PERMAS

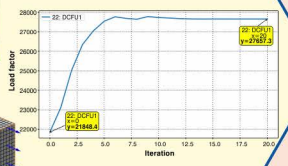
News in Version 18

Maximizing Buckling Load Factor

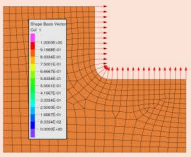
Model with B.C. and loading

Optimized shape

Shape Basis Vectors (2 of 10)

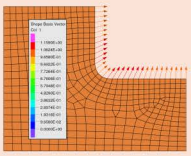


Normal Shape Changes



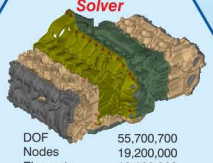
Notch stresses will increase

Non-Normal Shape Changes

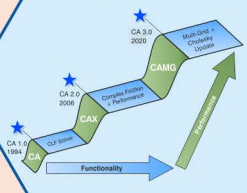


Notch stresses will decrease

Contact Multi-Grid Solver

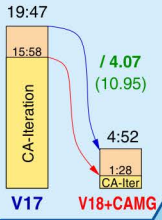


History of PERMAS contact analysis



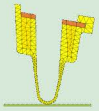
DOF	55,700,700
Nodes	19,200,000
Elements	13,100,000
Contact DOF	144,000
Gasket Elts.	38,500
Time steps	37
Temp. states	2

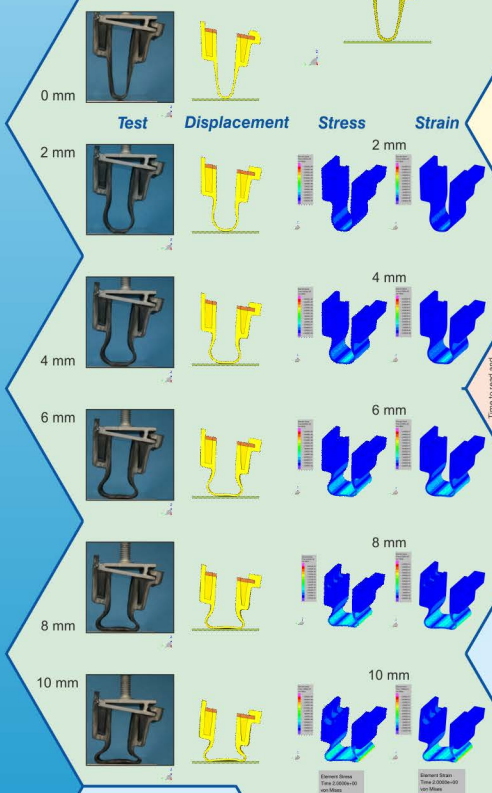
2*Xeon 6146 + XPU (24 cores + P100/16GB)



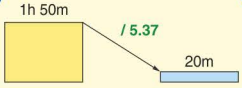
Hyperelastic Material

Comparison of test and simulation

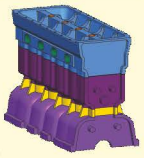




Parallel nonlinear element stress computation

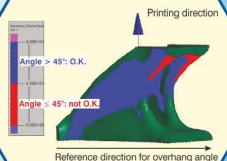


Xeon 8260 @ 2.0 Ghz (2x24 cores)
Out-of-core job (2.54 TiB disk I/O)

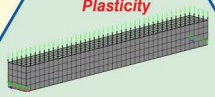


DOF	40,000,000
Contacts	70,000
Nodes	13,400,000
Elements	10,200,000
With plasticity	

Overhang Angle as Optimization Constraint



Transverse Isotropic Plasticity

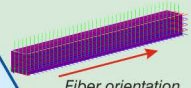


PERMAS4EDU PERMAS for Education

PERMAS4EDU

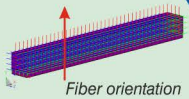
Free-of-charge PERMAS and VisPER with limited model size for non-commercial use.

Bending ∥ isotropic plane



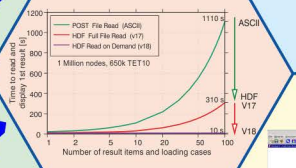
Fiber orientation

⊥ isotropic plane

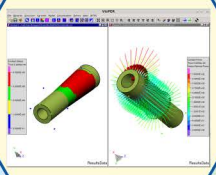


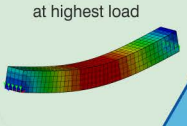
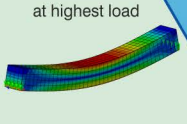
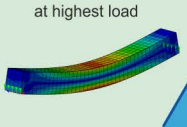
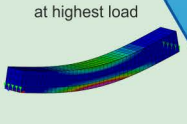
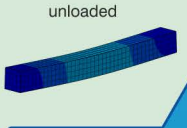
Fiber orientation

Fast Post-Processing with HDF file format

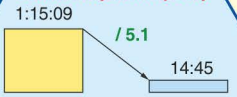


Multiple Windows for Postprocessing



	Displacement	Nodal stress	Nodal strain	Plastic strain	Plastic deformation
at highest load					
unloaded					

Parallel computation of nonlinear heat conductivity and capacity

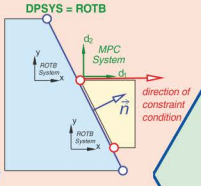


DOF	23,400,000
Nodes	24,300,000
Elements	18,400,000

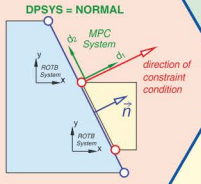
Xeon 8180 @ 2.5 GHz (28 cores)

Coupling of MPC SURFACE like for Contact

$MPC ISURFACE DPDOFS = 1
DPSYS = ROTB

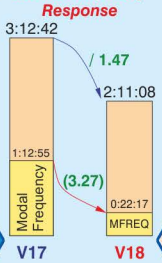


$MPC ISURFACE DPDOFS = 1
DPSYS = NORMAL



As shown here, bending of fibre reinforced plastics should be perpendicular to the fibre direction and not in fibre direction.

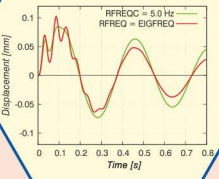
Modal Frequency Response



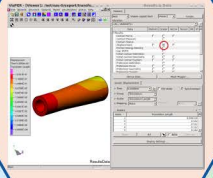
Nodes	3,500,000
Modes	15,400
Excitation frequ.	566
Load cases	51
SOLV = ITER	

2*Intel Xeon 8260L (48 cores)

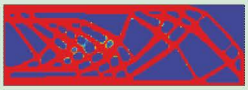
Equivalent Viscous Damping for Material Damping



New Designed Postprocessing

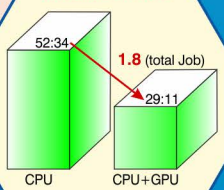


New Min/Max Member Size Handling



Min/max member size (2/6 times edge length).

PERMAS on GPU



2*Intel 6146(40core)
Nvidia Tesla V100

... as busy as a bee!

INTES GmbH
Breitwiesenstr. 28
D-70565 Stuttgart
Phone: +49-711-784 990
Fax: +49-711-784 9910
E-mail: info@intes.de
Web: www.intes.de