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|  | |  | | --- | | **Simulation of ЛР №6**  **Date: вторник, 28 марта 2023 г. Designer: Solidworks**  **Study name: Static 1**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc130915195)  [Assumptions 2](#_Toc130915196)  [Model Information 2](#_Toc130915197)  [Study Properties 3](#_Toc130915198)  [Units 3](#_Toc130915199)  [Material Properties 4](#_Toc130915200)  [Loads and Fixtures 4](#_Toc130915201)  [Connector Definitions 5](#_Toc130915202)  [Contact Information 5](#_Toc130915203)  [Mesh information 5](#_Toc130915204)  [Sensor Details 6](#_Toc130915205)  [Resultant Forces 6](#_Toc130915206)  [Beams 6](#_Toc130915207)  [Study Results 7](#_Toc130915208)  [Conclusion 9](#_Toc130915209) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** ЛР №6**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Boss-Extrude5** | **Solid Body** | ****Mass:5,3355 kg****  ****Volume:0,000692922 m^3****  ****Density:7 700 kg/m^3****  ****Weight:52,2879 N**** | ****C:\Users\Maria\OneDrive\Рабочий стол\3 курс 6 сем\МАКГ\ЛР №6.SLDPRT****  **Feb 28 16:24:51 2023** | |

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| Study Properties  |  |  | | --- | --- | | Study name | Static 1 | | 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\Maria\OneDrive\Рабочий стол\3 курс 6 сем\МАКГ) | |

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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:**** | **Alloy Steel** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Max von Mises Stress** | | ****Yield strength:**** | **6,20422e+08 N/m^2** | | ****Tensile strength:**** | **7,23826e+08 N/m^2** | | ****Elastic modulus:**** | **2,1e+11 N/m^2** | | ****Poisson's ratio:**** | **0,28** | | ****Mass density:**** | **7 700 kg/m^3** | | ****Shear modulus:**** | **7,9e+10 N/m^2** | | ****Thermal expansion coefficient:**** | **1,3e-05 /Kelvin** | | **SolidBody 1(Boss-Extrude5)(ЛР №6)** | | **Curve Data:N/A** | | | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixed-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Fixed Geometry** | | | ****Resultant Forces****   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Components** | **X** | **Y** | **Z** | **Resultant** | | **Reaction force(N)** | **0,0675551** | **131,997** | **0,00357544** | **131,997** | | **Reaction Moment(N.m)** | **0** | **0** | **0** | **0** | | | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **2 face(s)** | | Type: | **Apply normal force** | | Value: | **100 N** | | |

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| Connector Definitions No Data |

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| Contact Information No Data |

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| Mesh information  |  |  | | --- | --- | | 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 | 8,85116 mm | | Tolerance | 0,442558 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 11157 | | Total Elements | 7090 | | Maximum Aspect Ratio | 4,371 | | % of elements with Aspect Ratio < 3 | 99,8 | | Percentage of elements with Aspect Ratio > 10 | 0 | | Percentage of distorted elements | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:01 | | 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 | 0,0675551 | 131,997 | 0,00357544 | 131,997 |  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 | 0,0201578 | -0,0143872 | 0,0129042 | 0,0279258 |  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 | | --- | --- | --- | --- | | Stress1 | VON: von Mises Stress | 5,755e+02N/m^2  Node: 10796 | 5,699e+05N/m^2  Node: 583 | | **ЛР №6-Static 1-Stress-Stress1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Displacement1 | URES: Resultant Displacement | 0,000e+00mm  Node: 96 | 2,625e-04mm  Node: 10745 | | **ЛР №6-Static 1-Displacement-Displacement1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Strain1 | ESTRN: Equivalent Strain | 1,398e-09  Element: 2481 | 1,670e-06  Element: 3103 | | **ЛР №6-Static 1-Strain-Strain1** | | | | |

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| Conclusion |