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|  | |  | | --- | | **Simulation of torqueLandaBar**  **Date: Friday, April 21, 2017 Designer: Solidworks**  **Study name: Design Study 1**  **Analysis type: Design Study** | | Table of Contents  [Description 1](#_Toc480547936)  [Assumptions 2](#_Toc480547937)  [Model Information 2](#_Toc480547938)  [Study Properties 2](#_Toc480547939)  [Units 3](#_Toc480547940)  [Design Study Setup 3](#_Toc480547941)  [Study Results 4](#_Toc480547942)  [Conclusion 5](#_Toc480547943) | |
| Description No Data |

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| --- |
| Assumptions |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model Information  |  |  |  |  | | --- | --- | --- | --- | | Document Name | Configuration | Document Path | Date Modified | | torqueLandaBar | Default | Z:\Research project\myWork\Design\WaxoDesign\torqueLandaBar.SLDPRT | Apr 20 21:05:39 2017 | |

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| Study Properties  |  |  | | --- | --- | | Study name | Design Study 1 | | Analysis type | Design Study(Optimization) | | Design Study Quality | High quality (slower) | | Result folder | SOLIDWORKS document(Z:\Research project\myWork\Design\WaxoDesign) | |

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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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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Design Study Setup** **Design Variables**   | ****Name**** | ****Type**** | ****Value**** | ****Units**** | | --- | --- | --- | --- | | **thickness** | **Range with Step** | Min:3 Max:10 Step:2 | mm | | **width** | **Range with Step** | Min:20 Max:30 Step:1 | mm |   **Constraints**   | ****Sensor name**** | ****Condition**** | ****Bounds**** | ****Units**** | ****Study name**** | | --- | --- | --- | --- | --- | | **Stress1** | **is less than** | Max:5e+007 | N/m^2 | Static 2 |   **Goals**   | ****Name**** | ****Goal**** | ****Properties**** | ****Weight**** | ****Study name**** | | --- | --- | --- | --- | --- | | **Mass1** | Minimize | Mass | 10 | - | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study Results 57 of 57 scenarios ran successfully.   | Component name | Units | Current | Initial | Optimal | Scenario1 | Scenario2 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 6 | 6 | 10 | 3 | 5 | | width | mm | 20 | 20 | 20 | 20 | 20 | | Stress1 | N/m^2 | 8.4123e+007 | 8.4123e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 84.7242 | 84.7242 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario3 | Scenario4 | Scenario5 | Scenario6 | Scenario7 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 20 | 20 | 20 | 21 | 21 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario8 | Scenario9 | Scenario10 | Scenario11 | Scenario12 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 21 | 21 | 21 | 22 | 22 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario13 | Scenario14 | Scenario15 | Scenario16 | Scenario17 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 22 | 22 | 22 | 23 | 23 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario18 | Scenario19 | Scenario20 | Scenario21 | Scenario22 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 23 | 23 | 23 | 24 | 24 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario23 | Scenario24 | Scenario25 | Scenario26 | Scenario27 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 24 | 24 | 24 | 25 | 25 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario28 | Scenario29 | Scenario30 | Scenario31 | Scenario32 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 25 | 25 | 25 | 26 | 26 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario33 | Scenario34 | Scenario35 | Scenario36 | Scenario37 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 26 | 26 | 26 | 27 | 27 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario38 | Scenario39 | Scenario40 | Scenario41 | Scenario42 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 27 | 27 | 27 | 28 | 28 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario43 | Scenario44 | Scenario45 | Scenario46 | Scenario47 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 28 | 28 | 28 | 29 | 29 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario48 | Scenario49 | Scenario50 | Scenario51 | Scenario52 | | --- | --- | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | 3 | 5 | | width | mm | 29 | 29 | 29 | 30 | 30 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | 1.6548e+008 | 1.0143e+008 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | 42.3621 | 70.6035 |  | Component name | Units | Scenario53 | Scenario54 | Scenario55 | | --- | --- | --- | --- | --- | | thickness | mm | 7 | 9 | 10 | | width | mm | 30 | 30 | 30 | | Stress1 | N/m^2 | 7.1812e+007 | 5.4656e+007 | 4.8696e+007 | | Mass1 | g | 98.8449 | 127.086 | 141.207 | |

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| --- |
| Conclusion |