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|  | |  | | --- | | **Simulation of Assem1**  **Date: sunnuntai 17. marraskuuta 2024 Designer: Solidworks**  **Study name: Design Study 1**  **Analysis type: Design Study**  **Analyser: Senja Kantanen** | | Table of Contents  [Description 1](#_Toc182744536)  [Assumptions 2](#_Toc182744537)  [Model Information 2](#_Toc182744538)  [Study Properties 2](#_Toc182744539)  [Units 3](#_Toc182744540)  [Design Study Setup 3](#_Toc182744541)  [Study Results 4](#_Toc182744542)  [Conclusion 5](#_Toc182744543) | |
| Description Mäntämekanismin massavoimien minimointi |

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| Assumptions |

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| Model Information  |  |  |  |  | | --- | --- | --- | --- | | Document Name | Configuration | Document Path | Date Modified | | Assem1 | Default | C:\Users\senja\OneDrive - LUT University\simulaatiot\mäntämekanismi\Assem1.SLDASM | Nov 17 13:59:44 2024 | | SKF\_6202-1 | Default | C:\Users\senja\OneDrive - LUT University\simulaatiot\mäntämekanismi\SKF\_6202.SLDPRT | Nov 12 17:31:25 2024 | | kampiakseli-1 | Default | C:\Users\senja\OneDrive - LUT University\simulaatiot\mäntämekanismi\kampiakseli.SLDPRT | Nov 17 13:59:07 2024 | | kiertokanki-1 | Default | C:\Users\senja\OneDrive - LUT University\simulaatiot\mäntämekanismi\kiertokanki.SLDPRT | Nov 12 17:31:24 2024 | | manta-1 | Default | C:\Users\senja\OneDrive - LUT University\simulaatiot\mäntämekanismi\manta.SLDPRT | Nov 12 17:31:24 2024 | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study Properties  |  |  | | --- | --- | | Study name | Design Study 1 | | Analysis type | Design Study | | Design Study Quality | High quality (slower) | | Result folder | SOLIDWORKS document(C:\Users\senja\OneDrive - LUT University\simulaatiot\mäntämekanismi) | |

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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**** | | --- | --- | --- | --- | | **sade** | **Range with Step** | Min:28 Max:30 Step:0.1 | mm |   **Constraints**   | ****Sensor name**** | ****Condition**** | ****Bounds**** | ****Units**** | ****Study name**** | | --- | --- | --- | --- | --- | | **Sensors1** | **Monitor Only** | - | - | - | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study Results 22 of 22 scenarios ran successfully.   | Component name | Units | Current | Initial | Optimal | Scenario1 | Scenario2 | | --- | --- | --- | --- | --- | --- | --- | | sade | mm | 30 | 30 | - | 28 | 28.1 | | Sensors1 | N | 37.6381 | 37.6381 | - | 24.1068 | 22.2346 |  | Component name | Units | Scenario3 | Scenario4 | Scenario5 | Scenario6 | Scenario7 | | --- | --- | --- | --- | --- | --- | --- | | sade | mm | 28.2 | 28.3 | 28.4 | 28.5 | 28.6 | | Sensors1 | N | 20.3491 | 18.4501 | 16.5377 | 14.6118 | 12.6724 |  | Component name | Units | Scenario8 | Scenario9 | Scenario10 | Scenario11 | Scenario12 | | --- | --- | --- | --- | --- | --- | --- | | sade | mm | 28.7 | 28.8 | 28.9 | 29 | 29.1 | | Sensors1 | N | 11.3799 | 13.3172 | 15.2681 | 17.2326 | 19.2108 |  | Component name | Units | Scenario13 | Scenario14 | Scenario15 | Scenario16 | Scenario17 | | --- | --- | --- | --- | --- | --- | --- | | sade | mm | 29.2 | 29.3 | 29.4 | 29.5 | 29.6 | | Sensors1 | N | 21.2027 | 23.2084 | 25.2279 | 27.2613 | 29.3086 |  | Component name | Units | Scenario18 | Scenario19 | Scenario20 | Scenario21 | <L\_Iter5/> | | --- | --- | --- | --- | --- | --- | --- | | sade | mm | 29.7 | 29.8 | 29.9 | 30 | <SR\_Iter5/> | | Sensors1 | N | 31.3699 | 33.4452 | 35.5346 | 37.6381 |  |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Graph5 | History: Design Study 1 | - | - | | **Assem1\_Design Study 1-History: Graph5** | | | | |

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| Conclusion |

Männän maksimikiihtyvyys ja laakerointiin kohdistuva massavoima liikkeen aikana maksimissaan ovat liikkeen samassa kohdassa. eli “ala-asennossa”

Laakerivoima 38N

ja maksimikiihtyvyys 838m^2

Nämä ovat mitattu kampiakselin säteellä 30mm

Kuva, joka sisältää kohteen teksti, kuvakaappaus

Kuvaus luotu automaattisesti

Voimien minimoimiseksi optimaalisin säde oli 28.7mm

Kuva, joka sisältää kohteen teksti, viiva, kuvakaappaus, Fontti

Kuvaus luotu automaattisesti