# Stress Analysis Report

| | |
|---|---|
| Analyzed File: | |
| Autodesk Inventor Version: | 2015 (Build 190159000, 159) |
| Creation Date: | 2014-12-21, 17:29 |
| Simulation Author: | Jaman42 |

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## Project Info (iProperties)

### Summary

| | |
|---|---|
| Author | Jaman42 |

### Project

| | |
|---|---|
| Designer | Jaman42 |
| Cost | 0,00 kr |
| Date Created | 2014-12-21 |

### Status

| | |
|---|---|
| Design Status | WorkInProgress |

### Physical

| | |
|---|---|
| Mass | 1,37905 kg |
| Area | 153638 mm^2 |
| Volume | 510759 mm^3 |
| Center of Gravity | x=-135,936 mm<br>y=0 mm<br>z=-53,4452 mm |

Note: Physical values could be different from Physical values used by FEA reported below.

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# Simulation:1

**General objective and settings:**

| | |
|---|---|
| Design Objective | Single Point |
| Simulation Type | Static Analysis |
| Last Modification Date | 2014-12-21, 17:28 |
| Detect and Eliminate Rigid Body Modes | Yes |
| Separate Stresses Across Contact Surfaces | No |
| Motion Loads Analysis | No |

**Mesh settings:**

| | |
|---|---|
| Avg. Element Size (fraction of model diameter) | 0,1 |
| Min. Element Size (fraction of avg. size) | 0,2 |
| Grading Factor | 1,5 |
| Max. Turn Angle | 60 deg |
| Create Curved Mesh Elements | No |
| Use part based measure for Assembly mesh | Yes |

### Material(s)

| | |
|---|---|
| Name | Aluminum 6061 |

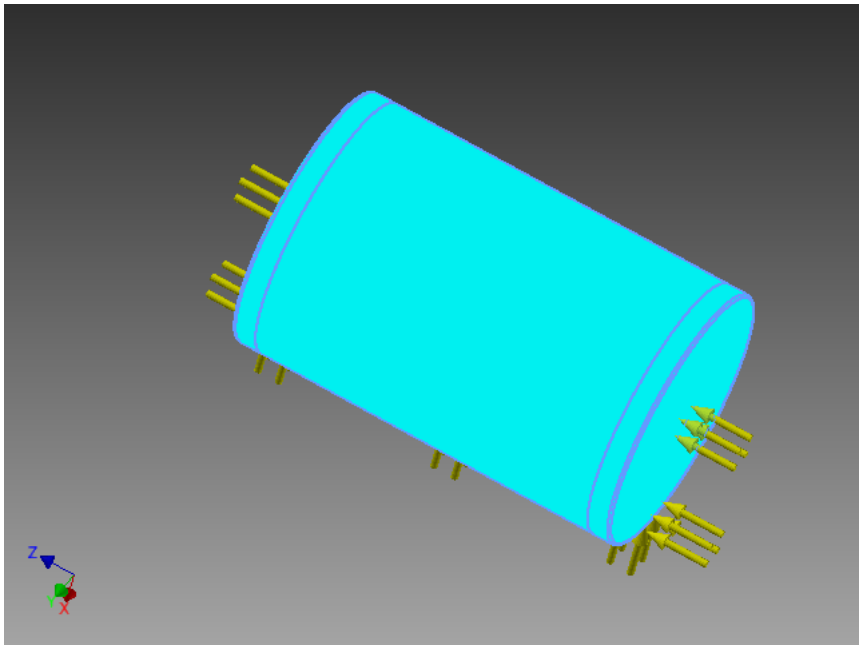
| | | |
|---|---|---|
| General | Mass Density | 2,7 g/cm^3 |
| | Yield Strength | 275 MPa |
| | Ultimate Tensile Strength | 310 MPa |
| Stress | Young's Modulus | 68,9 GPa |
| | Poisson's Ratio | 0,33 ul |
| | Shear Modulus | 25,9023 GPa |
| Part Name(s) | 110mm tube.ipt<br>110mm tube plug weld.ipt<br>110mm tube plug weld.ipt | |

## Operating conditions

### Pressure:1

| | |
|---|---|
| Load Type | Pressure |
| Magnitude | 3.100 MPa |

#### Selected Face(s)



## Results

### Reaction Force and Moment on Constraints

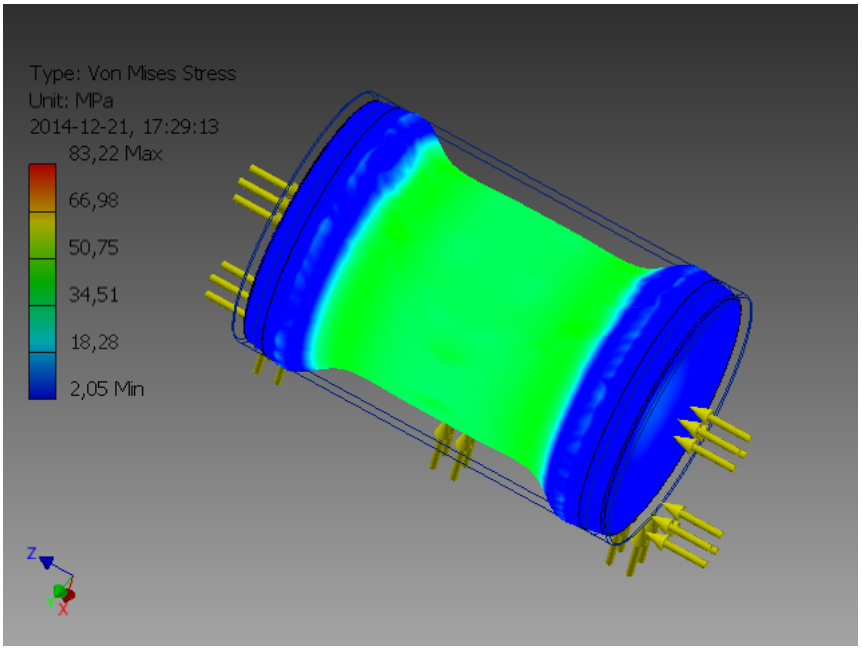
| Constraint Name | Reaction Force | | Reaction Moment | |
|---|---|---|---|---|
| | Magnitude | Component (X,Y,Z) | Magnitude | Component (X,Y,Z) |

### Result Summary

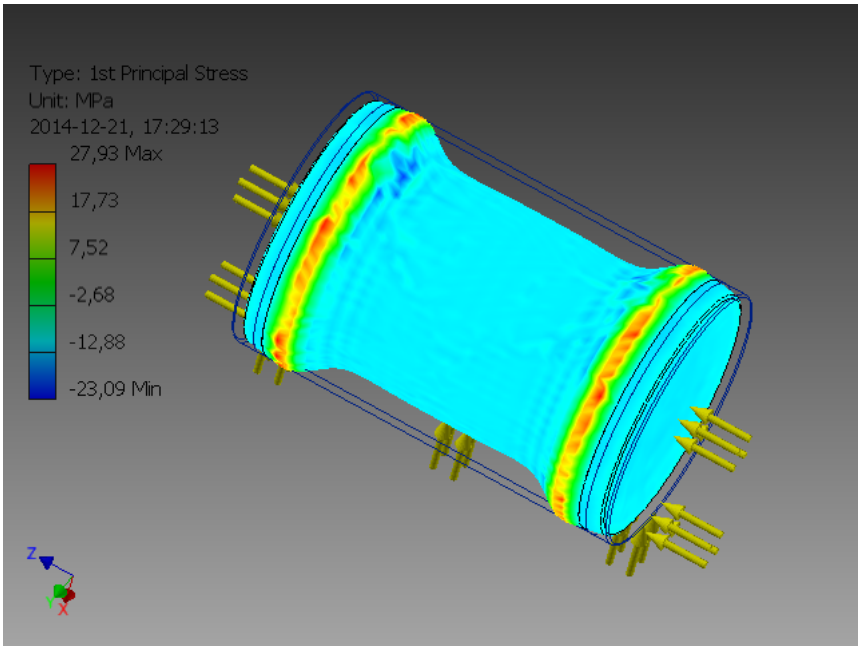
| Name | Minimum | Maximum |
|---|---|---|
| Volume | 510759 mm^3 | |
| Mass | 1,37905 kg | |
| Von Mises Stress | 2,04501 MPa | 83,2173 MPa |
| 1st Principal Stress | -23,0894 MPa | 27,9334 MPa |
| 3rd Principal Stress | -107,619 MPa | 3,1375 MPa |
| Displacement | 0,00777568 mm | 0,0392922 mm |
| Safety Factor | 3,3046 ul | 15 ul |

### Figures

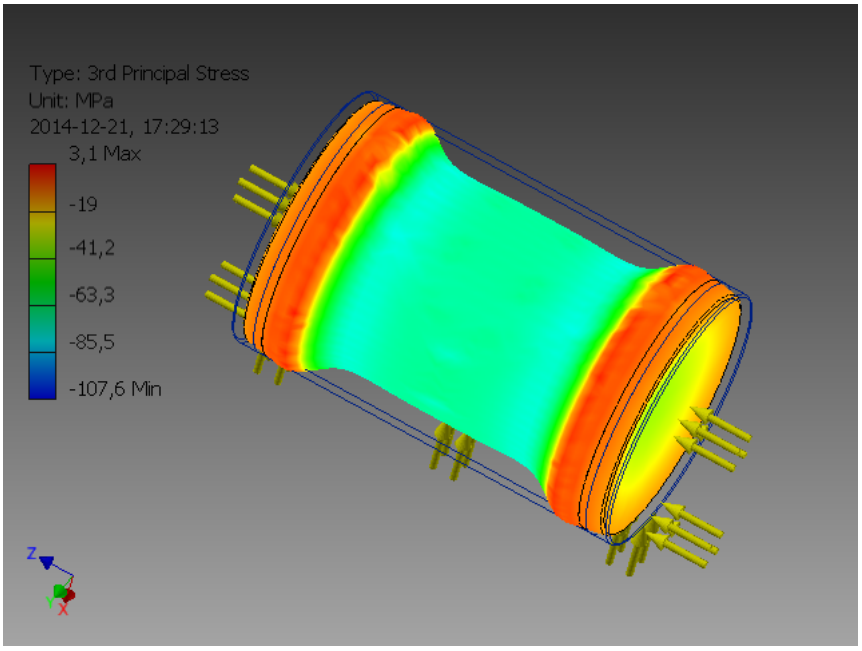
#### Von Mises Stress



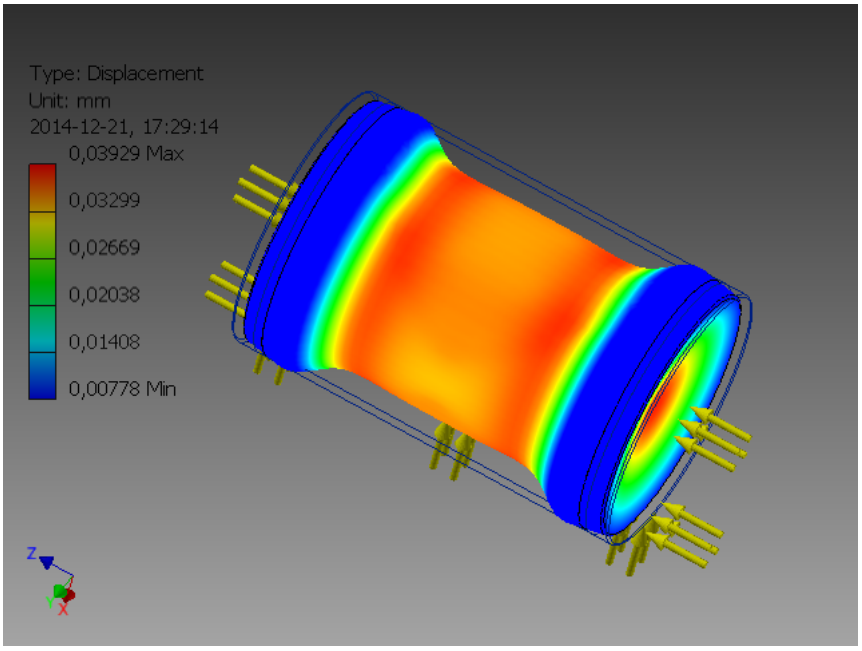

## ⊟ 1st Principal Stress



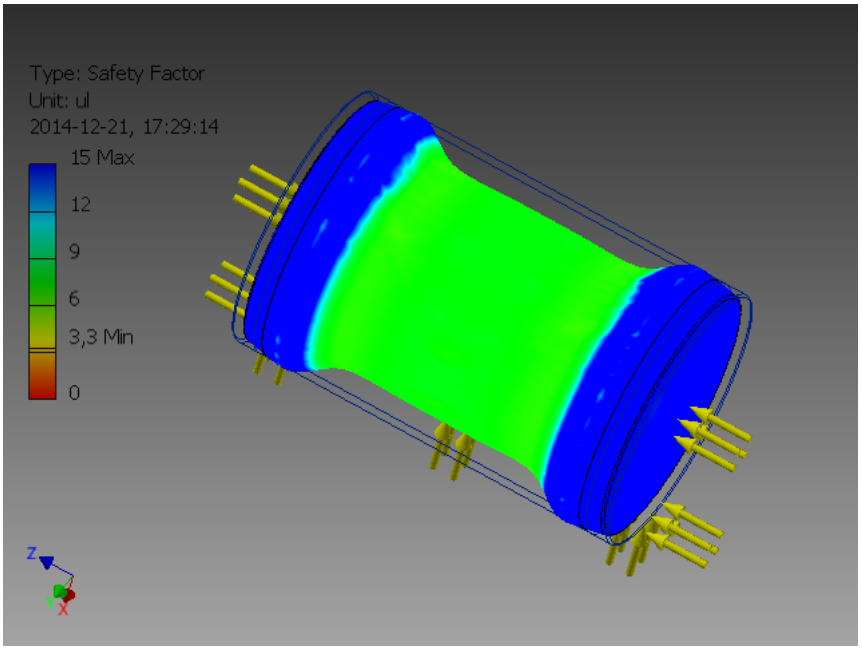

## ⊟ 3rd Principal Stress




## ⊟ Displacement




## ⊟ Safety Factor


Type: Safety Factor
Unit: ul
2014-12-21, 17:29:14
15 Max
12
9
6
3,3 Min
0
Z
X