|  |  |  |  |
| --- | --- | --- | --- |
|  | |  | | --- | | **Simulation of shell\_small\_material**  **Date: 27 May 2024 Designer: Solidworks**  **Study name: Fatigue 1**  **Analysis type: Fatigue(Constant Amplitude)** | | Table of Contents  [Description 1](#_Toc167737016)  [Assumptions 2](#_Toc167737017)  [Model Information 3](#_Toc167737018)  [Study Properties 4](#_Toc167737019)  [Units 4](#_Toc167737020)  [Material Properties 5](#_Toc167737021)  [Loading Options 5](#_Toc167737022)  [Study Results 6](#_Toc167737023)  [Conclusion 7](#_Toc167737024) | |
| Description No Data |

|  |  |  |
| --- | --- | --- |
| Assumptions  |  |  | | --- | --- | | Original Model | Model Analyzed | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** shell\_small\_material**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **shell\_small.step<1>[4]** | **Solid Body** | ****Mass:0.0138369 kg****  ****Volume:1.02598e-05 m^3****  ****Density:1,348.65 kg/m^3****  ****Weight:0.135601 N**** | ****C:\Users\cinta\Downloads\IER\_Shell\Small Shell\shell\_small\_material.SLDPRT****  **May 27 21:14:43 2024** | | **shell\_small.step<1>[3]** | **Solid Body** | ****Mass:0.0115786 kg****  ****Volume:8.5767e-06 m^3****  ****Density:1,350 kg/m^3****  ****Weight:0.11347 N**** | ****C:\Users\cinta\Downloads\IER\_Shell\Small Shell\shell\_small\_material.SLDPRT****  **May 27 21:14:43 2024** | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study Properties  |  |  | | --- | --- | | Study name | Fatigue 1 | | Analysis type | Fatigue(Constant Amplitude) | | Event Interaction | Random | | Computing alternating stress using | Stress intensity (P1-P3) | | Shell face | Top Face | | Mean stress correction | None | | Fatigue strength reduction factor | 1 | | Infinite life | Off | | Result folder | SOLIDWORKS document (C:\Users\cinta\Downloads) | |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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:**** | **Custom Plastic** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Max von Mises Stress** | | **SolidBody 1(shell\_small.step<1>[4])(shell\_small),**  **SolidBody 2(shell\_small.step<1>[3])(shell\_small)** | | **Curve Data:**   |  |  |  | | --- | --- | --- | |  |  |  | | **SN curve** |  |  | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Loading Options**  | ****Event Name**** | ****No. of cycles**** | ****Loading Type**** | ****Study Association**** | | --- | --- | --- | --- | | **Event-1** | **3000** | Fully Reversed (LR=-1) | |  |  |  | | --- | --- | --- | | **Study name** | **Scale Factor** | **Step** | | **Static 1** | **1** | **0** | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Results1 | Damage plot | 3.000e-01  Node: 1 | 1.032e+04  Node: 14791 | | **shell\_small\_material-Fatigue 1-Results-Results1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Results2 | Life plot | 2.908e+01cycle  Node: 14791 | 1.000e+06cycle  Node: 1 | | **shell\_small\_material-Fatigue 1-Results-Results2** | | | | |

|  |
| --- |
| Conclusion |