

ChassisAnalysis

MESH:

Entity	Size
Nodes	98656
Elements	328292

ELEMENT TYPE:

Connectivity	Statistics
TE4	328292 (100.00%)

ELEMENT QUALITY:

Criterion	Good	Poor	Bad	Worst	Average
Stretch	328292 (100.00%)	0 (0.00%)	0 (0.00%)	0.350	0.632
Aspect Ratio	279925 (85.27%)	48366 (14.73%)	1 (0.00%)	5.015	1.946

Materials.1

Material	Steel
Young's modulus	2e+011N_m2
Poisson's ratio	0.266
Density	7860kg_m3
Coefficient of thermal expansion	1.17e-005_Kdeg
Yield strength	2.5e+008N_m2

Static Case

Boundary Conditions

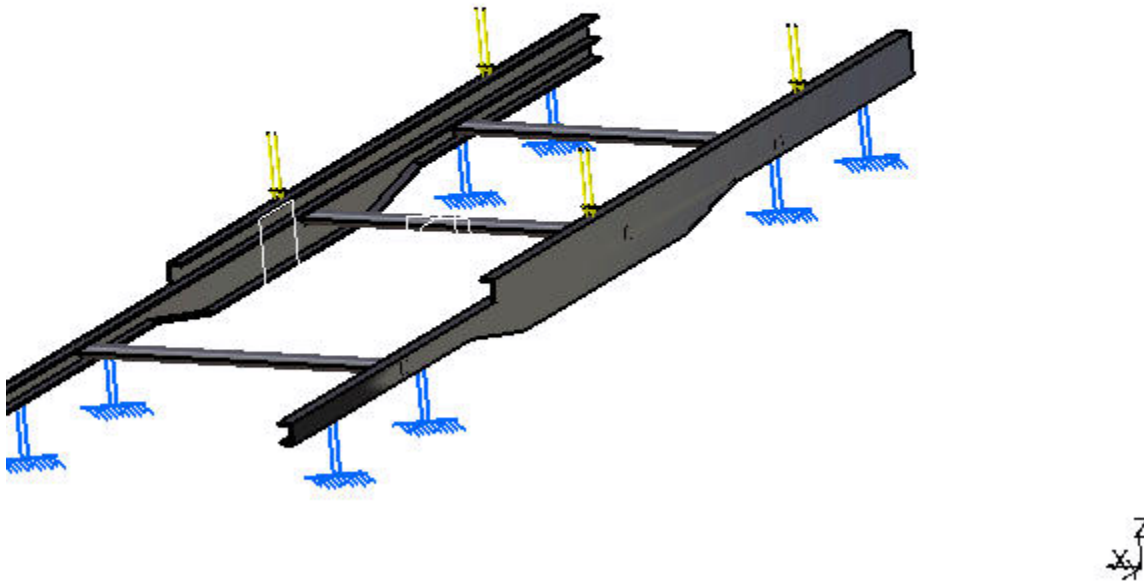


Figure 1

STRUCTURE Computation

Number of nodes	:	98656
Number of elements	:	328292
Number of D.O.F.	:	295968
Number of Contact relations	:	0
Number of Kinematic relations	:	0

Linear tetrahedron : 328292

RESTRAINT Computation

Name: Restraints.1

Number of S.P.C : 12516

LOAD Computation

Name: Loads.1

Applied load resultant :

$F_x = 1.631e-012 \text{ N}$
 $F_y = -5.437e-013 \text{ N}$
 $F_z = -9.800e+003 \text{ N}$
 $M_x = 8.244e+003 \text{ Nxm}$
 $M_y = -9.043e-007 \text{ Nxm}$
 $M_z = 1.372e-012 \text{ Nxm}$

STIFFNESS Computation

Number of lines : 295968
Number of coefficients : 5151570
Number of blocks : 11
Maximum number of coefficients per bloc : 499999
Total matrix size : 60.08 Mb

SINGULARITY Computation

Restraint: Restraints.1

Number of local singularities : 0
Number of singularities in translation : 0
Number of singularities in rotation : 0
Generated constraint type : MPC

CONSTRAINT Computation

Restraint: Restraints.1

Number of constraints : 12516
Number of coefficients : 0

Number of factorized constraints : 12516

Number of coefficients : 0

Number of deferred constraints : 0

FACTORIZED Computation

Method : SPARSE

Number of factorized degrees : 283452

Number of supernodes : 7055

Number of overhead indices : 764997

Number of coefficients : 48912099

Maximum front width : 915

Maximum front size : 419070

Size of the factorized matrix (Mb) : 373 . 17

Number of blocks : 25

Number of Mflops for factorization : 1 . 311e+004

Number of Mflops for solve : 1 . 971e+002

Minimum relative pivot : 1 . 007e-003

Minimum and maximum pivot

Value	Dof	Node	x (mm)	y (mm)	z (mm)
6.8835e+006	Tx	98656	-7.0554e+002	-2.0462e+002	4.8352e+001
1.5131e+010	Tz	4584	-7.0000e+002	-9.2705e+000	1.6500e+002

Minimum pivot

Value	Dof	Node	x (mm)	y (mm)	z (mm)
7.5663e+006	Tz	98655	-7.0488e+002	-1.4751e+003	5.3795e+001
8.6481e+006	Ty	98655	-7.0488e+002	-1.4751e+003	5.3795e+001
1.1578e+007	Tz	43345	-6.6000e+002	6.6000e+002	1.7500e+002
1.2030e+007	Ty	43345	-6.6000e+002	6.6000e+002	1.7500e+002
1.2323e+007	Tx	37938	6.7999e+002	4.5001e+002	-7.9395e+001
1.2390e+007	Tx	86568	7.0008e+002	-1.4421e+003	5.1735e+001
1.6203e+007	Tx	86569	6.8027e+002	-1.4403e+003	5.4517e+001
1.7028e+007	Tx	37932	6.8000e+002	4.8000e+002	-7.9395e+001

1.7084e+007	Tz	92286	1.0000e+002	-2.1000e+002	2.3750e+001
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Translational pivot distribution

Value	Percentage
10.E6 --> 10.E7	1.0584e-003
10.E7 --> 10.E8	7.5145e-002
10.E8 --> 10.E9	1.5826e+000
10.E9 --> 10.E10	9.7860e+001
10.E10 --> 10.E11	4.8121e-001

DIRECT METHOD Computation

Name: Static Case Solution.1

Restraint: Restraints.1

Load: Loads.1

Strain Energy : 1.207e-001 J

Equilibrium

Components	Applied Forces	Reactions	Residual	Relative Magnitude Error
Fx (N)	1.6312e-012	6.5519e-010	6.5682e-010	8.1398e-013
Fy (N)	-5.4372e-013	1.1265e-009	1.1259e-009	1.3954e-012
Fz (N)	-9.8000e+003	9.8000e+003	3.2342e-009	4.0080e-012
Mx (Nxm)	8.2443e+003	-8.2443e+003	2.7521e-009	1.3297e-012
My (Nxm)	-9.0431e-007	8.9890e-007	-5.4091e-009	2.6134e-012
Mz (Nxm)	1.3717e-012	-4.1773e-009	-4.1760e-009	2.0176e-012

Static Case Solution.1 - Deformed mesh.1

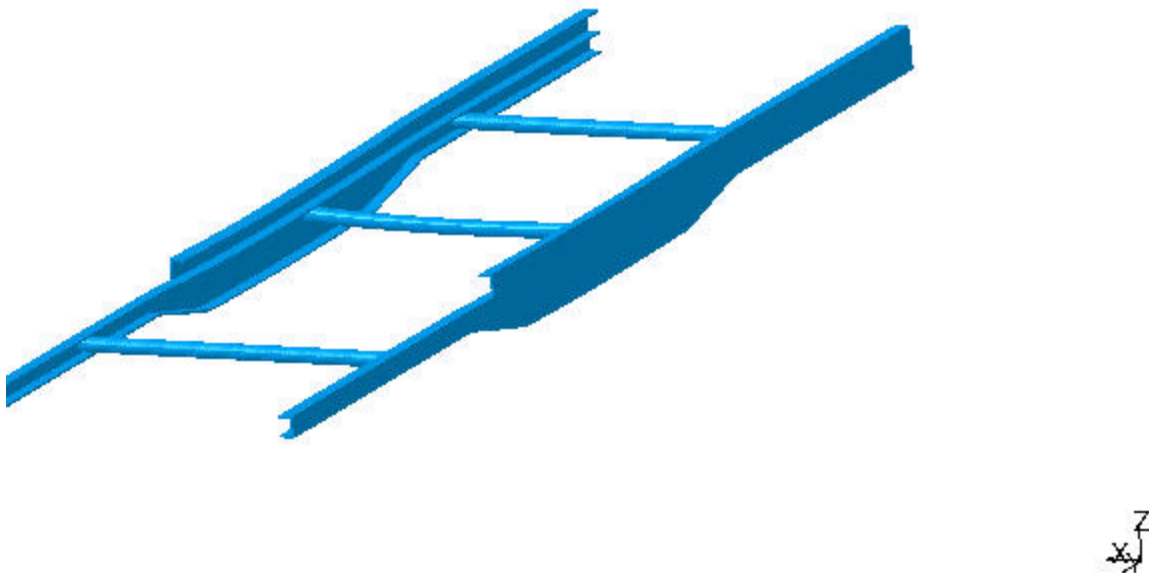
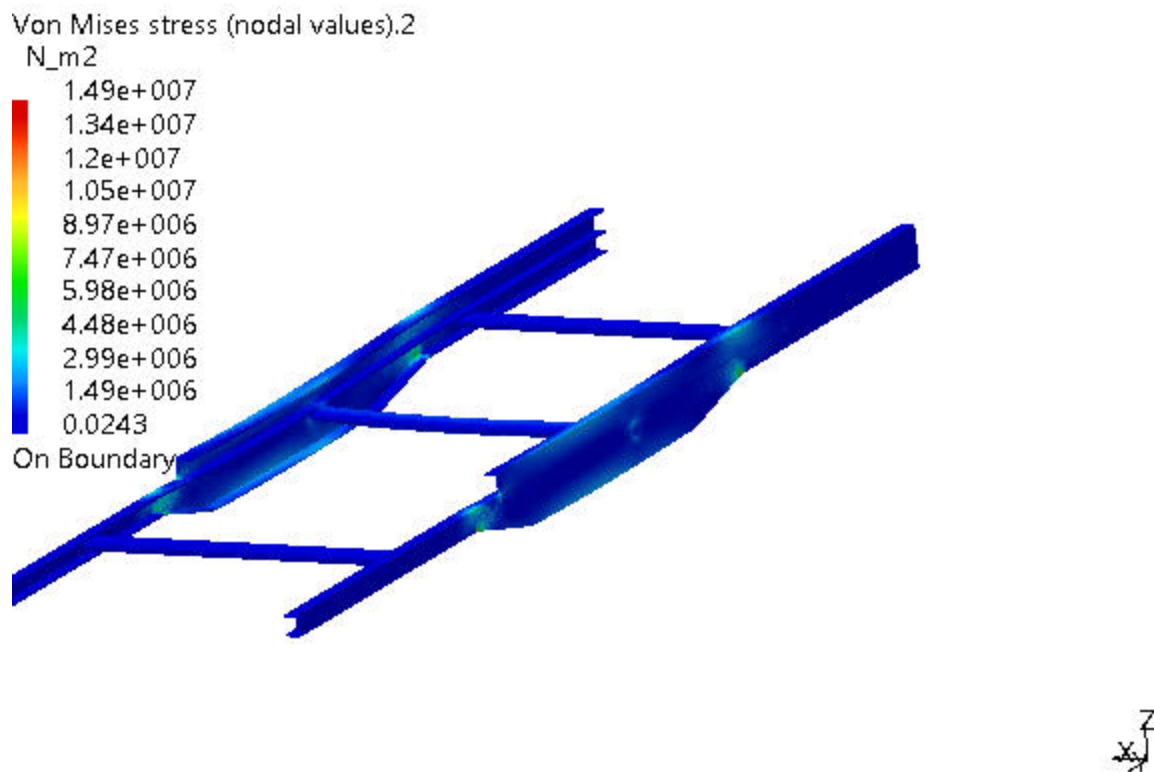


Figure 2

On deformed mesh ---- On boundary ---- Over all the model

Static Case Solution.1 - Von Mises stress (nodal values).2



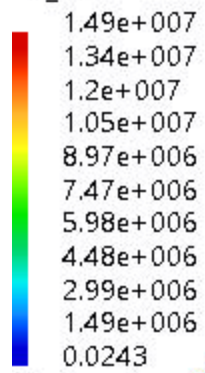
3D elements: : Components: : All

On deformed mesh ---- On boundary ---- Over all the model

Static Case Solution.1 - Von Mises stress (nodal values).1

Von Mises stress (nodal values).1

N_m2



On Boundary

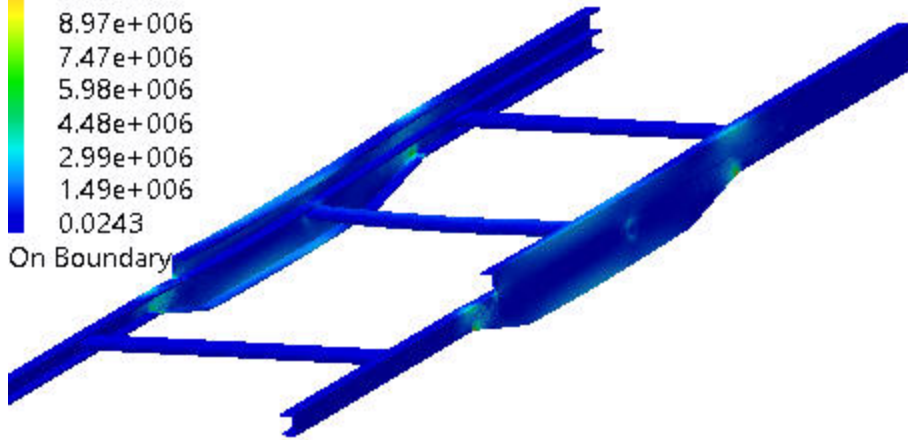


Figure 4

3D elements: : Components: : All

On deformed mesh ---- On boundary ---- Over all the model

Global Sensors

Sensor Name	Sensor Value
Energy	0.121J