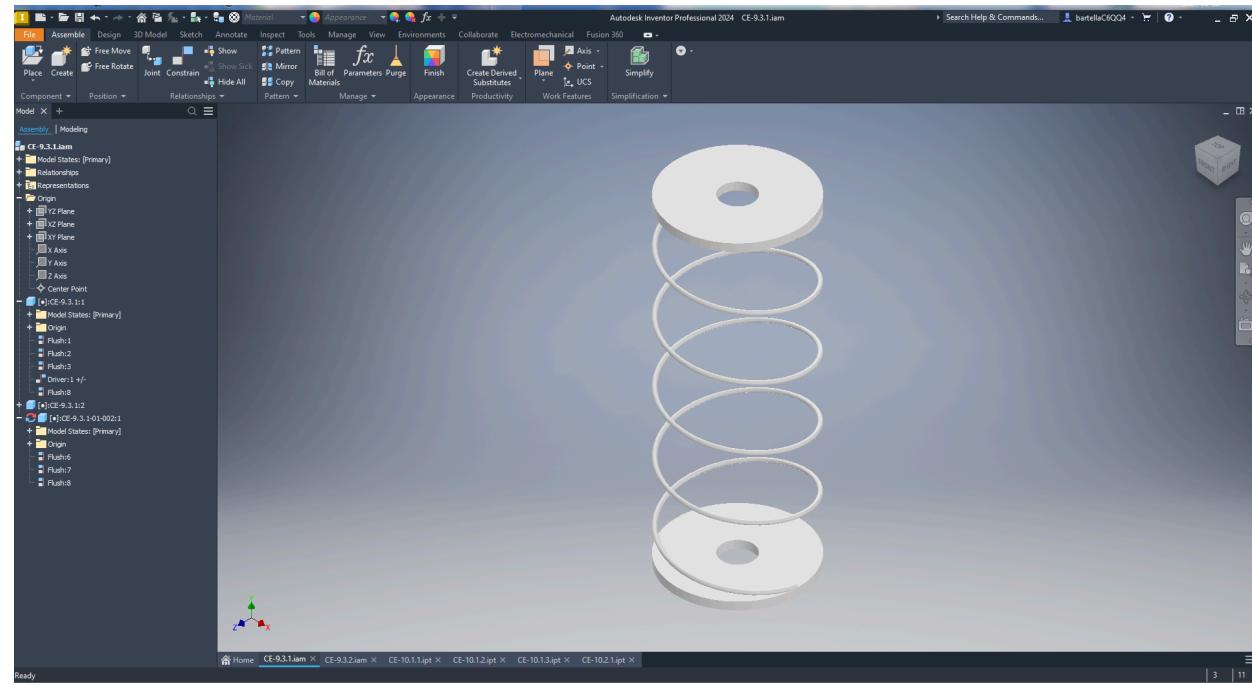
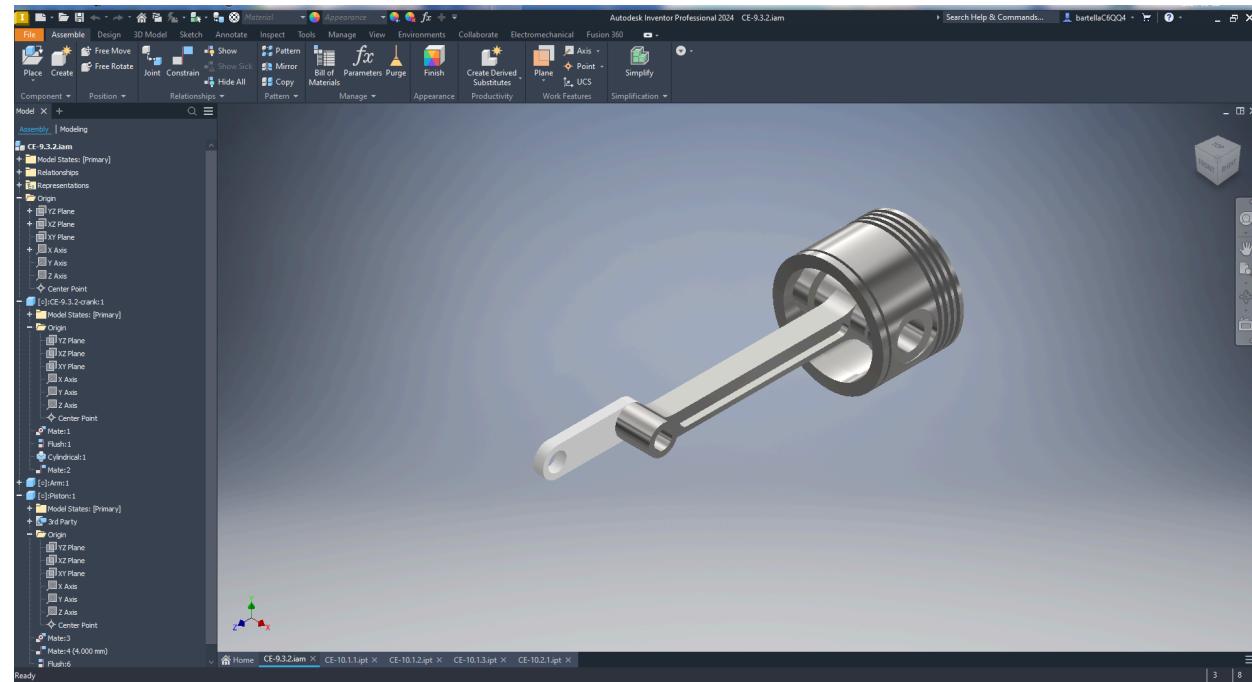


MECHENG 4Z03 CAD/CAM/CAE  
Class exercise 9.3, 10.1, 10.2  
Author: Alex Bartella, 400308868  
Submitted 21-March-24

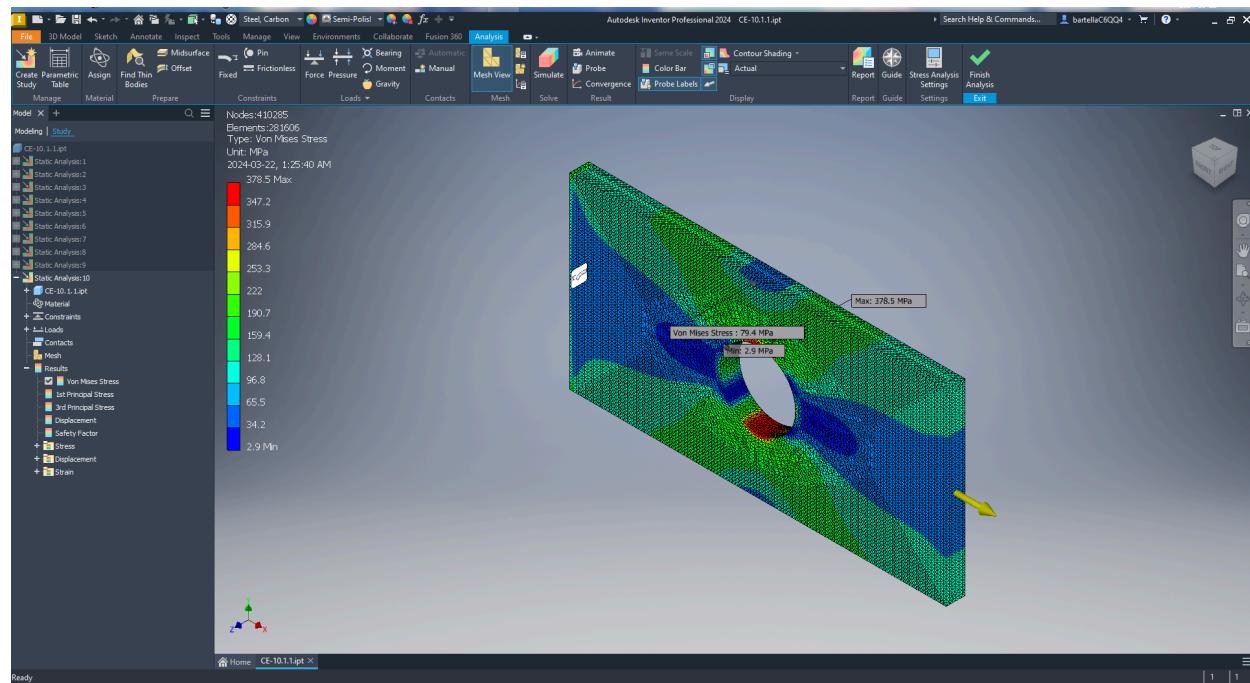
## CE-9.3.1



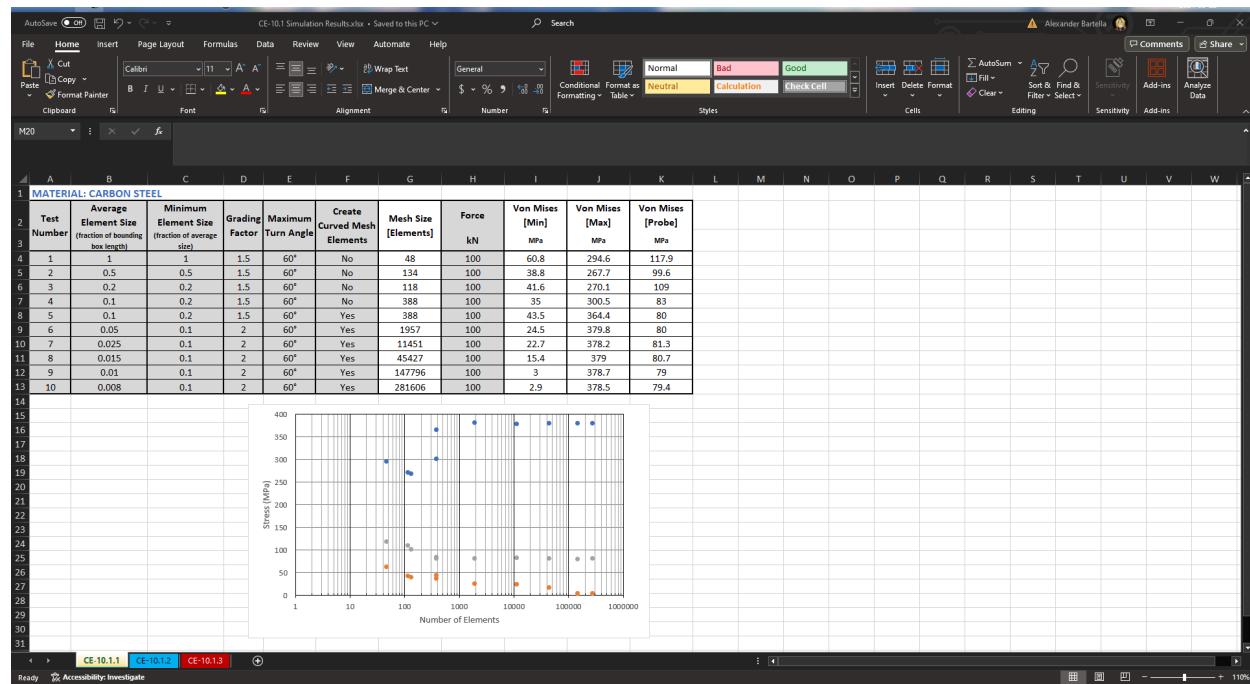
## CE-9.3.2



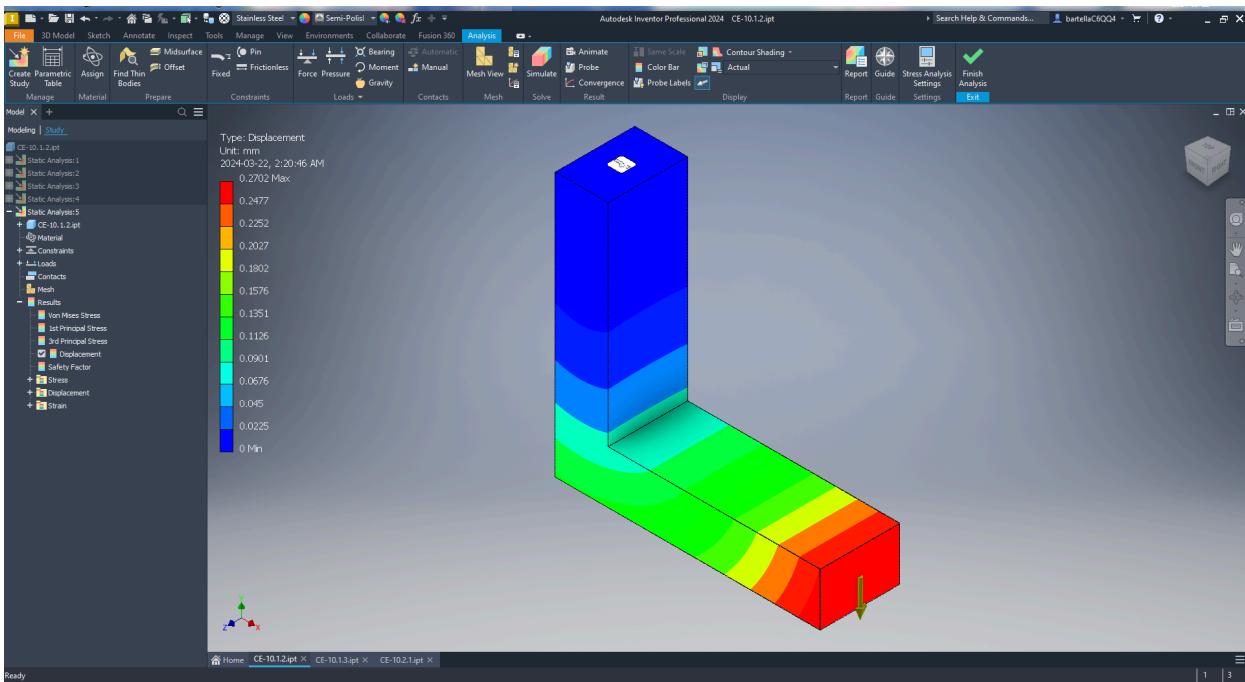
## CE-10.1.1



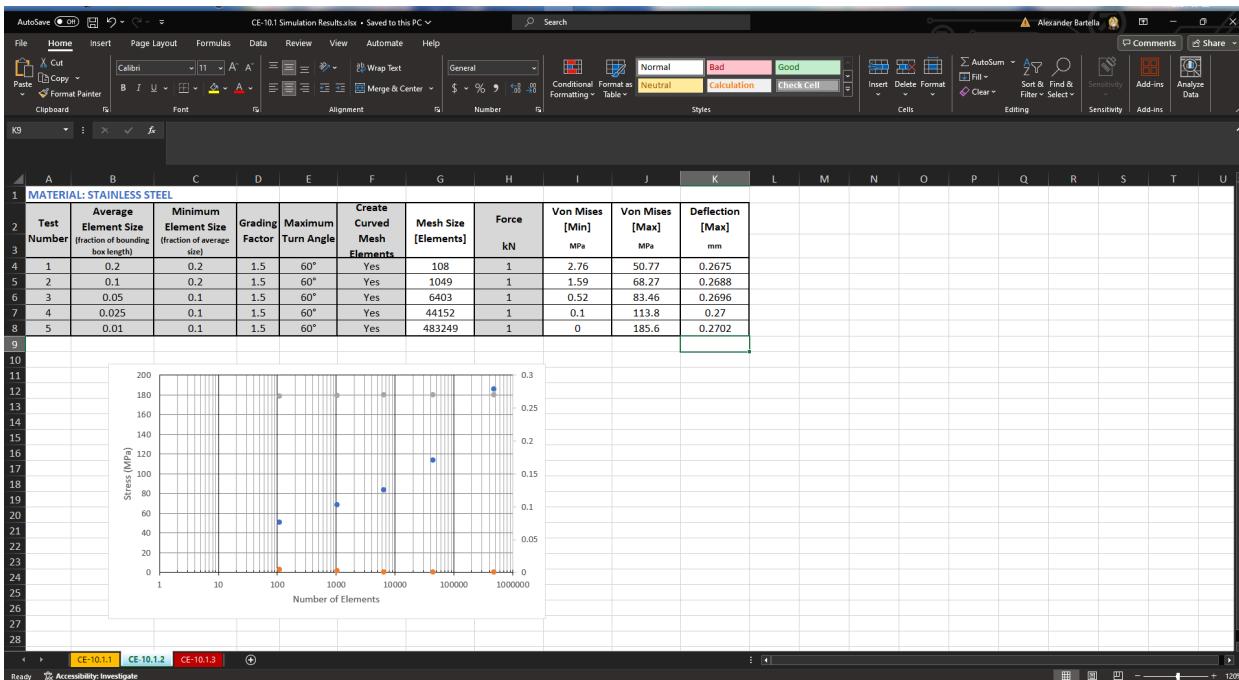
## CE-10.1.1 excel



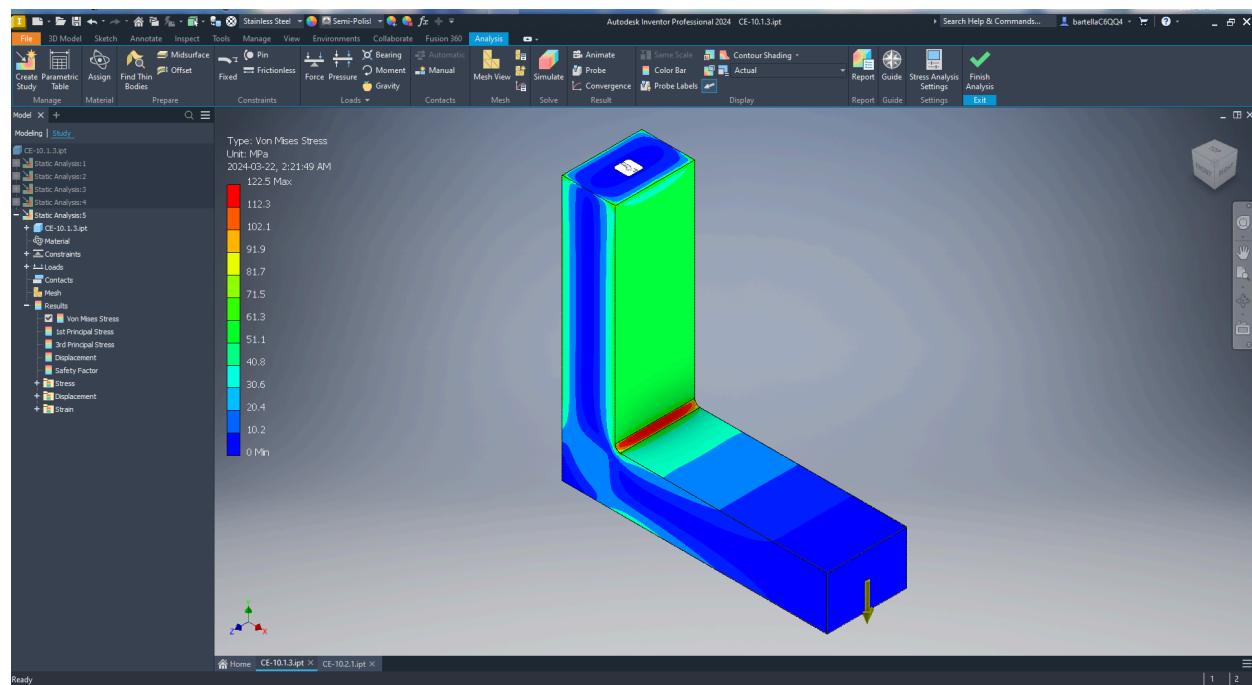
## CE-10.1.2



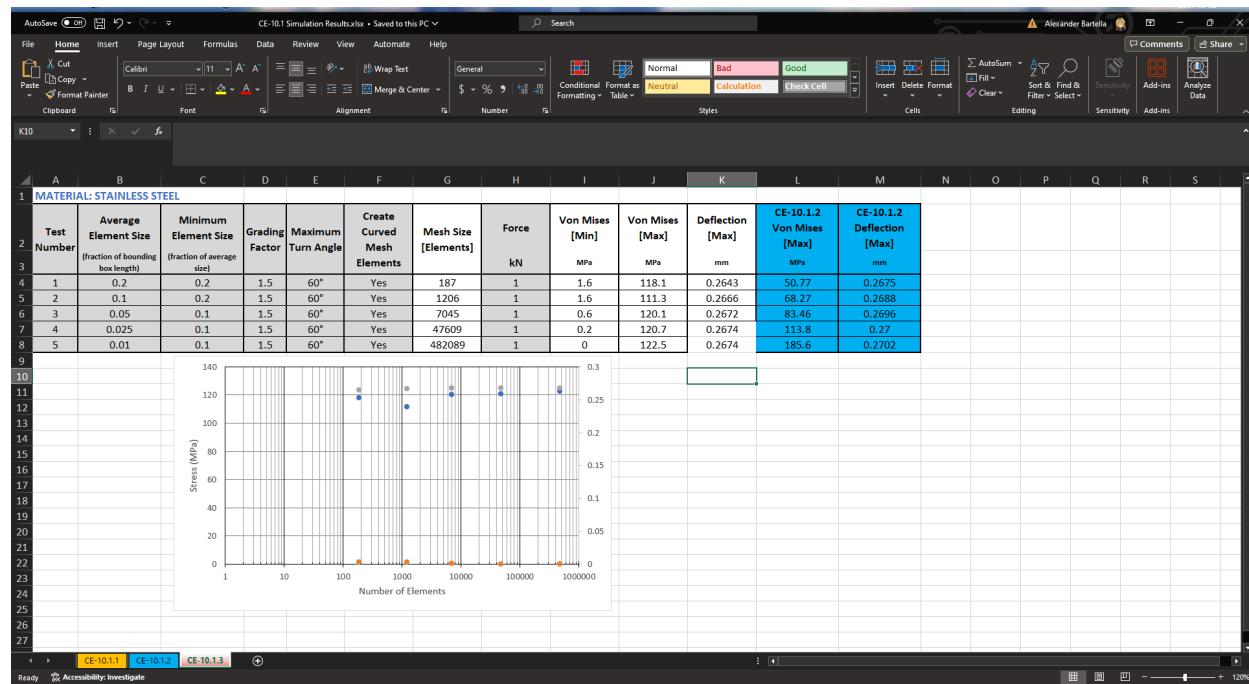
## CE-10.1.2 excel



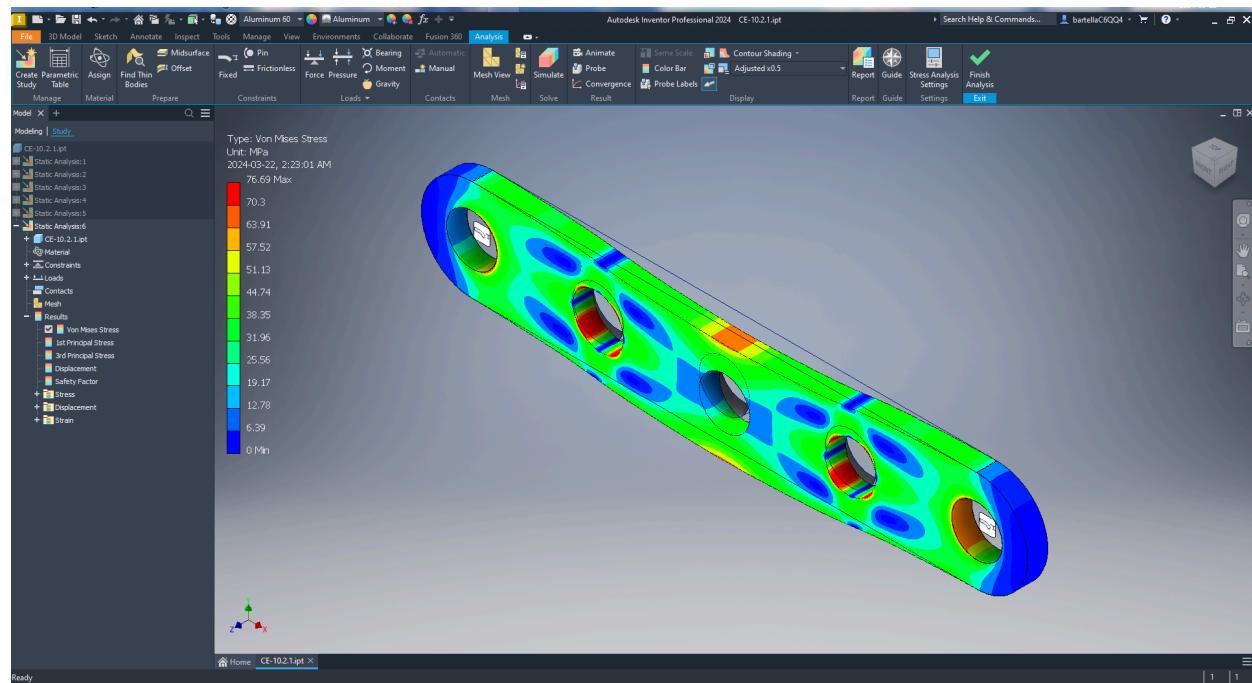
## CE-10.1.3



## CE-10.1.3 excel



## CE-10.2.1



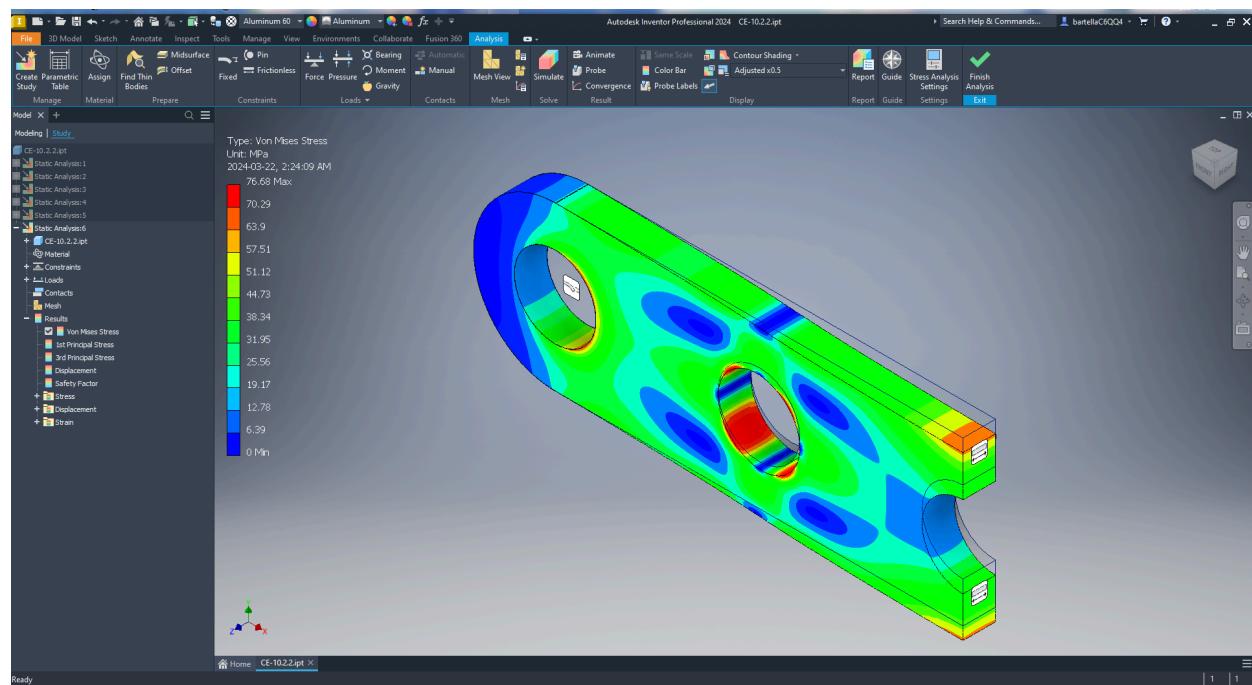
## CE-10.2.1 excel

CE-10.2.2 Simulation Results.xlsx • Saved to this PC

Average Minimum Create Mesh Force Von Mises Von Mises Deflection Simulation  
Element Size Element Size Grading Maximum Curved Elements [Elements] kN [Min] [Max] [Max] Time  
(fraction of bounding (fraction of average Factor Angle Yes MPa MPa mm seconds)

Test Number	Average Element Size (fraction of bounding box length)	Minimum Element Size (fraction of average size)	Grading Factor	Maximum Turn Angle	Create Curved Mesh Elements	Mesh Size [Elements]	Force kN	Von Mises [Min] MPa	Von Mises [Max] MPa	Deflection [Max] mm	Simulation Time seconds
1	0.2	0.2	1.5	60°	Yes	330	30	0.21	70.82	0.3247	1
2	0.05	0.1	1.5	60°	Yes	765	30	0.68	76.29	0.3263	1
3	0.025	0.1	1.5	60°	Yes	2575	30	0.13	76.67	0.3271	1
4	0.01	0.1	1.5	60°	Yes	31031	30	0.02	76.73	0.3273	2
5	0.005	0.1	1.5	60°	Yes	234563	30	0.01	76.73	0.3274	17
6	0.0025	0.1	1.5	60°	Yes	1455571	30	0	76.69	0.3274	140

## CE-10.2.2



## CE-10.2.2 excel

The screenshot shows a Microsoft Excel spreadsheet titled "CE-10.2.2 Simulation Results.xlsx". The table contains data for six test cases (Test Numbers 1 through 6) comparing two different mesh sizes (CE-10.2.1 and CE-10.2.2). The table includes columns for Test Number, Average Element Size (fraction of bounding box length), Minimum Element Size (fraction of average size), Grading Factor, Maximum Turn Angle, Create Curved Mesh Elements, CE-10.2.1 Mesh Size [Elements], Mesh Size [Elements], Force (kN), Von Mises [Min] (MPa), Von Mises [Max] (MPa), Deflection [Max] (mm), Simulation Time (seconds), and CE-10.2.1 Simulation Time (seconds).

	MATERIAL: ALUMINUM (yield about 95 MPa)													
Test Number	CE-10.2.1 mesh avg size [fraction of bounding box length]	Average Element Size [fraction of bounding box length]	Minimum Element Size [fraction of average size]	Grading Factor	Maximum Turn Angle	Create Curved Mesh Elements	CE-10.2.1 Mesh Size [Elements]	Mesh Size [Elements]	Force kN	Von Mises [Min] MPa	Von Mises [Max] MPa	Deflection [Max] mm	Simulation Time seconds	CE-10.2.1 Simulation Time seconds
4	1	0.2	0.4	1.5	60°	Yes	330	205	30	0.15	69.28	0.3248	0	1
5	2	0.05	0.1	1.5	60°	Yes	765	364	30	0.69	74.89	0.3264	1	1
6	3	0.025	0.05	1.5	60°	Yes	2575	1255	30	0.1	76.67	0.3271	1	1
7	4	0.01	0.02	1.5	60°	Yes	31031	15439	30	0.02	76.78	0.3273	1	2
8	5	0.005	0.01	1.5	60°	Yes	234563	117437	30	0.01	76.73	0.3274	8	17
9	6	0.0025	0.005	1.5	60°	Yes	1455571	728557	30	0	76.68	0.3274	63	140