ConrodAnalysis

MESH:

Entity	Size
Nodes	39855
Elements	180708

ELEMENT TYPE:

Connectivity	Statistics
TE4	180708 (100.00%)

ELEMENT QUALITY:

Criterion	Good	Poor	Bad	Worst	Average
Stretch	180691 (99.99%)	17 (0.01%)	0 (0.00%)	0.151	0.651
Aspect Ratio	177143 (98.03%)	3558 (1.97%)	7 (0.00%)	6.019	1.802

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

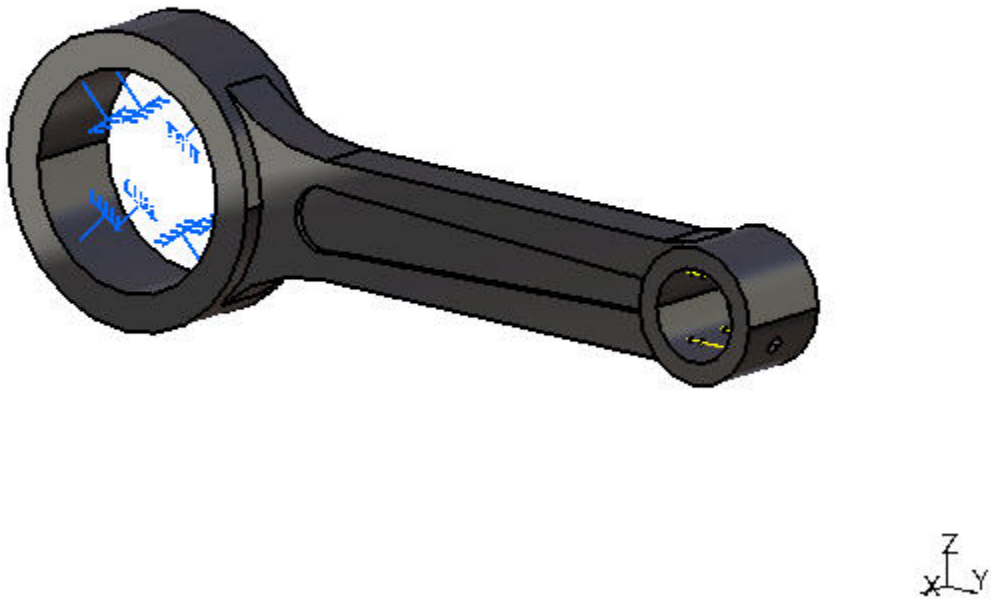

Figure 1

STRUCTURE Computation

Number of nodes	:	39855
Number of elements	:	180708
Number of D.O.F.	:	119565
Number of Contact relations	:	0
Number of Kinematic relations	:	0

Linear tetrahedron : 180708

RESTRAINT Computation

Name: Restraints.1

Number of S.P.C : 18864

LOAD Computation

Name: Loads.1

Applied load resultant :

Fx = 1 . 983e-007 N
Fy = -5 . 000e+003 N
Fz = 2 . 243e-007 N
Mx = -4 . 034e+000 Nxm
My = 1 . 025e-009 Nxm
Mz = -1 . 439e+000 Nxm

STIFFNESS Computation

Number of lines	: 119565
Number of coefficients	: 2380734
Number of blocks	: 5
Maximum number of coefficients per bloc	: 499993
Total matrix size	: 27 . 70 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	: 18864
Number of coefficients	: 0

Number of factorized constraints : 18864
Number of coefficients : 0
Number of deferred constraints : 0

FACTORIZED Computation

Method : SPARSE
Number of factorized degrees : 100701
Number of supernodes : 4304
Number of overhead indices : 479130
Number of coefficients : 24836841
Maximum front width : 1368
Maximum front size : 936396
Size of the factorized matrix (Mb) : 189 . 49
Number of blocks : 13
Number of Mflops for factorization : 1 . 184e+004
Number of Mflops for solve : 9 . 985e+001
Minimum relative pivot : 1 . 052e-002

Minimum and maximum pivot

Value	Dof	Node	x (mm)	y (mm)	z (mm)
2.6559e+006	Tx	21827	4.6412e-001	6.8348e+001	-7.1494e+000
1.7637e+009	Tz	19756	2.4917e+000	9.0325e+001	4.2978e+000

Minimum pivot

Value	Dof	Node	x (mm)	y (mm)	z (mm)
5.6501e+006	Tz	21827	4.6412e-001	6.8348e+001	-7.1494e+000
9.0760e+006	Ty	19752	-4.9993e-001	9.0337e+001	4.3102e+000
1.3880e+007	Tz	21826	-4.8409e-001	6.8375e+001	-7.0238e+000
1.4097e+007	Tx	19752	-4.9993e-001	9.0337e+001	4.3102e+000
1.4970e+007	Ty	14625	-4.0000e+000	2.0593e+001	-3.1039e+000
1.7294e+007	Tz	19752	-4.9993e-001	9.0337e+001	4.3102e+000
2.1910e+007	Tx	14625	-4.0000e+000	2.0593e+001	-3.1039e+000
2.6679e+007	Ty	21827	4.6412e-001	6.8348e+001	-7.1494e+000

2.9489e+007	Ty	17408	6.4580e+000	9.8597e+001	5.6046e+000

Translational pivot distribution

Value	Percentage
10.E6 --> 10.E7	2.9791e-003
10.E7 --> 10.E8	9.2651e-001
10.E8 --> 10.E9	9.7967e+001
10.E9 --> 10.E10	1.1033e+000

DIRECT METHOD Computation

Name: Static Case Solution.1

Restraint: Restraints.1

Load: Loads.1

Strain Energy : 4.916e-002 J

Equilibrium

Components	Applied Forces	Reactions	Residual	Relative Magnitude Error
Fx (N)	1.9825e-007	-1.9789e-007	3.6423e-010	3.2737e-011
Fy (N)	-5.0000e+003	5.0000e+003	1.5098e-010	1.3570e-011
Fz (N)	2.2426e-007	-2.2460e-007	-3.3252e-010	2.9887e-011
Mx (Nxm)	-4.0341e+000	4.0341e+000	-2.9162e-011	2.5143e-011
My (Nxm)	1.0245e-009	-1.0250e-009	-4.7633e-013	4.1067e-013
Mz (Nxm)	-1.4393e+000	1.4393e+000	-3.4160e-011	2.9451e-011

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

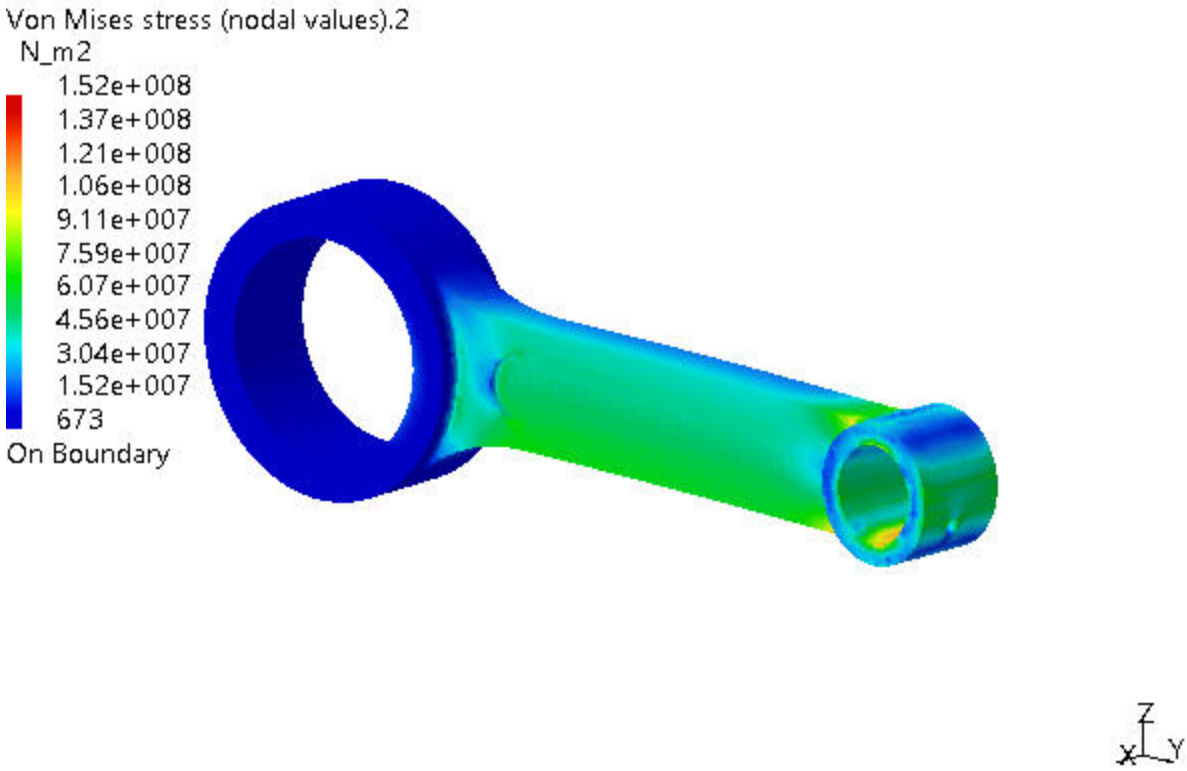

Figure 3

3D elements: : Components: : All

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

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

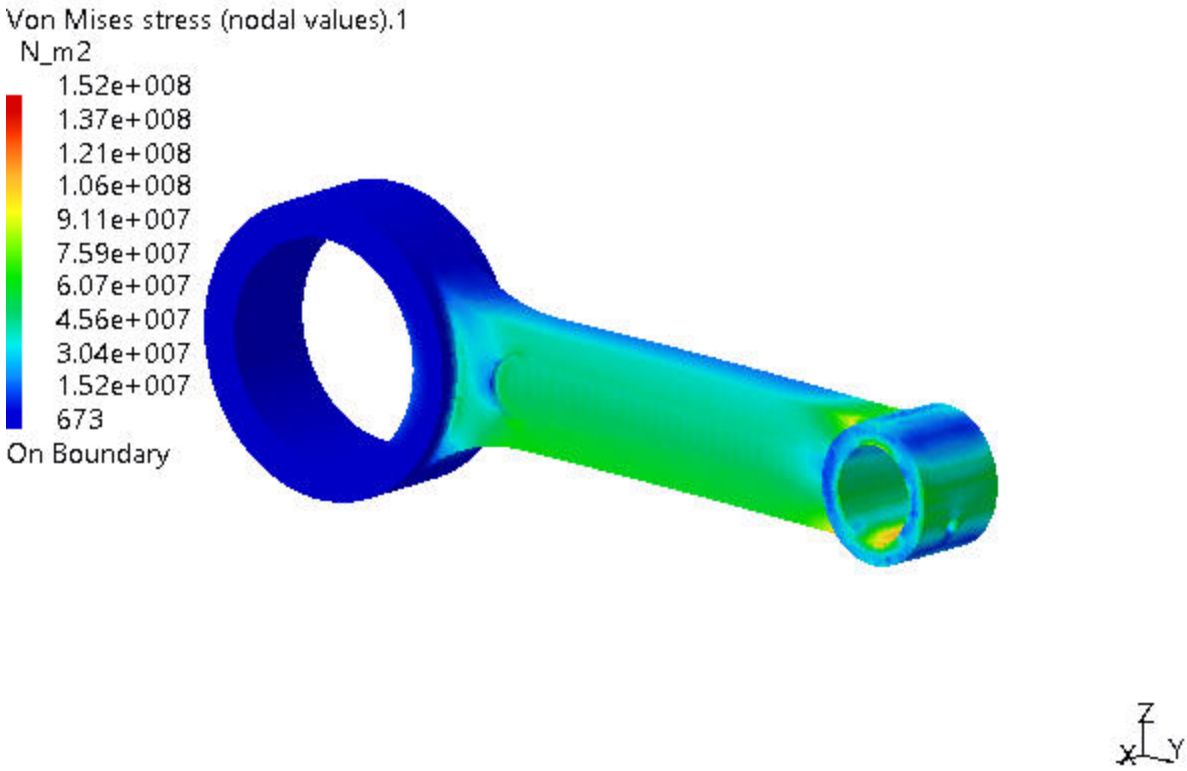

Figure 4

3D elements: : Components: : All

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

Global Sensors

Sensor Name	Sensor Value
Energy	0.049J