Structural Optimization 2025

Project #2 Report

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**Task 1:**

Panel\_volume: 21200000 mm^3, Max displacement: 0.83 mm, Max von Mises stress: 120.85 MPa

**Task 2:** Refer to the table below and to CSV files in corresponding folders.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| 5 | 50 | 5.344192364 | 632.5932594 |
| 5 | 67.5 | 2.512133094 | 521.3671713 |
| 5 | 85 | 1.44956218 | 503.7112312 |
| 5 | 102.5 | 0.943542199 | 501.1971313 |
| 5 | 120 | 0.675678434 | 516.7802132 |
| 8.75 | 50 | 3.803467189 | 412.208293 |
| 8.75 | 67.5 | 1.984712259 | 345.2309156 |
| 8.75 | 85 | 1.136246741 | 287.3892463 |
| 8.75 | 102.5 | 0.715172765 | 291.7880032 |
| 8.75 | 120 | 0.500252633 | 275.3234352 |
| 12.5 | 50 | 2.408254581 | 277.4774702 |
| 12.5 | 67.5 | 1.492427288 | 215.475182 |
| 12.5 | 85 | 0.943453309 | 179.0664623 |
| 12.5 | 102.5 | 0.624297584 | 150.9811503 |
| 12.5 | 120 | 0.435081905 | 142.462069 |
| 16.25 | 50 | 1.493652523 | 191.4025025 |
| 16.25 | 67.5 | 1.059921627 | 168.8139584 |
| 16.25 | 85 | 0.740080052 | 134.2721536 |
| 16.25 | 102.5 | 0.523799392 | 118.149781 |
| 16.25 | 120 | 0.38113505 | 101.3989628 |
| 20 | 50 | 0.955078267 | 122.54119 |
| 20 | 67.5 | 0.743804986 | 117.102436 |
| 20 | 85 | 0.563306633 | 103.6704636 |
| 20 | 102.5 | 0.424686445 | 88.32707542 |
| 20 | 120 | 0.323659181 | 74.08651253 |

**Task 3:**

Max displacement: FE: 0.93791 mm, Surrogate: 0.93548 mm

Max von Mises stress: FE: 236.2357 MPa, Surrogate: 258.7425 MPa

**Task 4:**

Optimum found at tp = 13.09 mm and hs = 102.88 mm with volume = 15147600mm^3

Max displacement: FE: 0.60375 mm, Surrogate: 0.42378 mm

Max von Mise stress: FE: 146.0717 MPa, Surrogate: 150 MPa

**Bonus Task :**

See folder, as per instructions assignment.