|  |  |  |  |
| --- | --- | --- | --- |
|  | |  | | --- | | **Simulation of Platform\_001**  **Date: Freitag, 2. Mai 2025 Designer: Solidworks**  **Study name: Statical**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc197045019)  [Assumptions 2](#_Toc197045020)  [Model Information 2](#_Toc197045021)  [Study Properties 3](#_Toc197045022)  [Units 3](#_Toc197045023)  [Material Properties 4](#_Toc197045024)  [Loads and Fixtures 5](#_Toc197045025)  [Connector Definitions 6](#_Toc197045026)  [Contact Information 6](#_Toc197045027)  [Mesh information 7](#_Toc197045028)  [Sensor Details 8](#_Toc197045029)  [Resultant Forces 8](#_Toc197045030)  [Beams 8](#_Toc197045031)  [Study Results 9](#_Toc197045032)  [Conclusion 11](#_Toc197045033) | |
| Description No Data |

|  |
| --- |
| Assumptions |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** Platform\_001**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Ø5.0 (5) Durchmesser Bohrung1** | **Solid Body** | ****Mass:2,09626 kg****  ****Volume:0,000267858 m^3****  ****Density:7.826 kg/m^3****  ****Weight:20,5433 N**** | ****T:\Аспирантура\Стенд\_026\Platform\_001.SLDPRT**** | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study Properties  |  |  | | --- | --- | | Study name | Statical | | 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 | FFEPlus | | 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 (T:\Аспирантура\Стенд\_016) | |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Material Properties  |  |  |  | | --- | --- | --- | | ****Model Reference**** | ****Properties**** | ****Components**** | |  | |  |  | | --- | --- | | ****Name:**** | **Сталь 45 ГОСТ 1050-88** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Unknown** | | ****Yield strength:**** | **8,3e+08 N/m^2** | | ****Tensile strength:**** | **9,8e+08 N/m^2** | | ****Elastic modulus:**** | **2,04e+11 N/m^2** | | ****Poisson's ratio:**** | **0,3** | | ****Mass density:**** | **7.826 kg/m^3** | | ****Shear modulus:**** | **7,8e+10 N/m^2** | | ****Thermal expansion coefficient:**** | **1,2e-05 /Kelvin** | | **Твердое тело 1(Ø5.0 (5) Durchmesser Bohrung1)(Platform\_001)** | | **Curve Data:N/A** | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixiert-2** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Fixed Geometry** | | | ****Resultant Forces****   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Components** | **X** | **Y** | **Z** | **Resultant** | | **Reaction force(N)** | **0,00681542** | **1,45296** | **-0,656777** | **1,59452** | | **Reaction Moment(N.m)** | **0** | **0** | **0** | **0** | | | | | **Fixiert-1** |  | |  |  | | --- | --- | | Entities: | **8 face(s)** | | Type: | **Fixed Geometry** | | | ****Resultant Forces****   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Components** | **X** | **Y** | **Z** | **Resultant** | | **Reaction force(N)** | **-0,00719793** | **1,94802** | **0,65478** | **2,05513** | | **Reaction Moment(N.m)** | **0** | **0** | **0** | **0** | | | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Вращающий момент-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Reference: | **Face< 1 >** | | Type: | **Apply torque** | | Value: | **1,73 N.m** | | | **Вращающий момент-2** |  | |  |  | | --- | --- | | Entities: | **2 face(s), 1 plane(s)** | | Reference: | **Front Plane** | | Type: | **Apply force** | | Values: | **---; -1,7; --- N** | | | **Вращающий момент-3** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Reference: | **Face< 1 >** | | Type: | **Apply torque** | | Value: | **-1,73 N.m** | | |

|  |
| --- |
| Connector Definitions No Data |

|  |
| --- |
| Contact Information No Data |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mesh information  |  |  | | --- | --- | | Mesh type | Solid Mesh | | Mesher Used: | Standard mesh | | Automatic Transition: | Off | | Include Mesh Auto Loops: | Off | | Jacobian points for High quality mesh | 4 Points | | Element Size | 2,88429 mm | | Tolerance | 0,144215 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 143535 | | Total Elements | 88008 | | Maximum Aspect Ratio | 6,2869 | | % of elements with Aspect Ratio < 3 | 99,6 | | Percentage of elements with Aspect Ratio > 10 | 0 | | Percentage of distorted elements | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:08 | | Computer name: | RUSLANPC | |  | | |

|  |
| --- |
| Sensor Details No Data |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Resultant ForcesReaction forces  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N | -0,000382665 | 3,40098 | -0,00199675 | 3,40098 |  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 | 0,0316978 | 0,00358156 | 0,0123174 | 0,0341949 |  Free body moments  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N.m | 0 | 0 | 0 | 1e-33 | |

|  |
| --- |
| Beams No Data |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Напряжение1 | VON: von Mises Stress | 7,260e+00N/m^2  Node: 65103 | 1,643e+05N/m^2  Node: 138995 | | **Platform\_001-Statical-Stress-Напряжение1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Перемещение1 | URES: Resultant Displacement | 0,000e+00mm  Node: 727 | 1,397e-04mm  Node: 6318 | | **Platform\_001-Statical-Displacement-Перемещение1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Деформация1 | ESTRN: Equivalent Strain | 2,515e-11  Element: 64274 | 5,691e-07  Element: 37435 | | **Platform\_001-Statical-Strain-Деформация1** | | | | |

|  |
| --- |
| Conclusion |