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|  | |  | | --- | | **Simulation of Boeing 747-simple\_thermal**  **Date: 2020年8月30日 Designer: Solidworks**  **Study name: Thermal 1**  **Analysis type: Thermal(Steady state)** | | Table of Contents  [Description 1](#_Toc49721990)  [Assumptions 2](#_Toc49721991)  [Model Information 2](#_Toc49721992)  [Study Properties 3](#_Toc49721993)  [Units 3](#_Toc49721994)  [Material Properties 3](#_Toc49721995)  [Thermal Loads 4](#_Toc49721996)  [Contact Information 4](#_Toc49721997)  [Mesh information 5](#_Toc49721998)  [Sensor Details 6](#_Toc49721999)  [Study Results 7](#_Toc49722000)  [Conclusion 7](#_Toc49722001) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** Boeing 747-simple\_thermal**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Split Line8** | **Solid Body** | ****Mass:40.0923 kg****  ****Volume:0.00520681 m^3****  ****Density:7,699.98 kg/m^3****  ****Weight:392.904 N**** | ****D:\6-代大工作\3D Models\airplanes\Boeing 747-simple\thermal\Boeing 747-simple\_thermal.SLDPRT****  **Aug 30 23:18:44 2020** | |

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| Study Properties  |  |  | | --- | --- | | Study name | Thermal 1 | | Analysis type | Thermal(Steady state) | | Mesh type | Solid Mesh | | Solver type | FFEPlus | | Solution type | Steady state | | Contact resistance defined? | No | | Result folder | SOLIDWORKS document (D:\6-代大工作\3D Models\airplanes\Boeing 747-simple\thermal) | |

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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** | | ****Thermal conductivity:**** | **50 W/(m.K)** | | ****Specific heat:**** | **460 J/(kg.K)** | | ****Mass density:**** | **7,700 kg/m^3** | | **SolidBody 1(Split Line8)(Boeing 747-simple\_thermal)** | | **Curve Data:N/A** | | | |

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| **Thermal Loads**  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Temperature-1** |  | |  |  | | --- | --- | | Entities: | **10 face(s)** | | Temperature: | **120 Celsius** | | | **Temperature-2** |  | |  |  | | --- | --- | | Entities: | **7 face(s)** | | Temperature: | **70 Celsius** | | | **Temperature-3** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Temperature: | **90 Celsius** | | | **Temperature-4** |  | |  |  | | --- | --- | | Entities: | **5 face(s)** | | Temperature: | **30 Celsius** | | |

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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 | 4 Points | | Element Size | 17.3362 mm | | Tolerance | 0.866811 mm | | Mesh Quality Plot | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 18953 | | Total Elements | 10718 | | Maximum Aspect Ratio | 37.174 | | % of elements with Aspect Ratio < 3 | 78.7 | | % of elements with Aspect Ratio > 10 | 1.79 | | % of distorted elements(Jacobian) | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:41 | | Computer name: |  | |  | | |

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| Sensor Details No Data |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Thermal1 | TEMP: Temperature | 30.000 Celsius  Node: 8 | 120.000 Celsius  Node: 94 | | **Boeing 747-simple\_thermal-Thermal 1-Thermal-Thermal1** | | | | |

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| Conclusion |