Relatório de análise de tensão - Involucro Quanton 7030

Arquivo analisado:	conceito4_Q7030.ipt
Versão do Autodesk Inventor:	2024.2 (Build 282272000, 272)
Data de criação:	13/11/2024, 17:45
Autor do estudo:	Fabio P. C.
Resumo:	Forças = 10,6066 N Momentos 2123,2 Nmm

Análise estática:1

Objetivo geral e configurações:

Objetivo do projeto	Ponto único
Tipo de estudo	Análise estática
Data da última modificação	13/11/2024, 17:43
Estado do modelo	[Principal]
Detectar e eliminar modos de corpo rígido	Não

iProperties

Resumo

Autor	Fabio P. C.

Projeto

Nº da peça	conceito4_Q7030
Projetista	Fabio P. C.
Custo estimado	R$ 0,00
Data da criação	15/01/2022

Status

Estado do projeto	TrabalhoEmCurso

Física

Material	Quanton 7030
Densidade	2,574 g/cm^3
Massa	0,438717 kg
Área	88987,2 mm^2
Volume	170442 mm^3
Centro de gravidade	x=20,7446 mm y=19,8263 mm z=-23,8947 mm

Nota: os valores físicos podem ser diferentes dos valores físicos utilizados por FEA indicados a seguir.

Configurações de malha:

Tamanho médio dos elementos (fração do diâmetro do modelo)	0.25
Tamanho mínimo dos elementos (fração do tamanho médio)	0.2
Fator de nivelamento	1.5
Ângulo máximo de giro	60 grau

Criar elementos de malha curva	Sim

Materiais

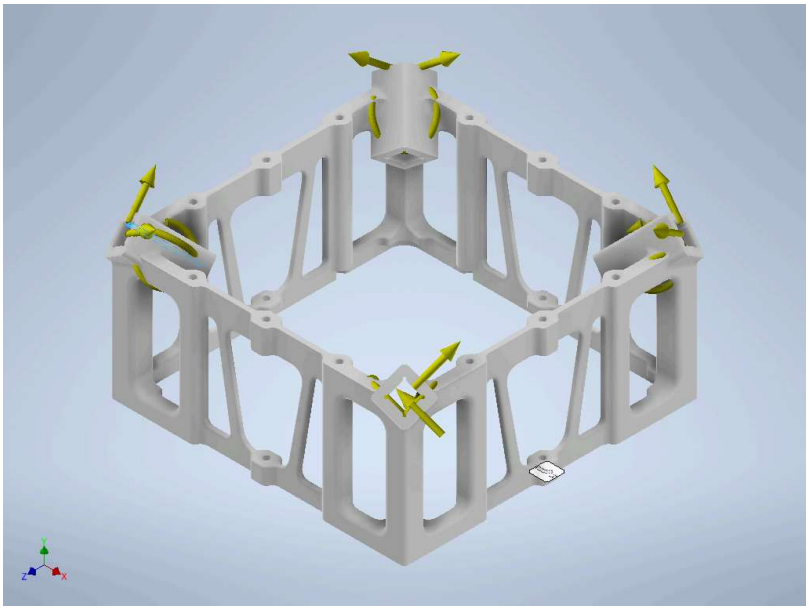
Nome	Quanton 7030	
Geral	Densidade de massa	2,574 g/cm^3
	Resistência à escoamento	20,5 MPa
	Resistência máxima à tração	20,5 MPa
Tensão	Módulo de Young	0,9219 GPa
	Coeficiente de Poisson	0,47 s_m
	Módulo cortante	0,313571 GPa
Nome(s) de peça	conceito4_Q7030.ipt	

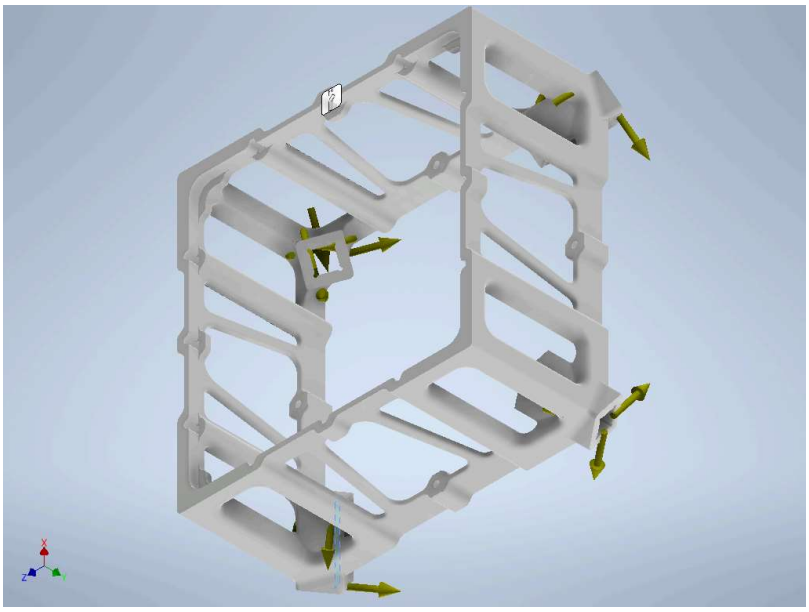
Condições de funcionamento

Momento:1

Tipo de carga	Momento
Magnitude	2123,200 N mm
Vetor X	-448,685 N mm
Vetor Y	1225,830 N mm
Vetor Z	-1674,515 N mm

Faces selecionadas

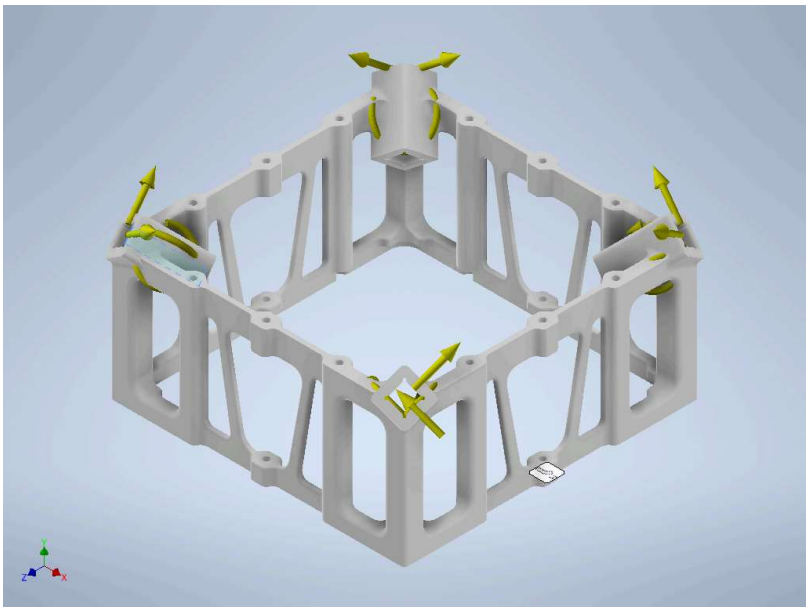


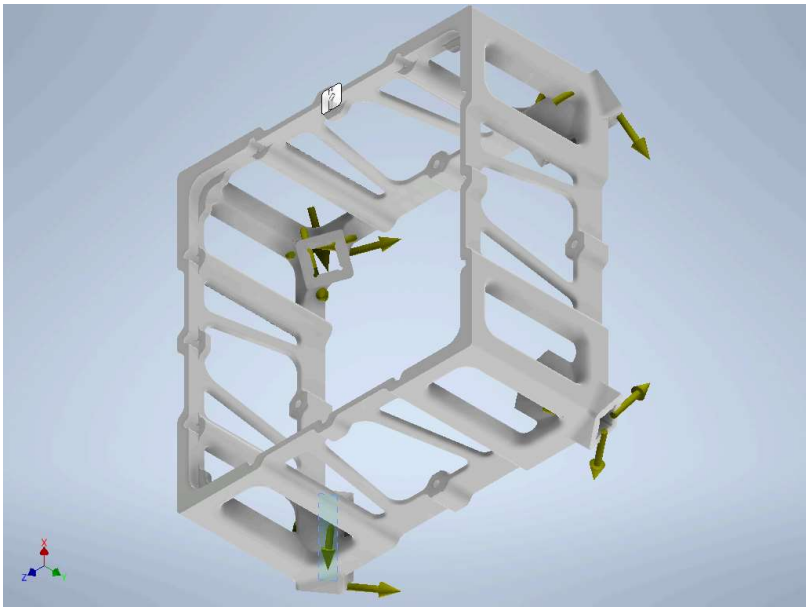


Momento:2

Tipo de carga	Momento
Magnitude	2123,200 N mm
Vetor X	-1674,515 N mm
Vetor Y	-1225,830 N mm
Vetor Z	-448,685 N mm

Faces selecionadas

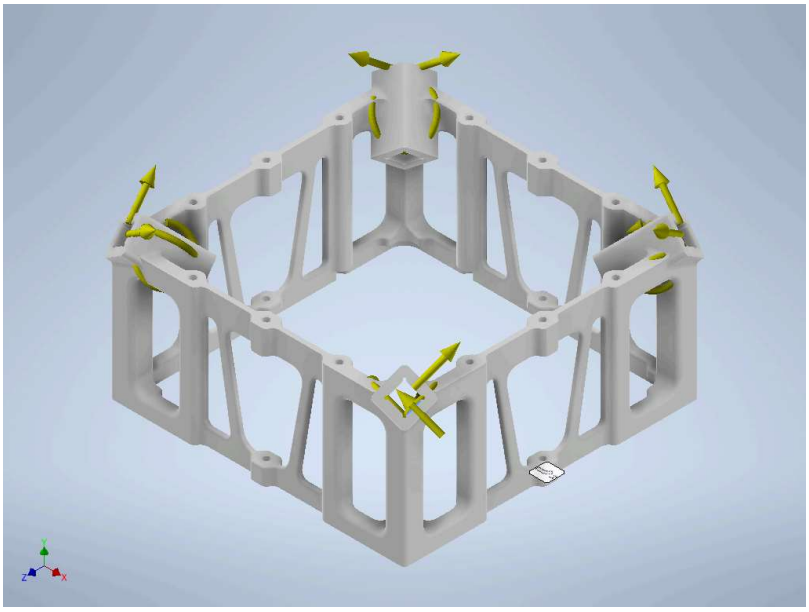


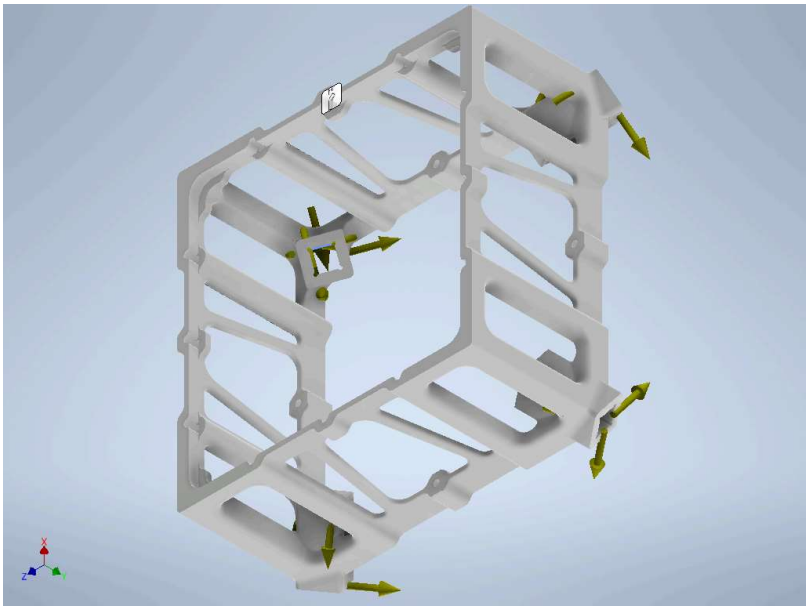


Momento:3

Tipo de carga	Momento
Magnitude	2123,200 N mm
Vetor X	-1674,515 N mm
Vetor Y	1225,830 N mm
Vetor Z	448,685 N mm

Faces selecionadas

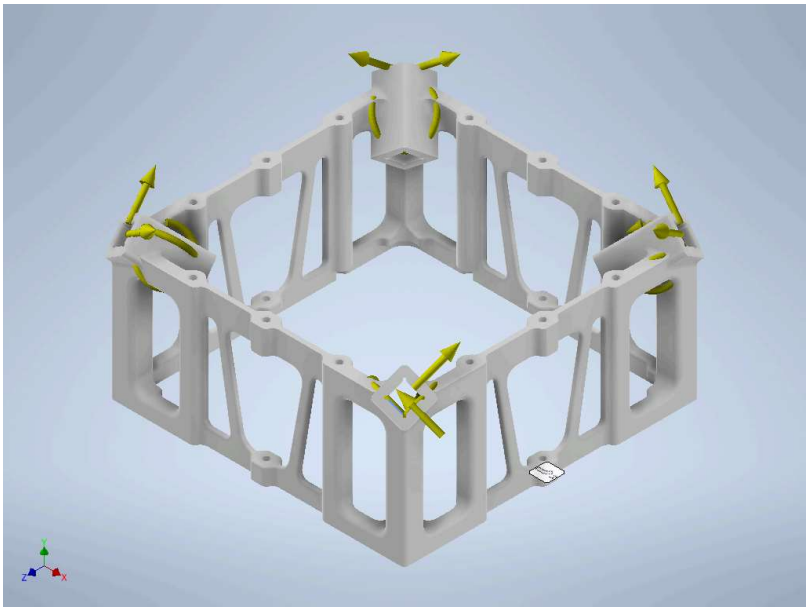


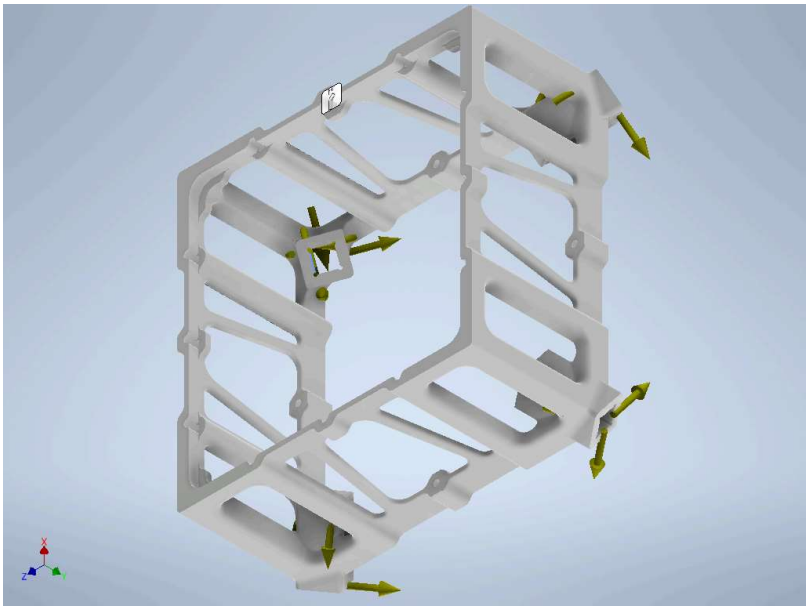


Momento:4

Tipo de carga	Momento
Magnitude	2123,200 N mm
Vetor X	-448,685 N mm
Vetor Y	-1225,830 N mm
Vetor Z	1674,515 N mm

Faces selecionadas

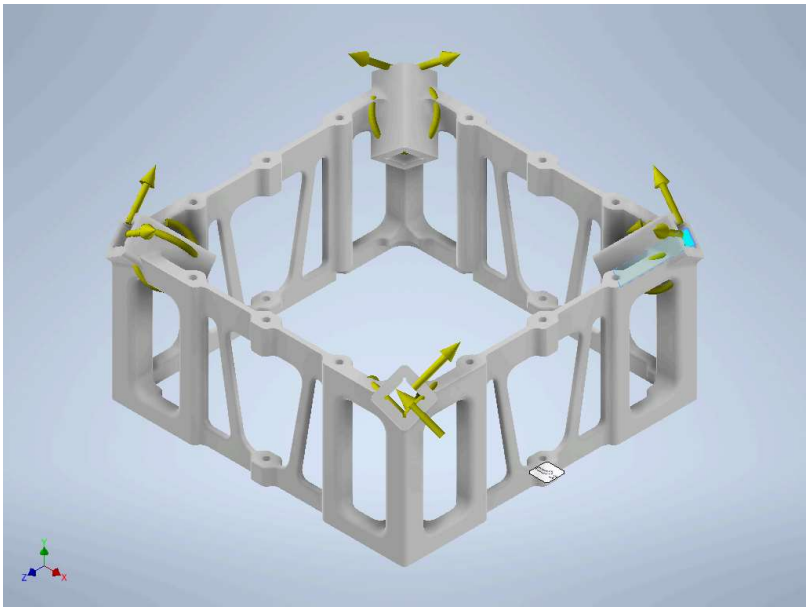


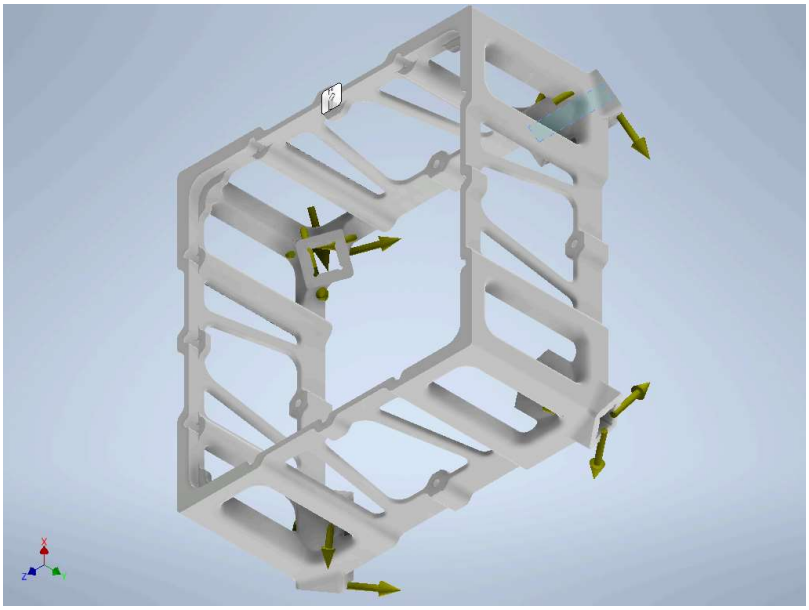


Momento:5

Tipo de carga	Momento
Magnitude	2123,200 N mm
Vetor X	448,685 N mm
Vetor Y	1225,830 N mm
Vetor Z	1674,515 N mm

Faces selecionadas

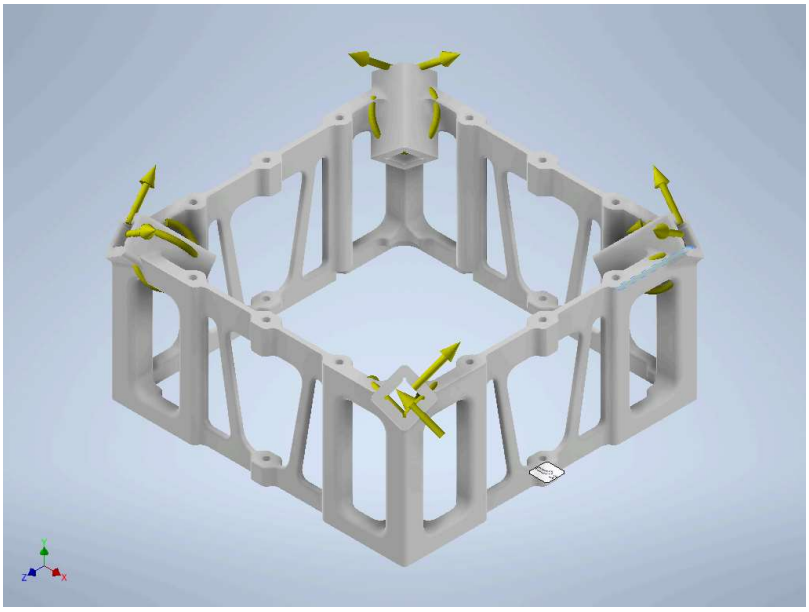


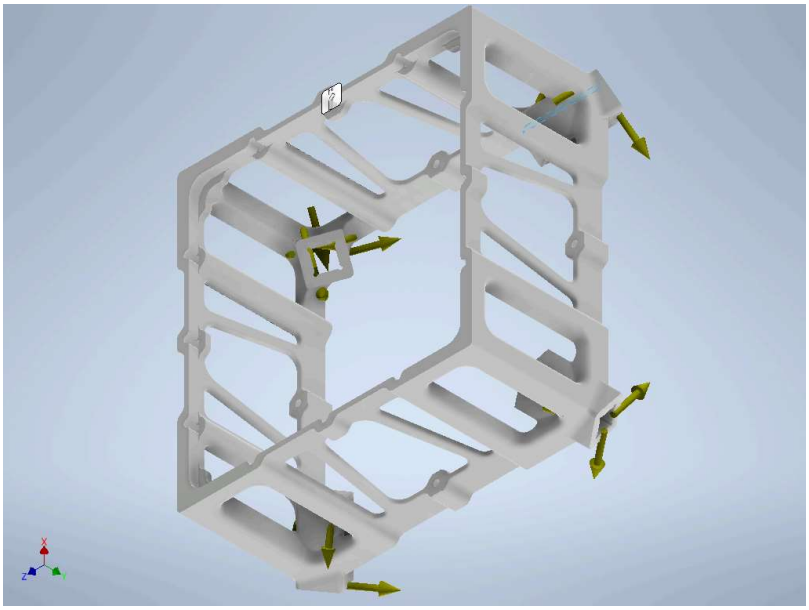


Momento:6

Tipo de carga	Momento
Magnitude	2123,200 N mm
Vetor X	1674,515 N mm
Vetor Y	-1225,830 N mm
Vetor Z	448,685 N mm

Faces selecionadas

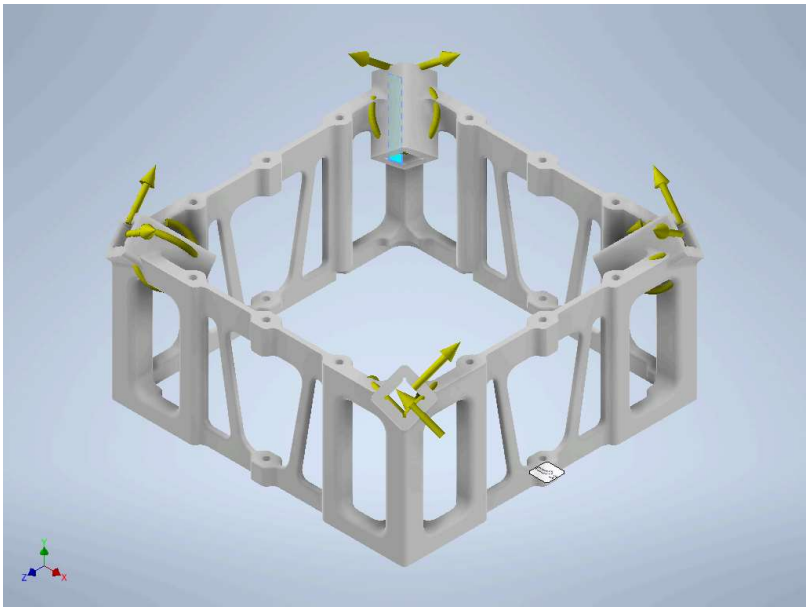


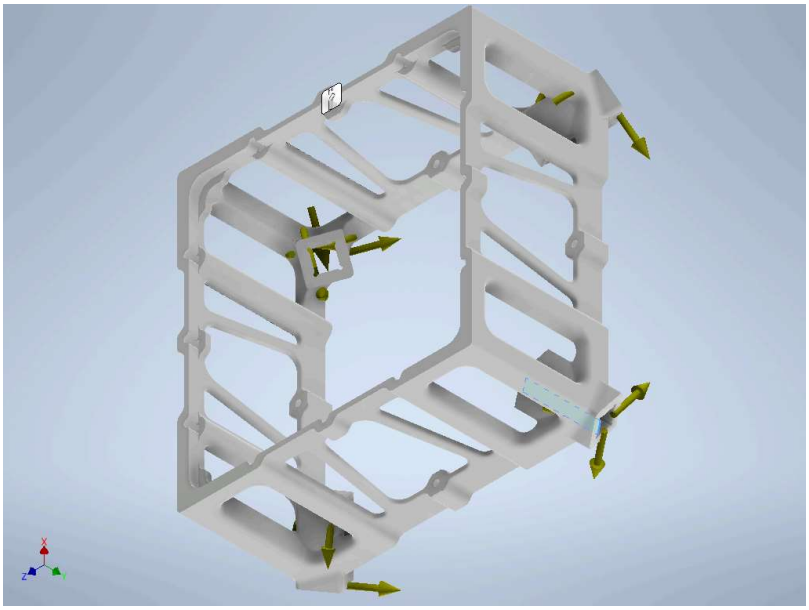


Momento:7

Tipo de carga	Momento
Magnitude	2123,200 N mm
Vetor X	1674,515 N mm
Vetor Y	1225,830 N mm
Vetor Z	-448,685 N mm

Faces selecionadas

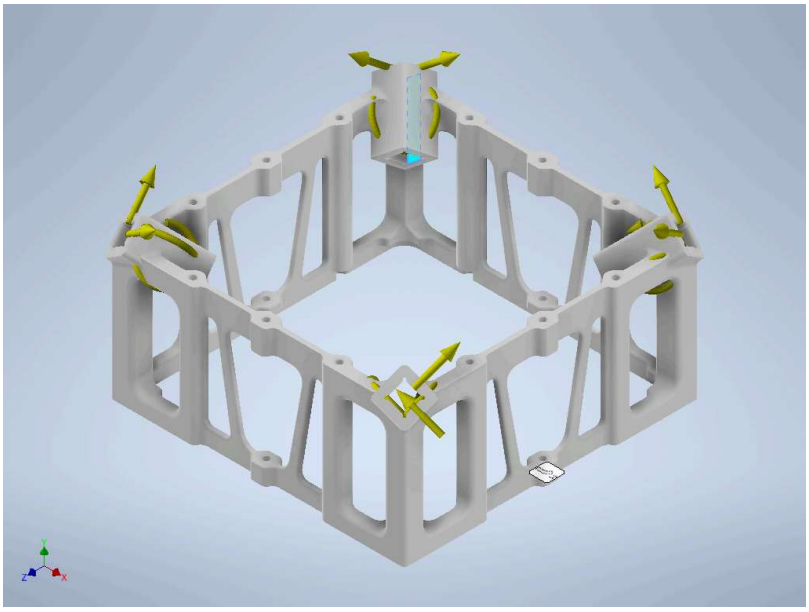


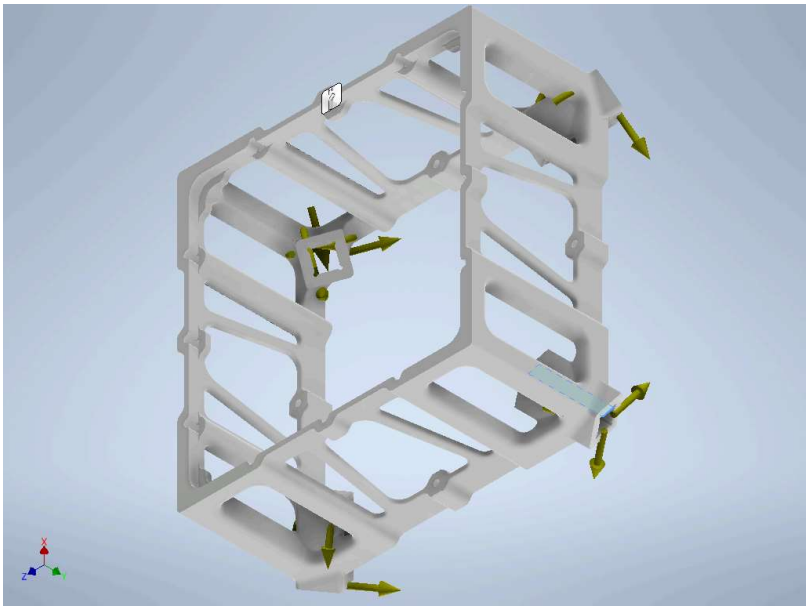


Momento:8

Tipo de carga	Momento
Magnitude	2123,200 N mm
Vetor X	448,685 N mm
Vetor Y	-1225,830 N mm
Vetor Z	-1674,515 N mm

Faces selecionadas

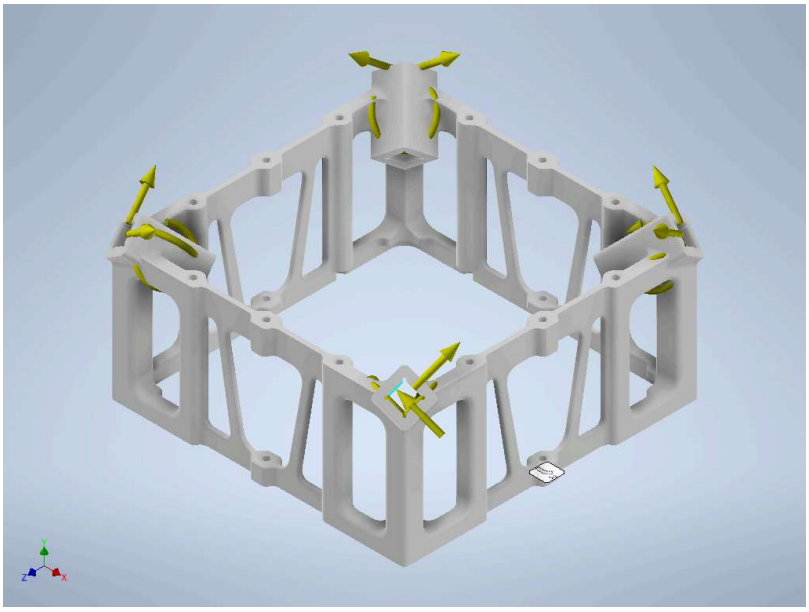


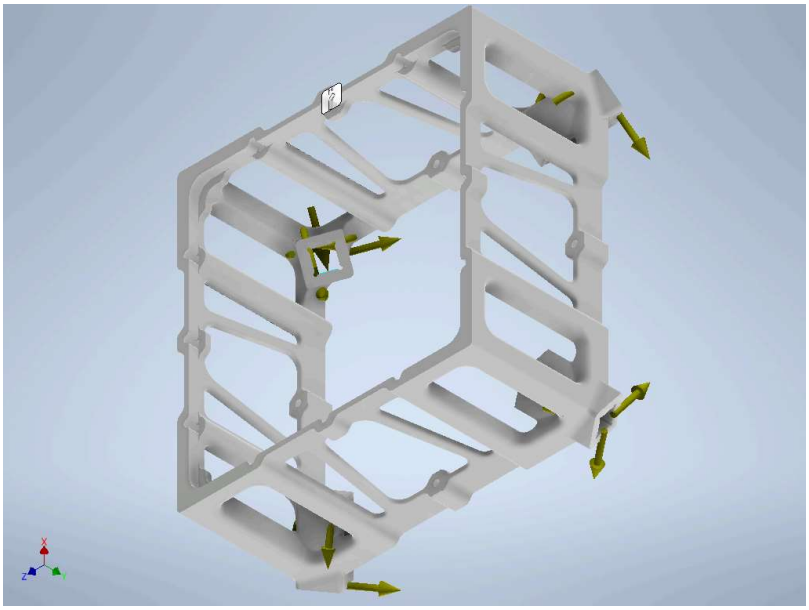


Força:3

Tipo de carga	Força
Magnitude	10,607 N
Vetor X	-8,365 N
Vetor Y	6,124 N
Vetor Z	2,241 N

Faces selecionadas

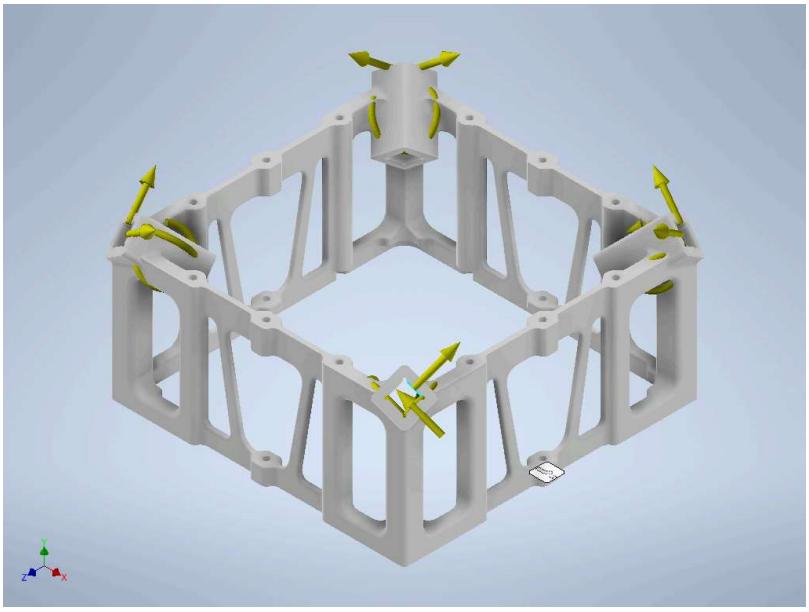


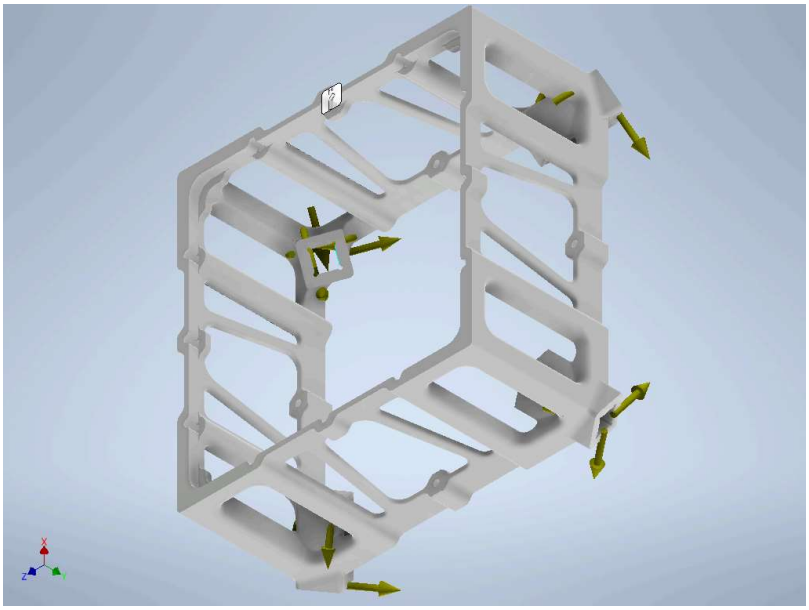


Força:4

Tipo de carga	Força
Magnitude	10,607 N
Vetor X	2,241 N
Vetor Y	6,124 N
Vetor Z	-8,365 N

Faces selecionadas

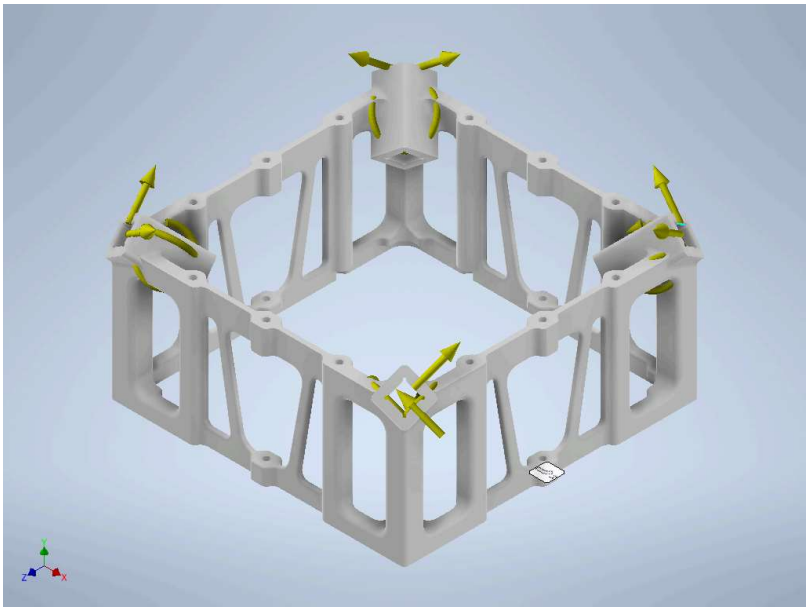


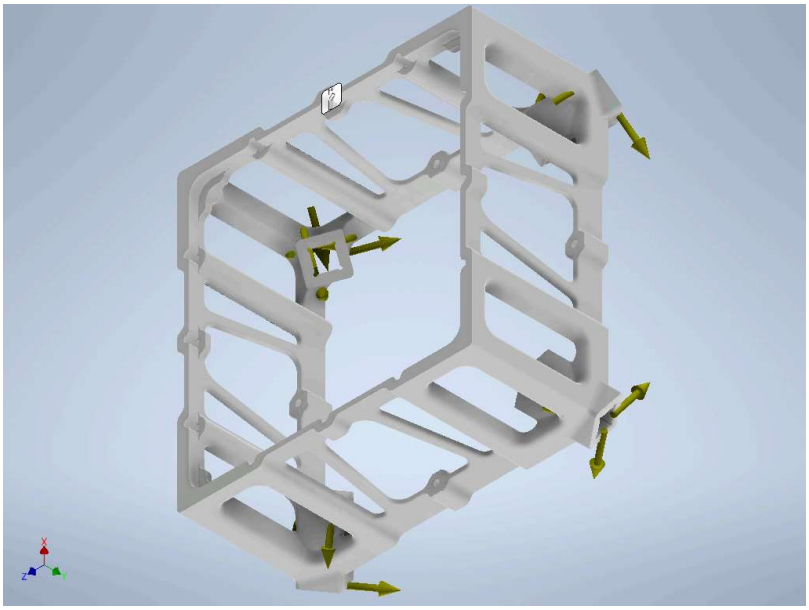


Força:5

Tipo de carga	Força
Magnitude	10,607 N
Vetor X	-8,365 N
Vetor Y	6,124 N
Vetor Z	-2,241 N

Faces selecionadas

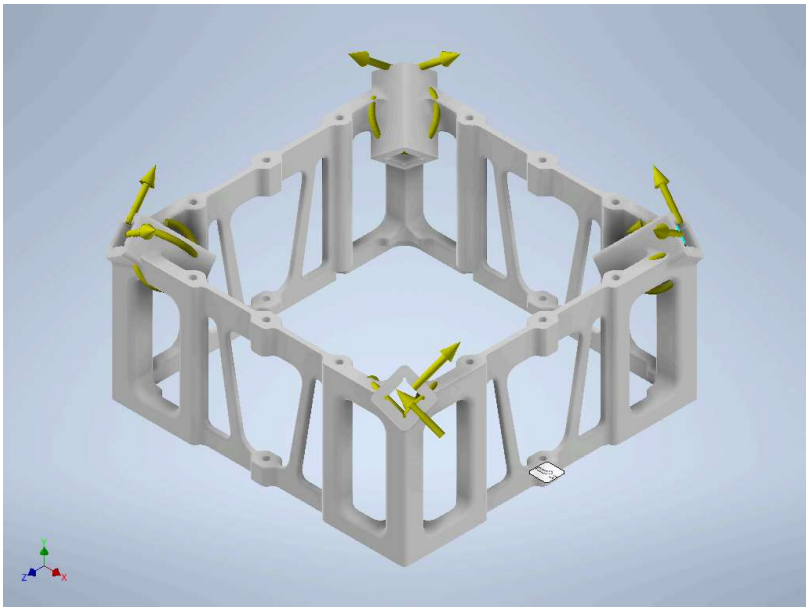


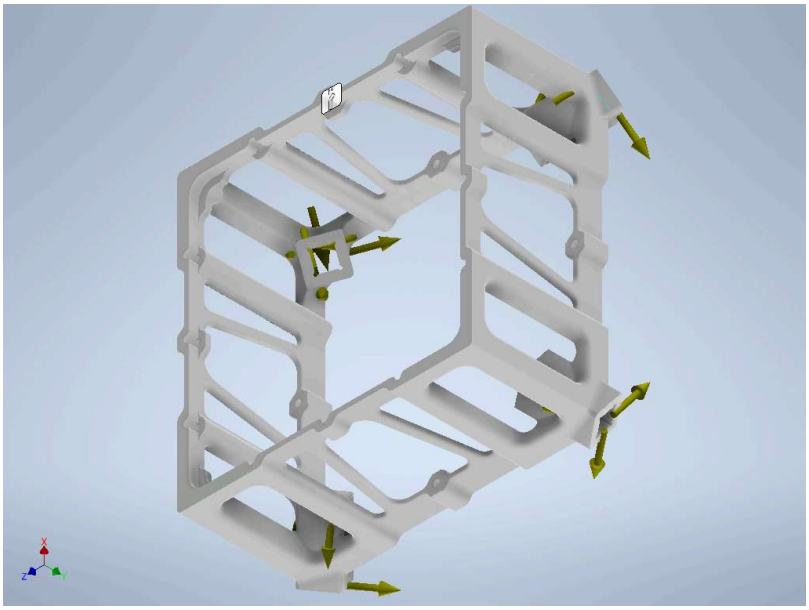


Força:6

Tipo de carga	Força
Magnitude	10,607 N
Vetor X	2,241 N
Vetor Y	6,124 N
Vetor Z	8,365 N

Faces selecionadas

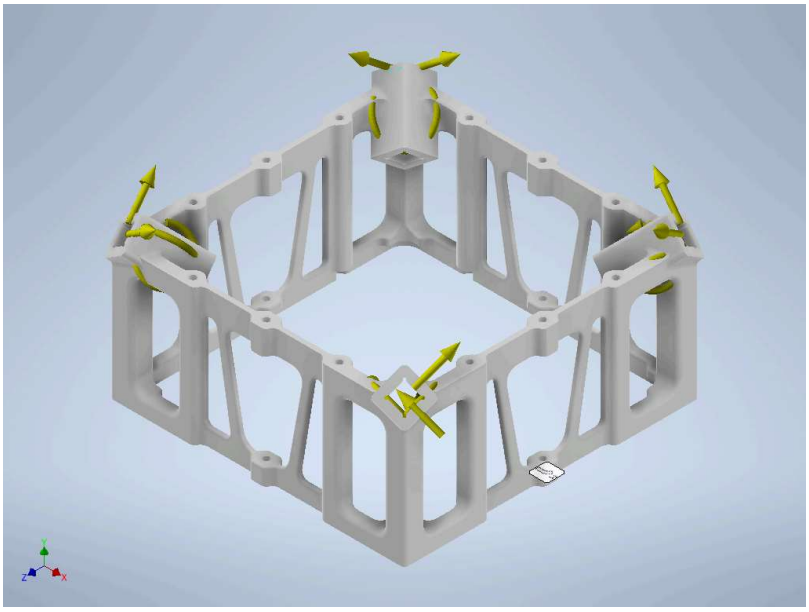


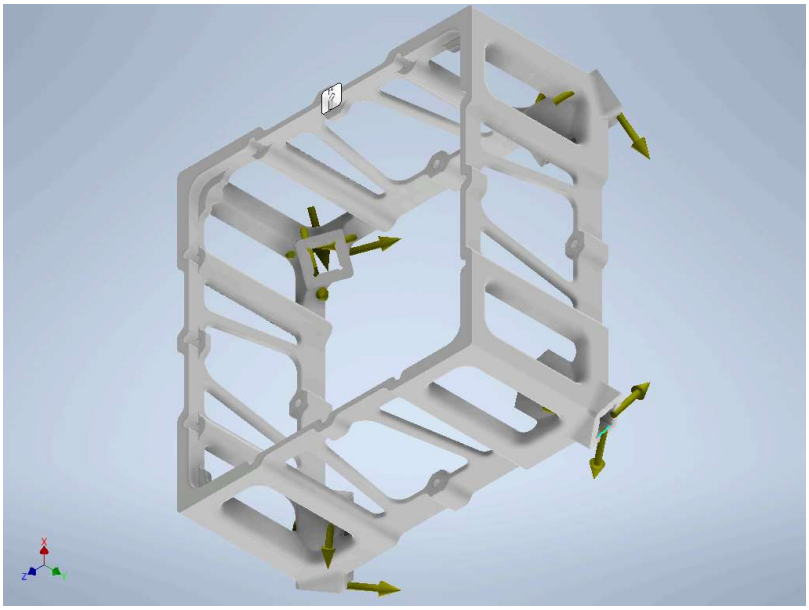


Força:7

Tipo de carga	Força
Magnitude	10,607 N
Vetor X	-2,241 N
Vetor Y	6,124 N
Vetor Z	8,365 N

Faces selecionadas

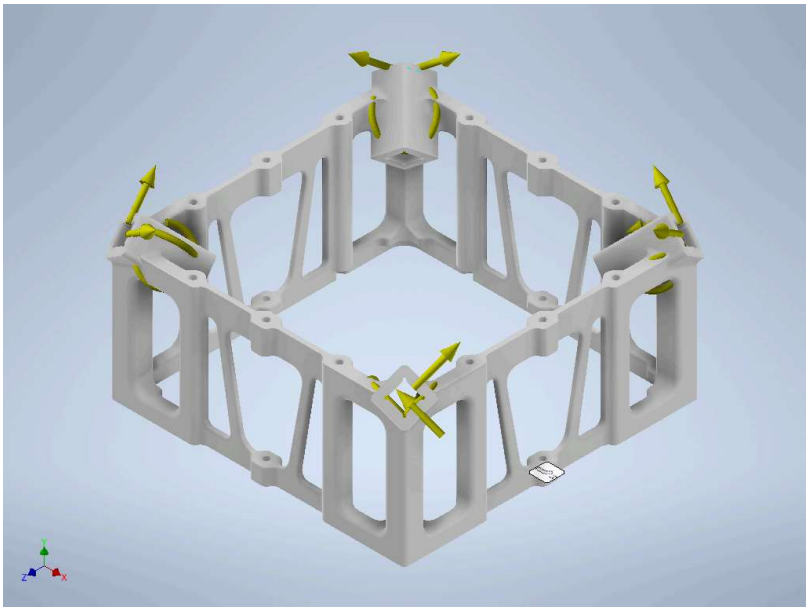


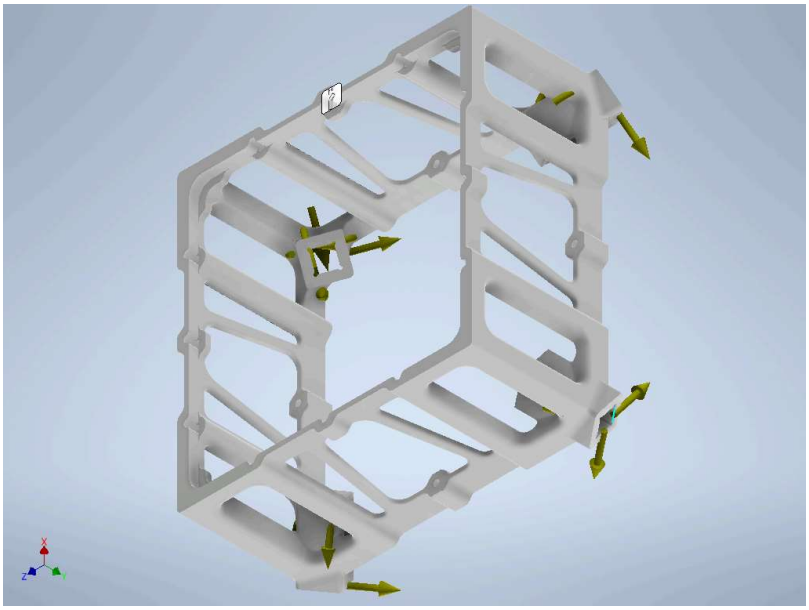


Força:8

Tipo de carga	Força
Magnitude	10,607 N
Vetor X	8,365 N
Vetor Y	6,124 N
Vetor Z	-2,241 N

Faces selecionadas

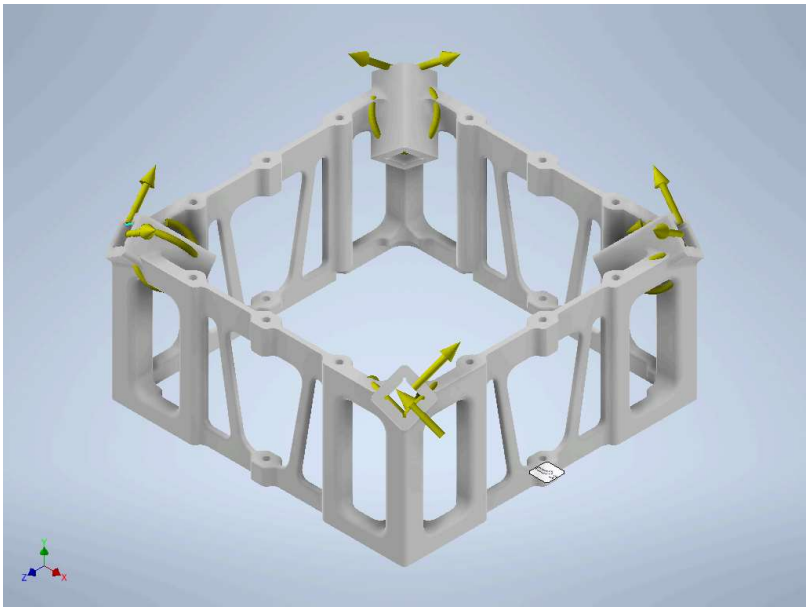


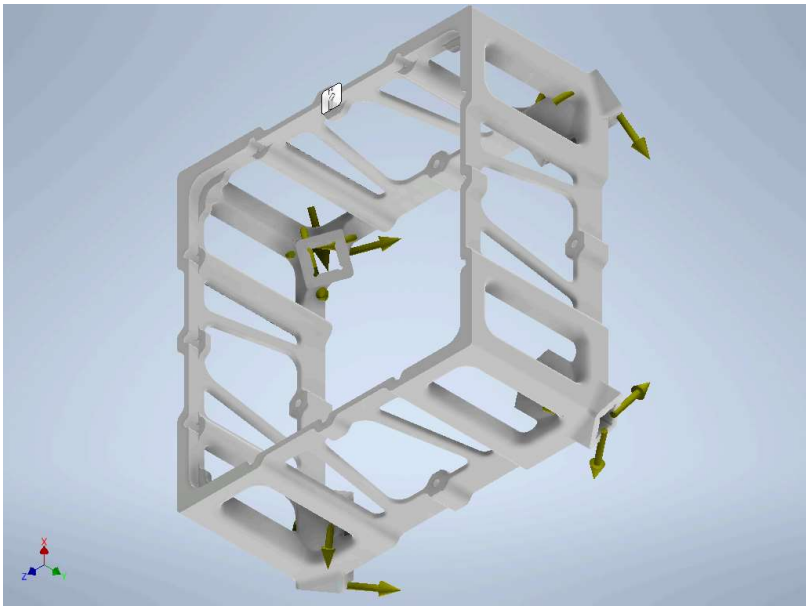


Força:9

Tipo de carga	Força
Magnitude	10,607 N
Vetor X	-2,241 N
Vetor Y	6,124 N
Vetor Z	-8,365 N

Faces selecionadas

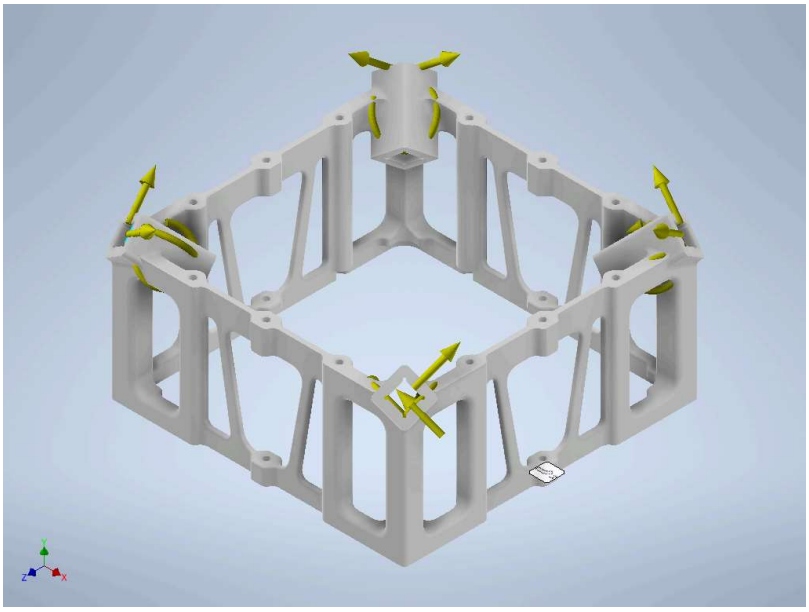


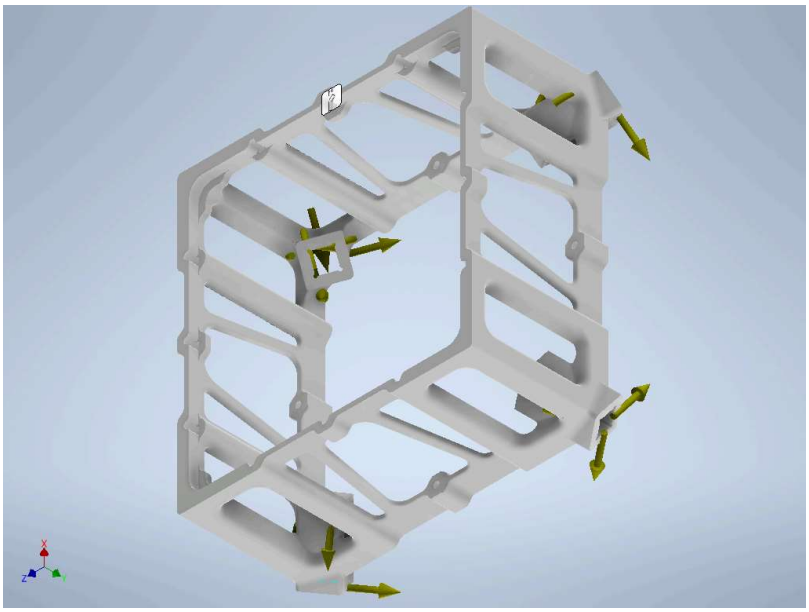


Força:10

Tipo de carga	Força
Magnitude	10,607 N
Vetor X	8,365 N
Vetor Y	6,124 N
Vetor Z	2,241 N

Faces selecionadas

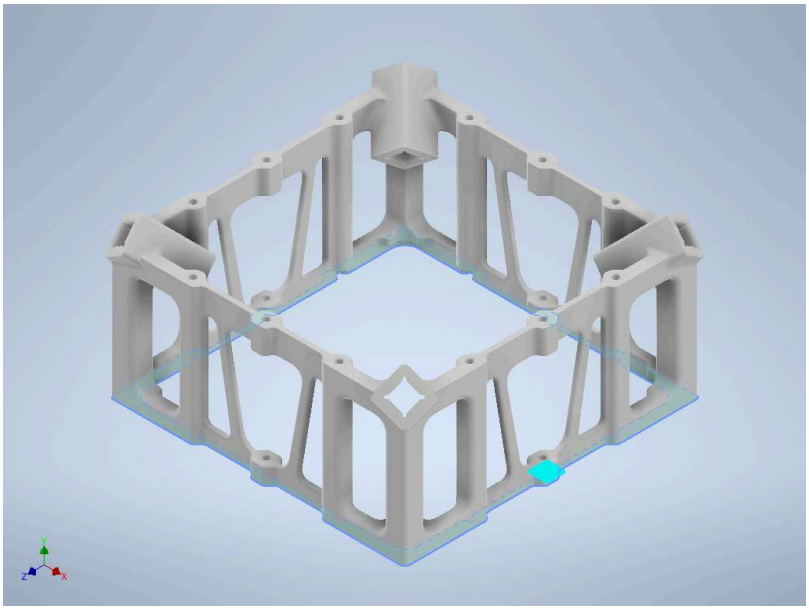


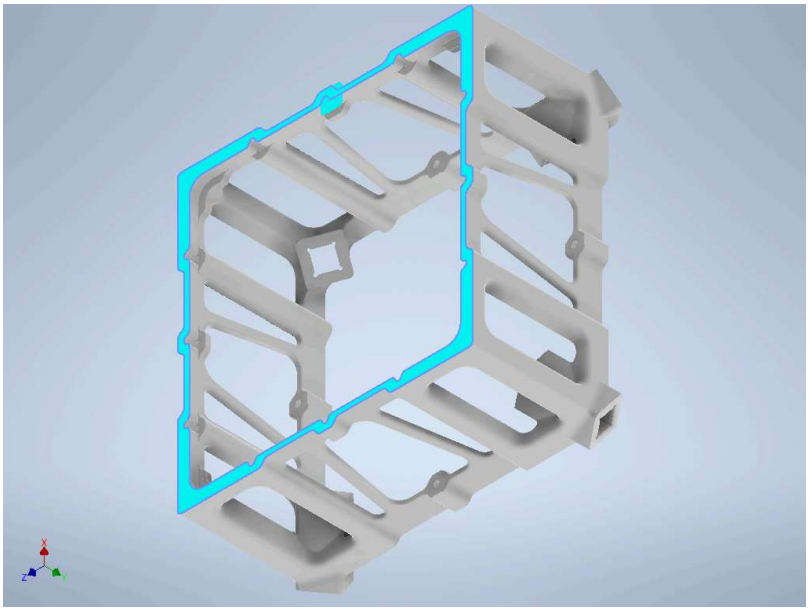


Restrição fixa:1

Tipo de restrição	Restrição fixa

Faces selecionadas





Resultados

Força e momento de reação em restrições

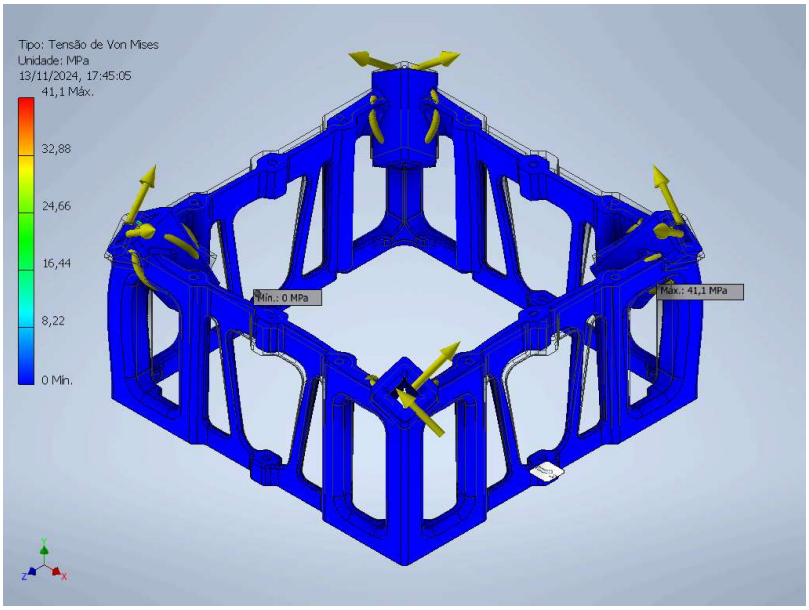
Nome da restrição	Força de reação		Momento de reação	
	Magnitude	"Componente (X,Y,Z)"	Magnitude	"Componente (X,Y,Z)"
Restrição fixa:1	48,9897 N	0 N	0 N m	0 N m
		-48,9897 N		0 N m
		0 N		0 N m

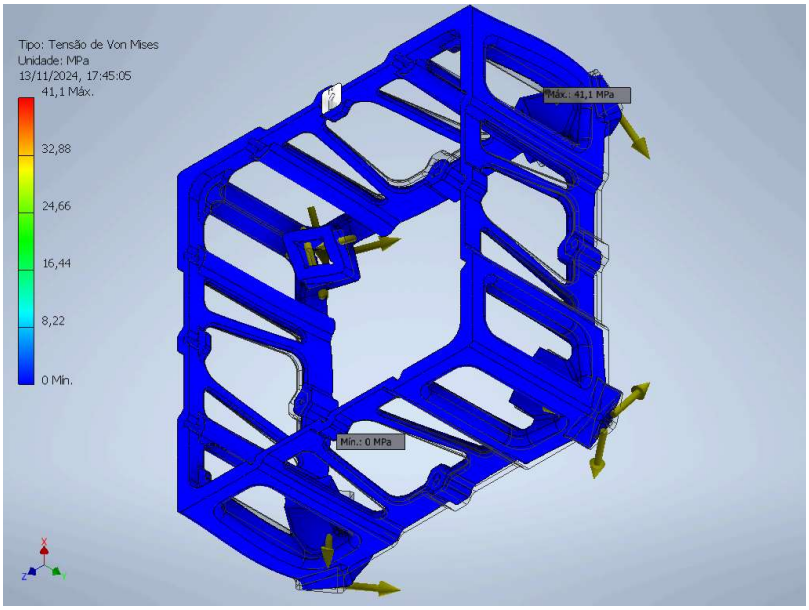
Resumo de resultados

Nome	Mínima	Máxima
Volume	170442 mm^3	
Massa	0,438717 kg	
Tensão de Von Mises	0,00198326 MPa	41,097 MPa
Primeira tensão principal	-32,0212 MPa	30,4668 MPa
Terceira tensão principal	-74,7504 MPa	19,9387 MPa
Deslocamento	0 mm	0,625875 mm
Fator de segurança	0,49882 s_m	15 s_m
Tensão XX	-50,5735 MPa	20,2455 MPa
Tensão XY	-9,26673 MPa	14,6492 MPa
Tensão XZ	-12,7898 MPa	18,6988 MPa
Tensão YY	-46,8629 MPa	27,4743 MPa
Tensão YZ	-11,3925 MPa	18,416 MPa
Tensão ZZ	-50,9435 MPa	27,1829 MPa
Deslocamento X	-0,235993 mm	0,396085 mm
Deslocamento Y	-0,623067 mm	0,206954 mm
Deslocamento Z	-0,396542 mm	0,234791 mm
Deformação equivalente	0,00000216878 s_m	0,0439046 s_m
Primeira deformação principal	0,00000129615 s_m	0,0284891 s_m
Terceira deformação principal	-0,0466556 s_m	-0,0000012355 s_m
Deformação XX	-0,0135545 s_m	0,0140812 s_m
Deformação XY	-0,0147761 s_m	0,0233586 s_m
Deformação XZ	-0,0203937 s_m	0,0298159 s_m
Deformação YY	-0,0244186 s_m	0,0163894 s_m
Deformação YZ	-0,0181656 s_m	0,0293649 s_m
Deformação ZZ	-0,0149185 s_m	0,015243 s_m

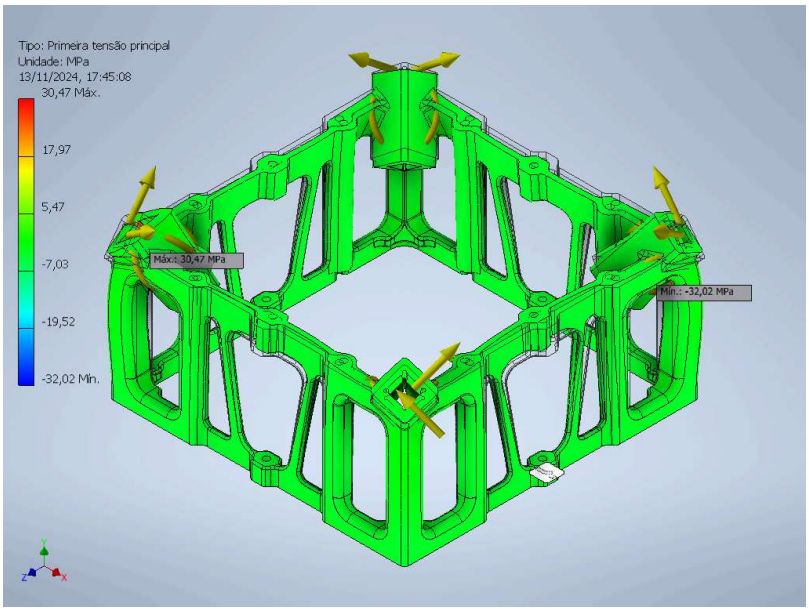
Figuras

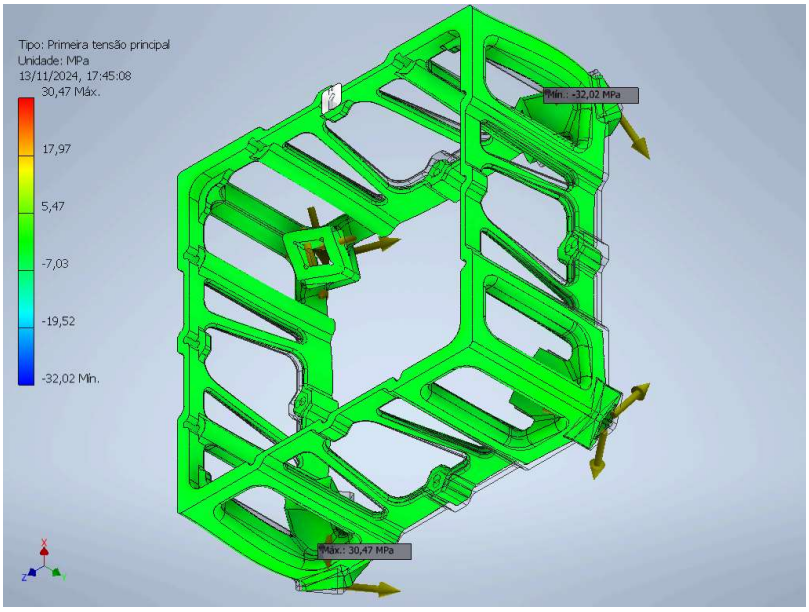
Tensão de Von Mises



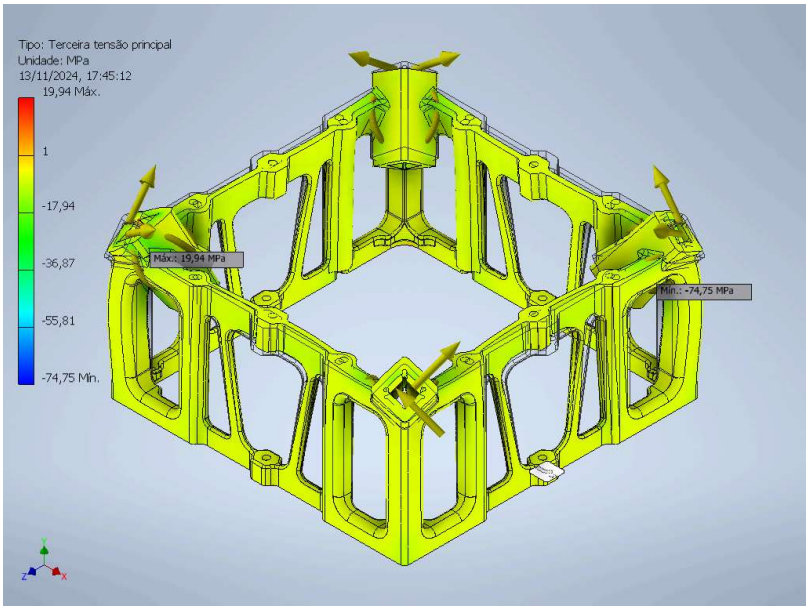


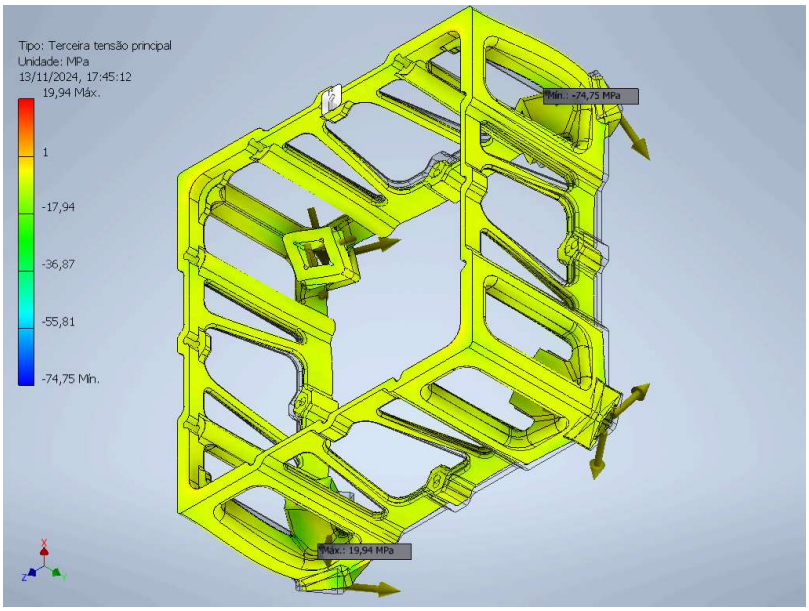
Primeira tensão principal



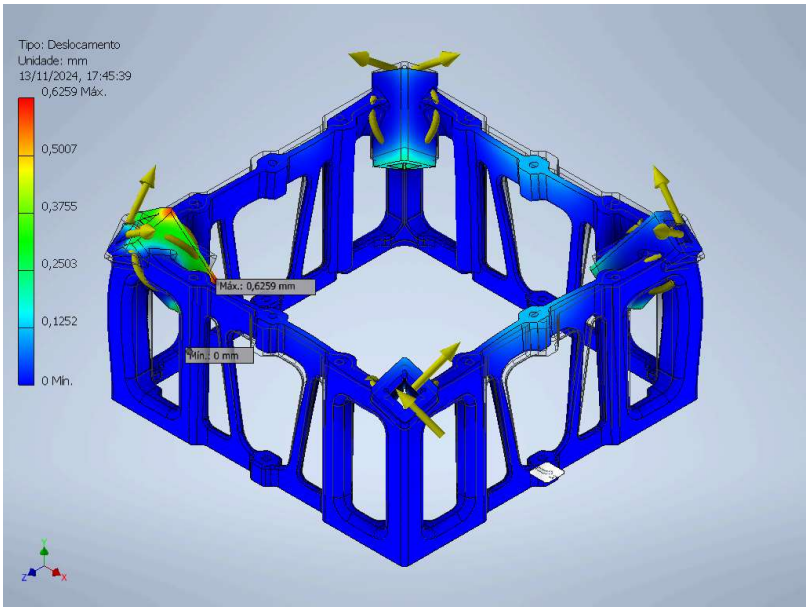


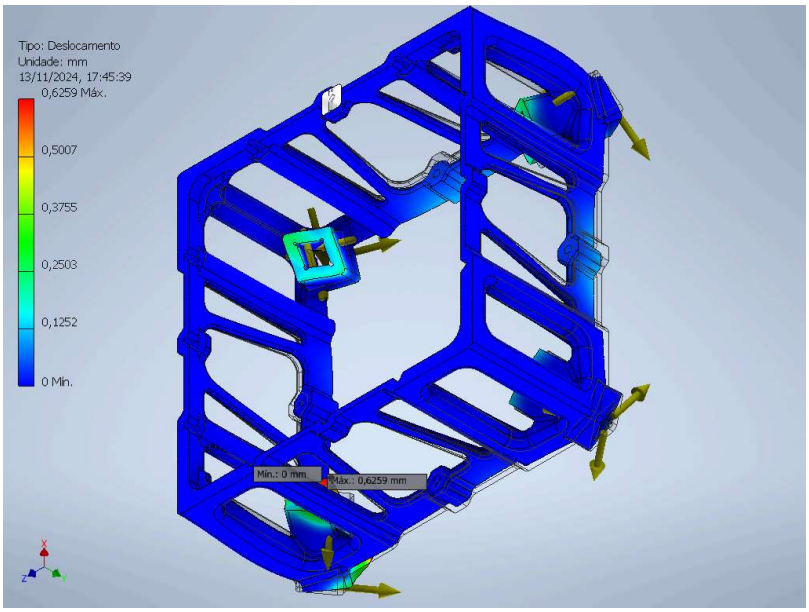
Terceira tensão principal



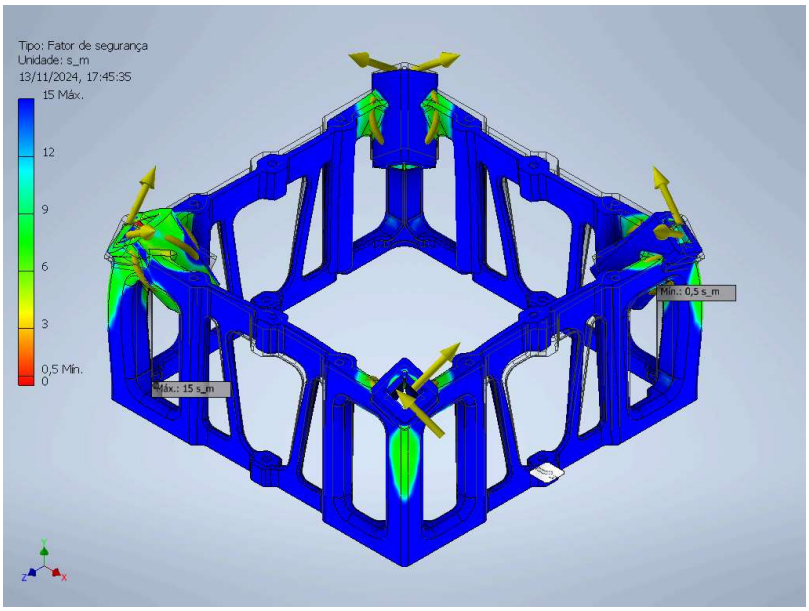


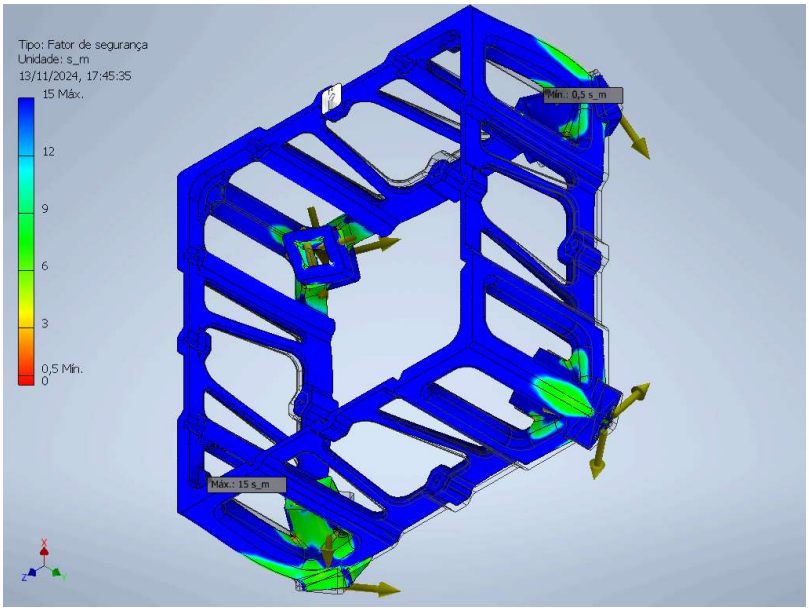
Deslocamento



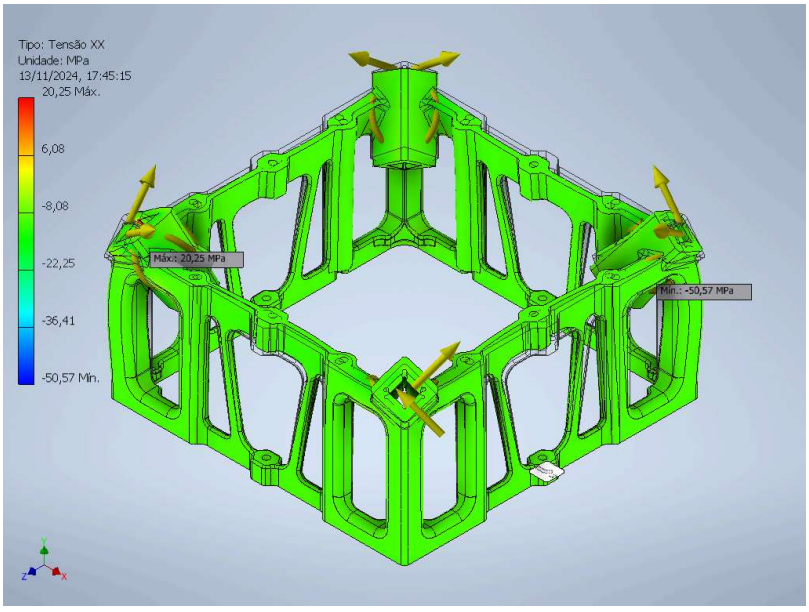


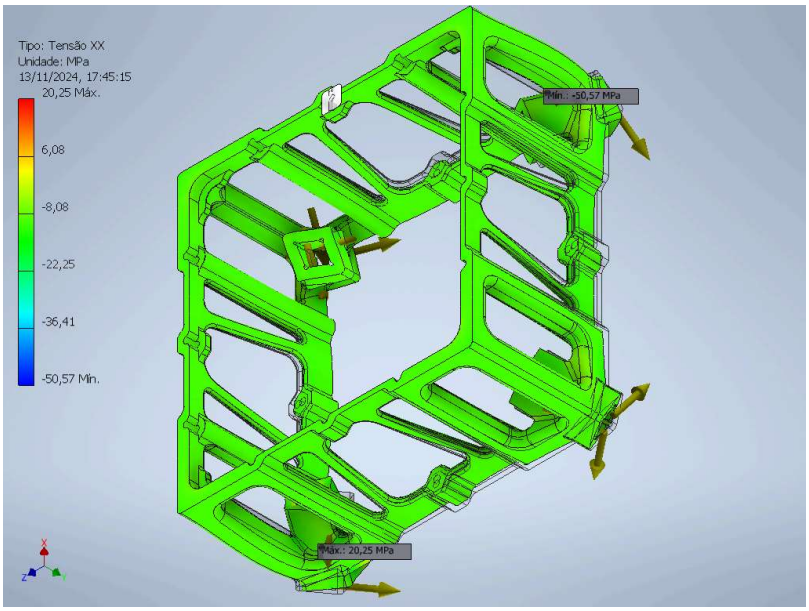
Fator de segurança



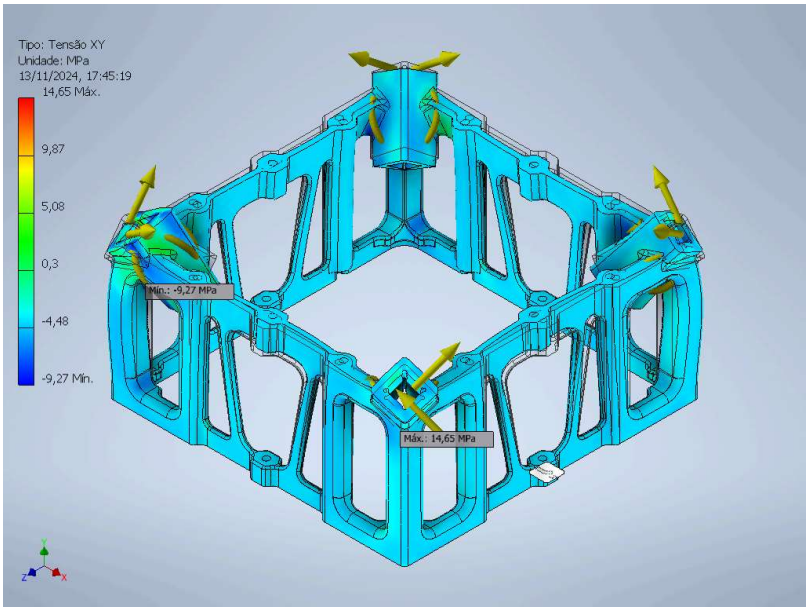


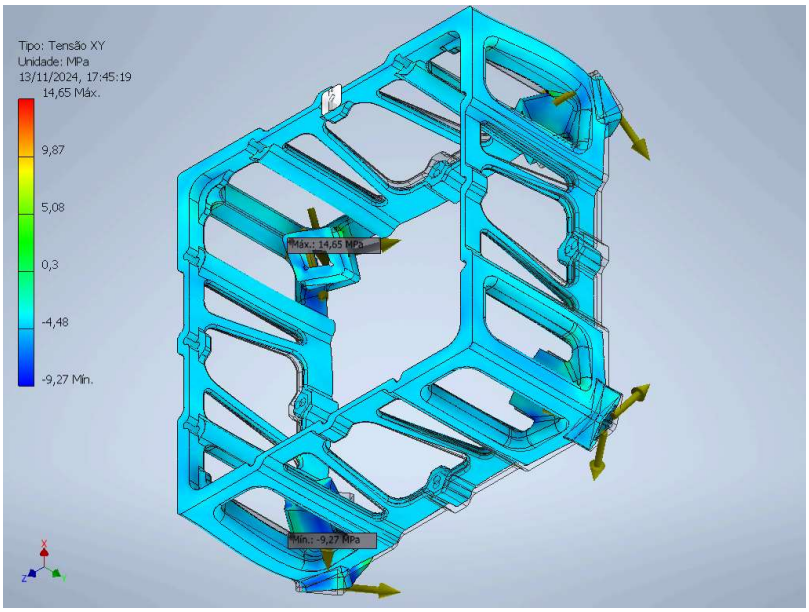
Tensão XX



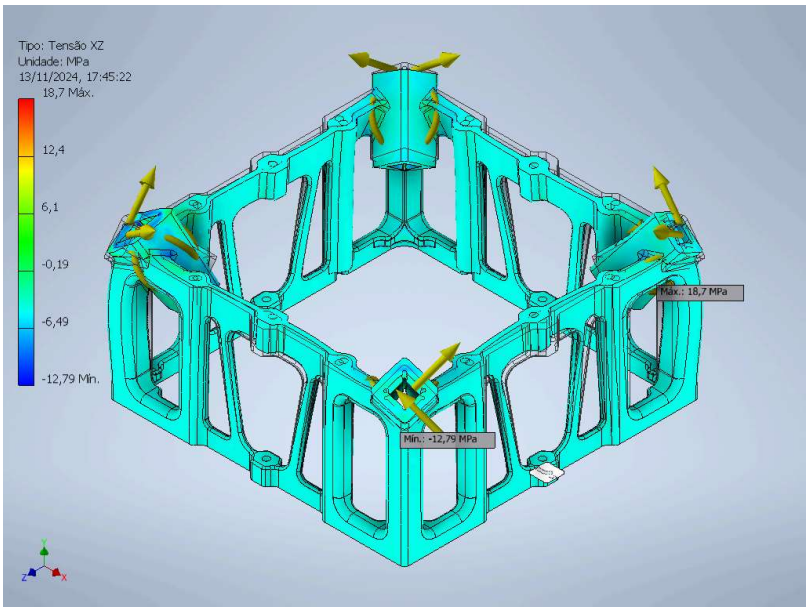


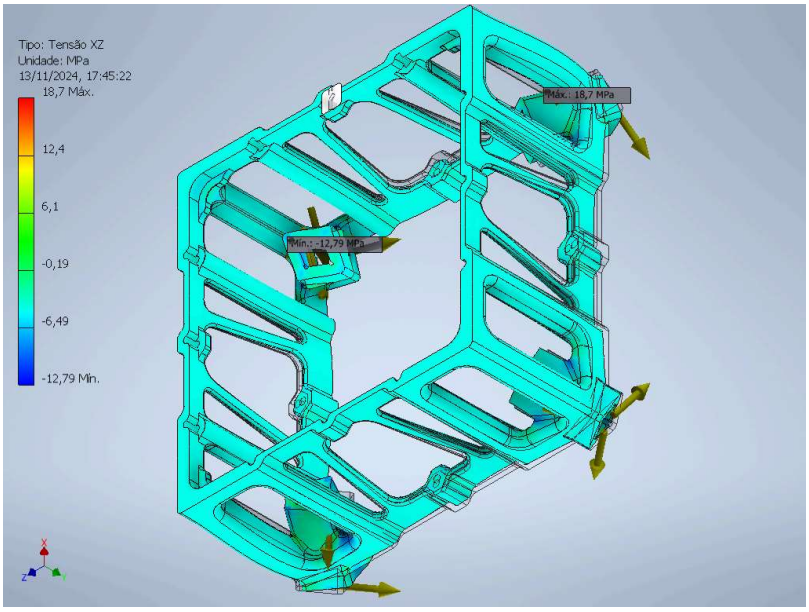
Tensão XY


Tipo: Tensão XY
Unidade: MPa
13/11/2024, 17:45:19
14,65 Máx.
9,87
5,08
0,3
-4,48
-9,27 Mín.
Mín.: -9,27 MPa
Máx.: 14,65 MPa

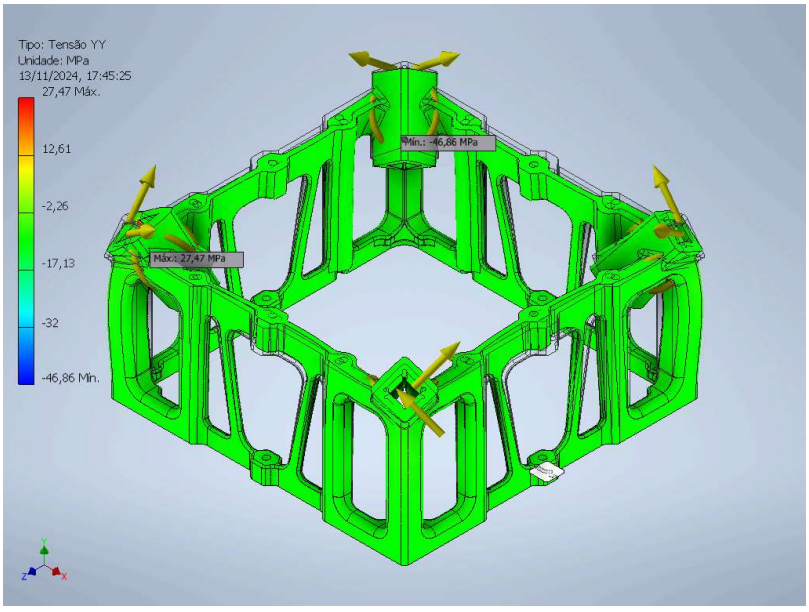

Tipo: Tensão XY
Unidade: MPa
13/11/2024, 17:45:19
14,65 Máx.
9,87
5,08
0,3
-4,48
-9,27 Mín.
Máx.: 14,65 MPa
Mín.: -9,27 MPa

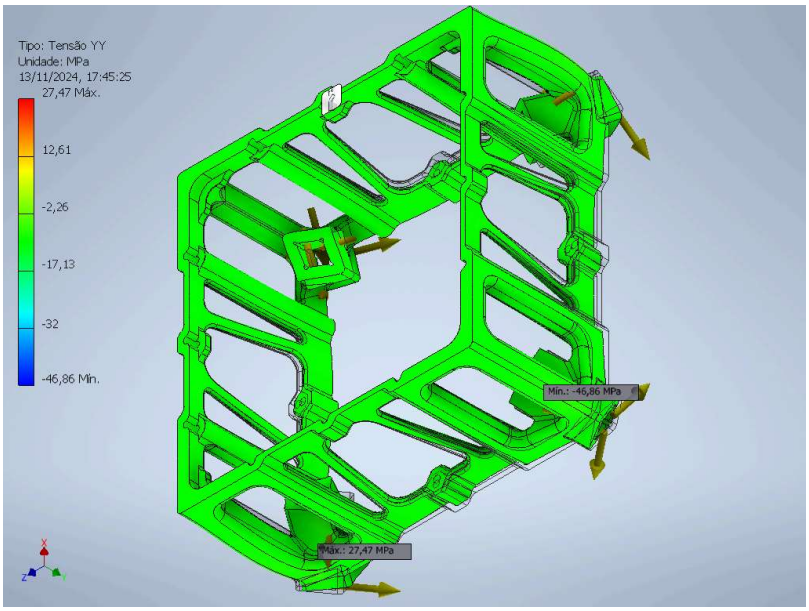
Tensão XZ


Tipo: Tensão XZ
Unidade: MPa
13/11/2024, 17:45:22
18,7 Máx.
12,4
6,1
-0,19
-6,49
-12,79 Mín.
Máx.: 18,7 MPa
Mín.: -12,79 MPa

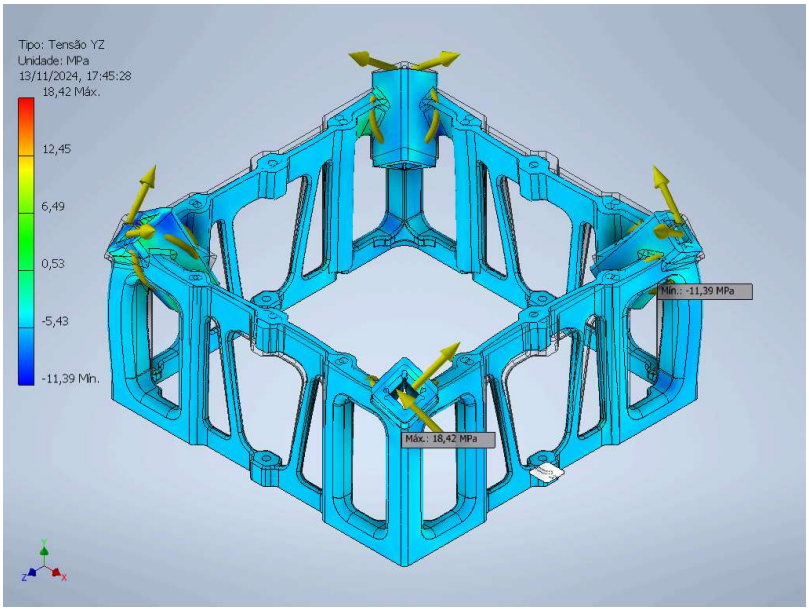


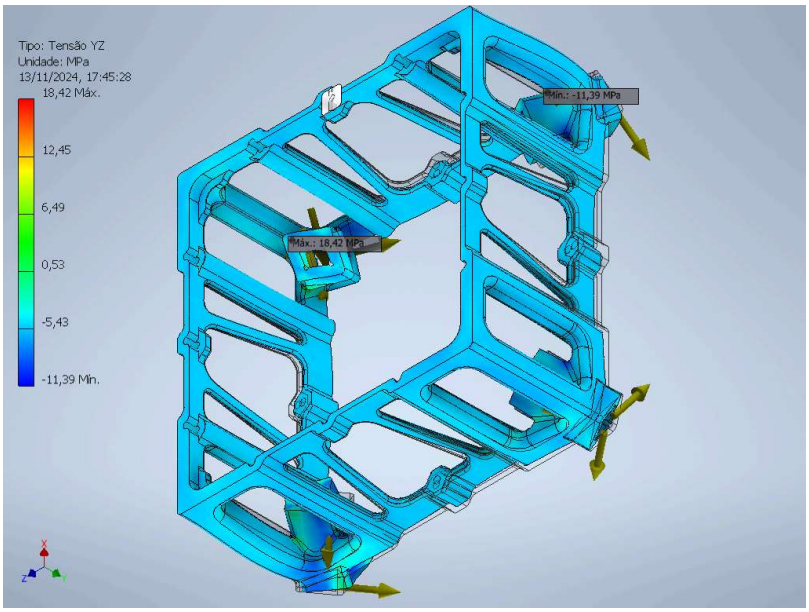
Tensão YY



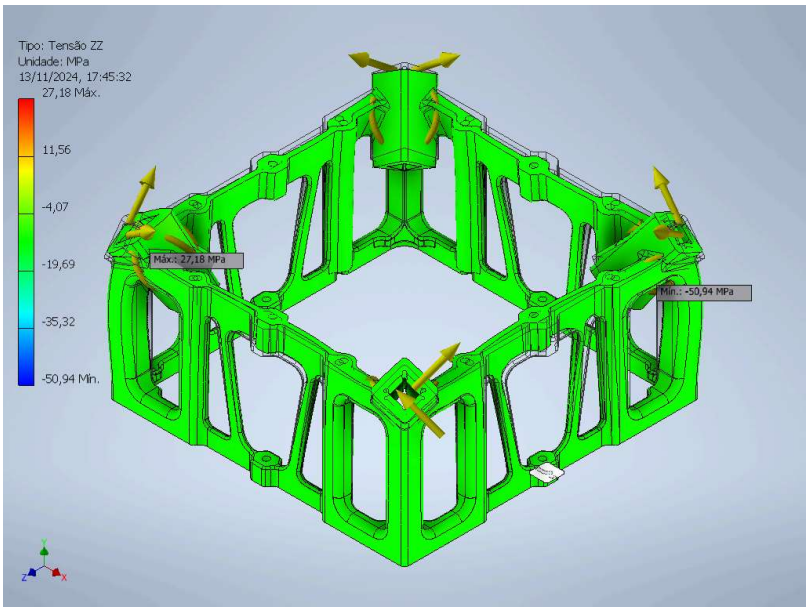


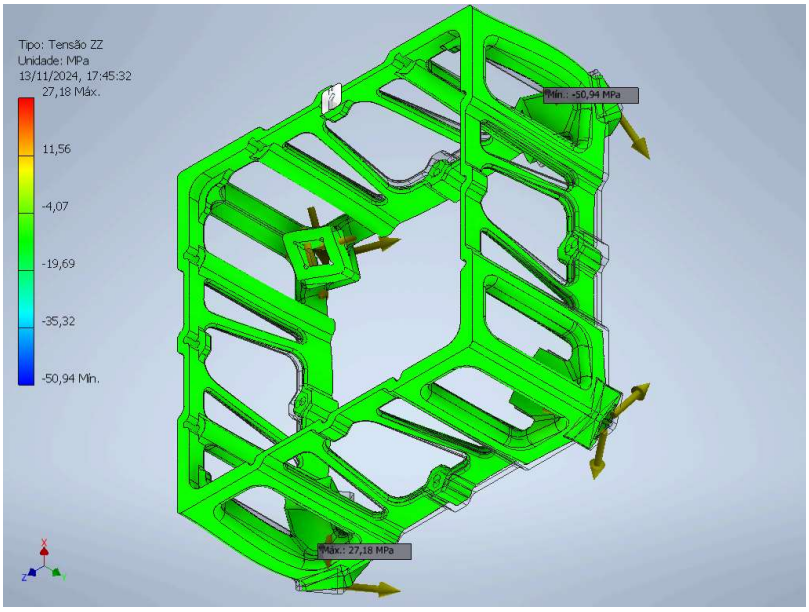
Tensão YZ


Tipo: Tensão YZ
Unidade: MPa
13/11/2024, 17:45:28
18,42 Máx.
12,45
6,49
0,53
-5,43
-11,39 Mín.
Mín.: -11,39 MPa
Máx.: 18,42 MPa

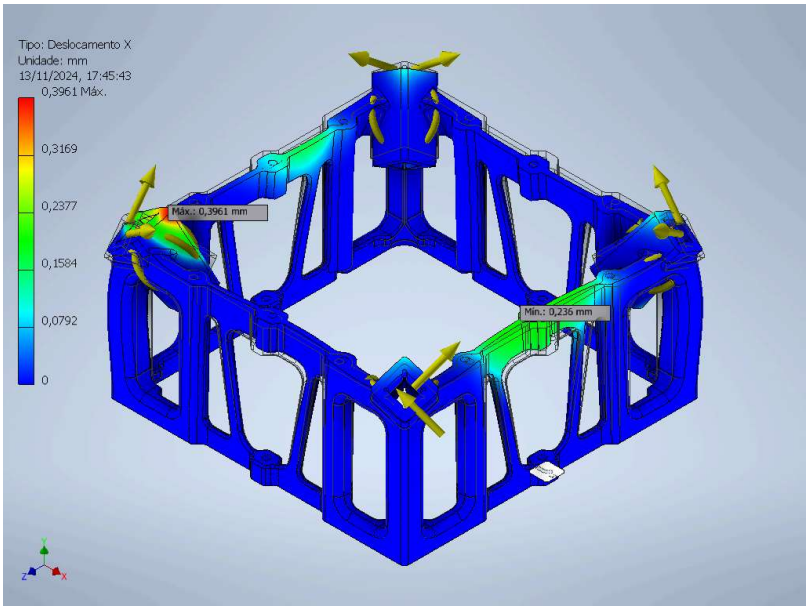

Tipo: Tensão YZ
Unidade: MPa
13/11/2024, 17:45:28
18,42 Máx.
12,45
6,49
0,53
-5,43
-11,39 Mín.
Mín.: -11,39 MPa
Máx.: 18,42 MPa

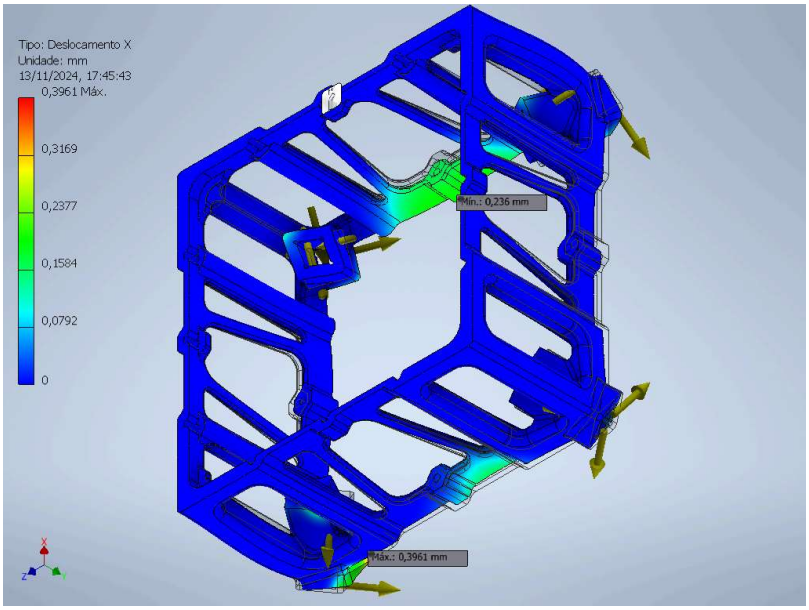
Tensão ZZ


Tipo: Tensão ZZ
Unidade: MPa
13/11/2024, 17:45:32
27,18 Máx.
11,56
-4,07
-19,69
-35,32
-50,94 Mín.
Máx.: 27,18 MPa
Mín.: -50,94 MPa

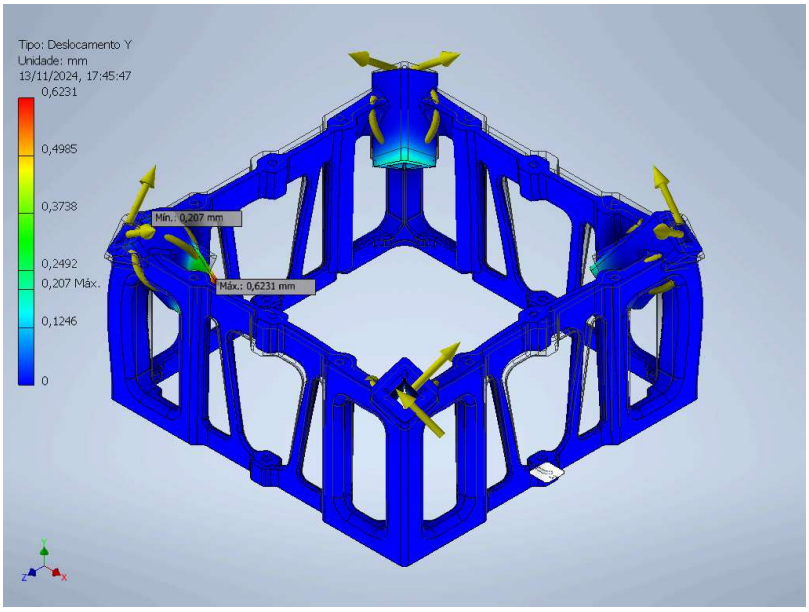


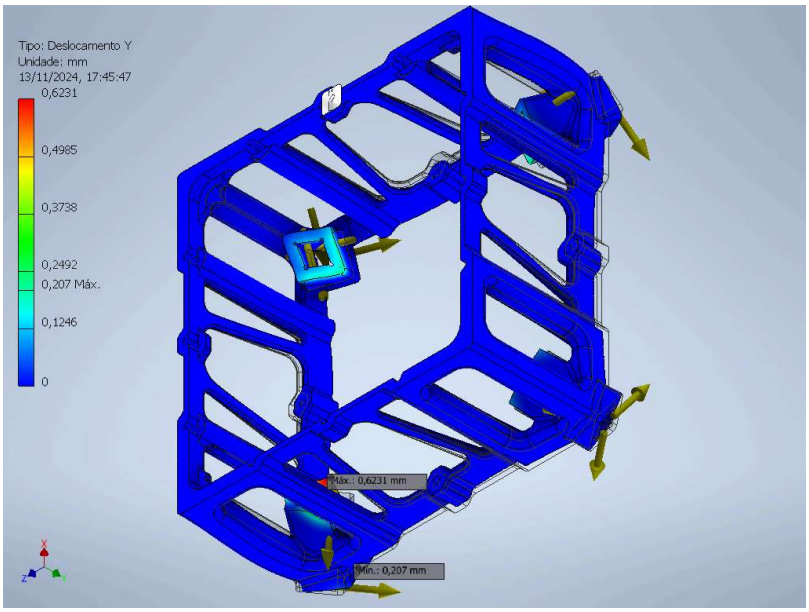
Deslocamento X



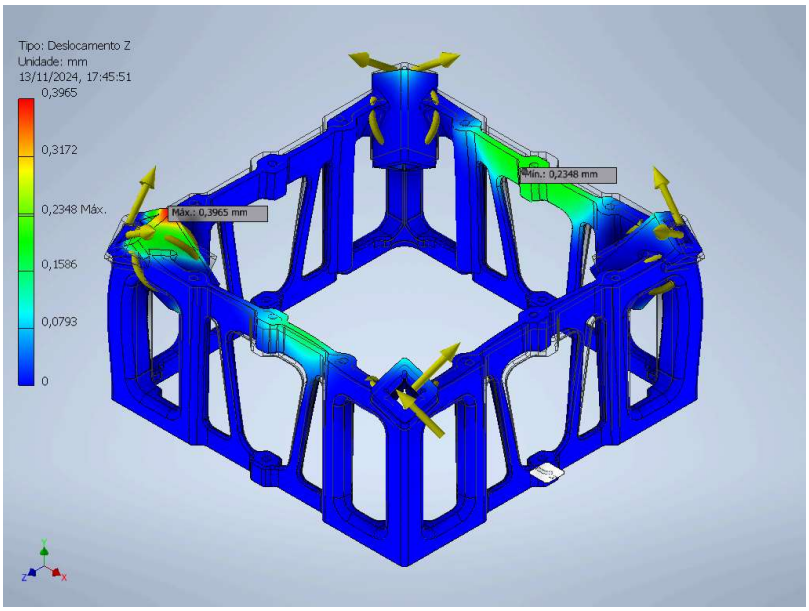


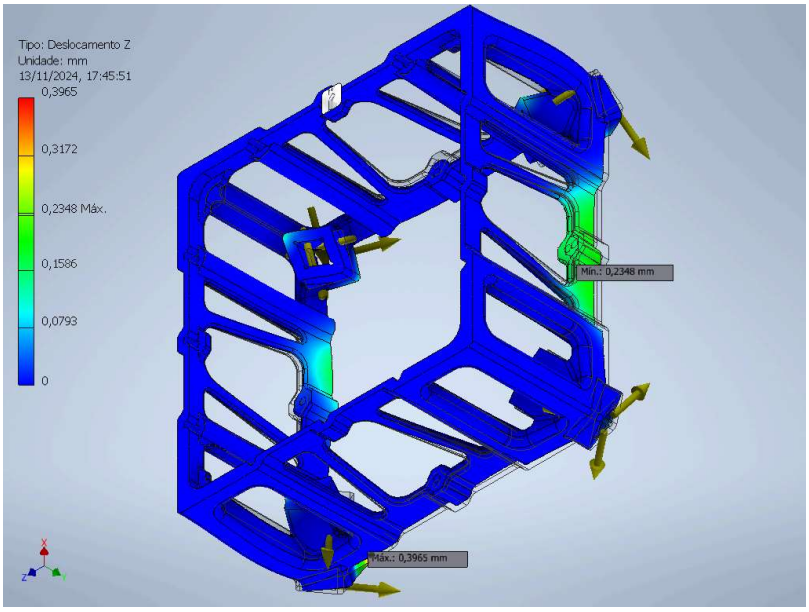
Deslocamento Y



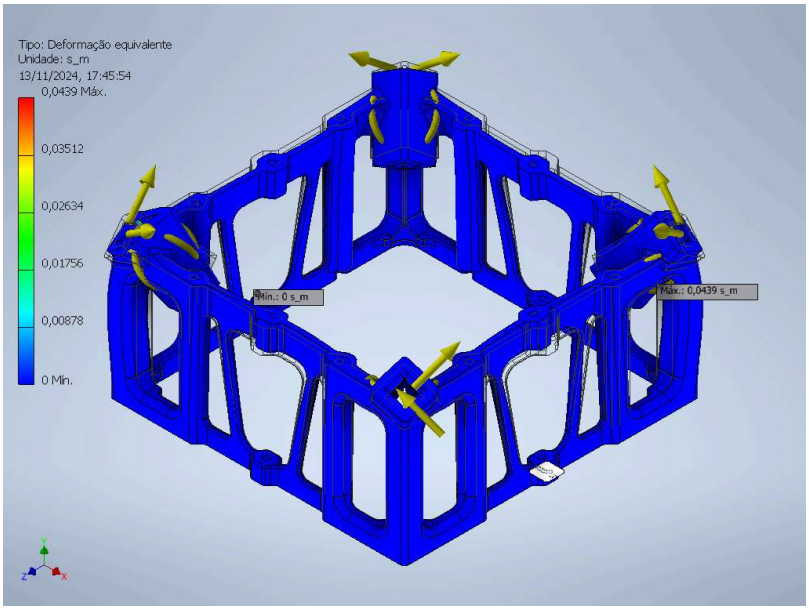


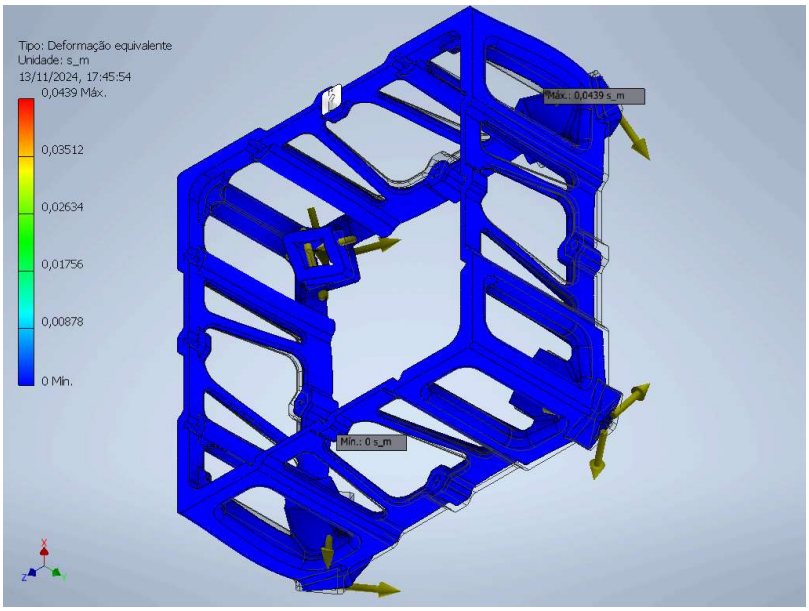
Deslocamento Z



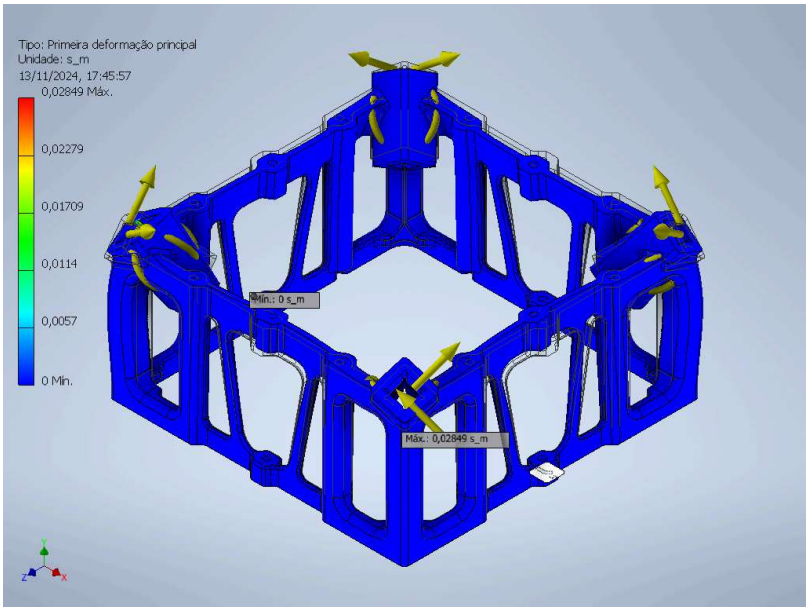


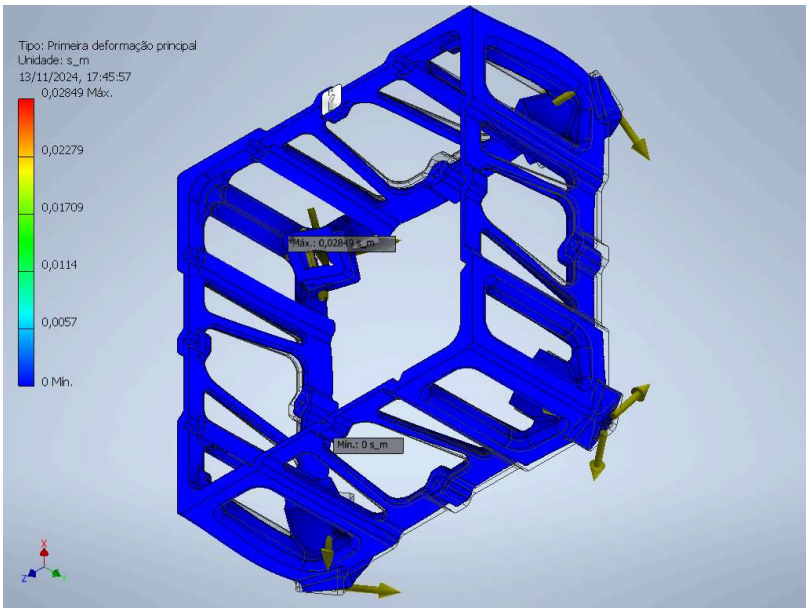
Deformação equivalente



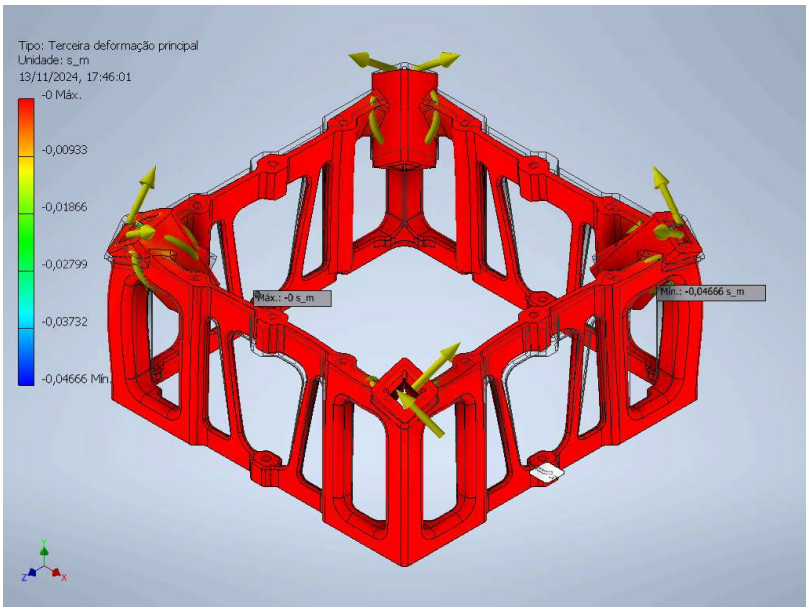


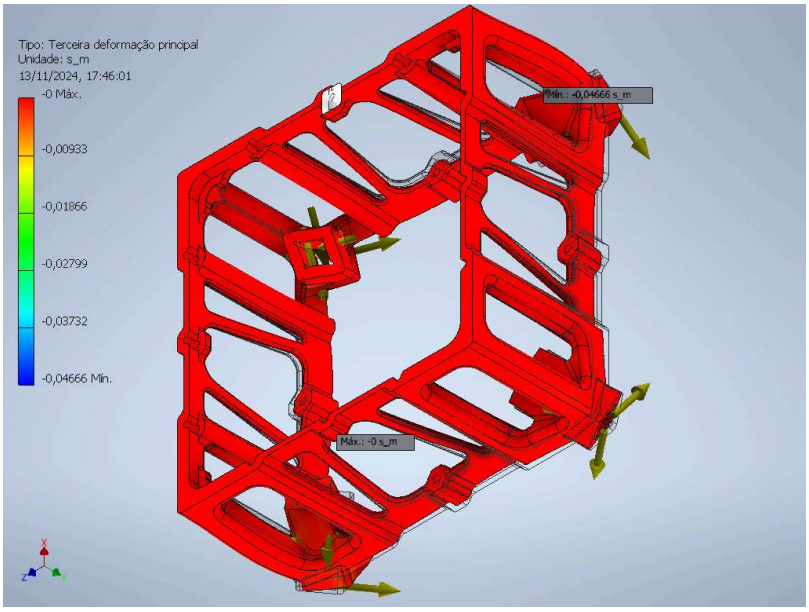
Primeira deformação principal



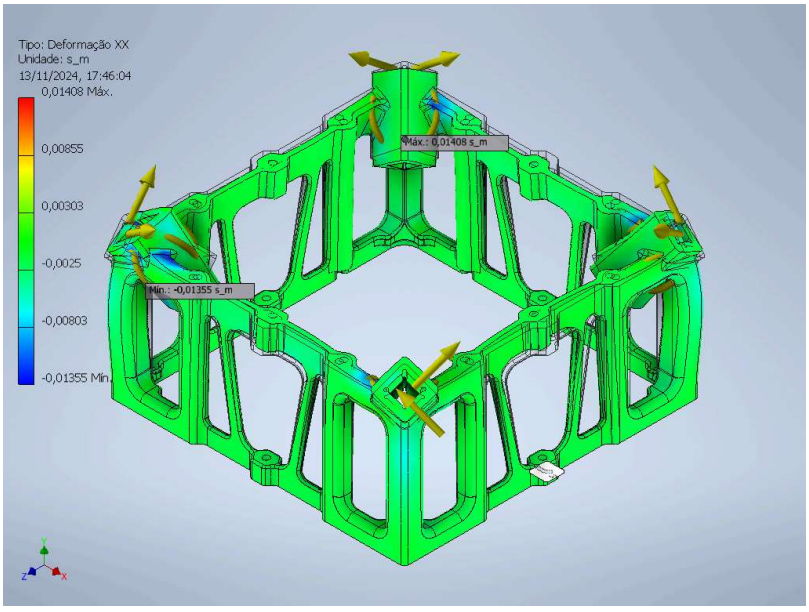


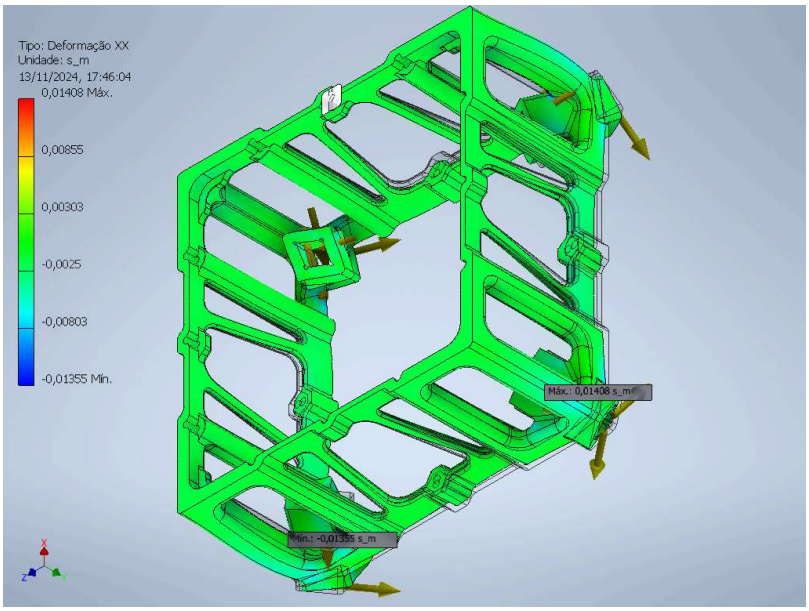
Terceira deformação principal



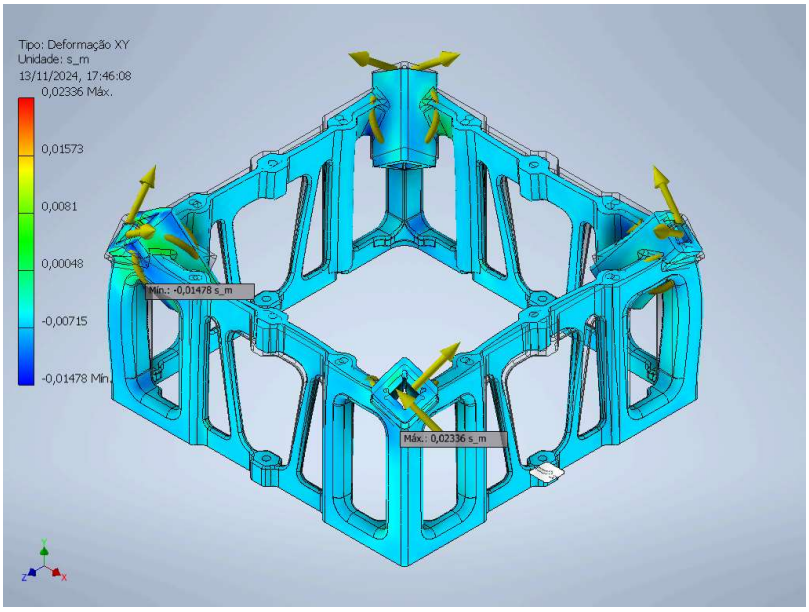


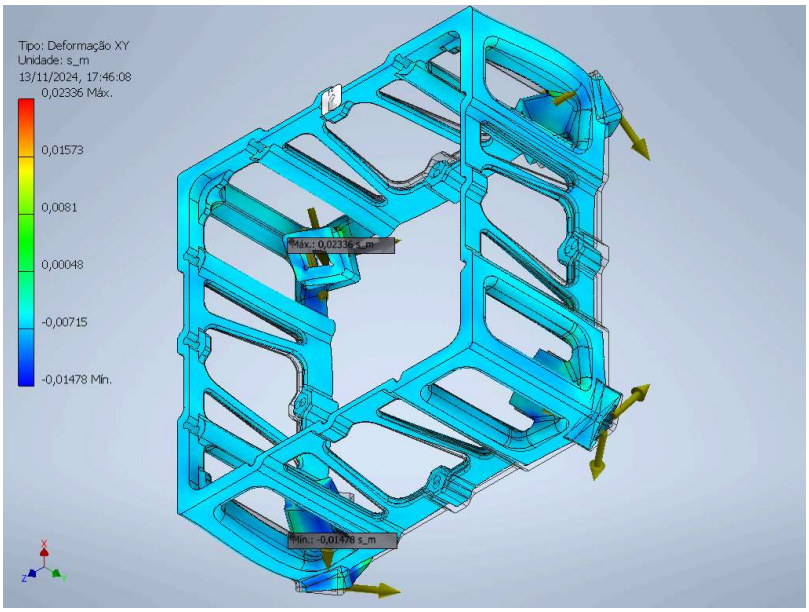
Deformação XX



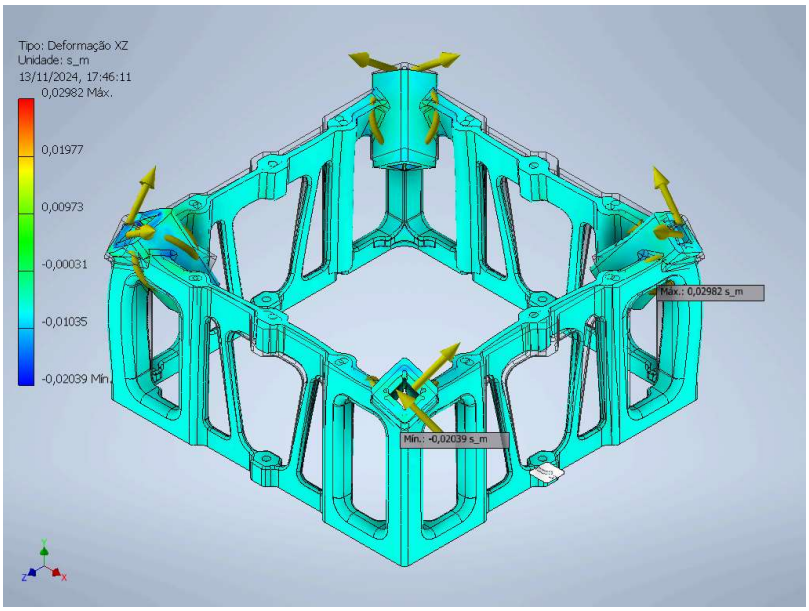


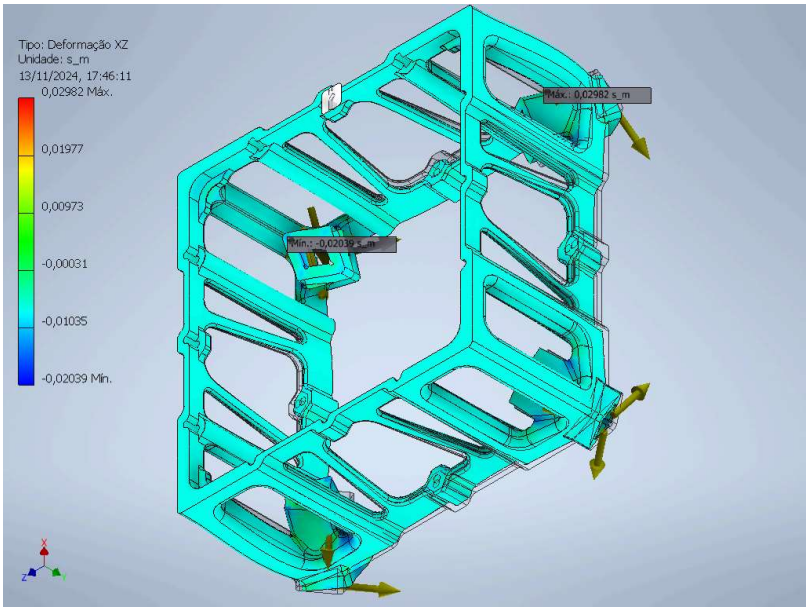
Deformação XY



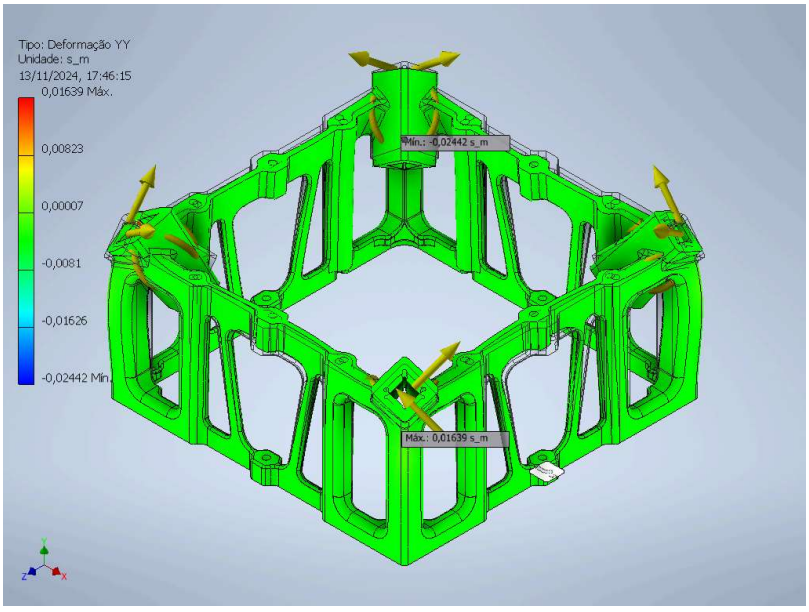


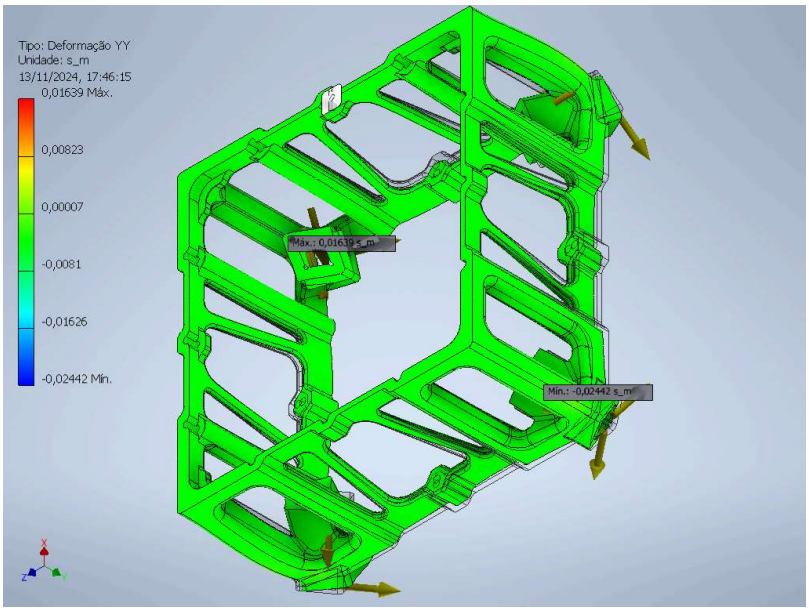
Deformação XZ



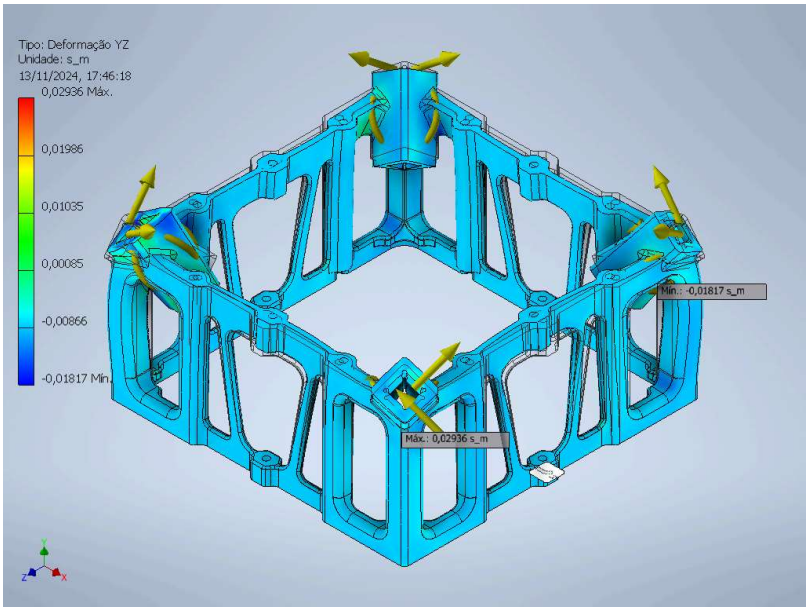


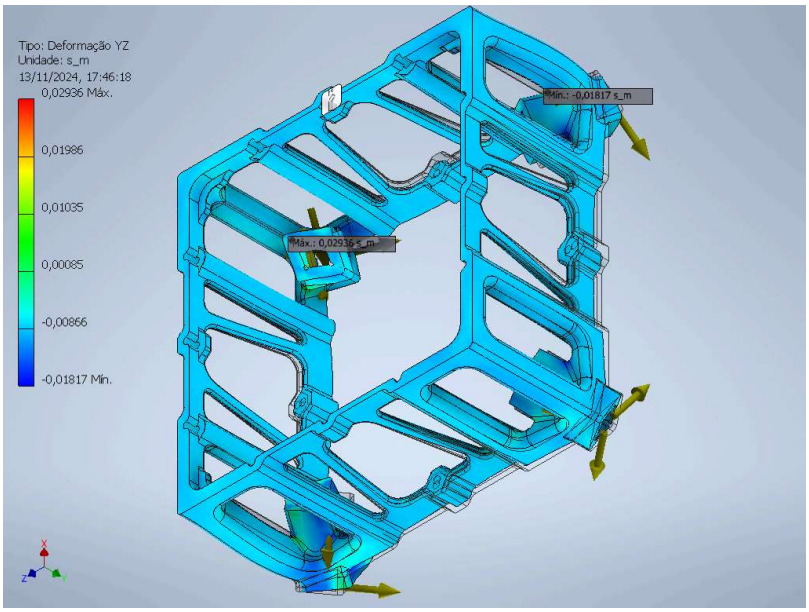
Deformação YY



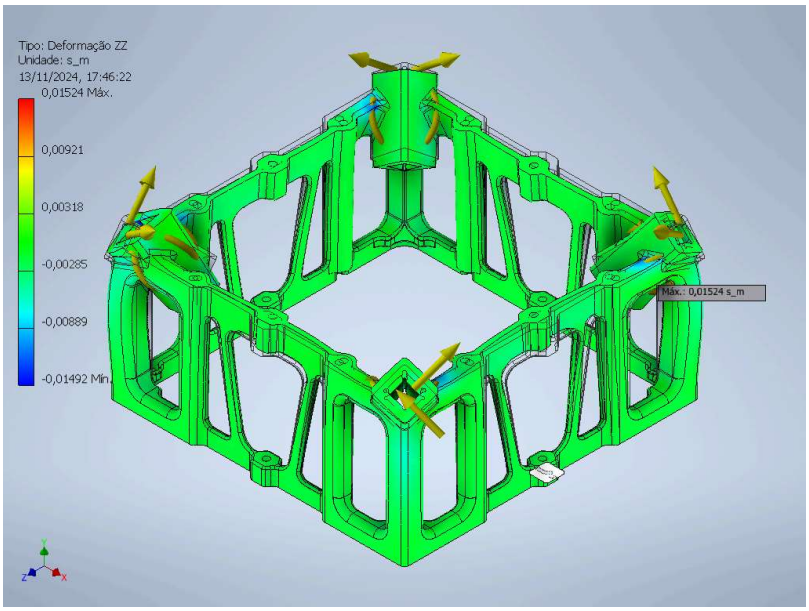


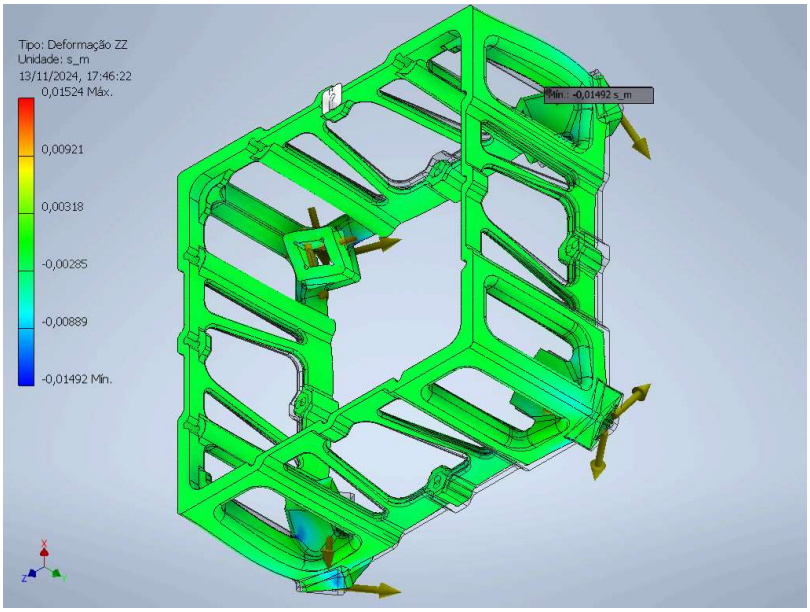
Deformação YZ





Deformação ZZ





D:\fabio\OneDrive\cursos\puc\00_DISSERTAÇÃO\04_Desenvolvimentos\D_Modelo Físico\Projeto\MEF\conceito4_Q7030.ipt