

## ANALISIS\_TEFLON

### MESH:

| Entity   | Size |
|----------|------|
| Nodes    | 820  |
| Elements | 2687 |

### ELEMENT TYPE:

| Connectivity | Statistics       |
|--------------|------------------|
| TE4          | 2687 ( 100,00% ) |

### ELEMENT QUALITY:

| Criterion    | Good             | Poor        | Bad         | Worst | Average |
|--------------|------------------|-------------|-------------|-------|---------|
| Stretch      | 2687 ( 100,00% ) | 0 ( 0,00% ) | 0 ( 0,00% ) | 0,348 | 0,582   |
| Aspect Ratio | 2687 ( 100,00% ) | 0 ( 0,00% ) | 0 ( 0,00% ) | 3,529 | 2,271   |

### Materials.1

| Material                         | Teflón         |
|----------------------------------|----------------|
| Young's modulus                  | 7,5e+011N_m2   |
| Poisson's ratio                  | 0              |
| Density                          | 2160kg_m3      |
| Yield strength                   | 0N_m2          |
| Coefficient of thermal expansion | 1,25e-004_Kdeg |

## Static Case

### Boundary Conditions

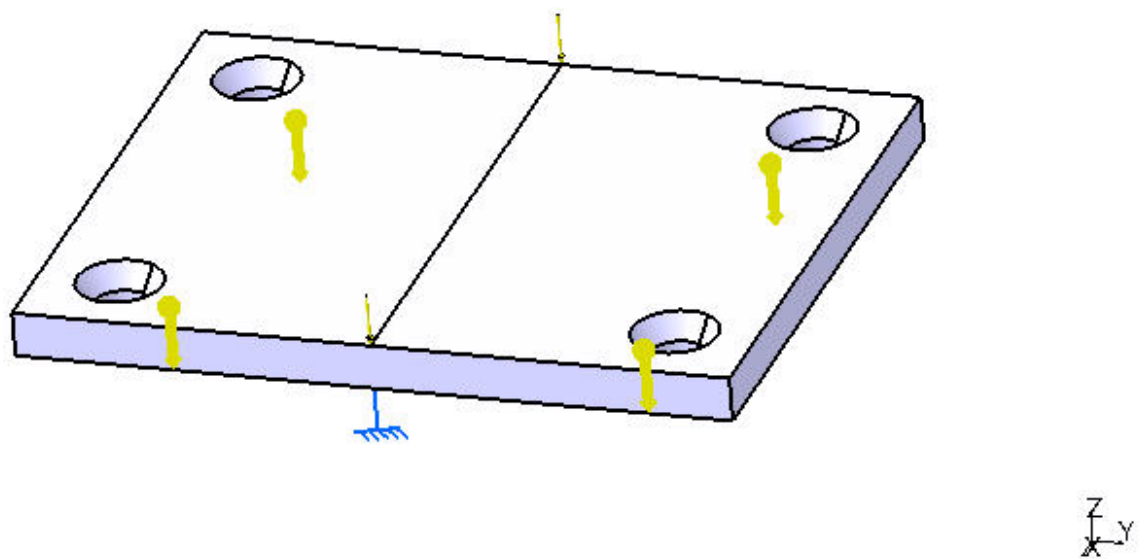


Figure 1

**STRUCTURE Computation**

|                               |   |      |
|-------------------------------|---|------|
| Number of nodes               | : | 820  |
| Number of elements            | : | 2687 |
| Number of D.O.F.              | : | 2460 |
| Number of Contact relations   | : | 0    |
| Number of Kinematic relations | : | 0    |

Linear tetrahedron : 2687

**RESTRAINT Computation**

Name: Restraints.1

Number of S.P.C : 858

**LOAD Computation**

Name: Loads.1

Applied load resultant :

|    |   |    |   |          |     |
|----|---|----|---|----------|-----|
| Fx | = | 0  | . | 000e+000 | N   |
| Fy | = | 0  | . | 000e+000 | N   |
| Fz | = | -9 | . | 141e+002 | N   |
| Mx | = | -3 | . | 857e-007 | Nxm |
| My | = | 2  | . | 285e+001 | Nxm |
| Mz | = | 0  | . | 000e+000 | Nxm |

**STRUCTURAL MASS Computation**

Name: StructuralMassSet.1

|                                         |   |       |         |
|-----------------------------------------|---|-------|---------|
| Number of lines                         | : | 2460  |         |
| Number of coefficients                  | : | 42243 |         |
| Number of blocks                        | : | 1     |         |
| Maximum number of coefficients per bloc | : | 42243 |         |
| Total matrix size                       | : | 0     | . 49 Mb |

Structural mass : 2.636e-002 kg

Inertia center coordinates

|    |   |   |   |          |    |
|----|---|---|---|----------|----|
| Xg | : | 2 | . | 500e+001 | mm |
| Yg | : | 1 | . | 496e-003 | mm |
| Zg | : | 1 | . | 990e+000 | mm |

Inertia tensor at origin: kgxm2

|             |            |             |
|-------------|------------|-------------|
| 8.608e-006  | 5.335e-010 | -1.311e-006 |
| 5.335e-010  | 2.202e-005 | 4.187e-011  |
| -1.311e-006 | 4.187e-011 | 3.035e-005  |

**STIFFNESS Computation**

|                                         |   |       |         |
|-----------------------------------------|---|-------|---------|
| Number of lines                         | : | 2460  |         |
| Number of coefficients                  | : | 42243 |         |
| Number of blocks                        | : | 1     |         |
| Maximum number of coefficients per bloc | : | 42243 |         |
| Total matrix size                       | : | 0     | . 49 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 : 858  
 Number of coefficients : 0  
 Number of factorized constraints : 813  
 Number of coefficients : 0  
 Number of deferred constraints : 0

## FACTORIZED Computation

Method : SPARSE  
 Number of factorized degrees : 1647  
 Number of supernodes : 330  
 Number of overhead indices : 10170  
 Number of coefficients : 86940  
 Maximum front width : 159  
 Maximum front size : 12720  
 Size of the factorized matrix (Mb) : 0 . 6633  
 Number of blocks : 1  
 Number of Mflops for factorization : 7 . 299e+000  
 Number of Mflops for solve : 3 . 560e-001  
 Minimum relative pivot : 4 . 488e-001

Minimum and maximum pivot

| Value       | Dof | Node | x (mm)      | y (mm)      | z (mm)      |
|-------------|-----|------|-------------|-------------|-------------|
| 5.4142e+008 | Ty  | 32   | 4.0842e+001 | 2.5510e+001 | 1.8000e+000 |
| 1.7585e+010 | Tz  | 605  | 1.2196e+001 | 2.7946e+001 | 4.0000e+000 |

Minimum pivot

| Value       | Dof | Node | x (mm)      | y (mm)      | z (mm)      |
|-------------|-----|------|-------------|-------------|-------------|
| 5.9578e+008 | Tz  | 32   | 4.0842e+001 | 2.5510e+001 | 1.8000e+000 |
| 6.5912e+008 | Ty  | 669  | 3.7207e+001 | 2.0288e+001 | 2.0723e+000 |
| 7.6861e+008 | Tx  | 669  | 3.7207e+001 | 2.0288e+001 | 2.0723e+000 |
| 8.0589e+008 | Ty  | 144  | 0.0000e+000 | 1.1821e+001 | 4.0000e+000 |
| 8.2643e+008 | Tx  | 32   | 4.0842e+001 | 2.5510e+001 | 1.8000e+000 |
| 8.3534e+008 | Ty  | 397  | 0.0000e+000 | 2.2938e+001 | 1.8901e+000 |
| 8.4390e+008 | Tz  | 669  | 3.7207e+001 | 2.0288e+001 | 2.0723e+000 |
| 9.4485e+008 | Tz  | 144  | 0.0000e+000 | 1.1821e+001 | 4.0000e+000 |
| 9.8152e+008 | Tz  | 397  | 0.0000e+000 | 2.2938e+001 | 1.8901e+000 |

Translational pivot distribution

| Value             | Percentage  |
|-------------------|-------------|
| 10.E8 --> 10.E9   | 6.6788e-001 |
| 10.E9 --> 10.E10  | 9.3200e+001 |
| 10.E10 --> 10.E11 | 6.1324e+000 |

## DIRECT METHOD Computation

Name: Static Case Solution.1

Restraint: Restraints.1

Structural mass is taken into account

Load: Loads.1

Strain Energy : 9.675e-006 J

Equilibrium

| Components | Applied Forces | Reactions    | Residual     | Relative Magnitude Error |
|------------|----------------|--------------|--------------|--------------------------|
| Fx (N)     | 0.0000e+000    | 6.3123e-015  | 6.3123e-015  | 8.2770e-017              |
| Fy (N)     | 0.0000e+000    | 3.2020e-014  | 3.2020e-014  | 4.1986e-016              |
| Fz (N)     | -9.1408e+002   | 9.1408e+002  | 2.2737e-013  | 2.9815e-015              |
| Mx (Nxm)   | -3.8566e-007   | 3.8566e-007  | -1.2018e-016 | 3.1517e-017              |
| My (Nxm)   | 2.2852e+001    | -2.2852e+001 | 1.7764e-014  | 4.6585e-015              |
| Mz (Nxm)   | 0.0000e+000    | 1.0551e-015  | 1.0551e-015  | 2.7670e-016              |

### Static Case Solution.1 - Deformed mesh.2

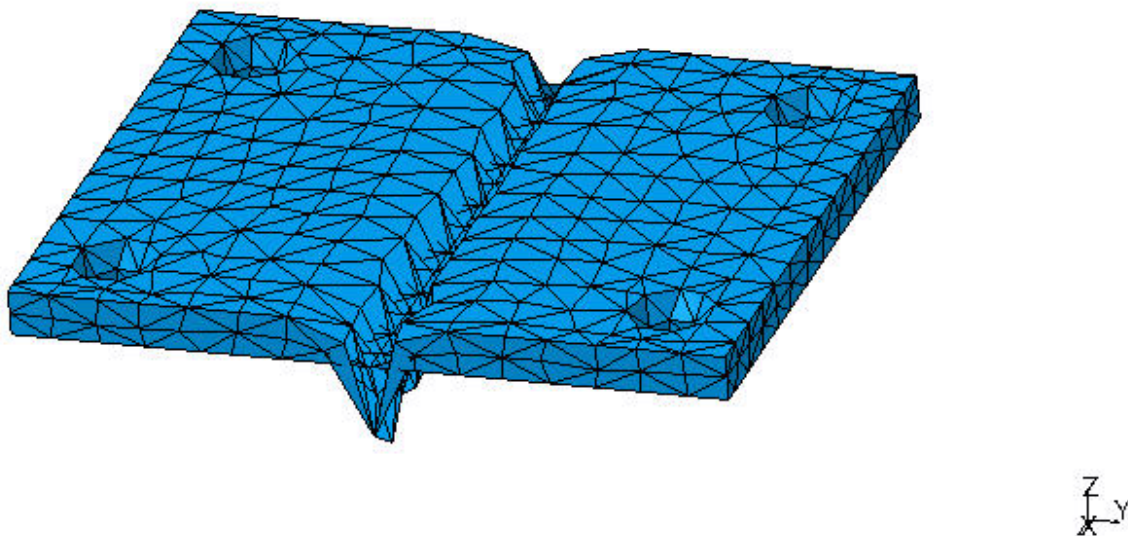


Figure 2

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

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

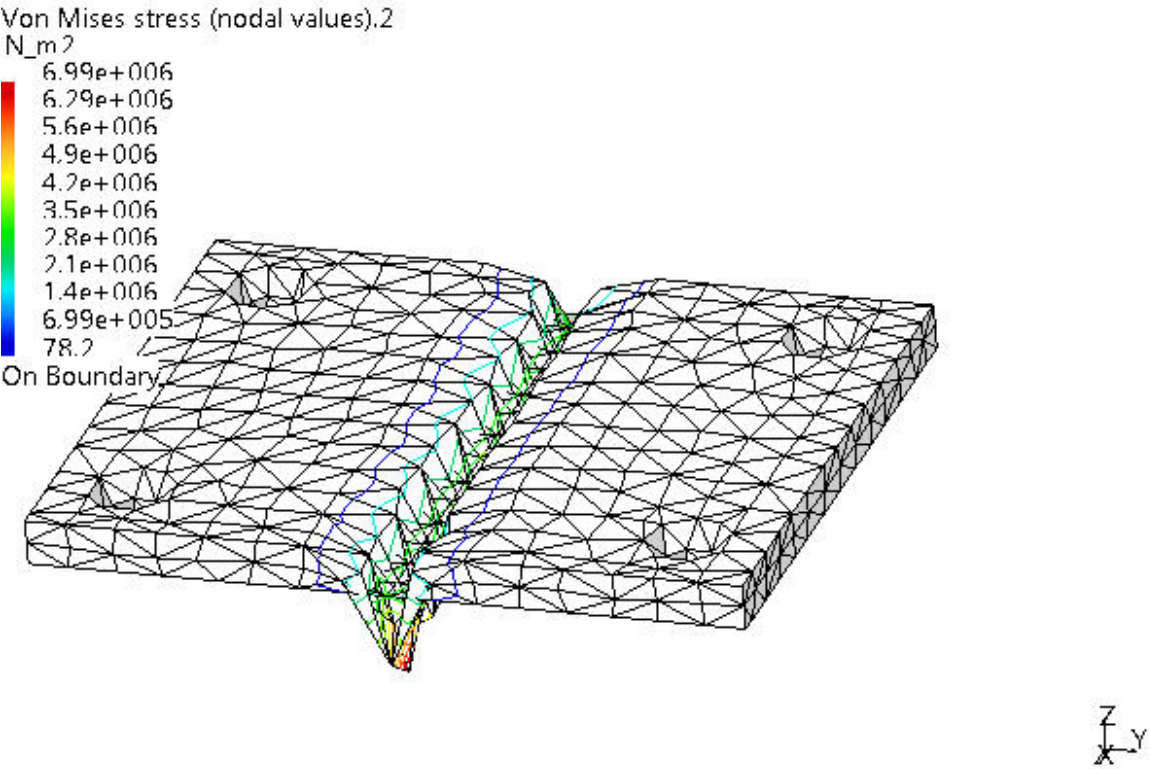


Figure 3

3D elements: : Components: : All

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

Global Sensors

| Sensor Name | Sensor Value |
|-------------|--------------|
| Energy      | 9,675e-006J  |