Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

ENGINEERING DESIGN AND COMPUTING

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.

tp [mm]	hs [mm]	$max\ disp$ [mm]	$max\ Mises$ [MPa]
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.