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| **Simulation of NASA RASC-AL Pressure Wall with Window****Date: Friday, October 29, 2021Designer: Keerthi S. Gopi-Nagaruri****Study name: SimulationXpress Study****Analysis type: Static** |
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 |
| DescriptionNo Data |

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| Assumptions |

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| Model Information

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****Model name:** NASA RASC-AL Pressure Wall with Window******Current Configuration:** Default** |
| ****Solid Bodies**** |
| ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** |
| **Boss-Extrude1** | **Solid Body** | ****Mass:20,568.5 kg********Volume:7.61796 m^3********Density:2,700 kg/m^3********Weight:201,571 N**** | ****E:\NAU\Spring 2021\CAPSTONE\Design Concepts\NASA RASC-AL Fall 2021 EDU\NASA RASC-AL Pressure Wall with Window.SLDPRT******Oct 28 03:17:19 2021** |

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| Material Properties

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| ****Model Reference**** | ****Properties**** | ****Components**** |
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| ****Name:**** | **6061-T6 (SS)** |
| ****Model type:**** | **Linear Elastic Isotropic** |
| ****Default failure criterion:**** | **Max von Mises Stress** |
| ****Yield strength:**** | **2.75e+08 N/m^2** |
| ****Tensile strength:**** | **3.1e+08 N/m^2** |

 | **SolidBody 1(Boss-Extrude1)(NASA RASC-AL Pressure Wall with Window)** |

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| **Loads and Fixtures**

| ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** |
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| **Fixed-1** |  |

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| --- | --- |
| Entities: | **2 face(s)** |
| Type: | **Fixed Geometry** |

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| ****Load name**** | ****Load Image**** | ****Load Details**** |
| --- | --- | --- |
| **Pressure-1** |  |

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| --- | --- |
| Entities: | **4 face(s)** |
| Type: | **Normal to selected face** |
| Value: | **101,300** |
| Units: | **N/m^2** |

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| Mesh information

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| Mesh type | Solid Mesh |
| Mesher Used:  | Standard mesh |
| Automatic Transition:  | Off |
| Include Mesh Auto Loops:  | Off |
| Jacobian points for High quality mesh | 16 Points |
| Element Size | 271.703 mm |
| Tolerance | 13.5852 mm |
| Mesh Quality | High |

Mesh information - Details

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| --- | --- |
| Total Nodes | 15892 |
| Total Elements | 8111 |
| Maximum Aspect Ratio | 34.622 |
| % of elements with Aspect Ratio < 3 | 29.8 |
| Percentage of elements with Aspect Ratio > 10 | 51.2 |
| Percentage of distorted elements | 0 |
| Time to complete mesh(hh;mm;ss):  | 00:00:04 |
| Computer name:  | RYAN-PC |
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| Study Results

| Name | Type | Min | Max |
| --- | --- | --- | --- |
| Stress | VON: von Mises Stress | 2.549e+04N/m^2Node: 5721 | 8.671e+06N/m^2Node: 9990 |
| **NASA RASC-AL Pressure Wall with Window-SimulationXpress Study-Stress-Stress** |

| Name | Type | Min | Max |
| --- | --- | --- | --- |
| Displacement | URES: Resultant Displacement | 0.000e+00mmNode: 1278 | 3.738e-01mmNode: 775 |
| **NASA RASC-AL Pressure Wall with Window-SimulationXpress Study-Displacement-Displacement** |

| Name | Type |
| --- | --- |
| Deformation | Deformed shape |
| **NASA RASC-AL Pressure Wall with Window-SimulationXpress Study-Displacement-Deformation** |

| Name | Type | Min | Max |
| --- | --- | --- | --- |
| Factor of Safety | Max von Mises Stress | 3.171e+01Node: 9990 | 1.079e+04Node: 5721 |
| **NASA RASC-AL Pressure Wall with Window-SimulationXpress Study-Factor of Safety-Factor of Safety** |

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| Conclusion |