



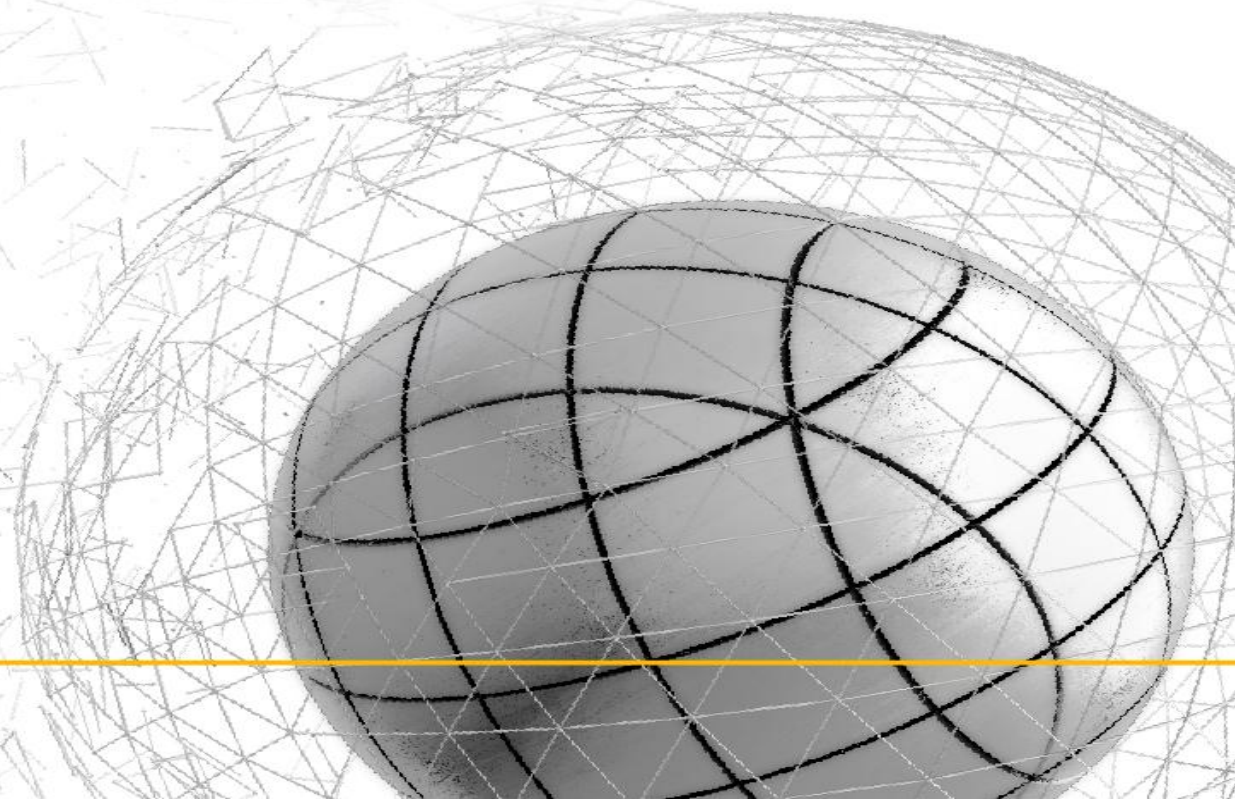
MIDAS

MESH FREE

沈約翰

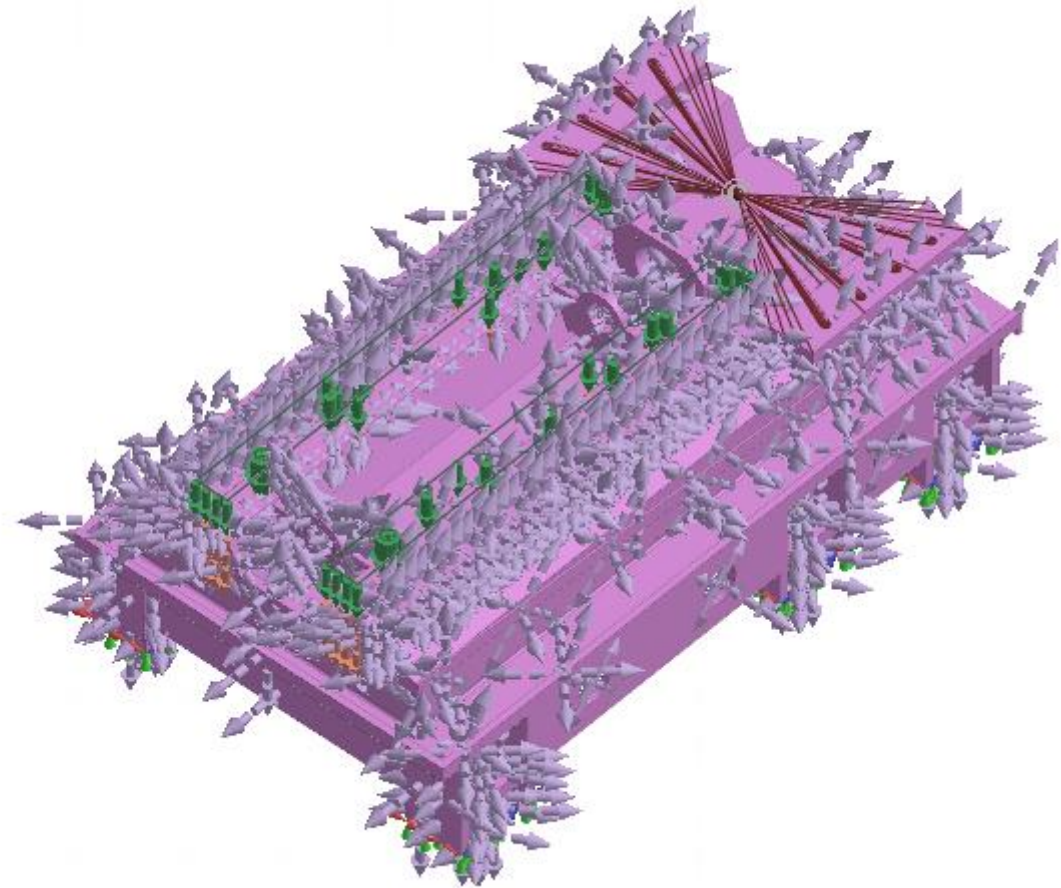
support@midasuser.com.tw

Simple, but Everything.

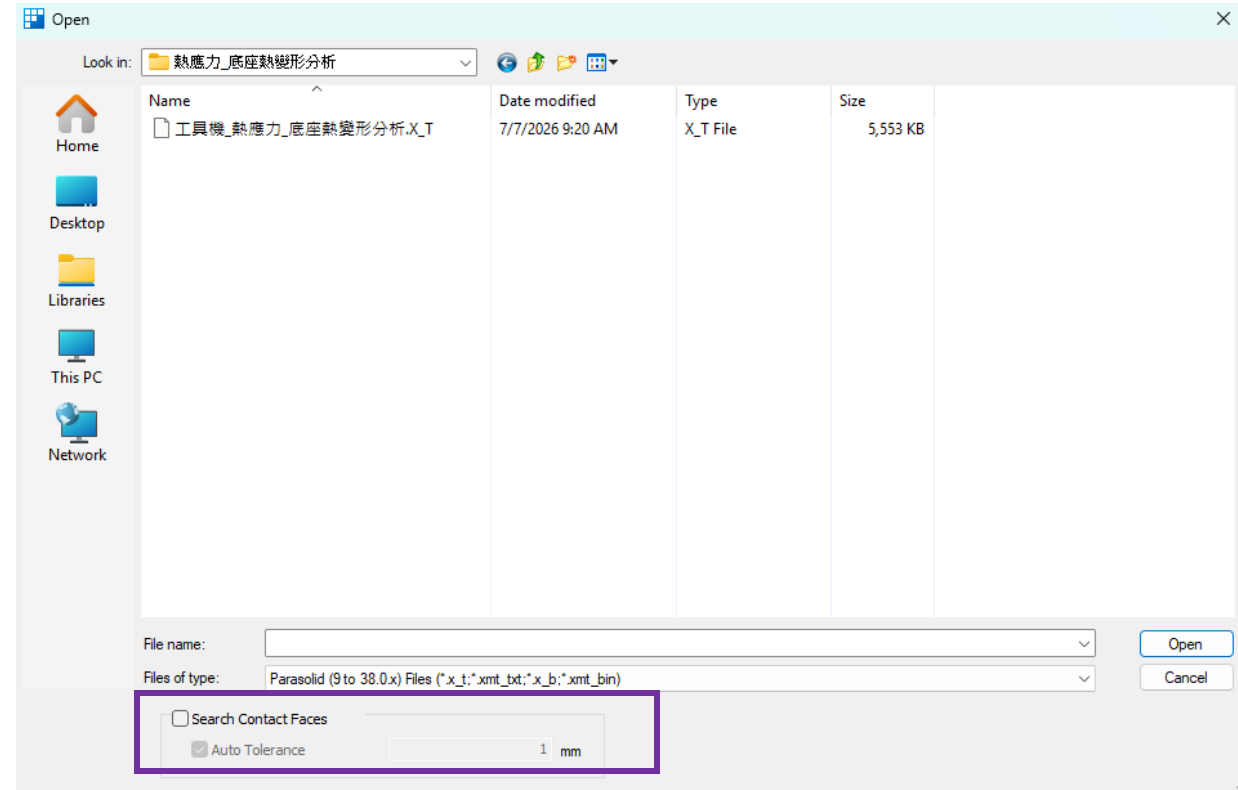
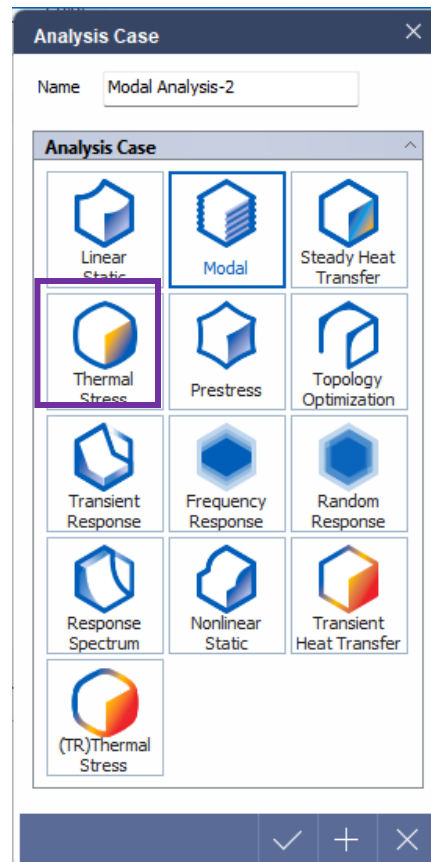


CASE 2: Thermal Stress

Analysis Case: Thermal Stress
Material: Alloy Steel
Contact: Welded
Flux: 0.005 W/mm^2
Ambient Temperature: 28°C
Film Coefficient: $\text{W/mm}^2[^\circ\text{C}]$
Boundary Condition: Fixed at the bottom
Load: Concentrated mass 500 kg.
Pressure 20 MPa.
Gravity

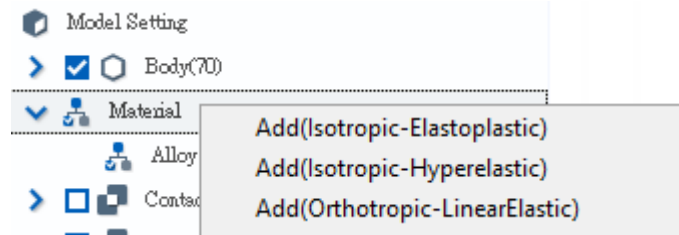


CASE 2: Heat Transfer Analysis



Parasolid (9 to 38.0.x) Files (*.x_t;*.xmt_bin;*.x_b;*.xmt_bin)
 Parasolid (9 to 38.0.x) Files (*.x_t;*.xmt_bin;*.x_b;*.xmt_bin)
 ACIS (R1 - 2026 1.0) Files (*.sat;*.sab;*.asat;*.asab)
 STEP (AP203, AP214, AP242) Files (*.stp;*.step)
 IGES (Up to 5.3) Files (*.igs;*.iges)
 Pro-E (16 - Creo 12.0) Files (*.prt;*.prt.*;*.asm;*.asm.*)
 CATIA V4 (CATIA 4.1.9 - 4.2.4) Files (*.model;*.exp;*.session)
 CATIA V5 (V5 R8 - V5-6 R2026) Files (*.CATPart;*.CATProduct)
 SolidWorks (98 - 2026) Files (*.sldprt;*.sldasm)
 Unigraphics (11 - NX2506) Files (*.prt)
 Inventor Part (V6 - V2026) Files (*.ipt)
 Inventor Assembly (V11 - V2026) Files (*.iam)
 Solid Edge (V18 - SE2026) Files (*.par;*.asm;*.psm)
 All Files (*.*)

GEOMETRY: MATERIAL



All

Name Alloy Steel

Color

Coord. Sys. None

17-4PH, H1100
AISI 1020
AISI 1060
AISI 304 SS Annealed
AISI 310_SS
AISI 410_SS
AISI_Steel_1005
AISI_Steel_1008-HR
AISI 4340 Annealed
AISI_Steel_Maraging
Alloy Steel
Cast Alloy Steel
Cast Carbon Steel
Cast Stainless Steel
Chrome Stainless Steel
FC250
Galvanized Steel
Hp-1
Hp-4
Inconel_718_Aged
Plain Carbon Steel
S/Steel_PH15-5
SAPH-400
SE508
SGACC
SGACEN
SGARC340-E
SGCC
SGCD1
Steel
Steel_Rolled
SUS304
SUS316
SUS316L
Wrought Stainless Steel
Ductile Iron
Gray Cast Iron
Iron_40
Iron_60
Iron_Cast_G25
Iron_Cast_G40
Iron_Cast_G60
Iron_Malleable
Iron_Nodular
Malleable Cast Iron

Add(Isotropic-Elastoplastic)
Add(Isotropic-Hyperelastic)
Add(Orthotropic-LinearElastic)

Elastoplastic

Structural

Elastic Modulus 210000 N/mm²
Poisson's Ratio 0.28
Mass Density 7.7e-06 kg/mm³

Thermal Expansion
Expansion 1.3e-05
Ref. Temperature 0 [°C]

Factor of Safety Calculation

Failure Theory None
Tension 0 N/mm² Compression 0 N/mm²

Elastoplastic

Plastic Hardening Curve None Function
Stress Strain Curve None Function
Hardening Rule Isotropic
Combined hardening factor 0

Perfect Plastic
Yield Stress 0 N/mm²

General

Mass Proportional Damping 0 1/sec
Stiffness Proportional Damping 0 sec

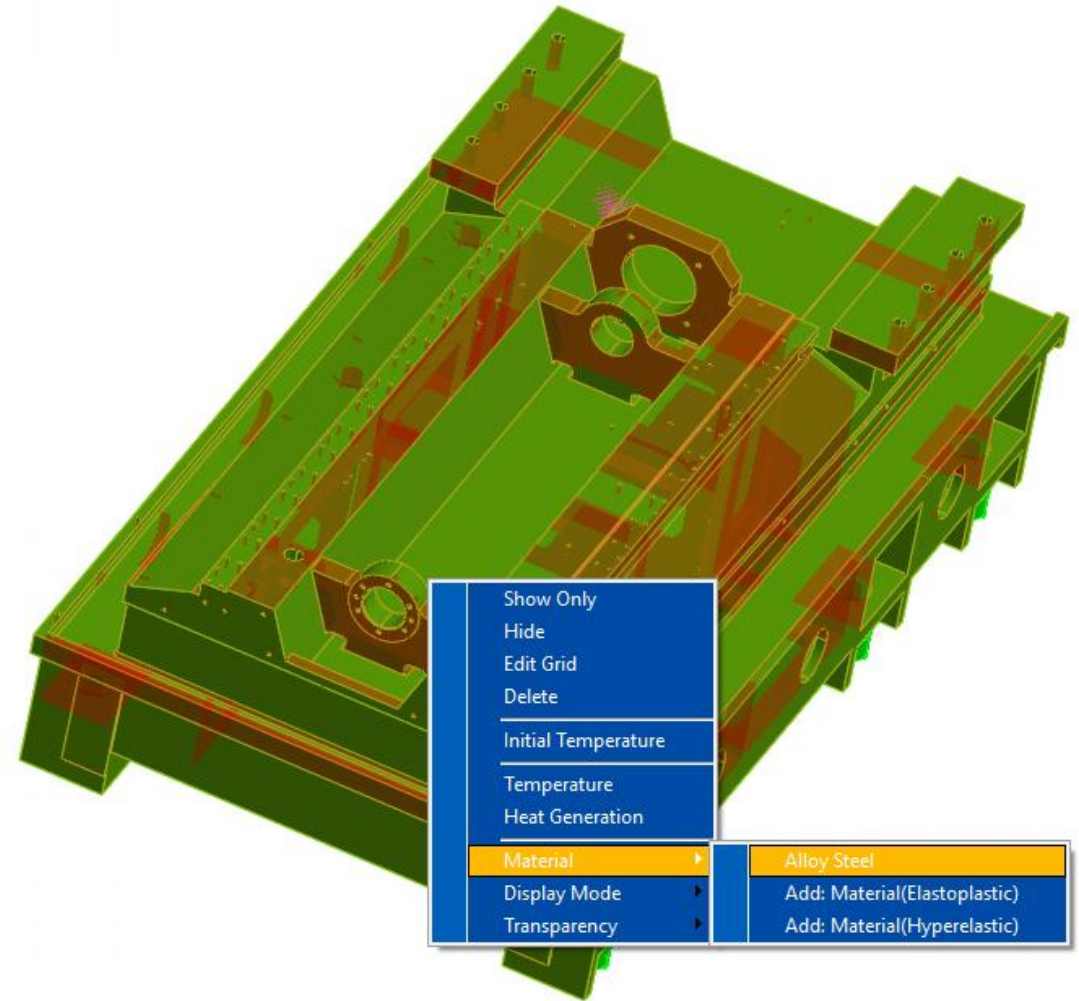
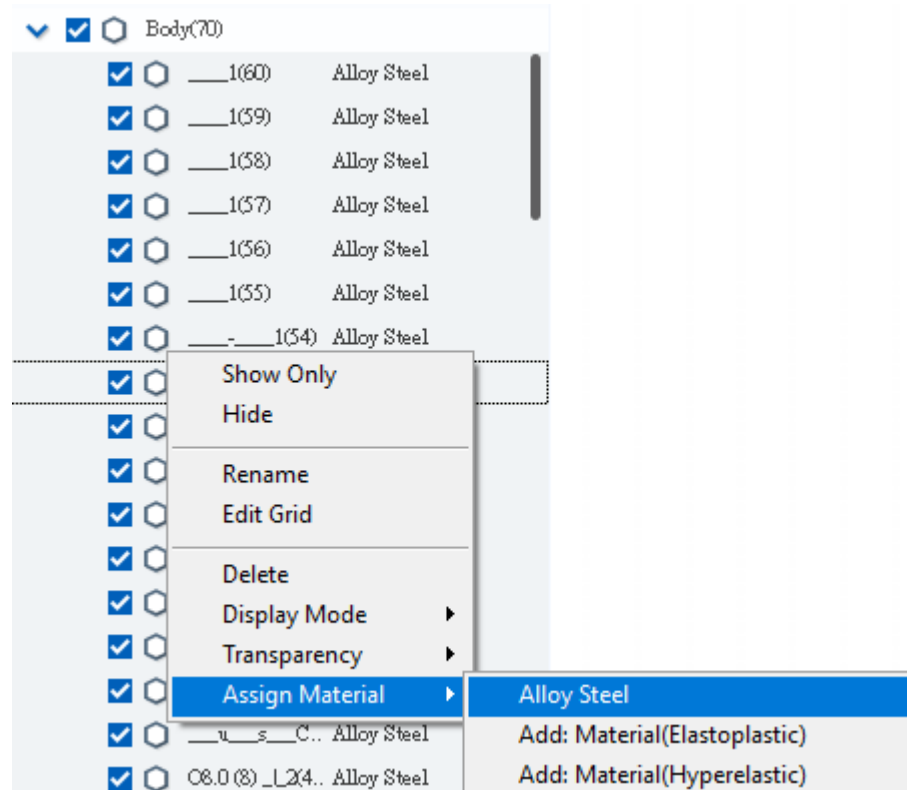
Load

Edit

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GEOMETRY: MATERIAL



ANALYSIS CONDITION: FLUX

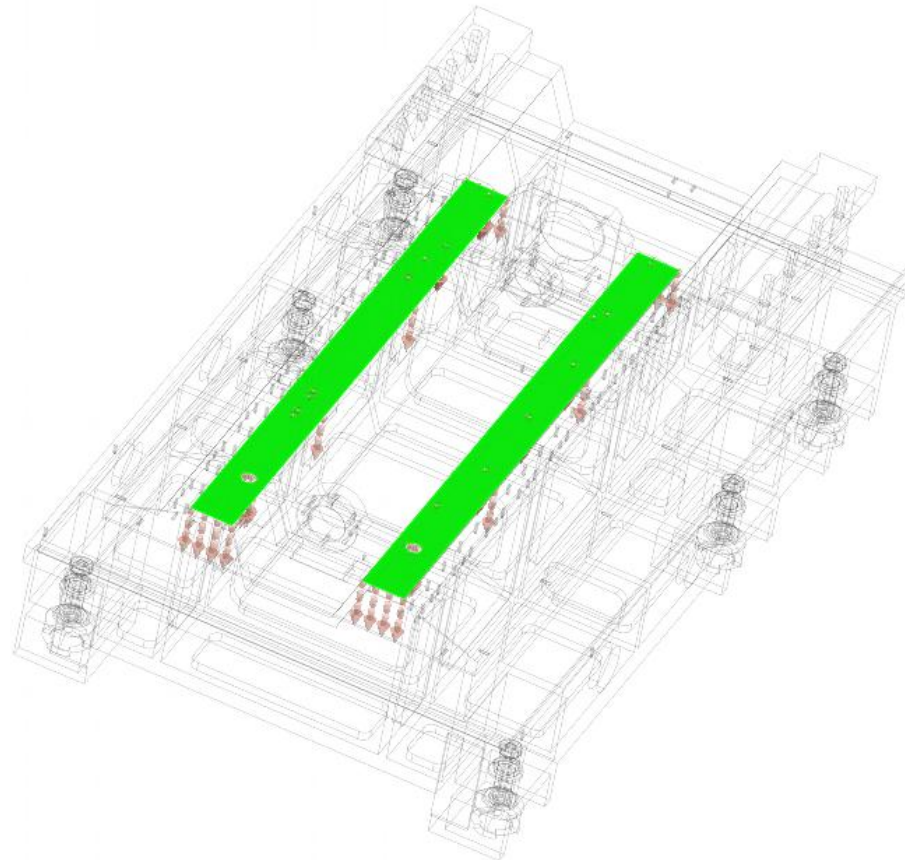


Define Heat Flux

Name

Flux

Heat Flux W/mm²



ANALYSIS CONDITION: CONVECTION AND INITIAL TEMPERATURE



Define Convection

Name Convection-1

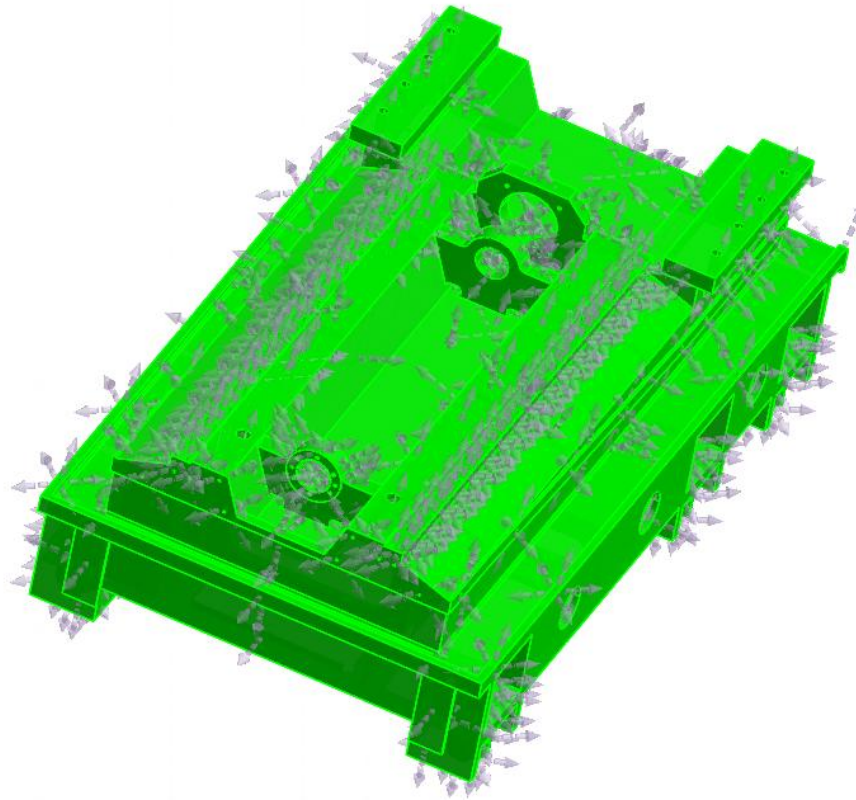
Selected 2843 Object(s)

Ambient Temperature

Temperature 28 [°C]

Film Coefficient

Film Coefficient 1e-05 W/(mm²·[°C])



Define Initial Temperature

Name Initial Temperature-1

Initial Temperature

Temperature 25 [°C]

ANALYSIS CONDITION: CONSTRAINT



Define Boundary Condition

Name

Select

Face

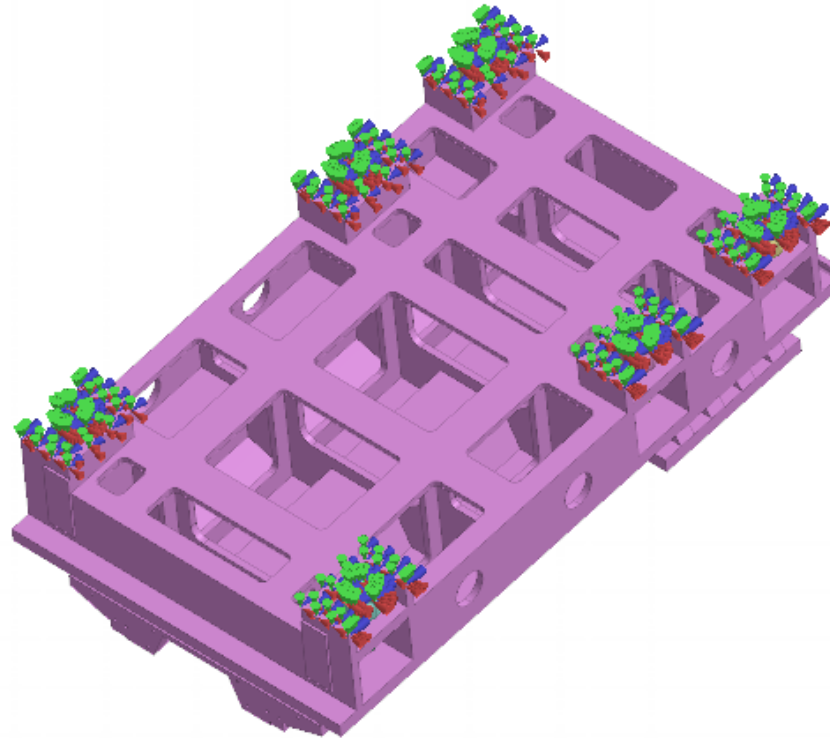
Reference Object

Type

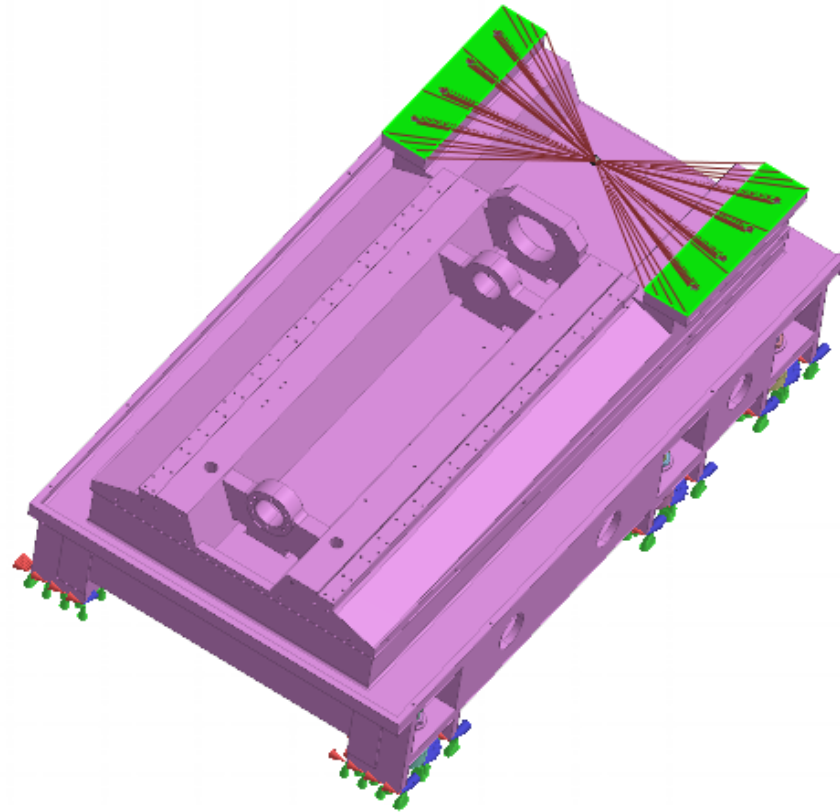
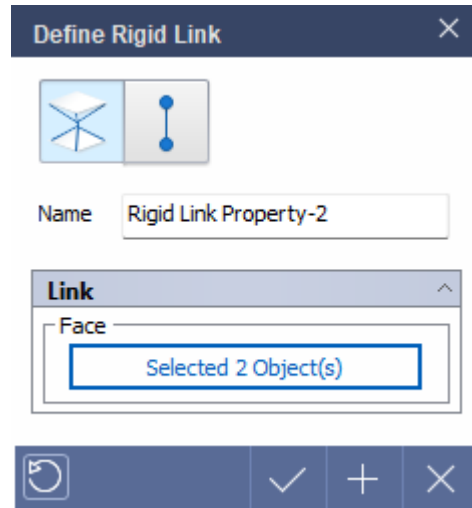
Symmetry Condition

DOF

☒ Tx
☒ Ty
☒ Tz



ANALYSIS CONDITION: RIGID LINK



ANALYSIS CONDITION: CONCENTRATED MASS



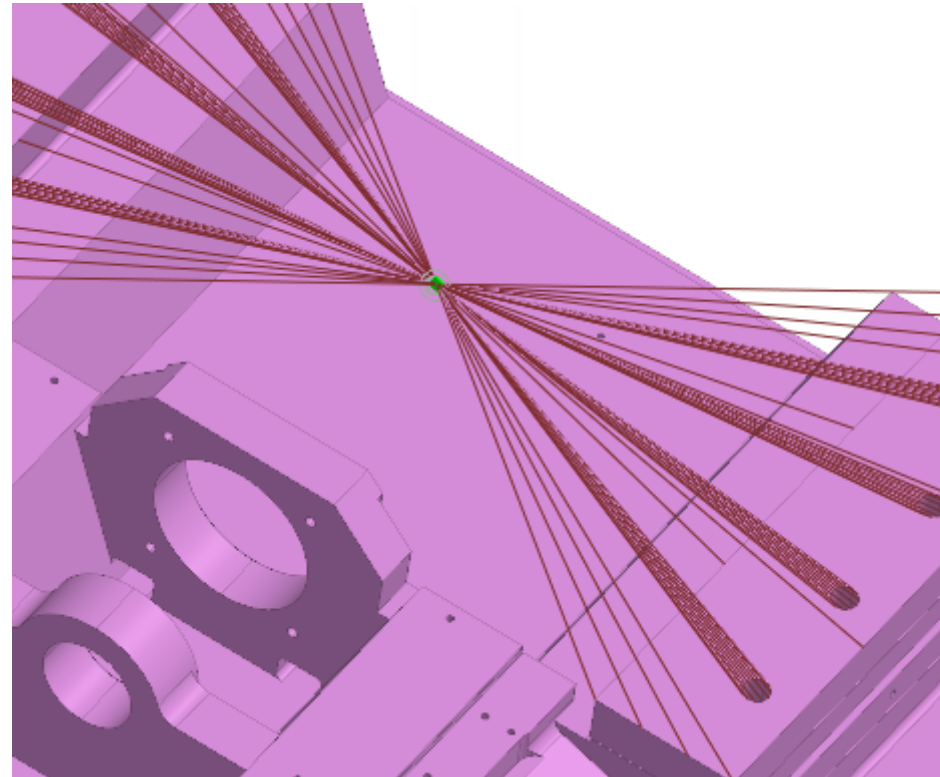
Define Concentrated Mass

Name
Concentrated Mass-1

Concentrated mass (point)

Selected 1 Object(s)

Mass
500
kg



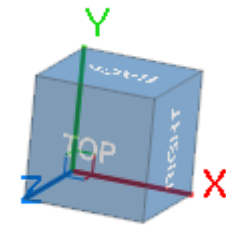
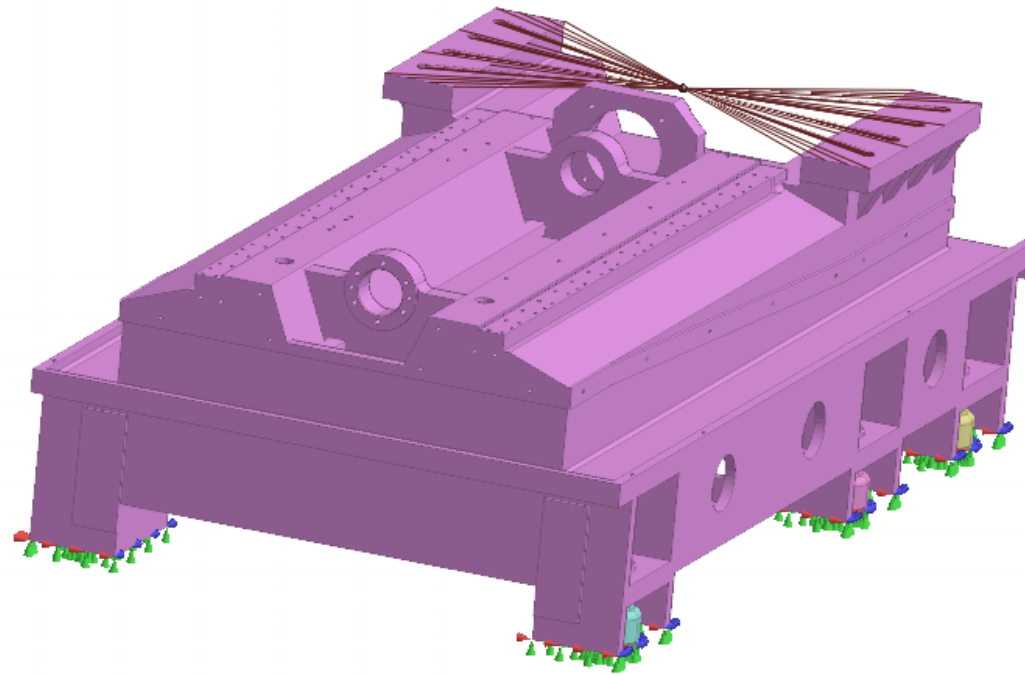
ANALYSIS CONDITION: GRAVITY



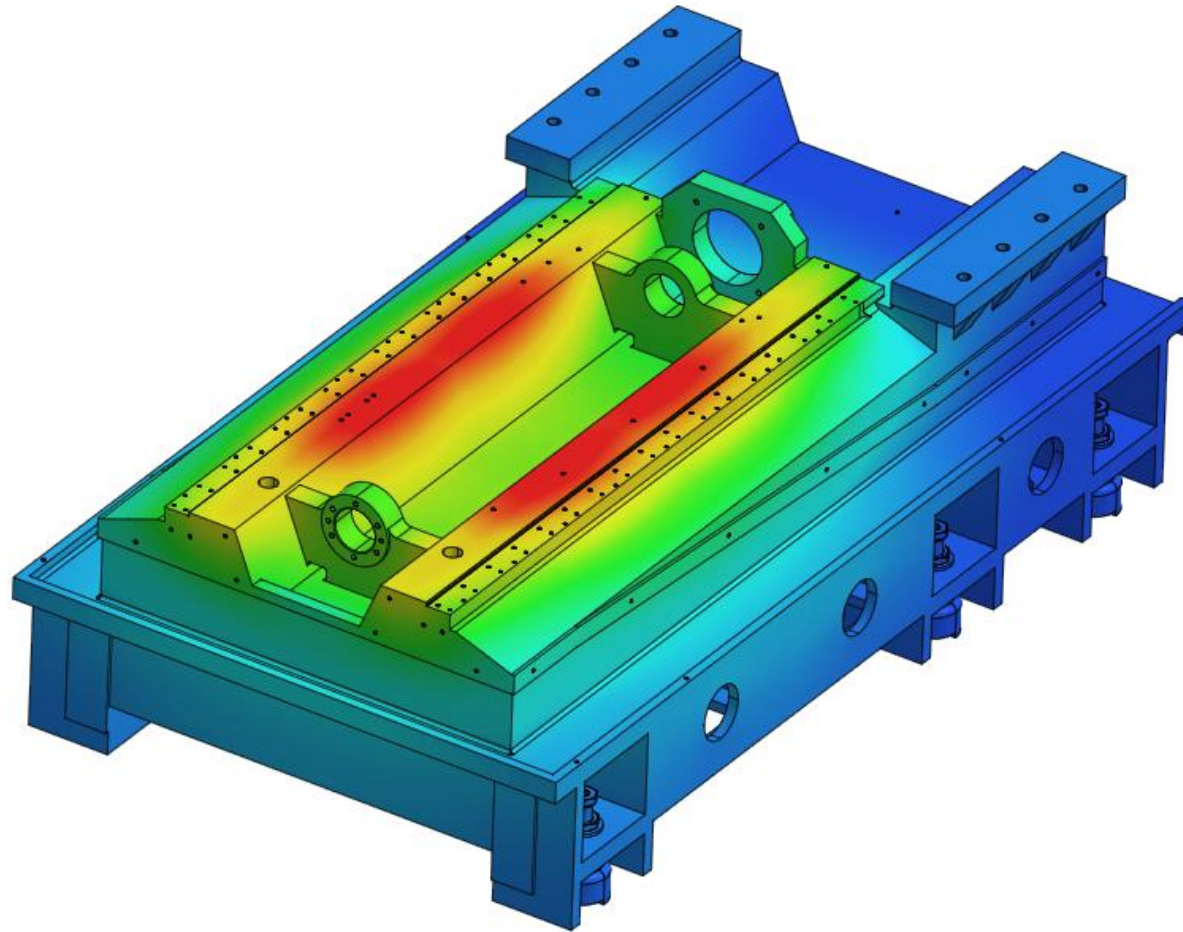
Define Gravity

Name Gravity-1

Value	
Gx	0 mm/sec ²
Gy	-9806 mm/sec ²
Gz	0 mm/sec ²

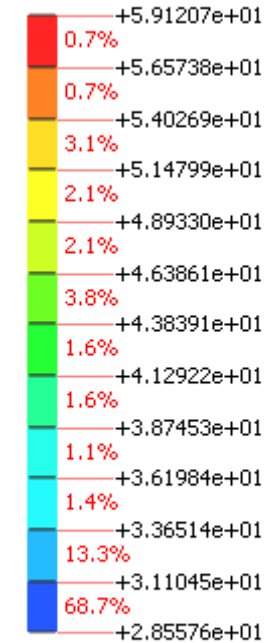


RESULT: TEMPERATURE



Thermal Results

TEMPERATURE



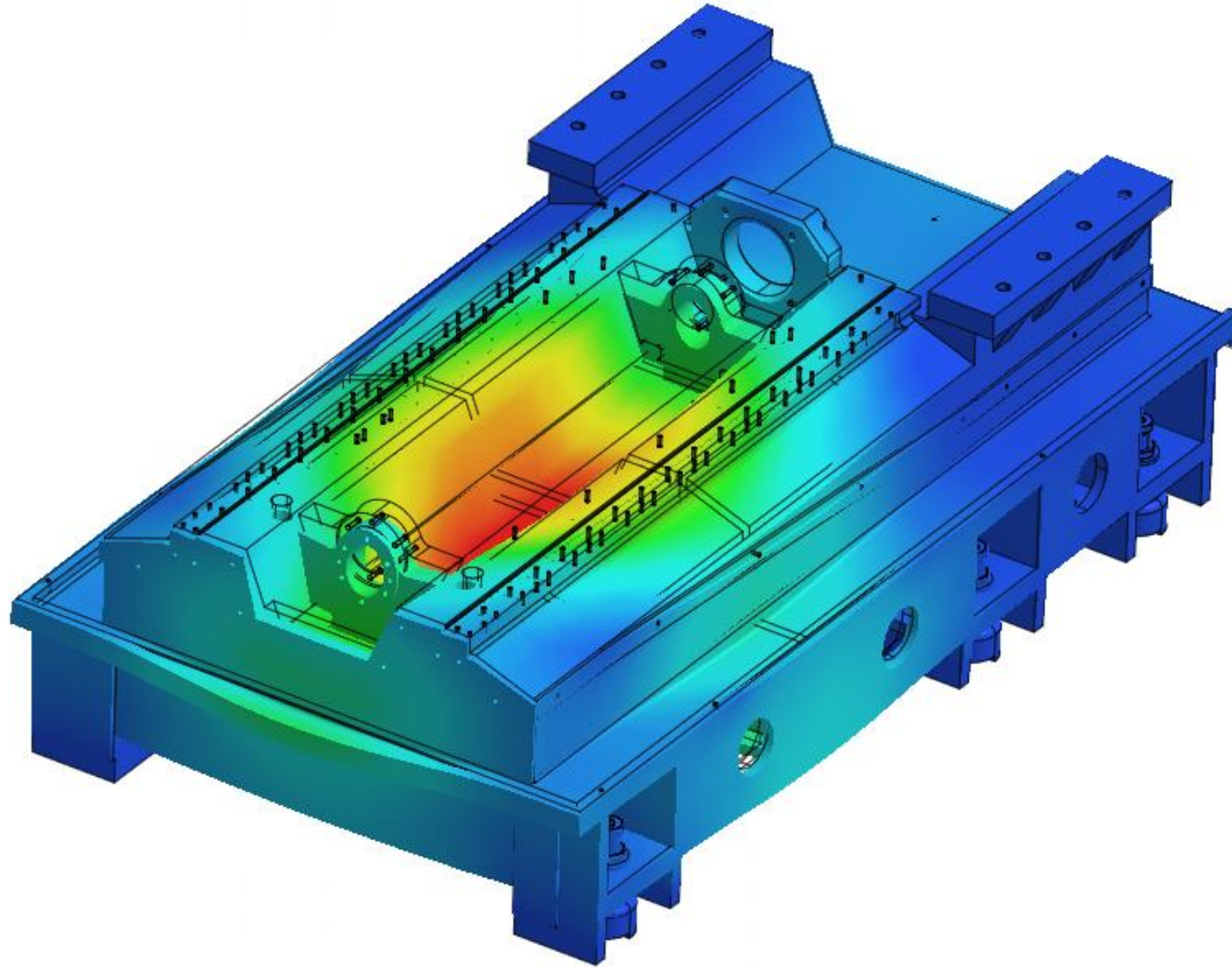
Thermal Stress Analysis-1

Steady Heat Transfer

INCR=1 (LOAD=1.000)

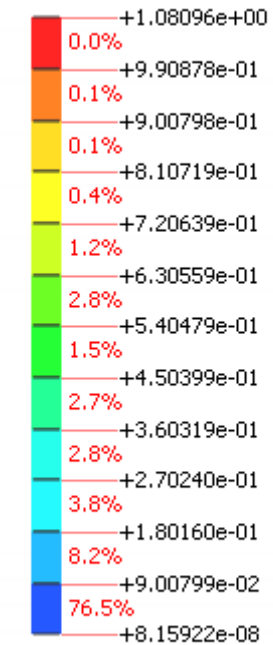
Unit : [°C]

RESULT: DISPLACEMENT



Deformations

DISPLACEMENT-XYZ

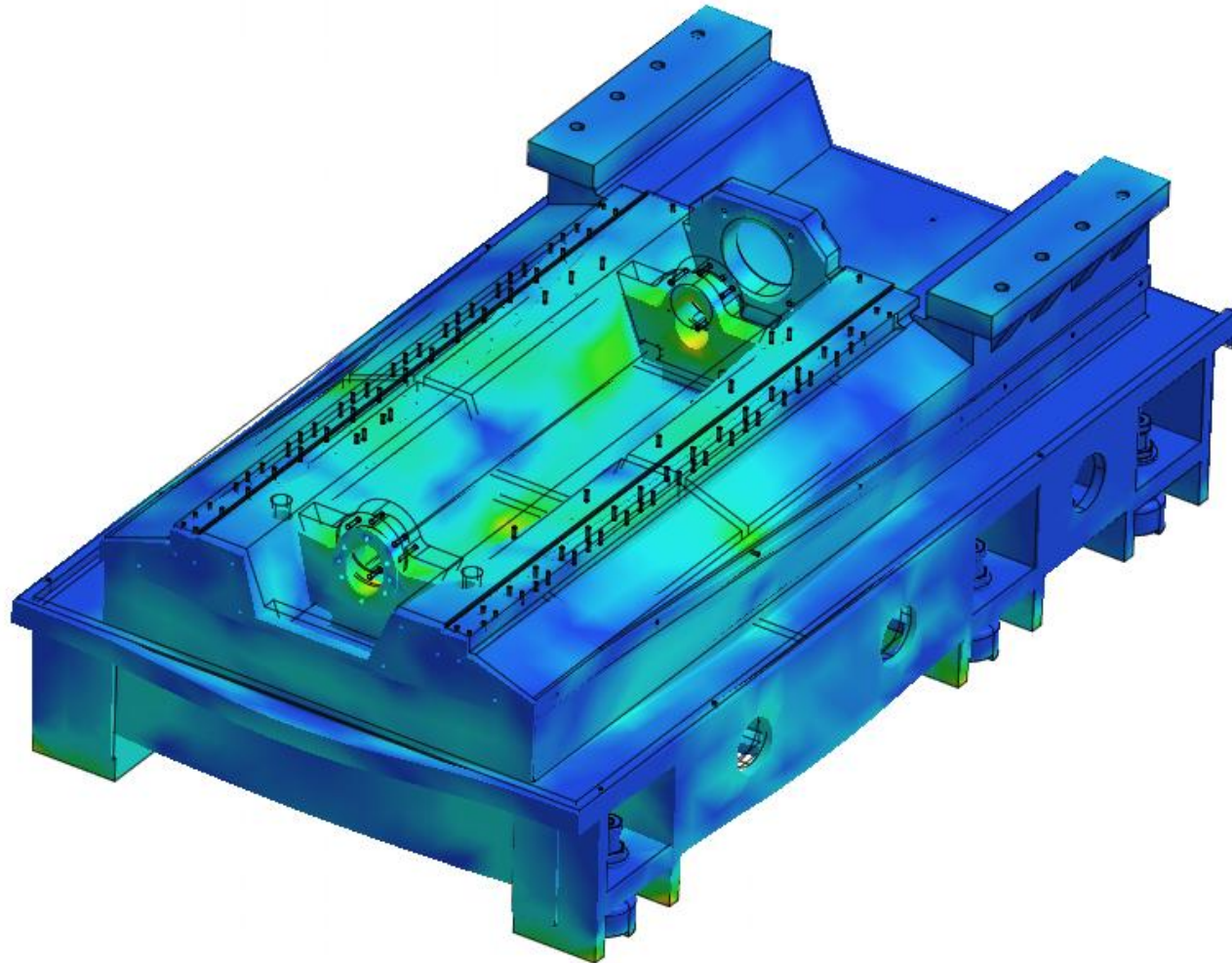


Thermal Stress Analysis-1

Linear Static

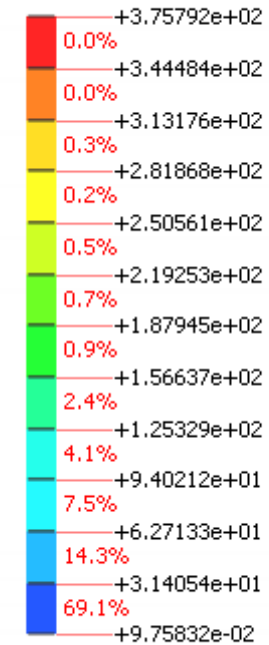
Unit : mm

RESULT: STRESS VON MISES



Stress

STRESS VON MISES

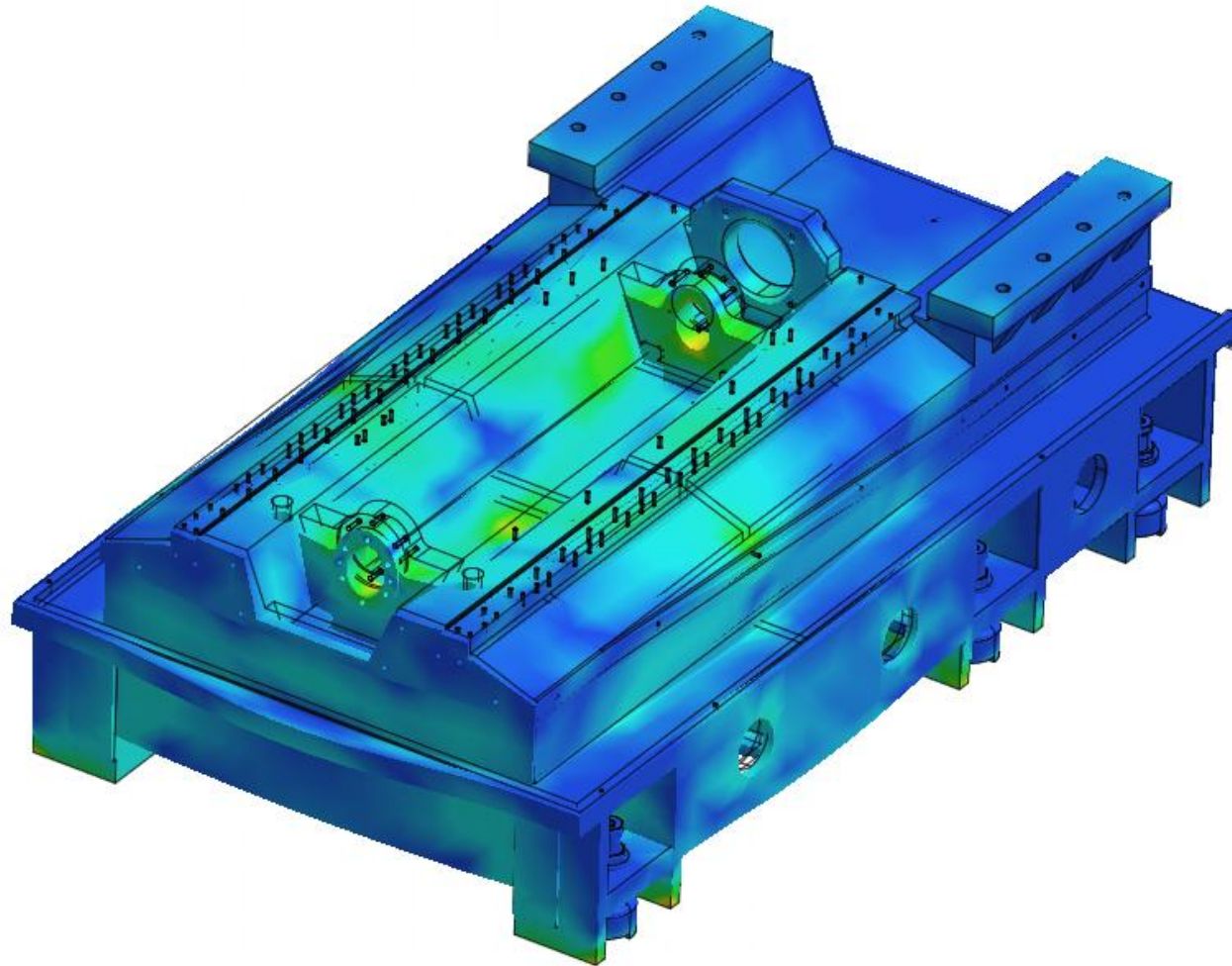


Thermal Stress Analysis-1

Linear Static

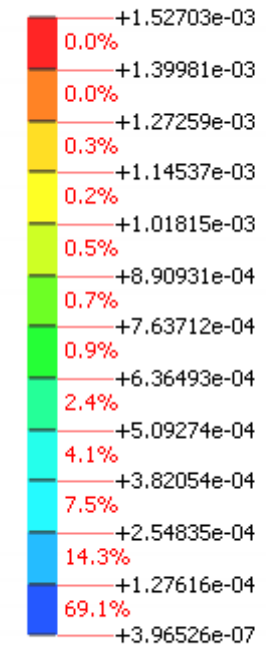
Unit : N/mm²

RESULT: STRAIN VON MISES



Strain

STRAIN VON MISES



Thermal Stress Analysis-1

Linear Static

Unit : None