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|  | |  | | --- | | **Simulation of semi\_rigid\_IMU**  **Date: Thursday, 5 November 2015 Designer: Philip Rowse**  **Study name: SimulationXpress Study**  **Analysis type: Static** | | Table of Contents  [Description 2](#_Toc434509993)  [Assumptions 3](#_Toc434509994)  [Model Information 3](#_Toc434509995)  [Material Properties 5](#_Toc434509996)  [Loads and Fixtures 6](#_Toc434509997)  [Mesh information 7](#_Toc434509998)  [Study Results 10](#_Toc434509999)  [Conclusion 12](#_Toc434510000) | |
| Description Design analysis if the foamless Isolator |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** semi\_rigid\_IMU**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Boss-Extrude3** | **Solid Body** | ****Mass:0.000834655 kg****  ****Volume:3.39622e-007 m^3****  ****Density:2457.6 kg/m^3****  ****Weight:0.00817962 N**** | ****W:\Git\Pixhawk2\FOAMLESS\semi\_rigid\_IMU.SLDPRT****  **Nov 05 17:27:51 2015** | |

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| Material Properties  |  |  |  | | --- | --- | --- | | ****Model Reference**** | ****Properties**** | ****Components**** | |  | |  |  | | --- | --- | | ****Name:**** | **FR4** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Mohr-Coulomb Stress** | | ****Yield strength:**** | **Temp dependent** | | ****Tensile strength:**** | **2.55106e+008 N/m^2** | | **SolidBody 1(Boss-Extrude3)(semi\_rigid\_IMU)** | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixed-2** |  | |  |  | | --- | --- | | Entities: | **4 face(s)** | | Type: | **Fixed Geometry** | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-4** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Apply normal force** | | Value: | **1 N** | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Mesh information  |  |  | | --- | --- | | Mesh type | Solid Mesh | | Mesher Used: | Standard mesh | | Automatic Transition: | Off | | Include Mesh Auto Loops: | Off | | Jacobian points | 4 Points | | Element Size | 0.789292 mm | | Tolerance | 0.0394646 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 18376 | | Total Elements | 8667 | | Maximum Aspect Ratio | 9.5799 | | % of elements with Aspect Ratio < 3 | 84.7 | | % of elements with Aspect Ratio > 10 | 0 | | % of distorted elements(Jacobian) | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:05 | | Computer name: | PROFICNC-PC | |  | | |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Stress | VON: von Mises Stress | 1620.49 N/m^2  Node: 18369 | 8.20684e+007 N/m^2  Node: 12884 | | **semi\_rigid\_IMU-SimulationXpress Study-Stress-Stress** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Displacement | URES: Resultant Displacement | 0 mm  Node: 261 | 1.85846 mm  Node: 6261 | | **semi\_rigid\_IMU-SimulationXpress Study-Displacement-Displacement** | | | |  | Name | Type | | --- | --- | | Deformation | Deformed shape | | **semi\_rigid\_IMU-SimulationXpress Study-Displacement-Deformation** | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Factor of Safety | Max von Mises Stress | 1.2185e-008  Node: 12884 | 0.000617098  Node: 18369 | | **semi\_rigid\_IMU-SimulationXpress Study-Factor of Safety-Factor of Safety** | | | | |

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| Conclusion |