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|  | |  | | --- | | **Simulation of xing ling**  **Date: May 28, 2016 Designer: Solidworks**  **Study name: Estudo 2**  **Analysis type: Frequency** | | Table of Contents  [Description 1](#_Toc452221108)  [Assumptions 2](#_Toc452221109)  [Model Information 2](#_Toc452221110)  [Study Properties 3](#_Toc452221111)  [Units 3](#_Toc452221112)  [Material Properties 4](#_Toc452221113)  [Loads and Fixtures 4](#_Toc452221114)  [Connector Definitions 5](#_Toc452221115)  [Contact Information 5](#_Toc452221116)  [Mesh information 6](#_Toc452221117)  [Sensor Details 7](#_Toc452221118)  [Study Results 8](#_Toc452221119)  [Conclusion 13](#_Toc452221120) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** xing ling**  ****Current Configuration:** Valor predeterminado** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Ressalto-extrusão3** | **Solid Body** | ****Mass:0.129045 kg****  ****Volume:4.81512e-005 m^3****  ****Density:2680 kg/m^3****  ****Weight:1.26464 N**** | ****\\Mac\Home\Documents\GitHub\ufrgs-instrumentacao-lab5\Resources\Solid\Xing\xing ling.SLDPRT****  **May 26 18:14:34 2016** | |

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| Study Properties  |  |  | | --- | --- | | Study name | Estudo 2 | | Analysis type | Frequency | | Mesh type | Solid Mesh | | Number of frequencies | 5 | | Solver type | Direct sparse solver | | Soft Spring: | Off | | Incompatible bonding options | Automatic | | Thermal option | Include temperature loads | | Zero strain temperature | 298 Kelvin | | Include fluid pressure effects from SOLIDWORKS Flow Simulation | Off | | Result folder | SOLIDWORKS document (\\Mac\Home\Documents\GitHub\ufrgs-instrumentacao-lab5\Resources\Solid\Xing) | |

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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:**** | **5052-H32** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Max von Mises Stress** | | ****Yield strength:**** | **1.95e+008 N/m^2** | | ****Tensile strength:**** | **2.3e+008 N/m^2** | | ****Mass density:**** | **2680 kg/m^3** | | ****Elastic modulus:**** | **7e+010 N/m^2** | | ****Poisson's ratio:**** | **0.33** | | ****Thermal expansion coefficient:**** | **2.38e-005 /Kelvin** | | **Corpo sólido 1(Ressalto-extrusão3)(xing ling)** | | **Curve Data:N/A** | | | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixo-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Fixed Geometry** | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Força-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Apply normal force** | | Value: | **4 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: | Curvature-based mesh | | Jacobian points | 4 Points | | Maximum element size | 0 mm | | Minimum element size | 0 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 17133 | | Total Elements | 9307 | | Maximum Aspect Ratio | 6.17 | | % of elements with Aspect Ratio < 3 | 99.7 | | % of elements with Aspect Ratio > 10 | 0 | | % of distorted elements(Jacobian) | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:02 | | Computer name: |  | |  | | |

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| Sensor Details No Data |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Deslocamento1 | AMPRES: Resultant Amplitude Plot for Mode Shape: 1(Value = 19.3567 Hz) | 0  Node: 15 | 5572.38  Node: 8547 | | **xing ling-Estudo 2-Amplitude-Deslocamento1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Deslocamento2 | AMPRES: Resultant Amplitude Plot for Mode Shape: 2(Value = 121.3 Hz) | 0  Node: 15 | 5564.5  Node: 8547 | | **xing ling-Estudo 2-Amplitude-Deslocamento2** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Deslocamento3 | AMPRES: Resultant Amplitude Plot for Mode Shape: 3(Value = 163.59 Hz) | 0  Node: 15 | 5557.86  Node: 144 | | **xing ling-Estudo 2-Amplitude-Deslocamento3** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Deslocamento4 | AMPRES: Resultant Amplitude Plot for Mode Shape: 4(Value = 339.708 Hz) | 0  Node: 15 | 5562.76  Node: 1253 | | **xing ling-Estudo 2-Amplitude-Deslocamento4** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Deslocamento5 | AMPRES: Resultant Amplitude Plot for Mode Shape: 5(Value = 447.833 Hz) | 0  Node: 15 | 6861.39  Node: 1258 | | **xing ling-Estudo 2-Amplitude-Deslocamento5** | | | |   **Mode List**   | ****Frequency Number**** | ****Rad/sec**** | ****Hertz**** | ****Seconds**** | | --- | --- | --- | --- | | **1** | **121.62** | **19.357** | **0.051662** | | **2** | **762.15** | **121.3** | **0.008244** | | **3** | **1027.9** | **163.59** | **0.0061129** | | **4** | **2134.4** | **339.71** | **0.0029437** | | **5** | **2813.8** | **447.83** | **0.002233** |   **Mass Participation (Normalized)**   | ****Mode Number**** | ****Frequency(Hertz)**** | ****X direction**** | ****Y direction**** | ****Z direction**** | | --- | --- | --- | --- | --- | | **1** | **19.357** | **1.0347e-010** | **0.61135** | **8.5358e-012** | | **2** | **121.3** | **1.2686e-009** | **0.18812** | **1.2409e-009** | | **3** | **163.59** | **1.7738e-012** | **2.6267e-010** | **0.61276** | | **4** | **339.71** | **3.2918e-009** | **0.064907** | **2.8054e-011** | | **5** | **447.83** | **2.2347e-010** | **1.4281e-010** | **4.5926e-007** | |  |  | **Sum X = 4.8891e-009** | **Sum Y = 0.86437** | **Sum Z = 0.61276** | |

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| Conclusion |