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|  | |  | | --- | | **Simulation of lub\_braco\_1**  **Date: 12 de junho de 2023 Designer: Solidworks**  **Study name: Análise Estrutural**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc137470590)  [Assumptions 2](#_Toc137470591)  [Model Information 2](#_Toc137470592)  [Study Properties 3](#_Toc137470593)  [Units 3](#_Toc137470594)  [Material Properties 4](#_Toc137470595)  [Loads and Fixtures 5](#_Toc137470596)  [Connector Definitions 5](#_Toc137470597)  [Interaction Information 6](#_Toc137470598)  [Mesh information 6](#_Toc137470599)  [Sensor Details 6](#_Toc137470600)  [Resultant Forces 7](#_Toc137470601)  [Beams 7](#_Toc137470602)  [Study Results 8](#_Toc137470603)  [Conclusion 9](#_Toc137470604) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** lub\_braco\_1**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Cut-Extrude5** | **Solid Body** | ****Mass:1,17312 kg****  ****Volume:0,00043449 m^3****  ****Density:2 700 kg/m^3****  ****Weight:11,4966 N**** | ****C:\Users\Tiago Costa\Desktop\3º ano 2223\2 Semestre\PESTEM\Conjuntos\Lubrificação\lub\_braco\_1.SLDPRT****  **Jun 12 13:33:39 2023** | |

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| Study Properties  |  |  | | --- | --- | | Study name | Análise Estrutural | | Analysis type | Static | | Mesh type | Solid Mesh | | Thermal Effect: | On | | Thermal option | Include temperature loads | | Zero strain temperature | 298 Kelvin | | Include fluid pressure effects from SOLIDWORKS Flow Simulation | Off | | Solver type | Automatic | | Inplane Effect: | Off | | Soft Spring: | Off | | Inertial Relief: | Off | | Incompatible bonding options | Automatic | | Large displacement | Off | | Compute free body forces | On | | Friction | Off | | Use Adaptive Method: | Off | | Result folder | SOLIDWORKS document (C:\Users\Tiago Costa\Desktop\3º ano 2223\2 Semestre\PESTEM\Conjuntos\Lubrificação) | |

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| Units  |  |  | | --- | --- | | Unit system: | SI (MKS) | | Length/Displacement | mm | | Temperature | Kelvin | | Angular velocity | Rad/sec | | Pressure/Stress | N/m^2 | |

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| Material Properties  |  |  |  | | --- | --- | --- | | ****Model Reference**** | ****Properties**** | ****Components**** | |  | |  |  | | --- | --- | | ****Name:**** | **6061 Alloy** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Unknown** | | ****Yield strength:**** | **5,51485e+07 N/m^2** | | ****Tensile strength:**** | **1,24084e+08 N/m^2** | | ****Elastic modulus:**** | **6,9e+10 N/m^2** | | ****Poisson's ratio:**** | **0,33** | | ****Mass density:**** | **2 700 kg/m^3** | | ****Shear modulus:**** | **2,6e+10 N/m^2** | | ****Thermal expansion coefficient:**** | **2,4e-05 /Kelvin** | | **SolidBody 1(Cut-Extrude5)(lub\_braco\_1)** | | **Curve Data:N/A** | | | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixed-1** |  | |  |  | | --- | --- | | Entities: | **4 face(s)** | | Type: | **Fixed Geometry** | | | ****Resultant Forces****   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Components** | **X** | **Y** | **Z** | **Resultant** | | **Reaction force(N)** | **-0,00507754** | **49,0074** | **0,00116167** | **49,0074** | | **Reaction Moment(N.m)** | **0** | **0** | **0** | **0** | | | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Gravity-1** |  | |  |  | | --- | --- | | Reference: | **Face< 1 >** | | Values: | **0 0 -9,81** | | Units: | **m/s^2** | | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Apply normal force** | | Value: | **-37,5 N** | | |

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| Connector Definitions No Data |

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| Interaction Information No Data |

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| Mesh information  |  |  | | --- | --- | | Mesh type | Solid Mesh | | Mesher Used: | Blended curvature-based mesh | | Jacobian points for High quality mesh | 16 Points | | Maximum element size | 15,152 mm | | Minimum element size | 1,26286 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 22623 | | Total Elements | 13545 | | Maximum Aspect Ratio | 9,9446 | | % of elements with Aspect Ratio < 3 | 91,6 | | Percentage of elements with Aspect Ratio > 10 | 0 | | Percentage of distorted elements | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:04 | | Computer name: |  | |

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| Sensor Details No Data |

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| Resultant ForcesReaction forces  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N | -0,00507754 | 49,0074 | 0,00116167 | 49,0074 |  Reaction Moments  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N.m | 0 | 0 | 0 | 0 | |
| Free body forces  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N | -0,0312246 | 8,07681 | 0,0519405 | 8,07704 |  Free body moments  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N.m | 0 | 0 | 0 | 1e-33 | |

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| Beams No Data |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Concentração de Tensões | VON: von Mises Stress | 0,00N/mm^2 (MPa)  Node: 21583 | 2,83N/mm^2 (MPa)  Node: 30 | | **lub\_braco\_1-Análise Estrutural-Stress-Concentração de Tensões** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Flecha | UY: Y Displacement | -0,03mm  Node: 52 | 0,00mm  Node: 831 | | **lub\_braco\_1-Análise Estrutural-Displacement-Flecha** | | | |  | Name | Type | | --- | --- | | Displacement1{1} | Deformed shape | | **lub\_braco\_1-Análise Estrutural-Displacement-Displacement1{1}** | | |

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| Conclusion |