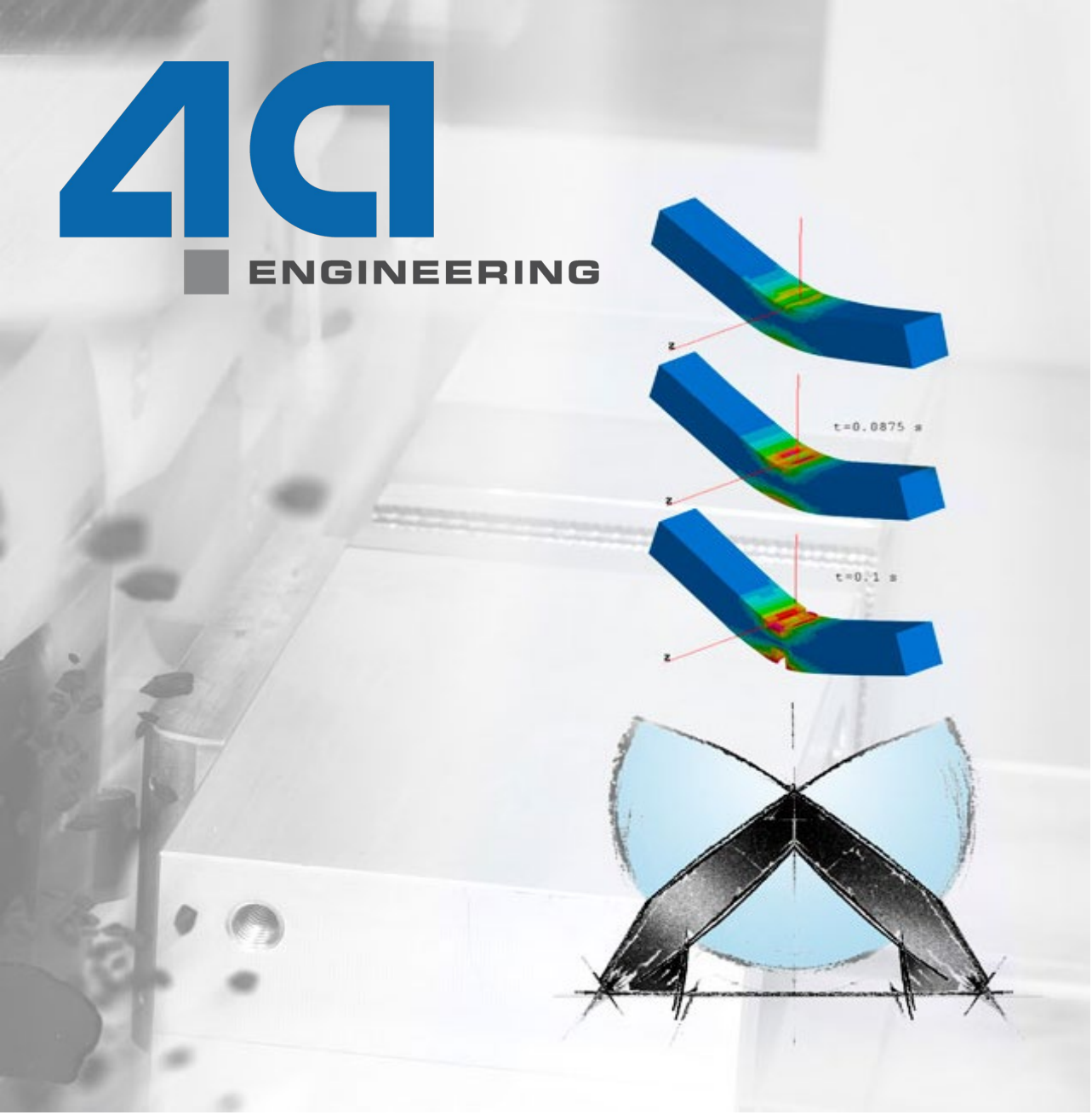

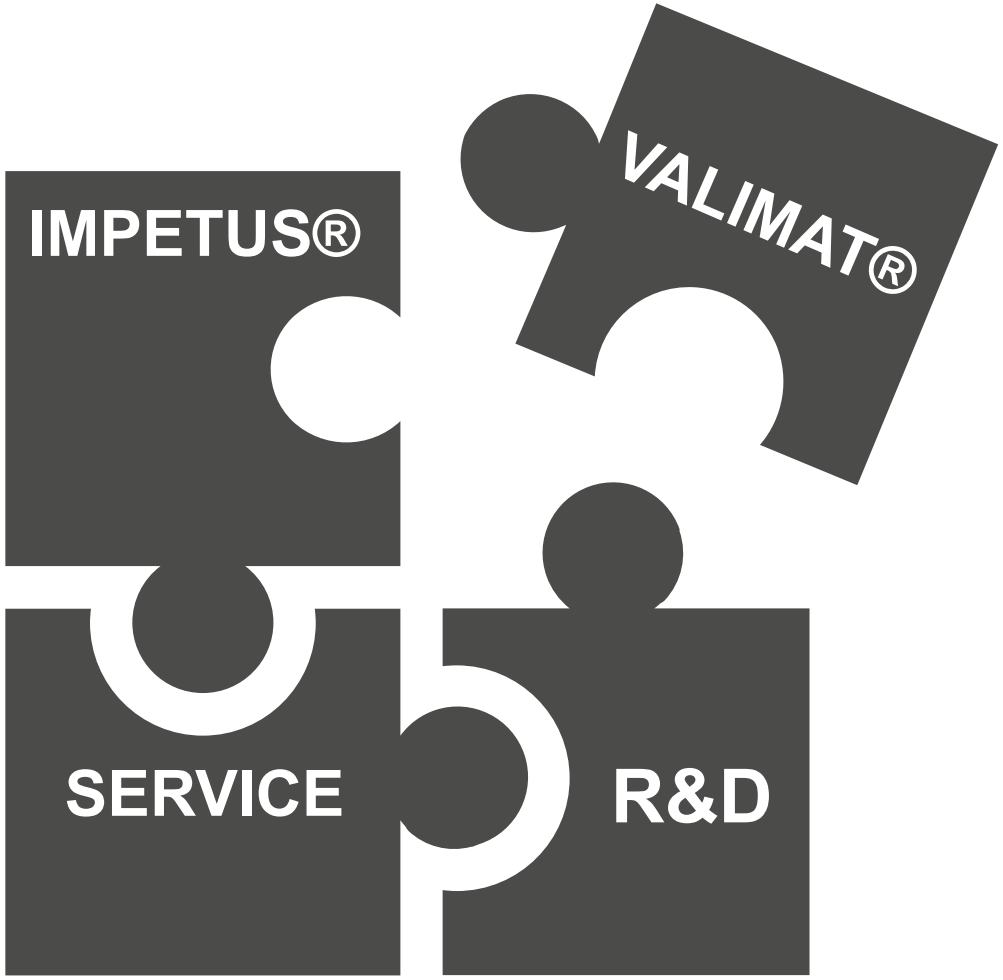

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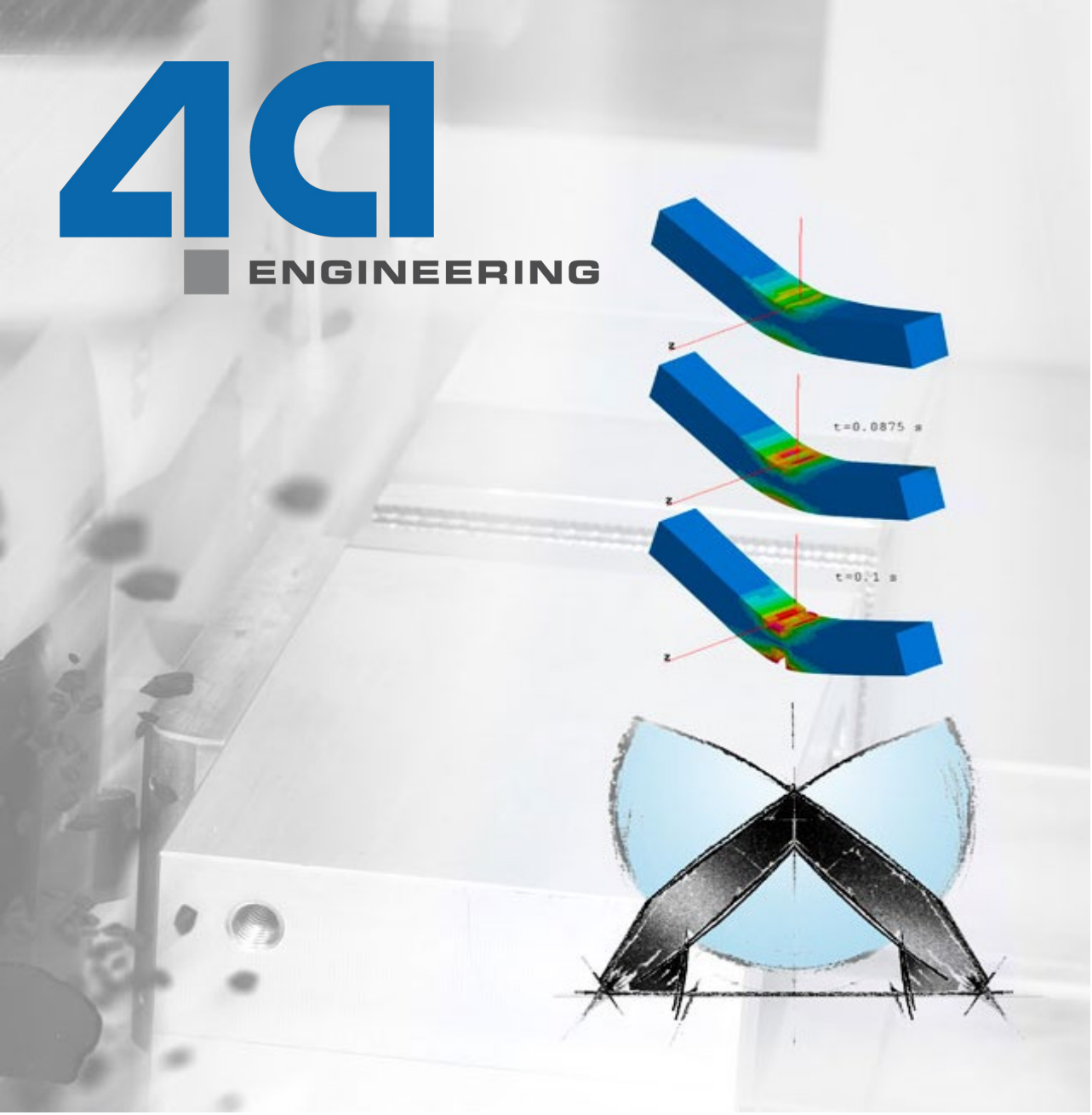

efficient dynamic testing

IMPETUS

plastics

engineering

production

excellence in testing

concepts

simulation

lightweight

prototypes

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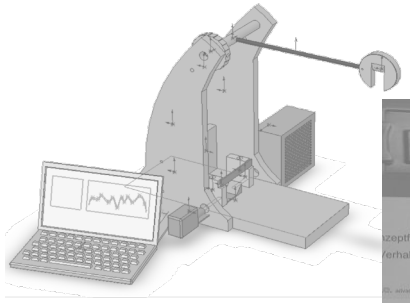
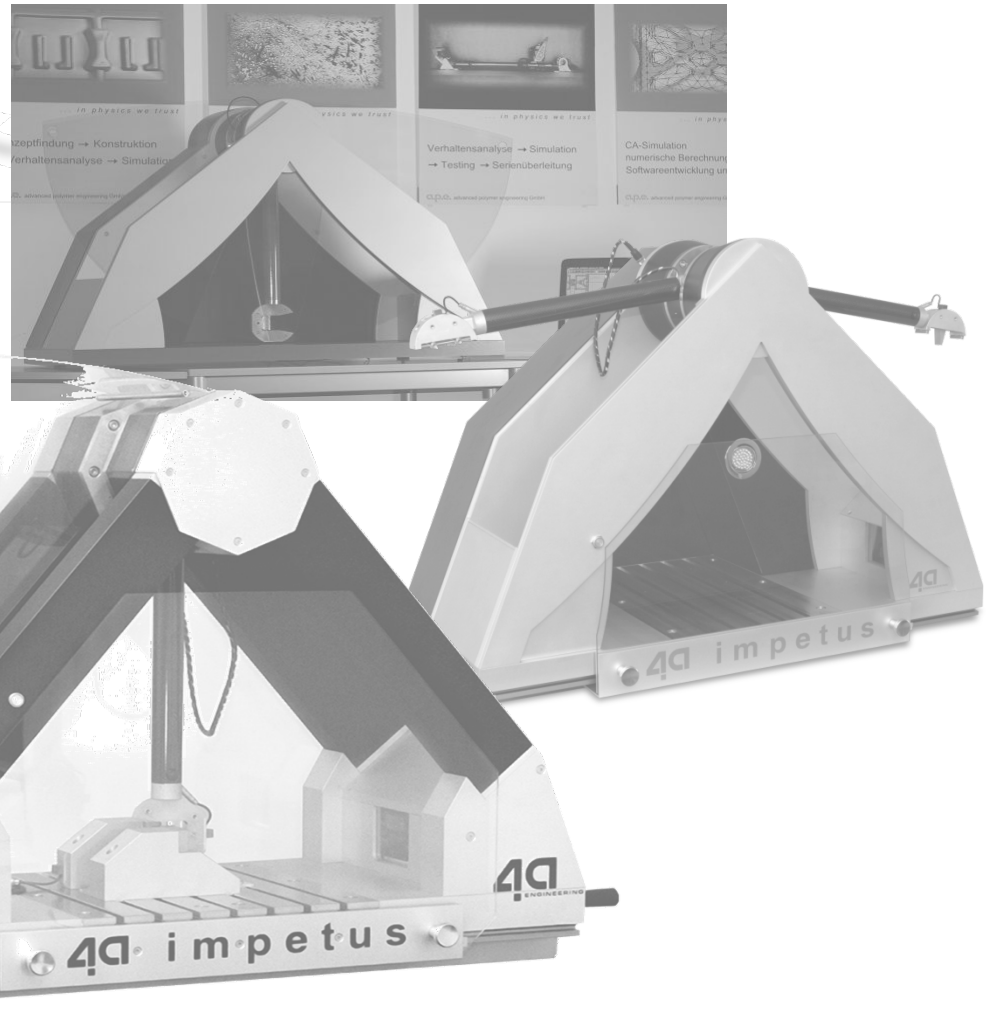
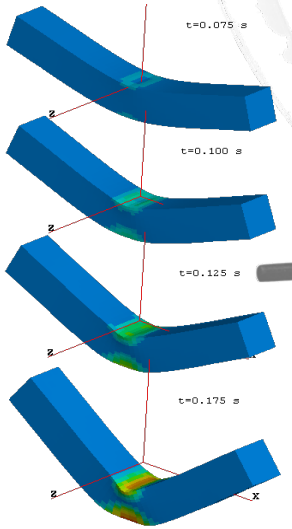
Efficient dynamic testing

- desktop testing device
- instrumented high-speed testing
  - acceleration → force / displacement
- impact velocity 0.5 – 4.5 m/s

IMPETUS







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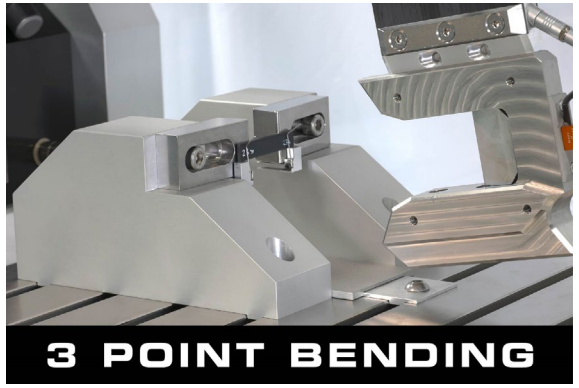
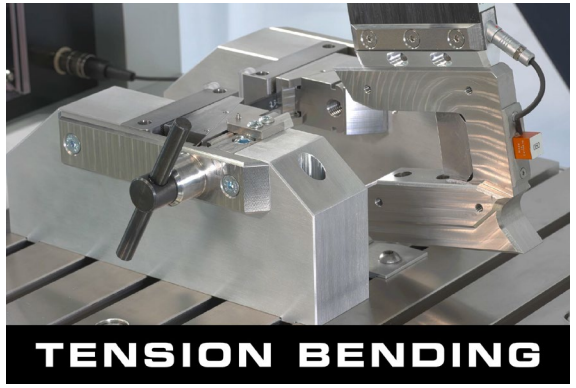
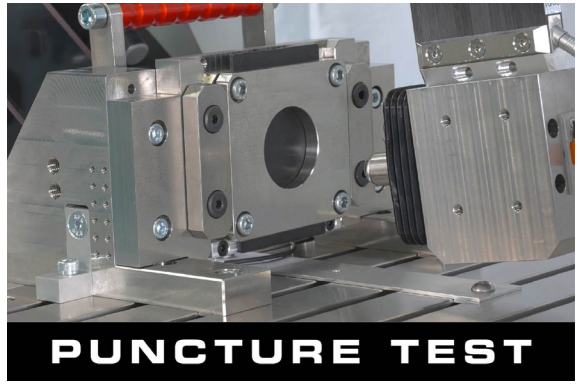
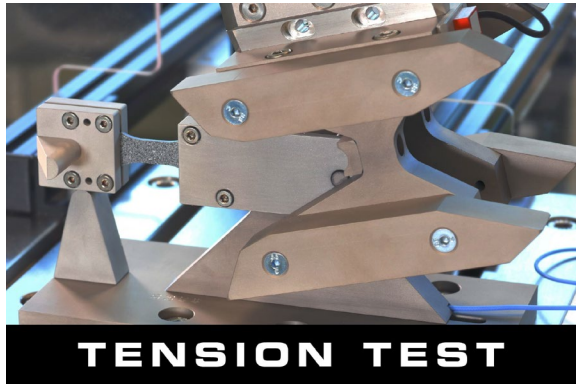
IMPETUS® - universal testing machine

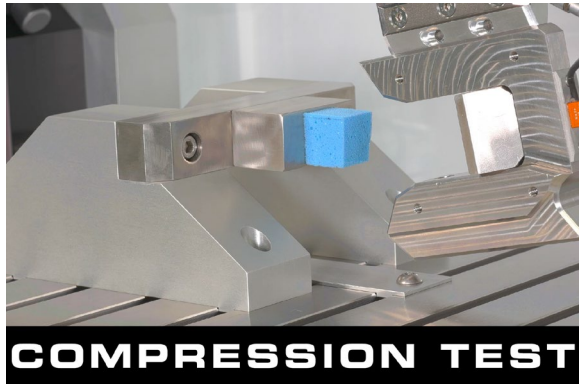
IMPETUS

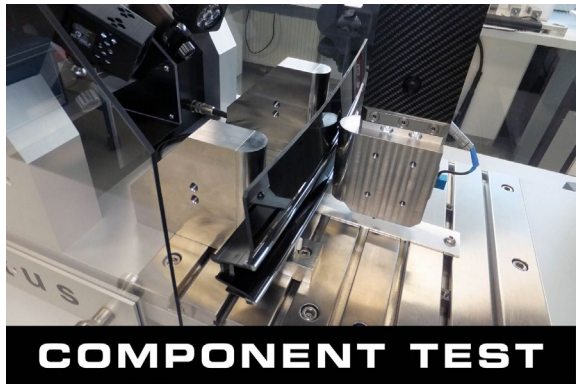


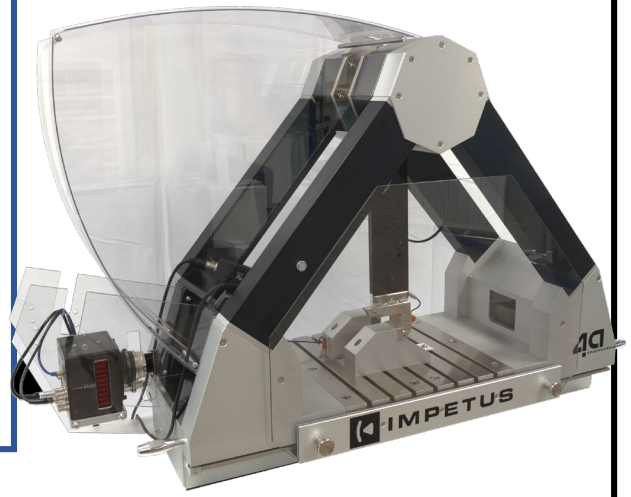












BASIC

STANDARD

PROFESSIONAL

YouTube

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from test to material card

VALIMAT

plastics

engineering

production

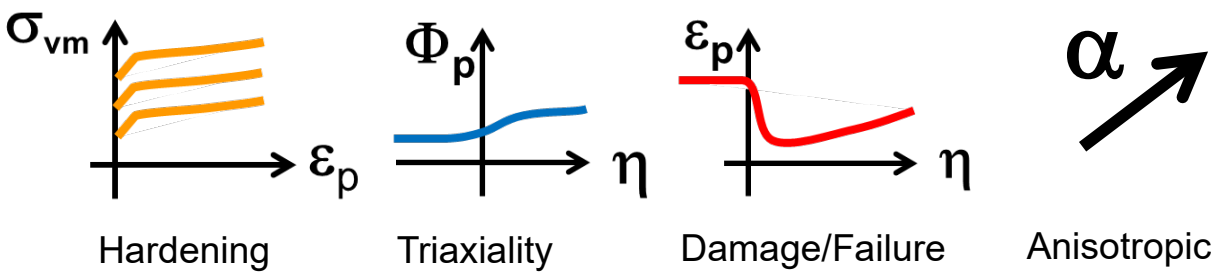
excellence in validation

concepts

simulation

lightweight

prototypes



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AUTOFIT feature

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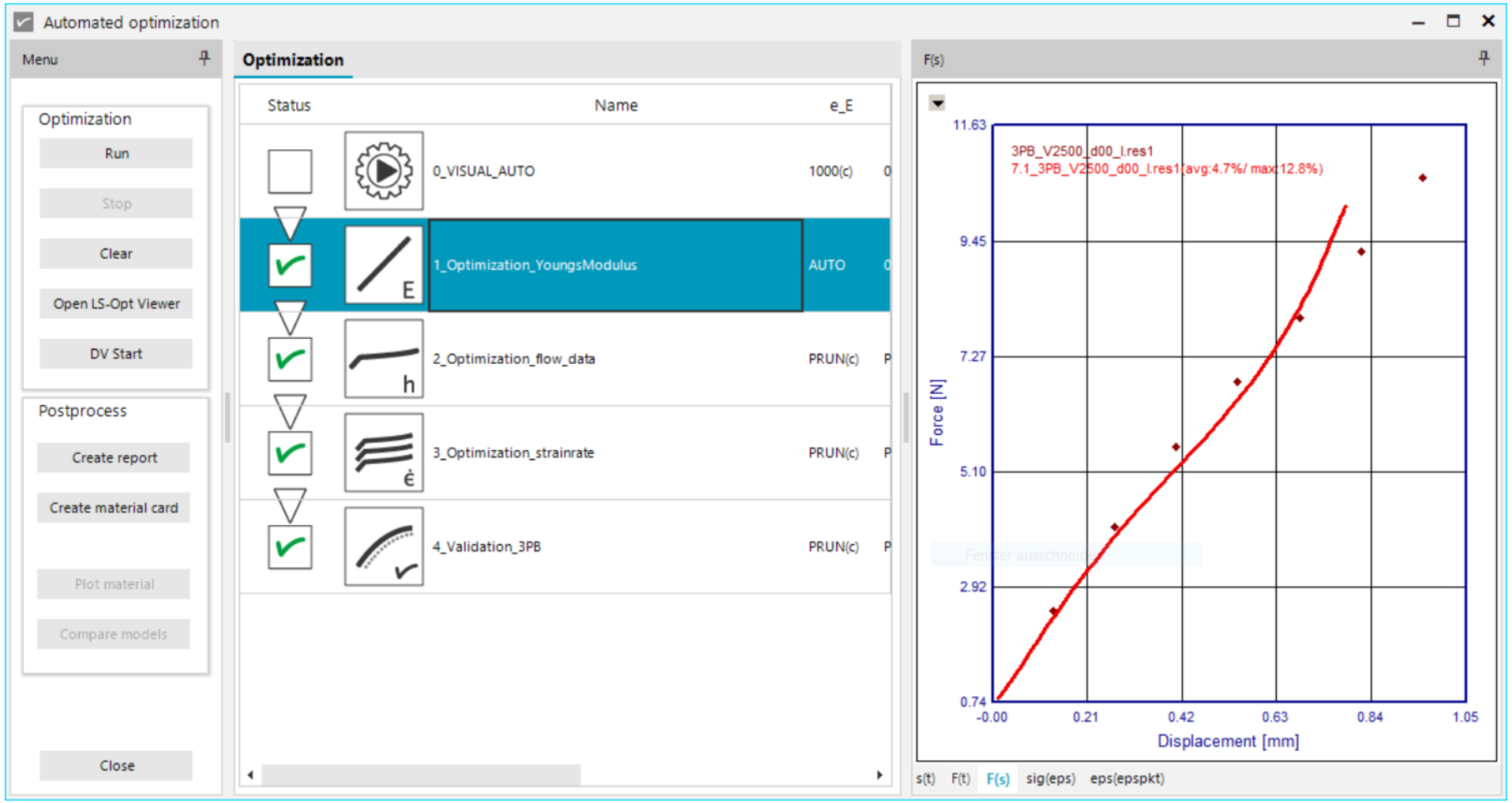

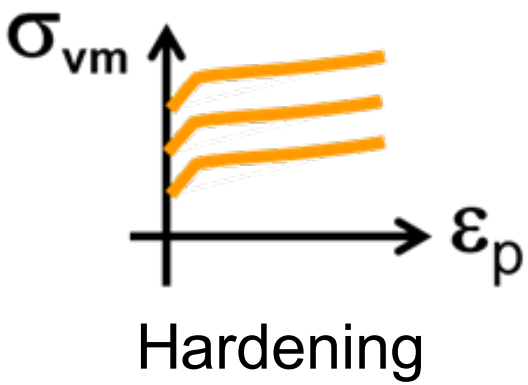

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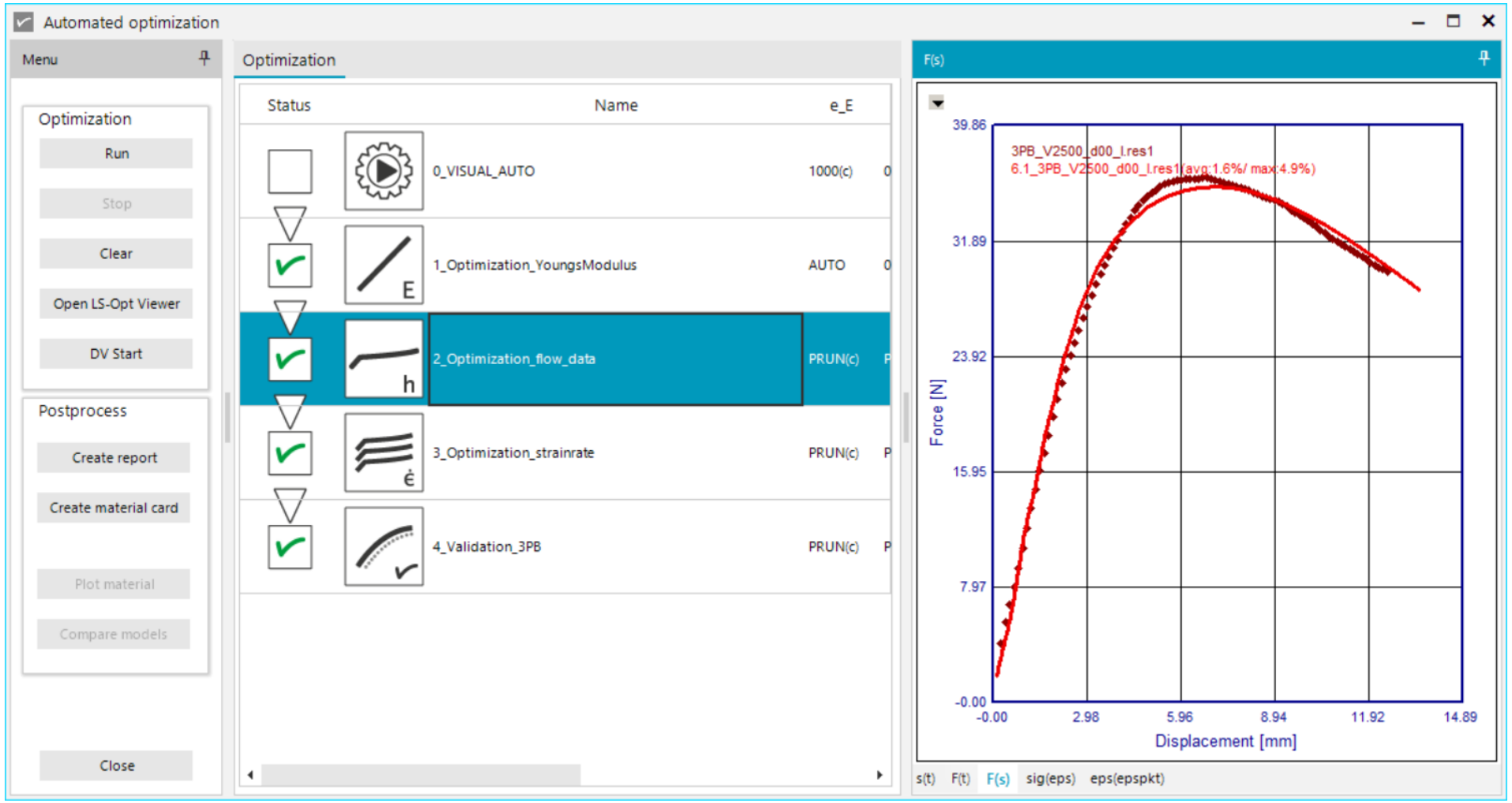

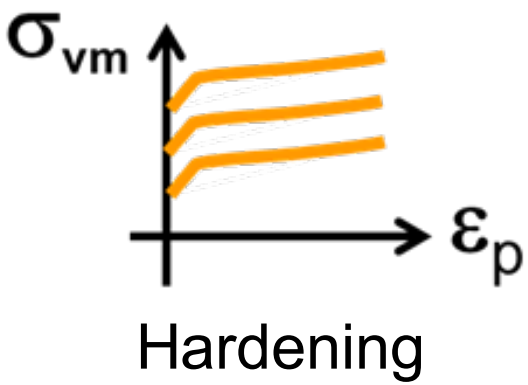

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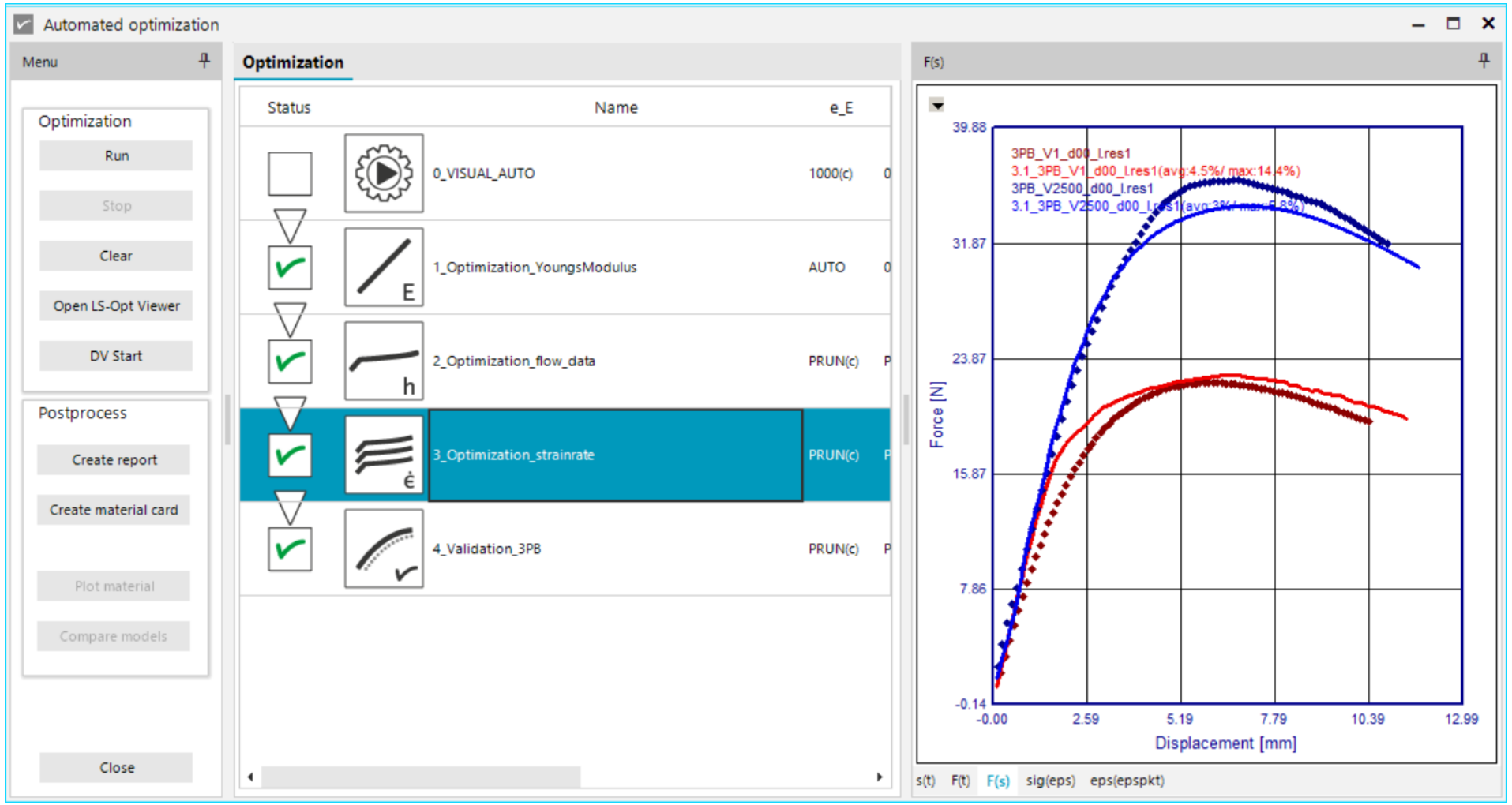

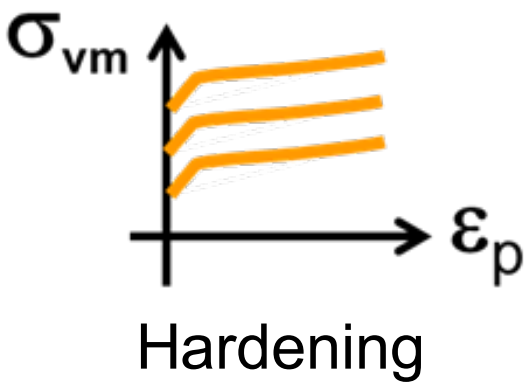

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AUTOFIT feature

VALIMAT

Automated optimization

Menu

Optimization

Run

Stop

Clear

Open LS-Opt Viewer

DV Start

Postprocess

Create report

Create material card

Plot material

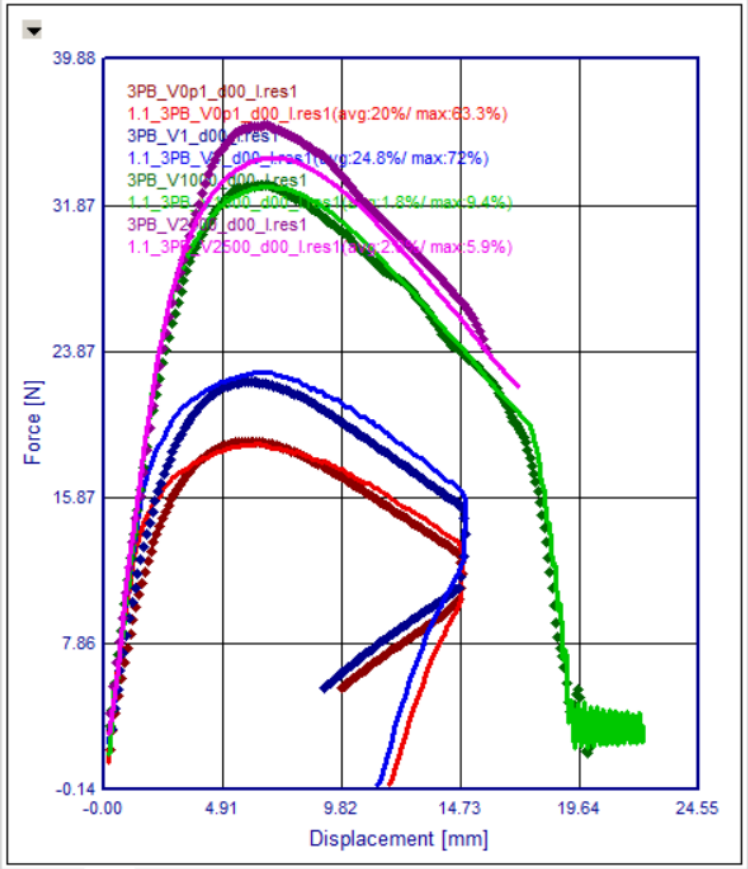
Compare models

Close

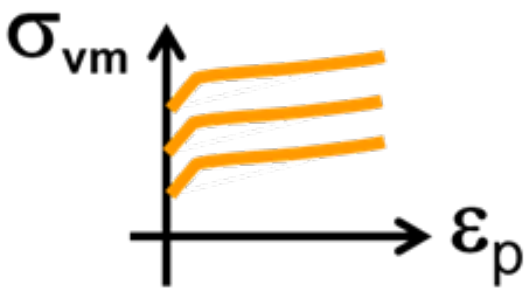
Optimization

Status	Name	e_E	
	0_VISUAL_AUTO	1000(c)	0
✓	1_Optimization_YoungsModulus	AUTO	0
✓	2_Optimization_flow_data	PRUN(c)	P
✓	3_Optimization_strainrate	PRUN(c)	P
✓	4_Validation_3PB	PRUN(c)	P

F(s)



s(t) F(t) F(s) sig(eps) eps(epspkt)



Hardening

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AUTOFIT feature

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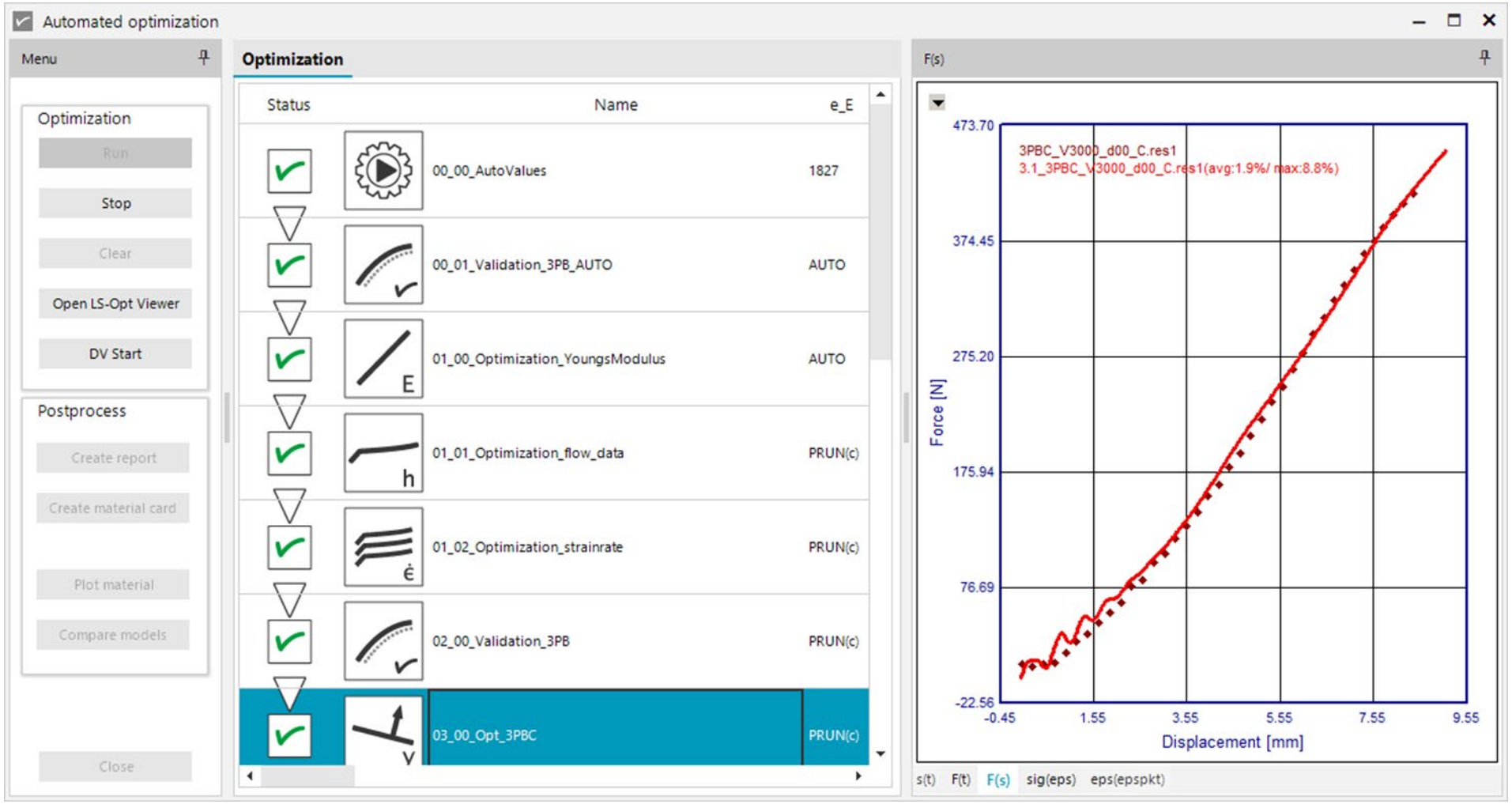

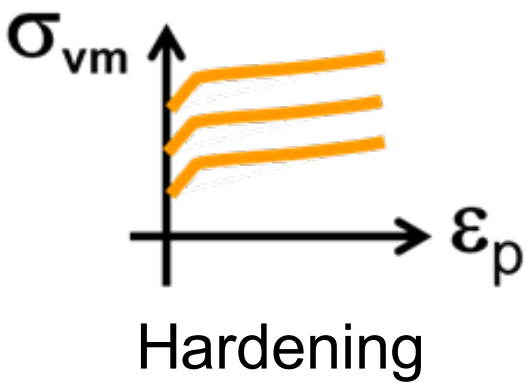

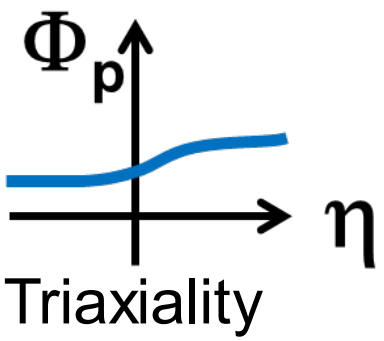

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AUTOFIT feature

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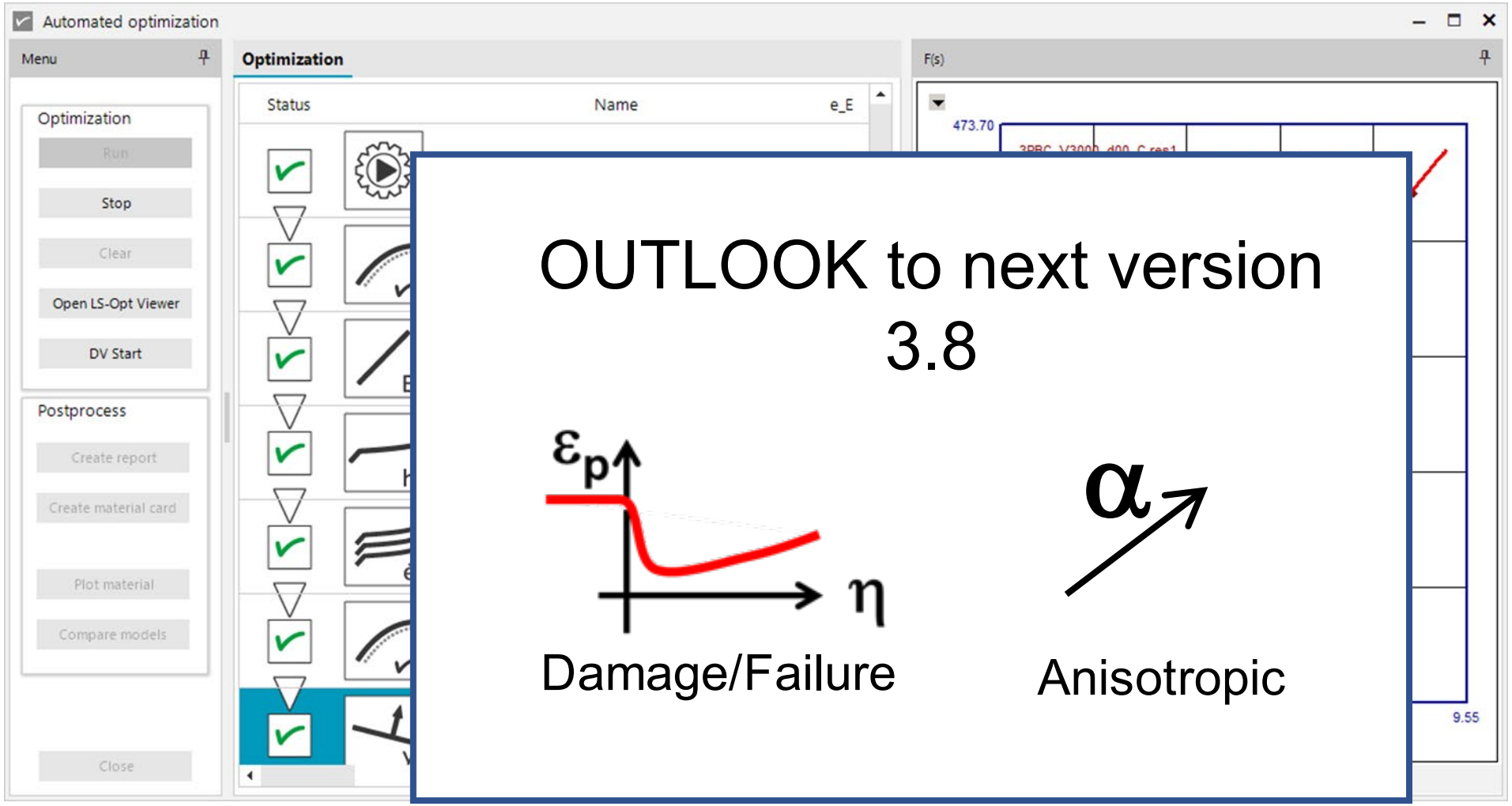
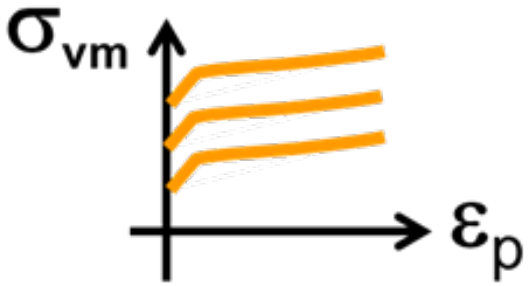


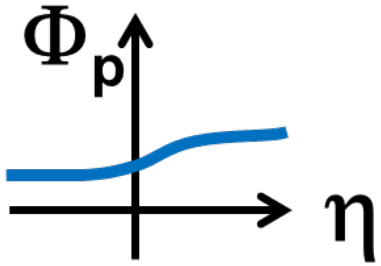
OUTLOOK to next version 3.8

Damage/Failure

Anisotropic



Hardening



Triaxiality

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validated material cards

plastics
engineering
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excellence in plastics
concepts
simulation
lightweight
prototypes

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validated material cards

Comprehensive overview

- isoP - isotropic Plastic
- frP – fibre reinforced Plastic
- comP - composite
- foam

Materialcard detail	basic	standard	prof.
strain rate/hardening	isoP & frP		
compression/tension asymmetry		isoP & frP	
damage/failure		isoP & frP	
validation on component			isoP & frP

4a test packages

thermoplastic materials

setups & measurement definition

VALIMAT

IMPETUS

excellence in ..

from test to material card

efficient dynamic testing for

plastics, foams, composites, ...

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*Standard package optionally includes temperature-based measurements

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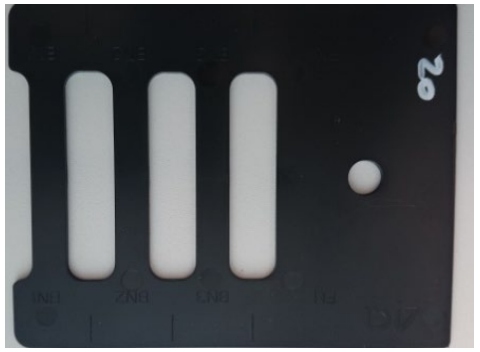
validated material cards - injection mold for plastics

Dom & Wall thickness

Melt- & Weldlines



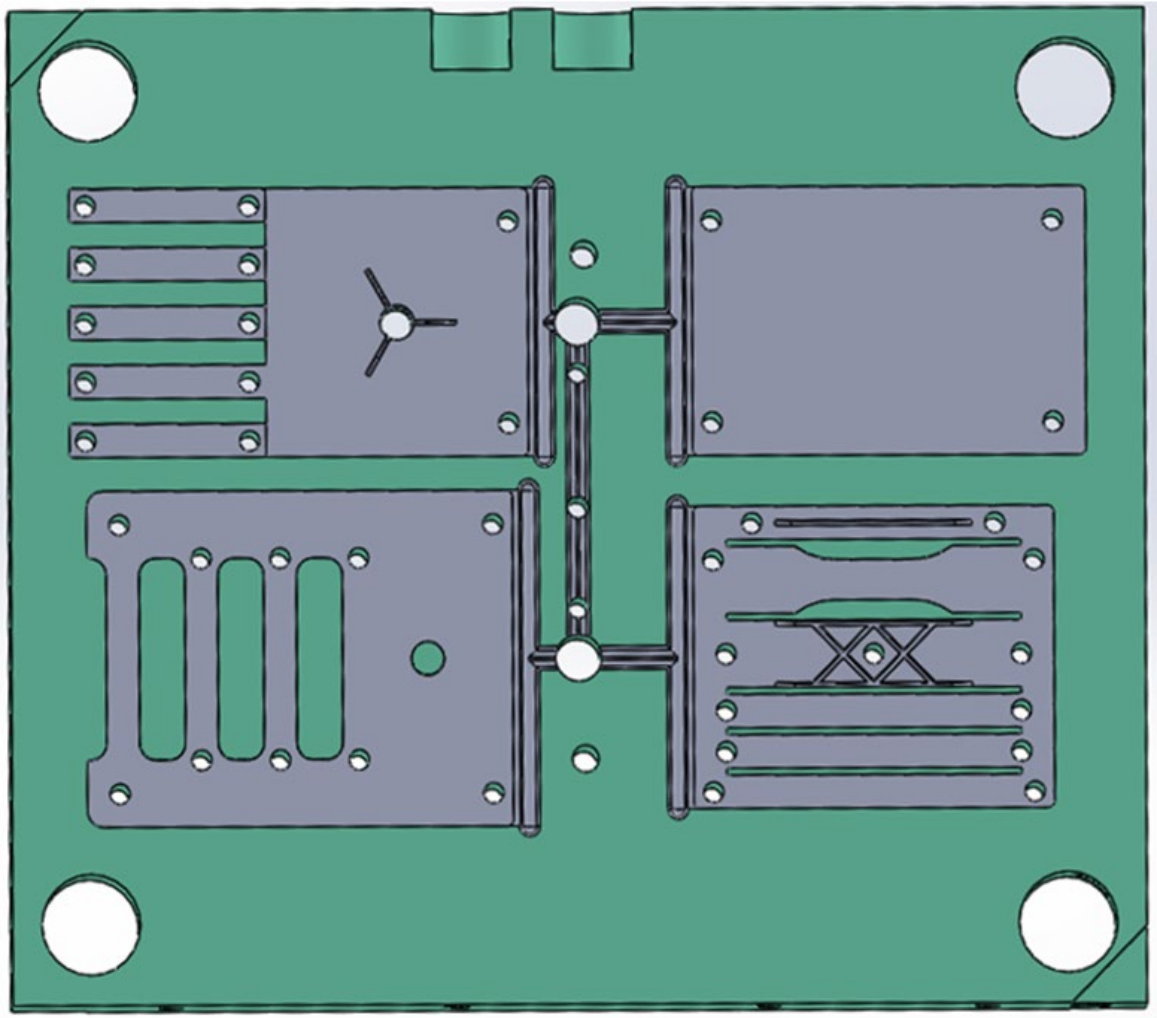


Plate 120 x 80 x 2 mm

Multi-Specimen &
XX-Rib & Component

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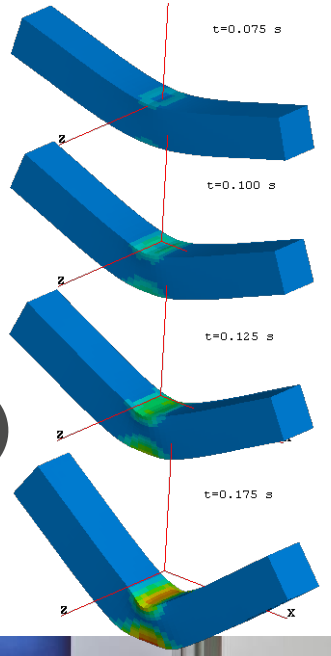
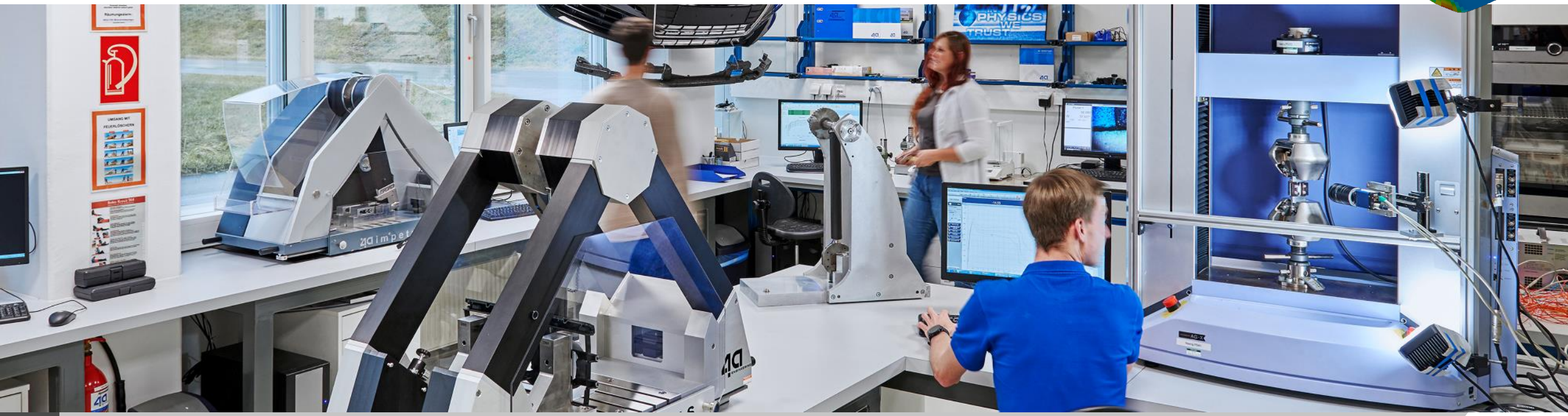
validated material cards
ready to use for your crashsimulation



SERVICE



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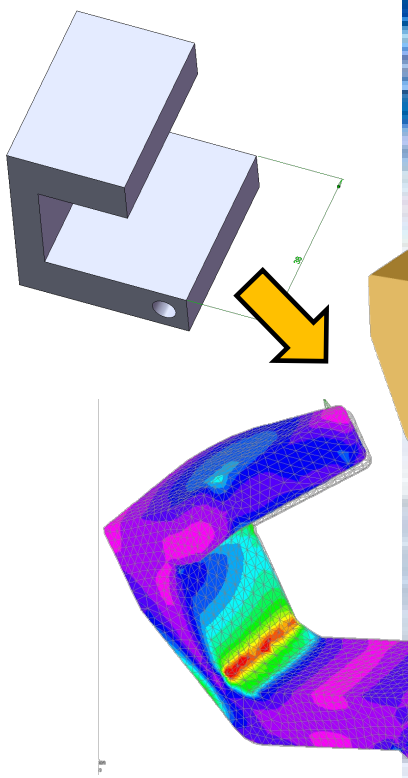

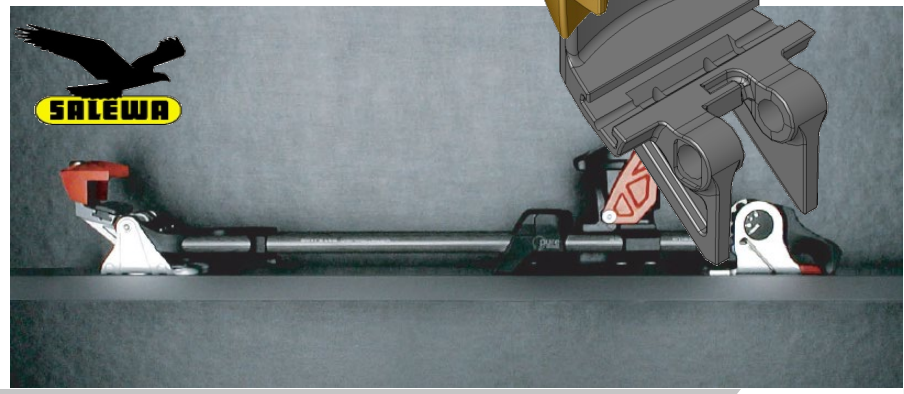

SERVICE

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concepts

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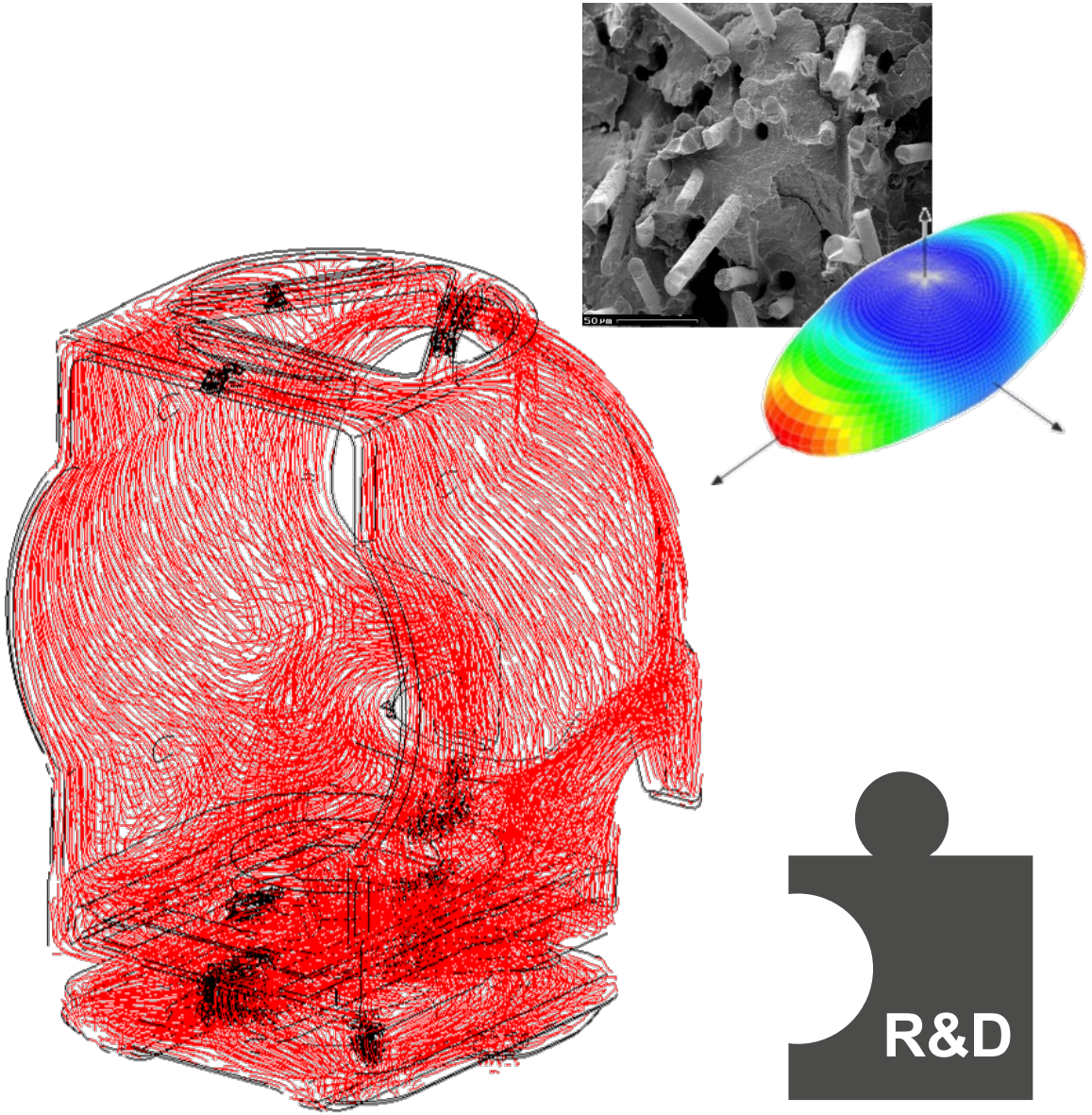

R&D

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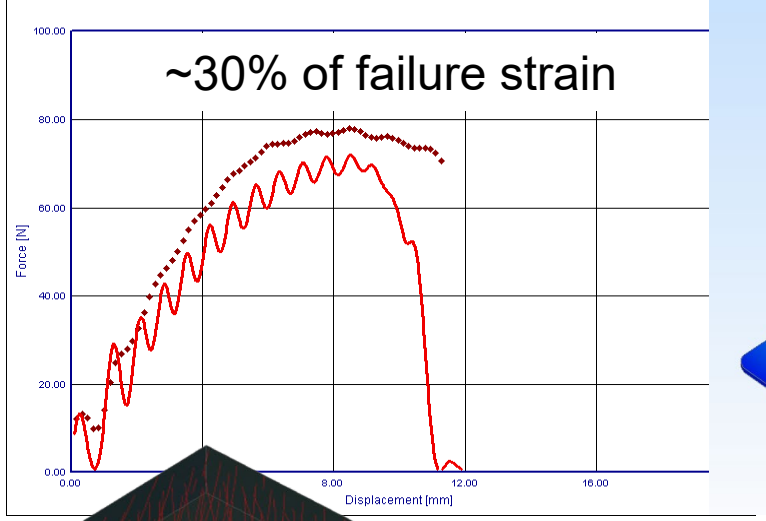
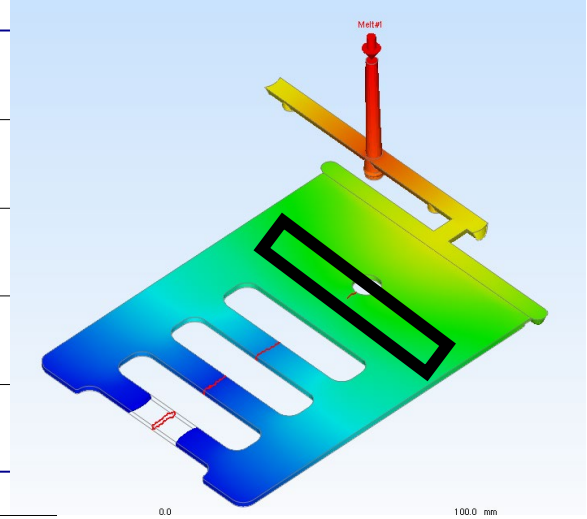
Research and development

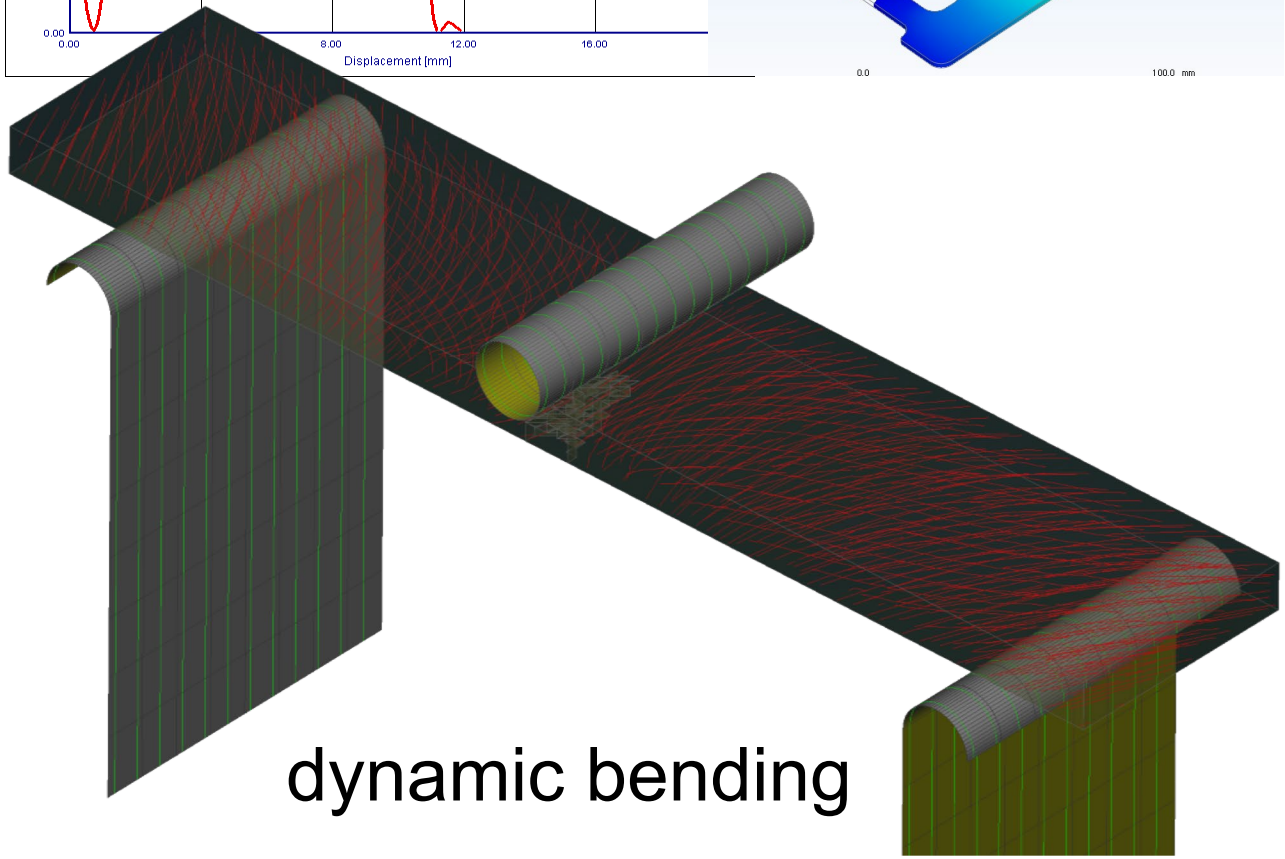
- material models
- simulation methods
- testing methods





VMAP

ITEA3



dynamic bending

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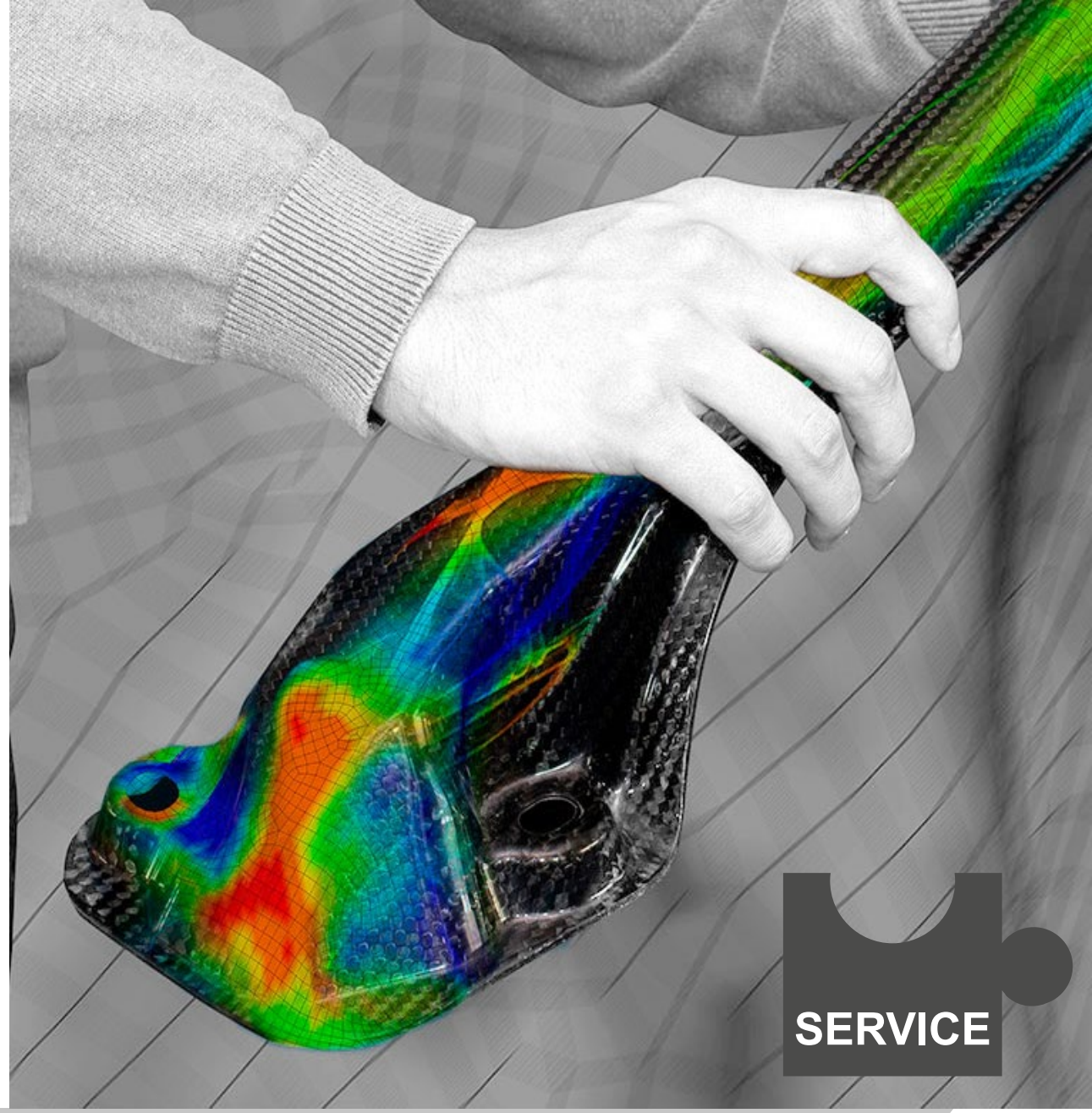
ENGINEERING

- product development
- material characterization
- numerical simulation methods
- polymer and materials science
- fiber reinforced plastics and composites



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Partners and special thanks

Plastics on the test rig
Testing and simulation
3rd & 4th March 2020
TECHNOLOGIETAG

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★★★★S
Bergresort Werfenweng
Salzburger Land

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