Relatório de análise de tensão - Involucro Impact Smooth 3D

Arquivo analisado:	conceito4_IS3D.ipt
Versão do Autodesk Inventor:	2024.2 (Build 282272000, 272)
Data de criação:	13/11/2024, 17:35
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, 17:33
Estado do modelo	[Principal]
Detectar e eliminar modos de corpo rígido	Não

iProperties

Resumo

Autor	Fabio P. C.

Projeto

Nº da peça	conceito4_IS3D
Projetista	Fabio P. C.
Custo estimado	R$ 0,00
Data da criação	15/01/2022

Status

Estado do projeto	TrabalhoEmCurso

Física

Material	Impact Smooth 3D
Densidade	1,376 g/cm^3
Massa	0,234528 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

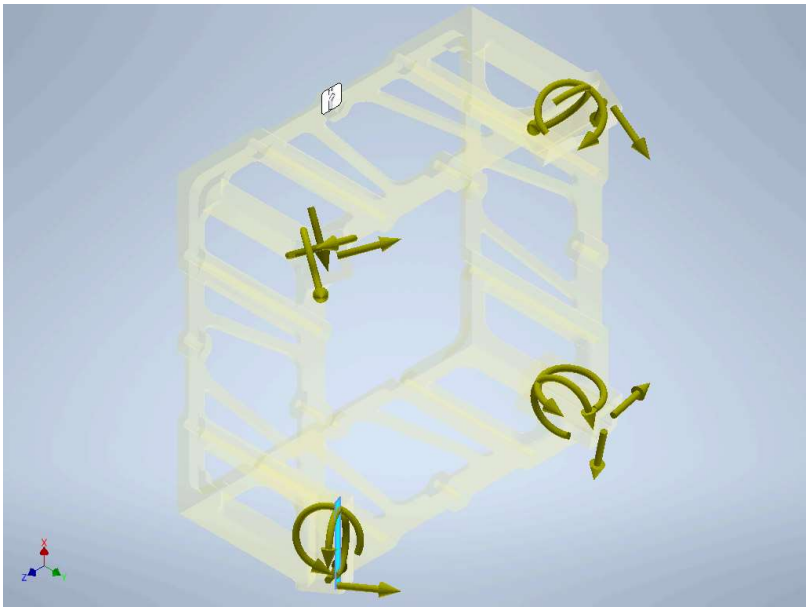
Nome	Impact Smooth 3D	
Geral	Densidade de massa	1,376 g/cm^3
	Resistência à escoamento	21,7 MPa
	Resistência máxima à tração	21,7 MPa
Tensão	Módulo de Young	0,512 GPa
	Coeficiente de Poisson	0,47 s_m
	Módulo cortante	0,17415 GPa
Nome(s) de peça	conceito4_IS3D.ipt	

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

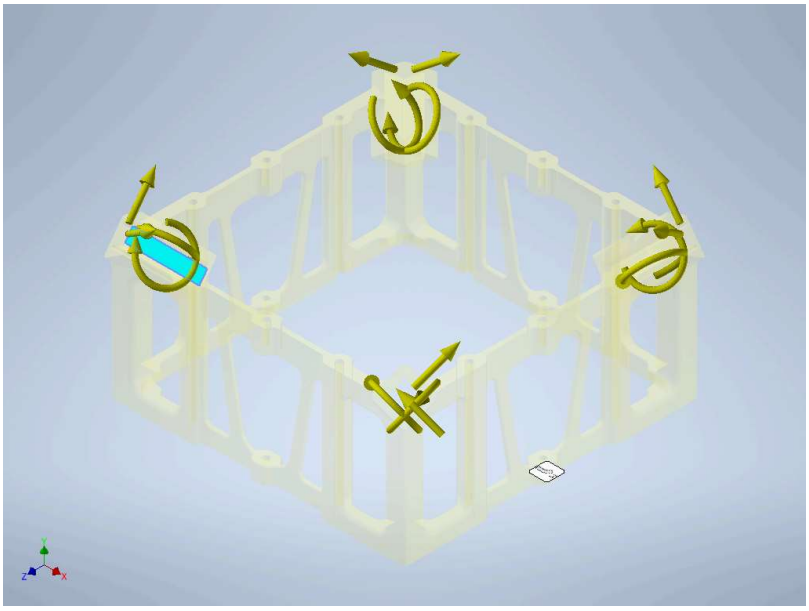
Faces selecionadas

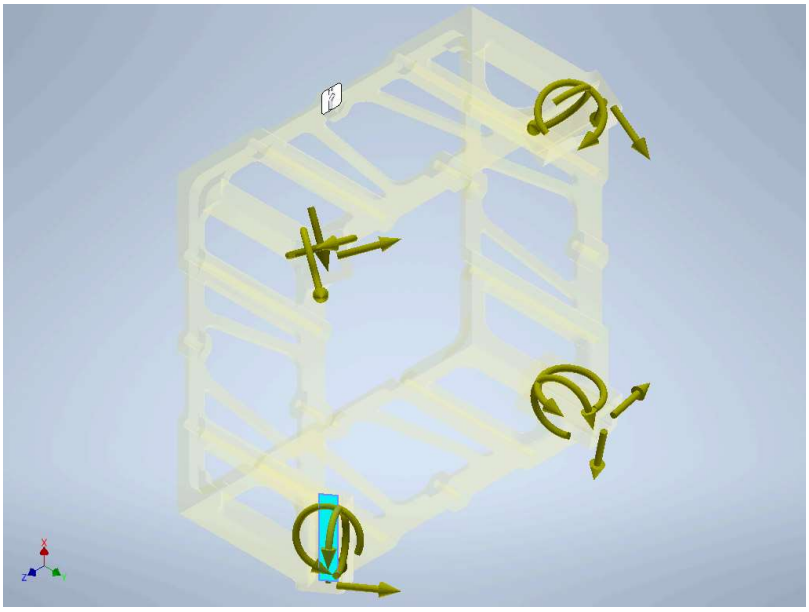


Momento:2

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

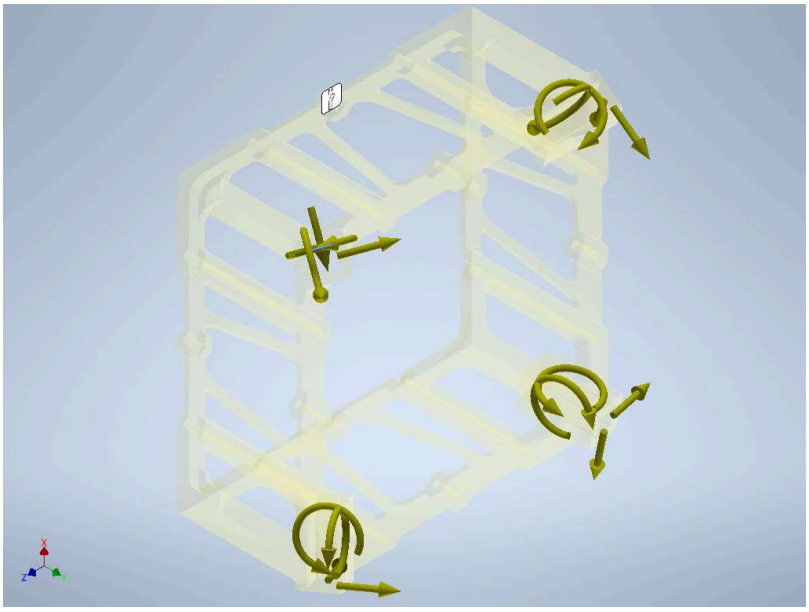




Momento:3

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

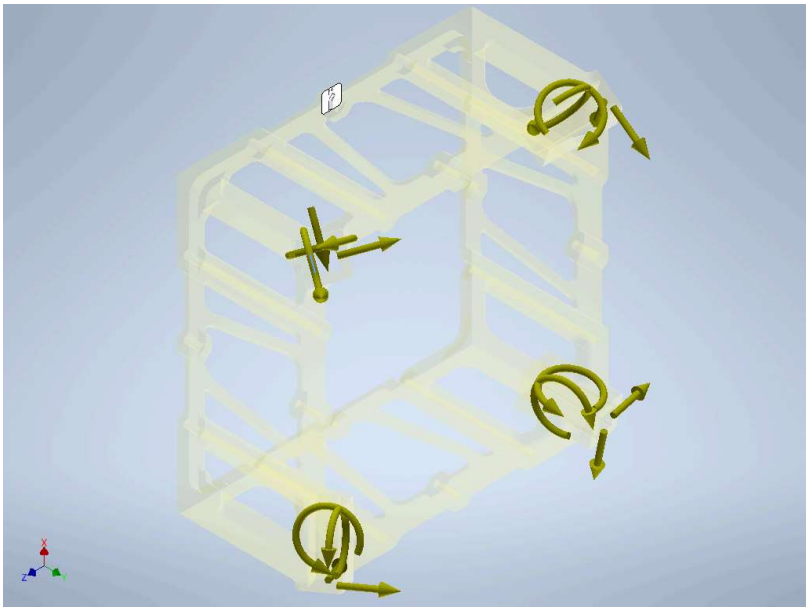
Faces selecionadas



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

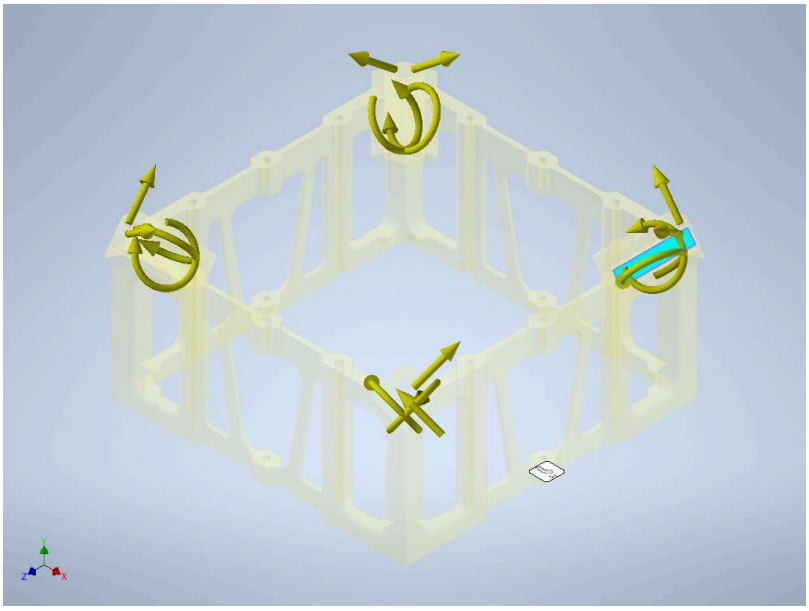
Faces selecionadas

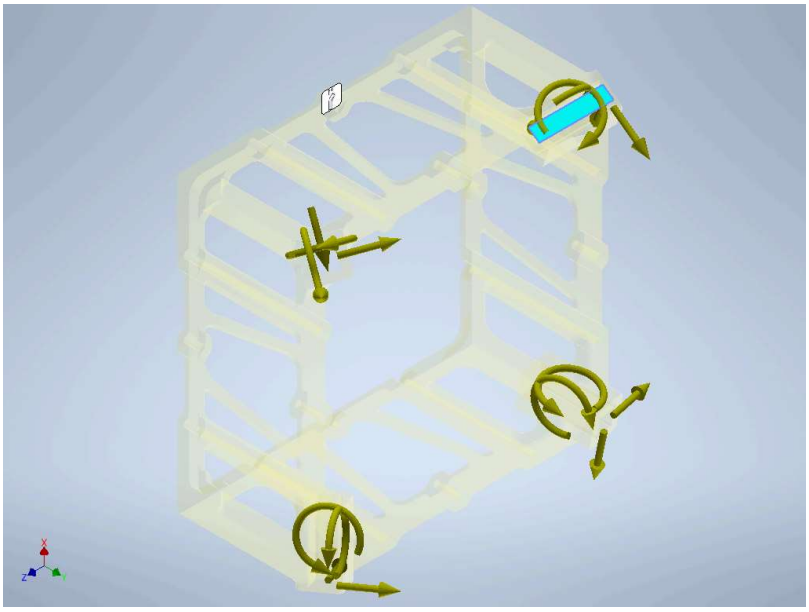


Momento:5

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

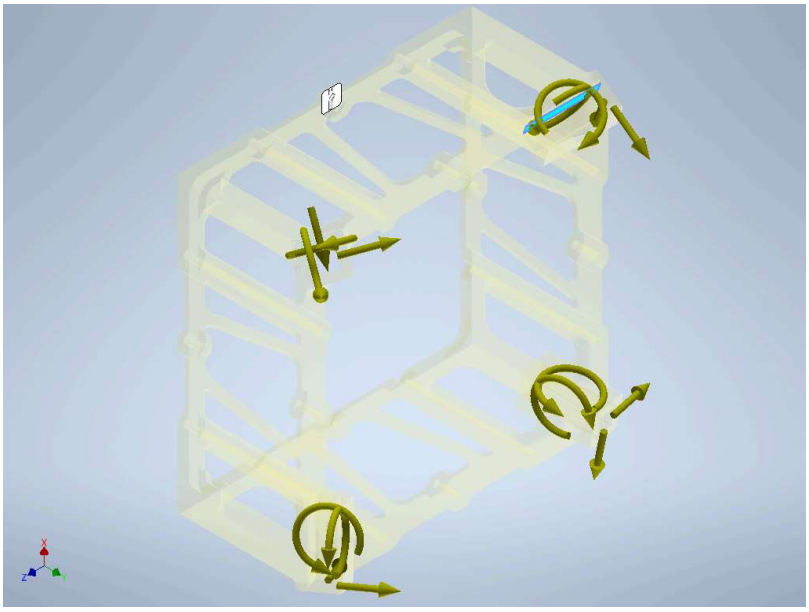




Momento:6

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

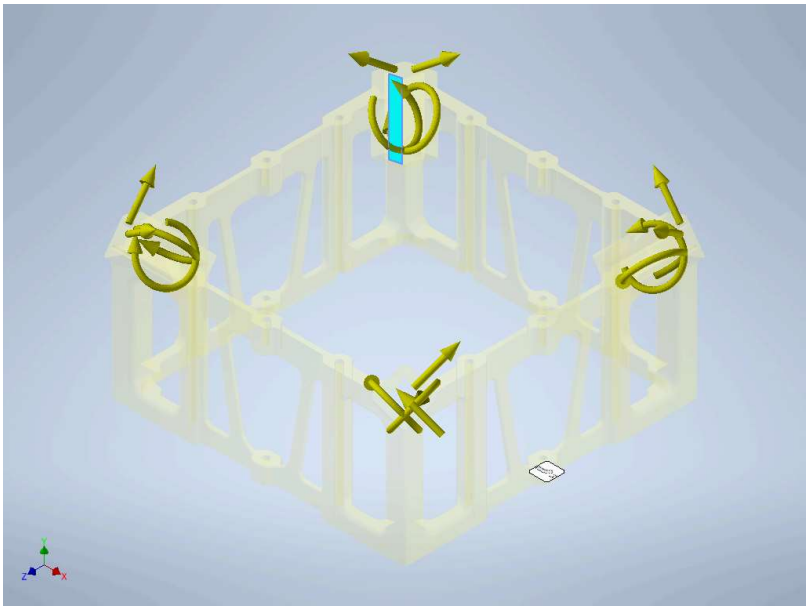
Faces selecionadas

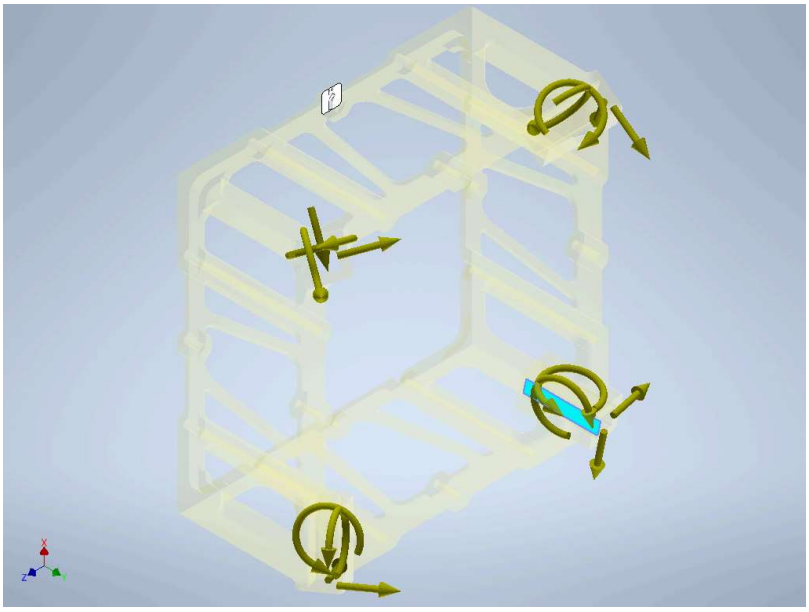


Momento:7

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

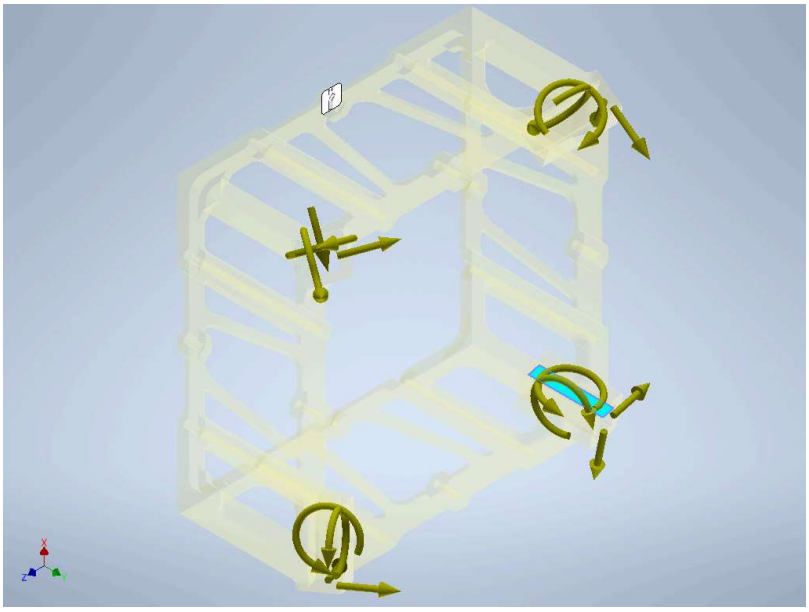




Momento:8

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

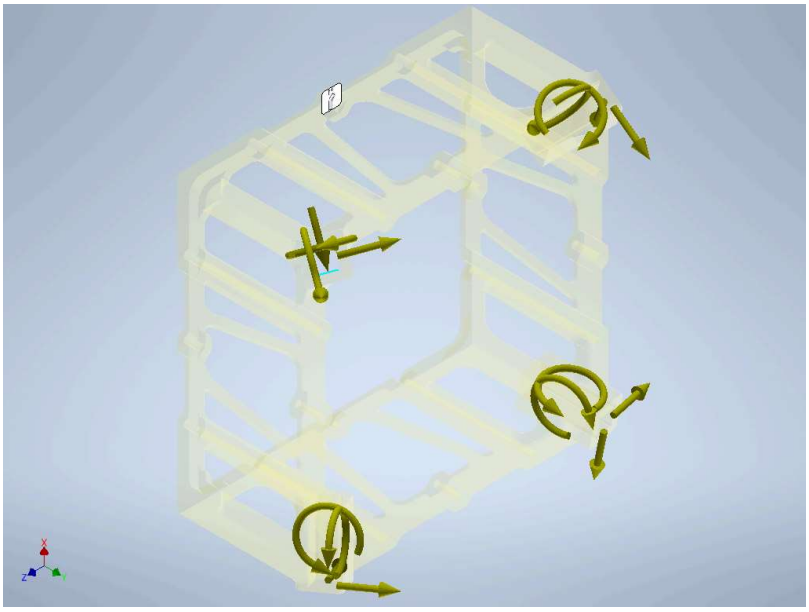
Faces selecionadas



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

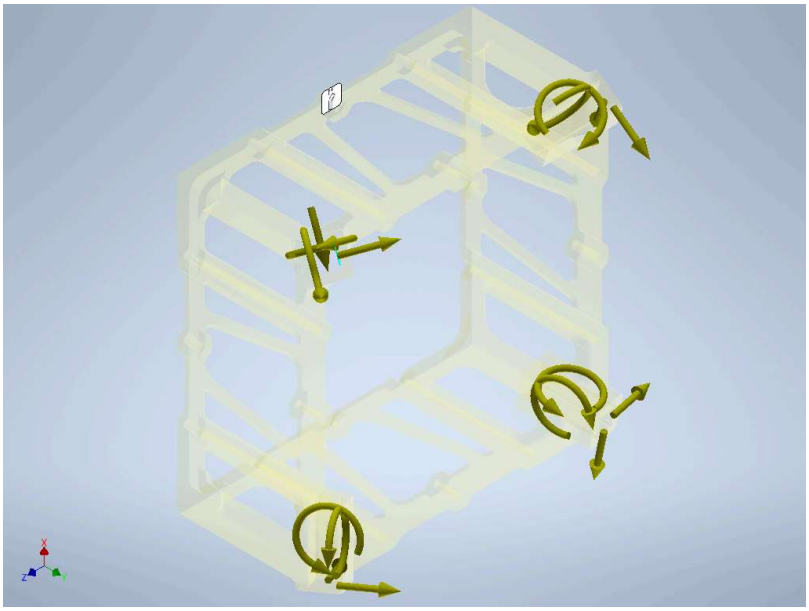
Faces selecionadas



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

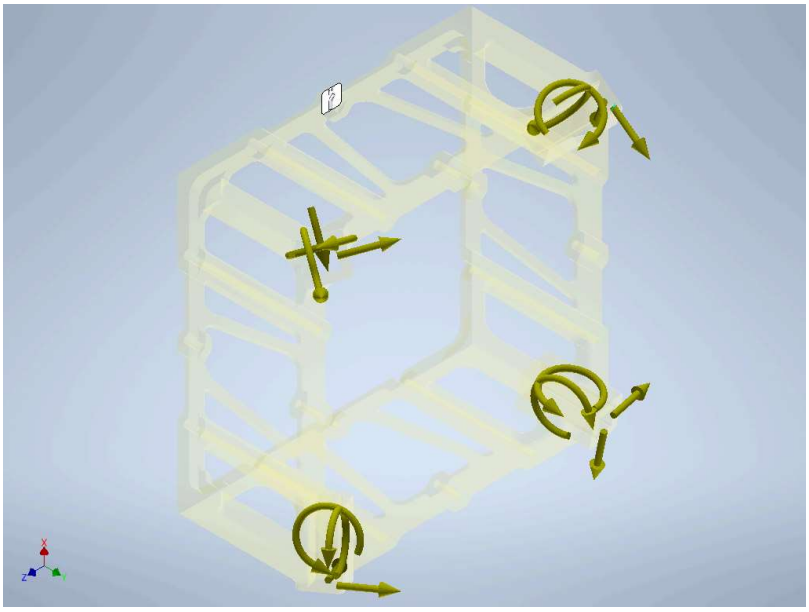
Faces selecionadas



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

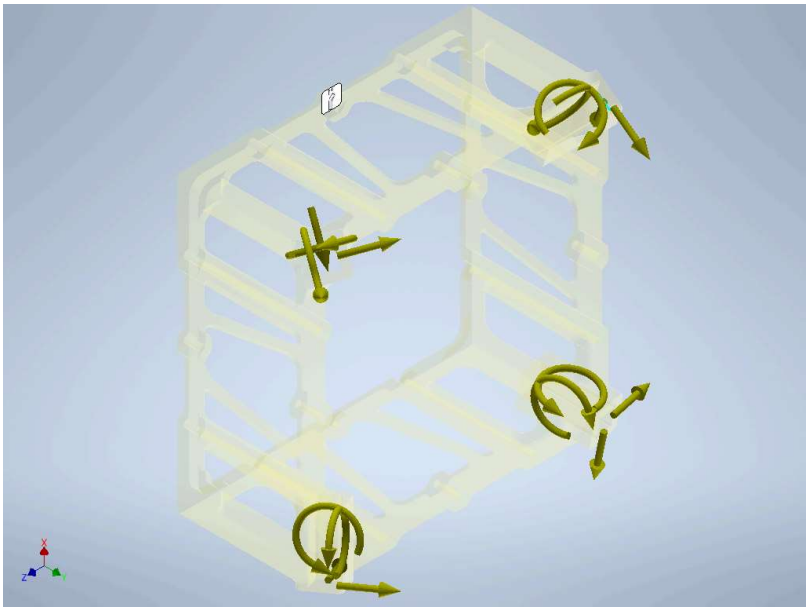
Faces selecionadas



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

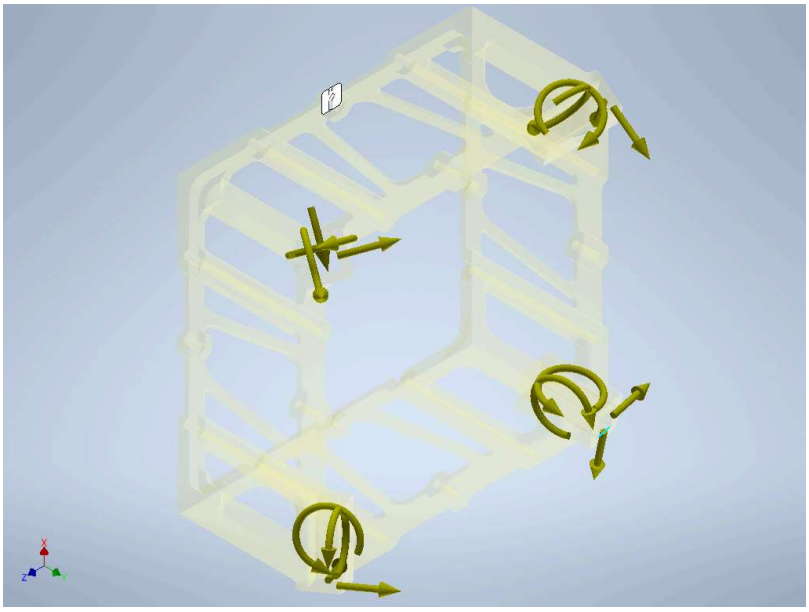
Faces selecionadas



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

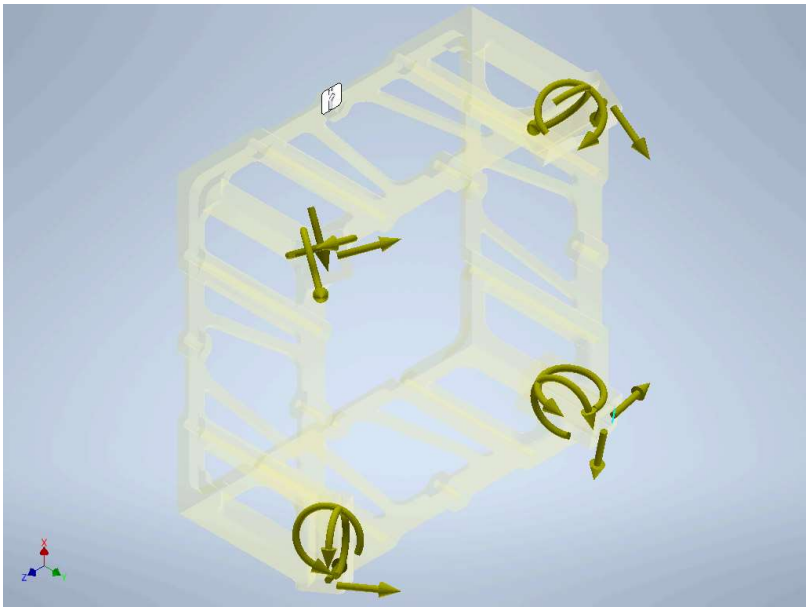
Faces selecionadas



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

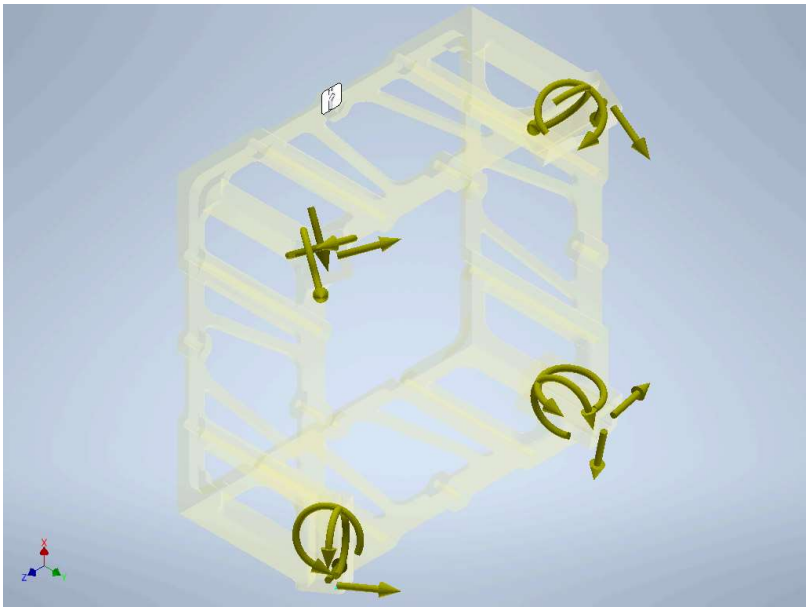
Faces selecionadas



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

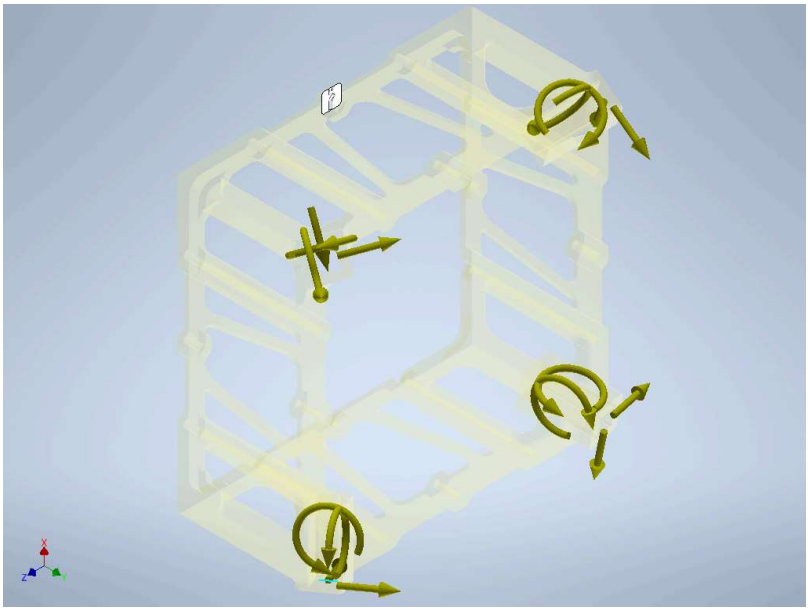
Faces selecionadas



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

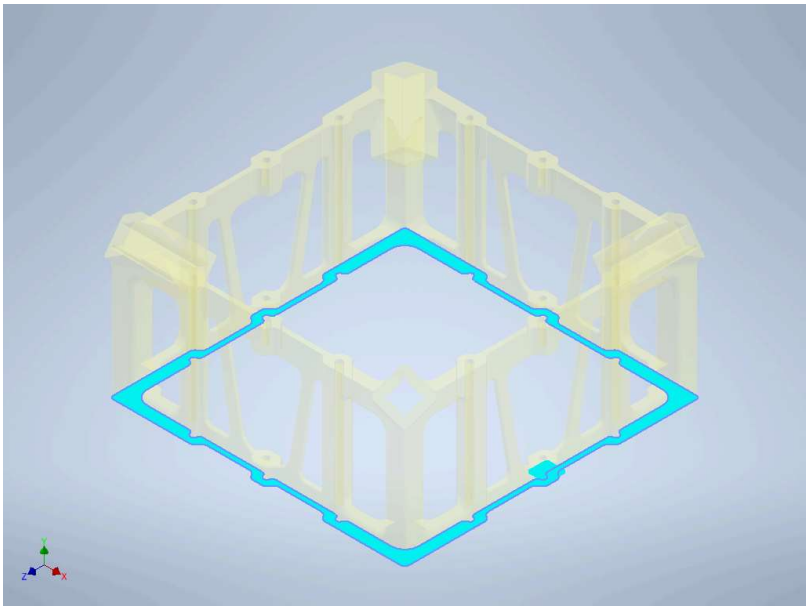
Faces selecionadas

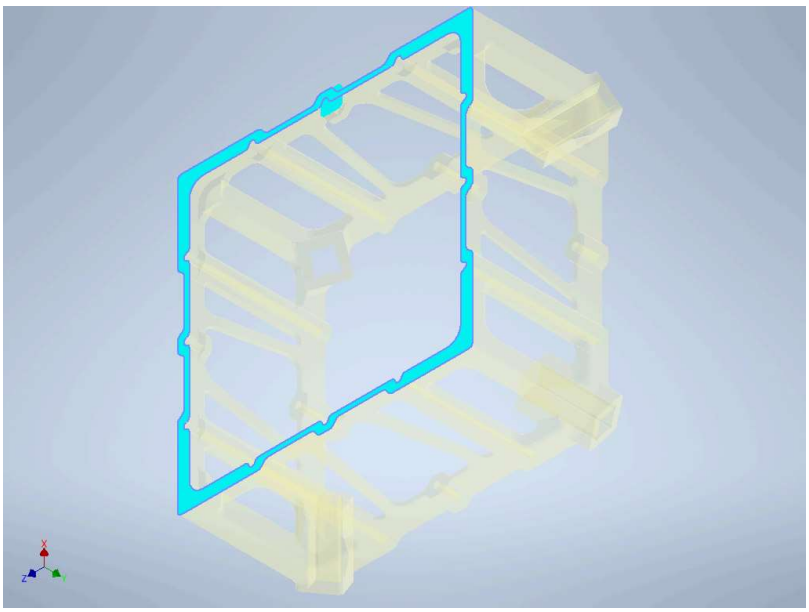


Restrição fixa:1

Tipo de restrição	Restrição fixa

Faces selecionadas





Resultados

Força e momento de reação em restrições

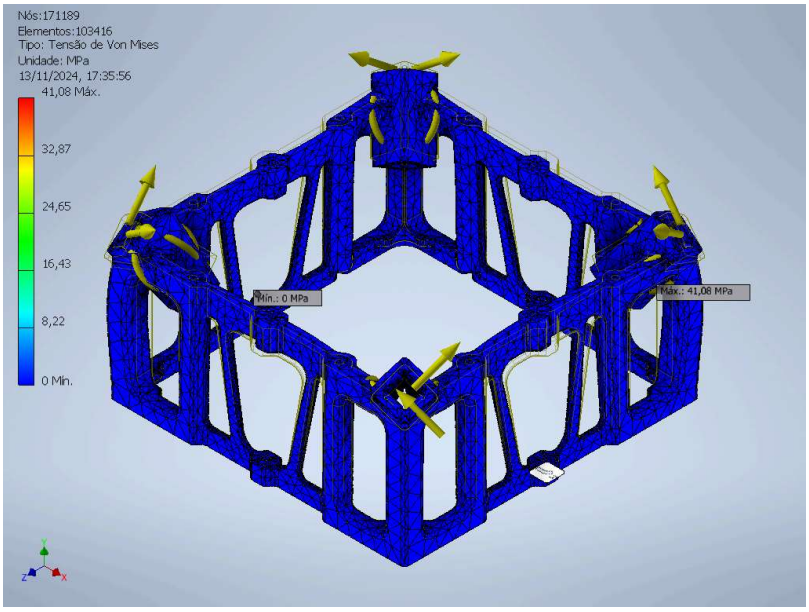
Nome da restrição	Força de reação		Momento de reação	
	Magnitude	"Componente (X,Y,Z)"	Magnitude	"Componente (X,Y,Z)"
Restrição fixa:1	48,9897 N	0 N	0 N m	0 N m
		-48,9897 N		0 N m
		0 N		0 N m

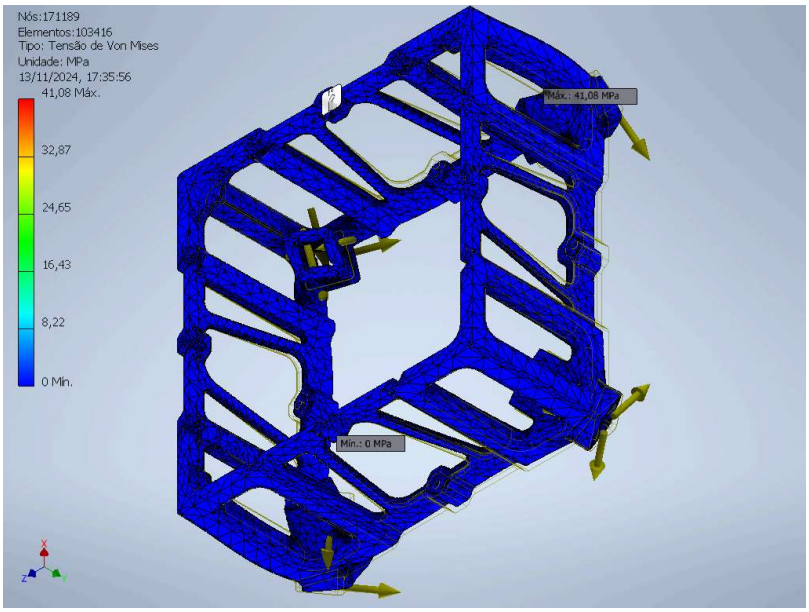
Resumo de resultados

Nome	Mínima	Máxima
Volume	170442 mm^3	
Massa	0,234528 kg	
Tensão de Von Mises	0,00198193 MPa	41,0808 MPa
Primeira tensão principal	-32,3107 MPa	30,4743 MPa
Terceira tensão principal	-75,0182 MPa	19,9469 MPa
Deslocamento	0 mm	1,12694 mm
Fator de segurança	0,528228 s_m	15 s_m
Tensão XX	-50,8518 MPa	20,2535 MPa
Tensão XY	-9,26669 MPa	14,6491 MPa
Tensão XZ	-12,7898 MPa	18,6866 MPa
Tensão YY	-46,8634 MPa	27,4819 MPa
Tensão YZ	-11,3927 MPa	18,416 MPa
Tensão ZZ	-51,2214 MPa	27,1908 MPa
Deslocamento X	-0,424937 mm	0,713183 mm
Deslocamento Y	-1,12188 mm	0,372638 mm
Deslocamento Z	-0,714007 mm	0,422749 mm
Deformação equivalente	0,0000039026 s_m	0,0790276 s_m
Primeira deformação principal	0,00000233305 s_m	0,0512973 s_m
Terceira deformação principal	-0,0840104 s_m	-0,00000222416 s_m
Deformação XX	-0,0244062 s_m	0,0253544 s_m
Deformação XY	-0,0266055 s_m	0,0420588 s_m
Deformação XZ	-0,0367208 s_m	0,0536509 s_m
Deformação YY	-0,0439675 s_m	0,0295107 s_m
Deformação YZ	-0,0327094 s_m	0,0528741 s_m
Deformação ZZ	-0,0268663 s_m	0,0274429 s_m

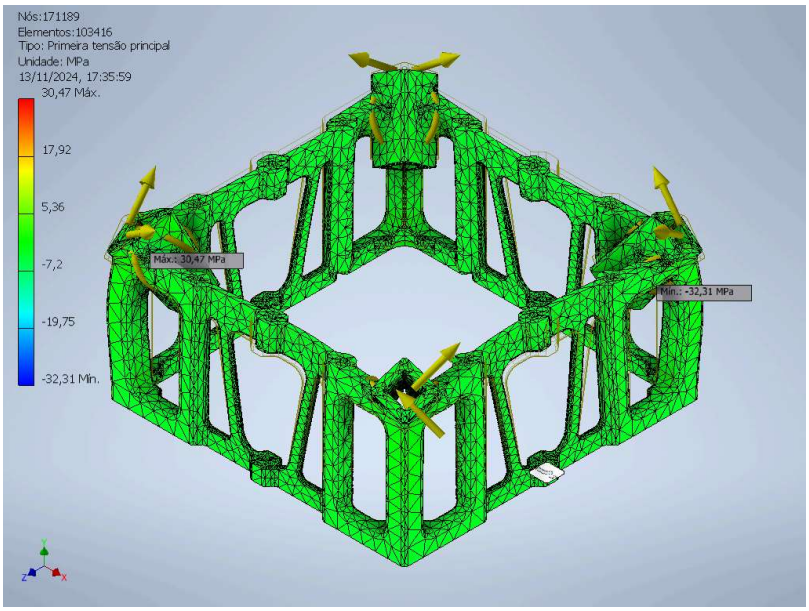
Figuras

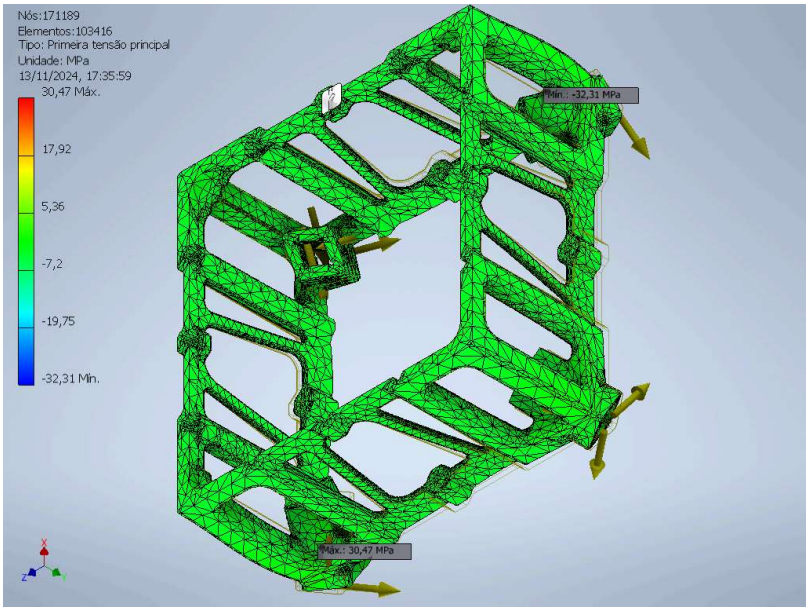
Tensão de Von Mises



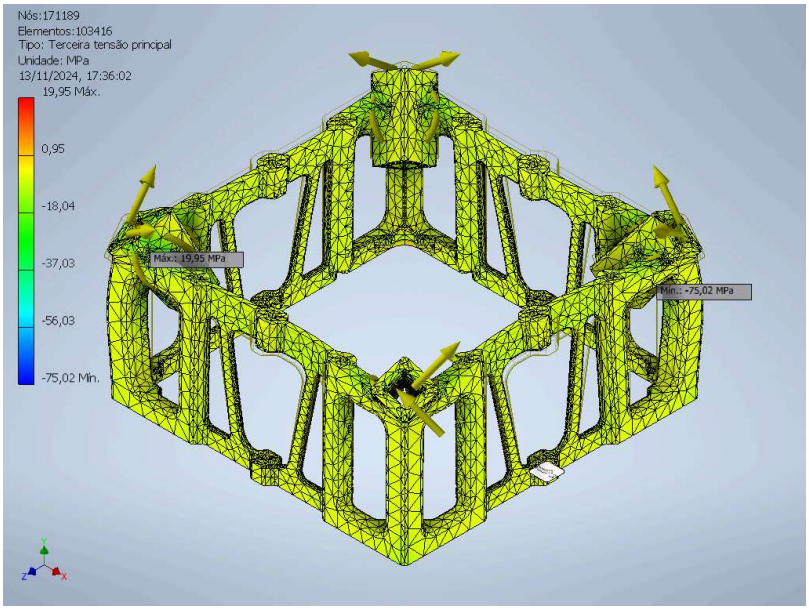


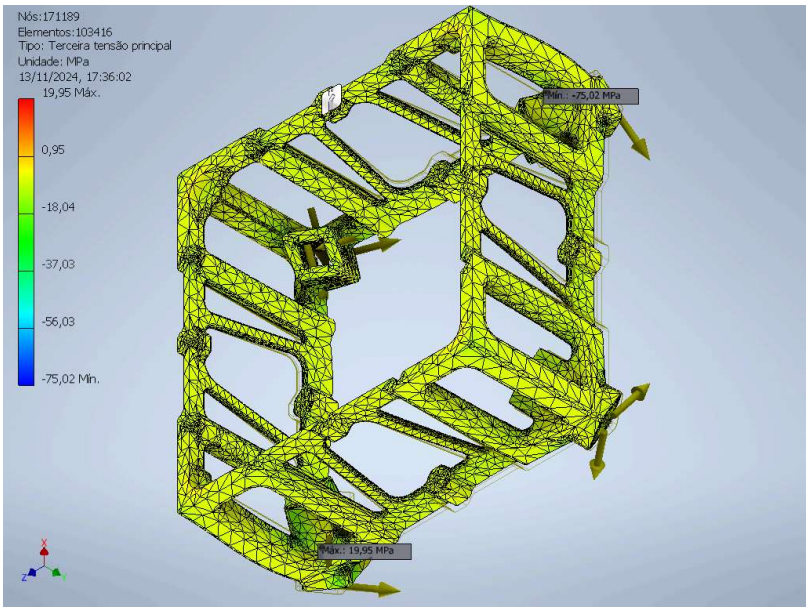
Primeira tensão principal



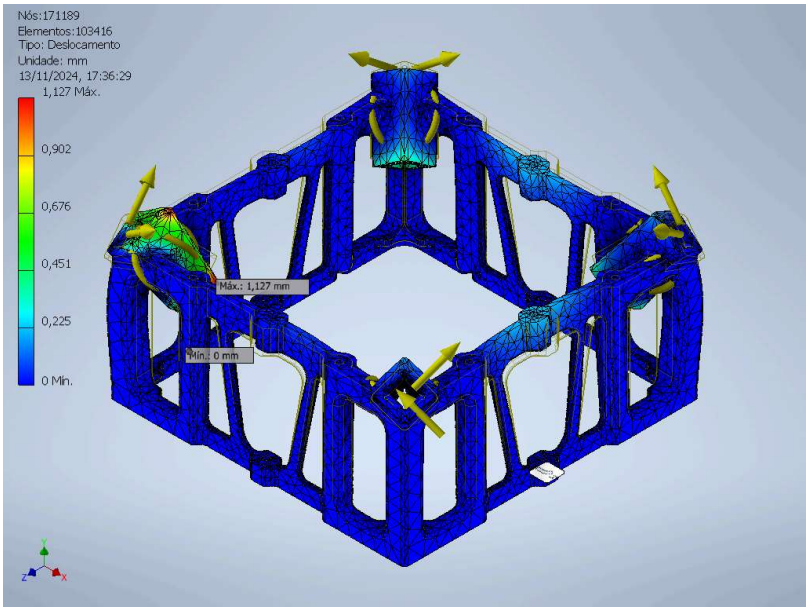


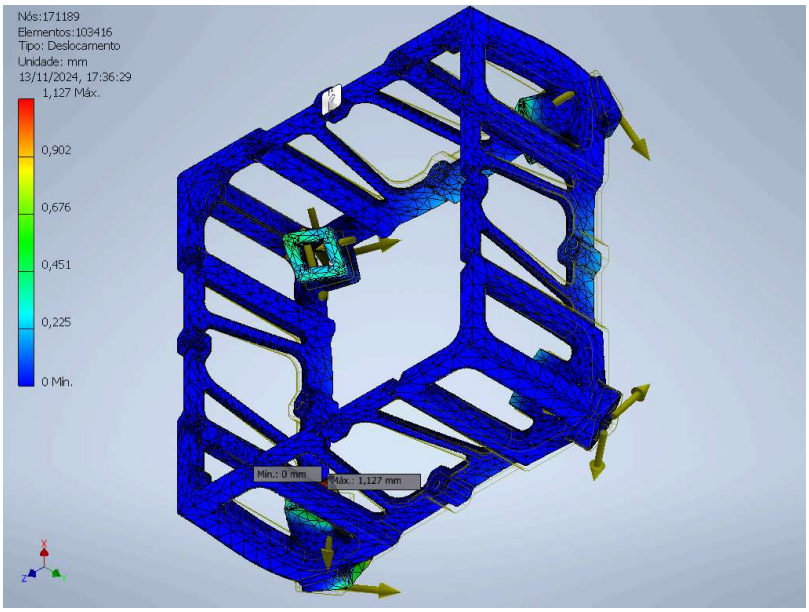
Terceira tensão principal



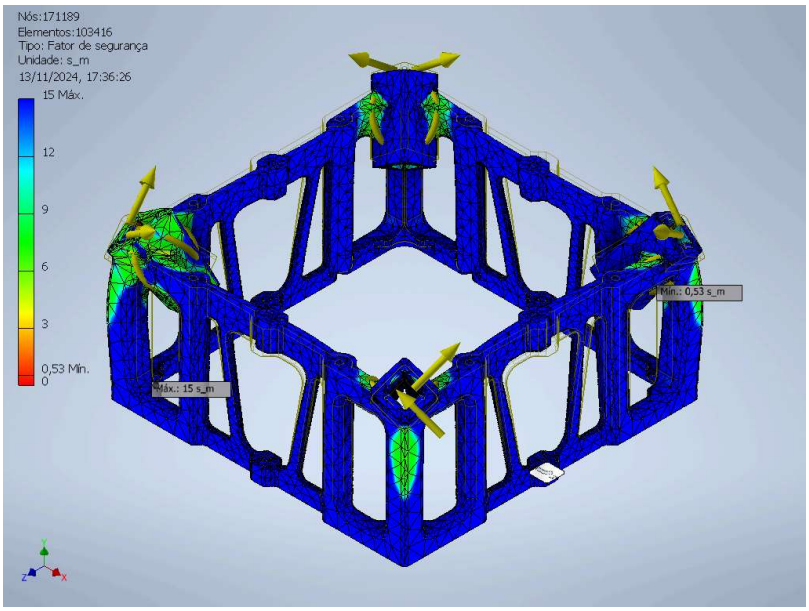


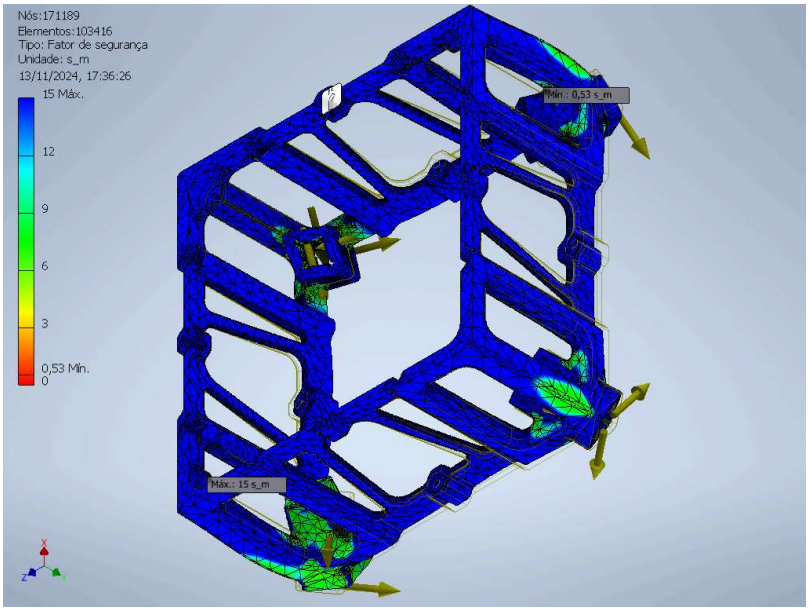
Deslocamento



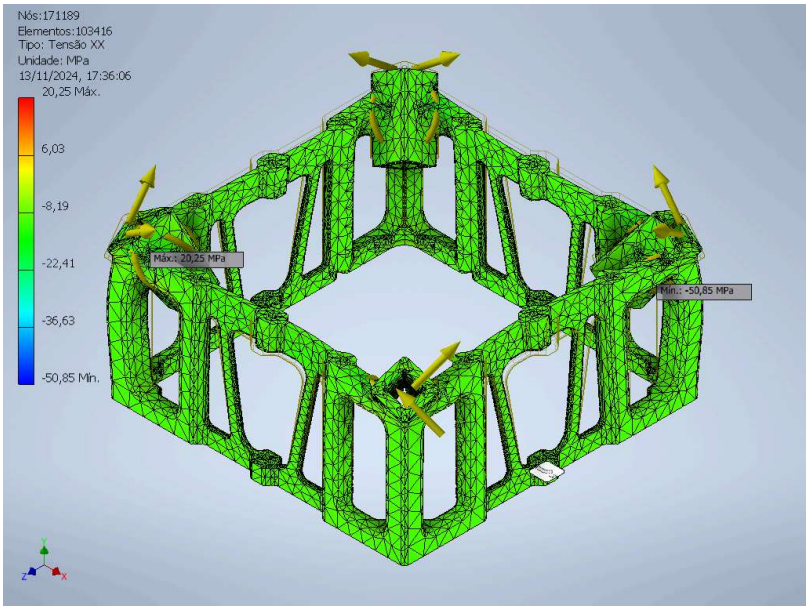


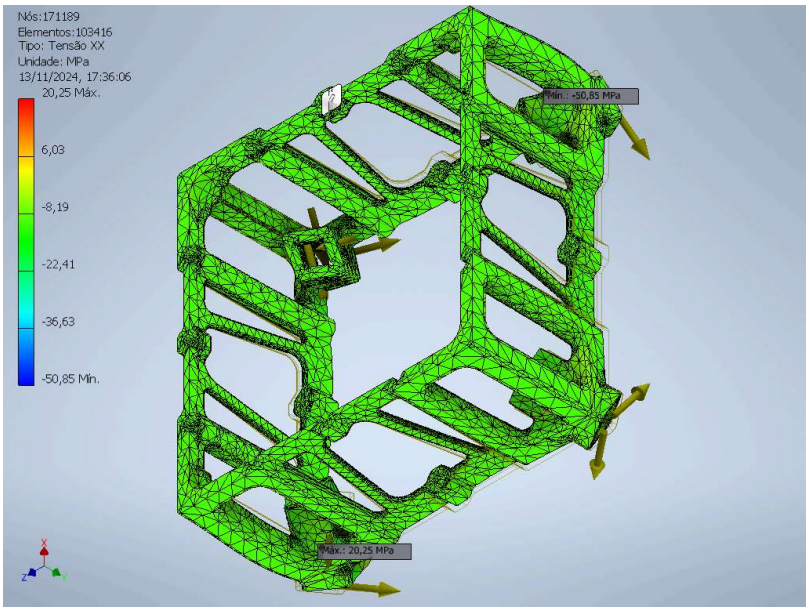
Fator de segurança



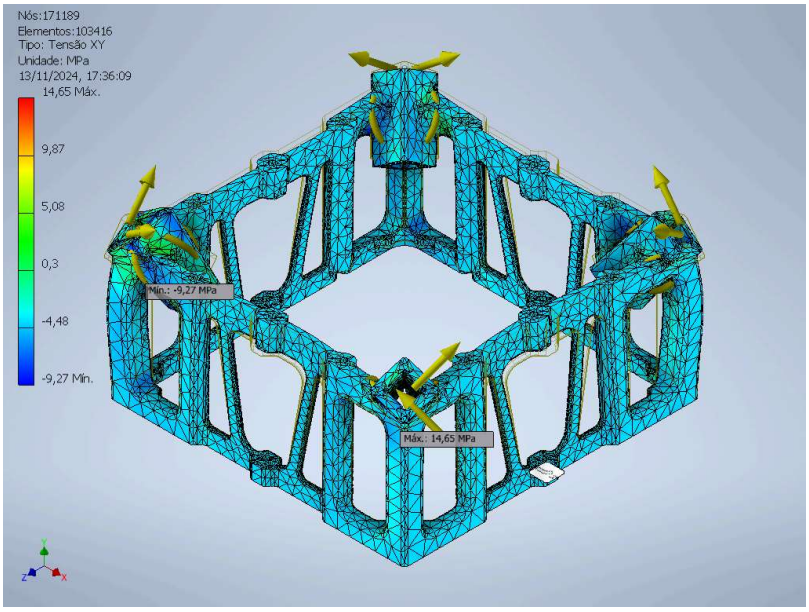


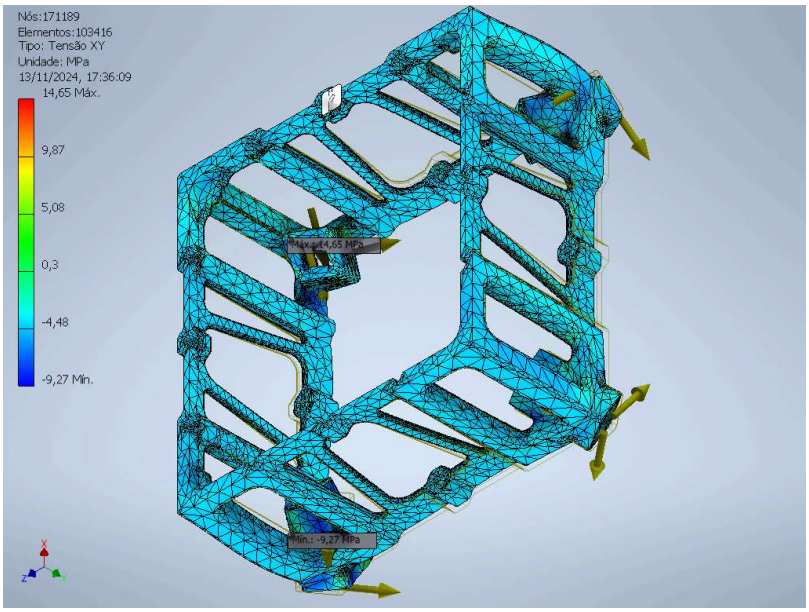
Tensão XX



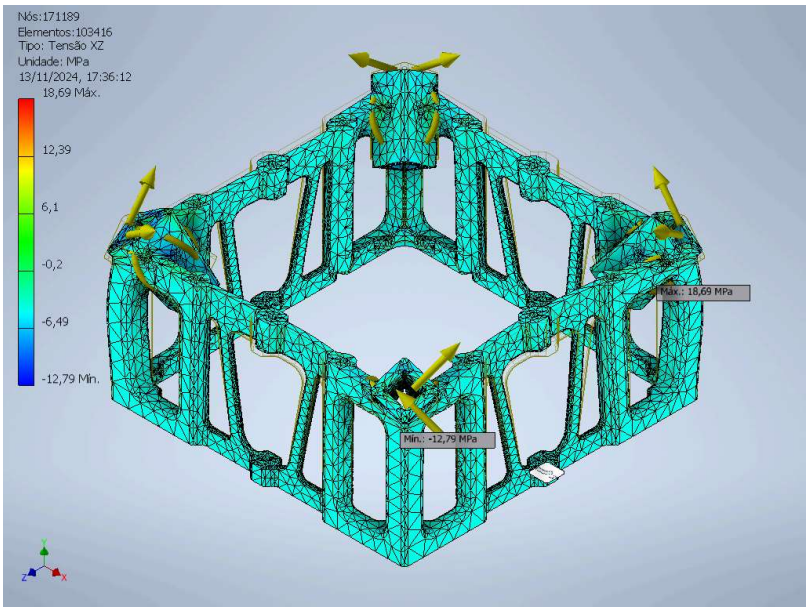


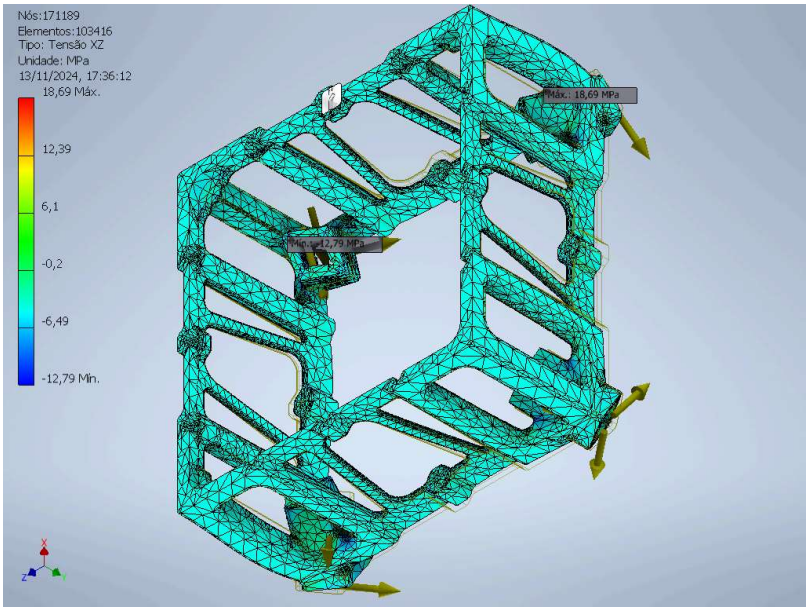
Tensão XY


Nós:171189
Elementos:103416
Tipo: Tensão XY
Unidade: MPa
13/11/2024, 17:36:09
14,65 Máx.
9,87
5,08
0,3
-4,48
-9,27 Mín.
Mín.: -9,27 MPa
Máx.: 14,65 MPa

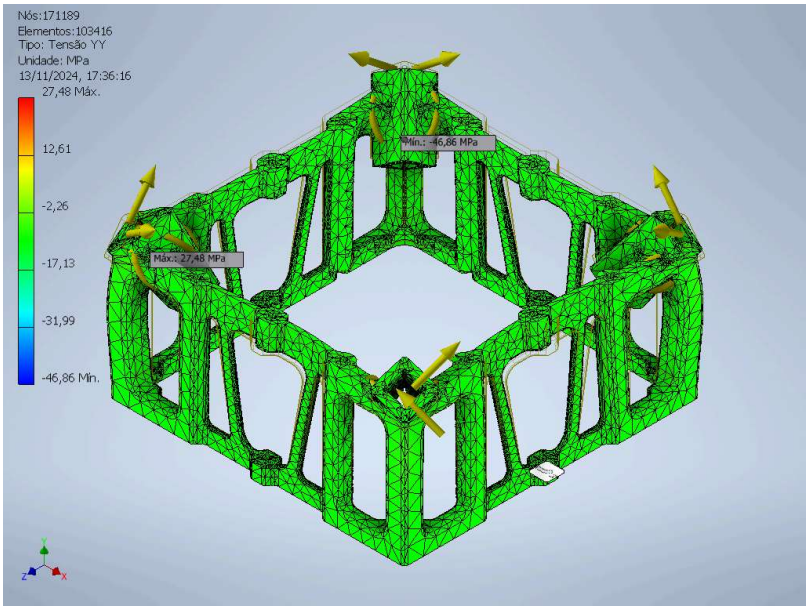

Nós:171189
Elementos:103416
Tipo: Tensão XY
Unidade: MPa
13/11/2024, 17:36:09
14,65 Máx.
9,87
5,08
0,3
-4,48
-9,27 Mín.
Máx.: 14,65 MPa
Mín.: -9,27 MPa

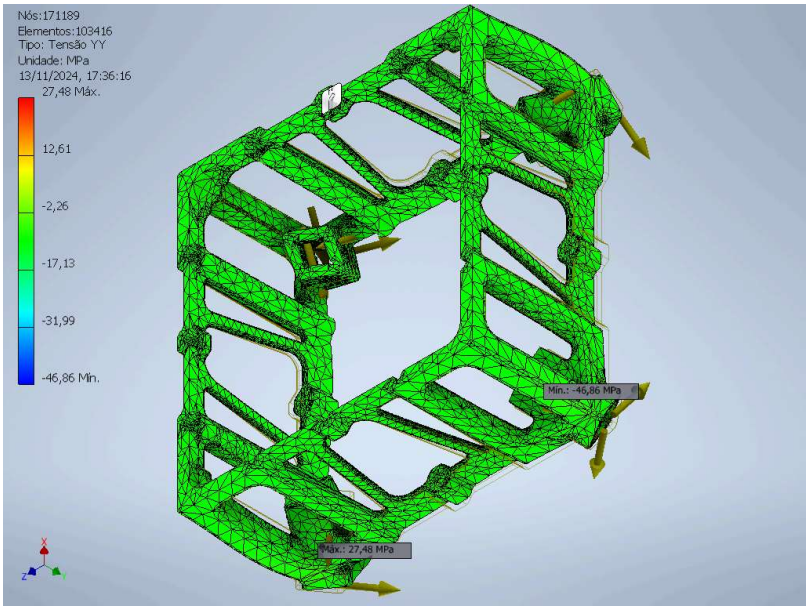
Tensão XZ


Nós:171189
Elementos:103416
Tipo: Tensão XZ
Unidade: MPa
13/11/2024, 17:36:12
18,69 Máx.
12,39
6,1
-0,2
-6,49
-12,79 Mín.
Máx.: 18,69 MPa
Mín.: -12,79 MPa

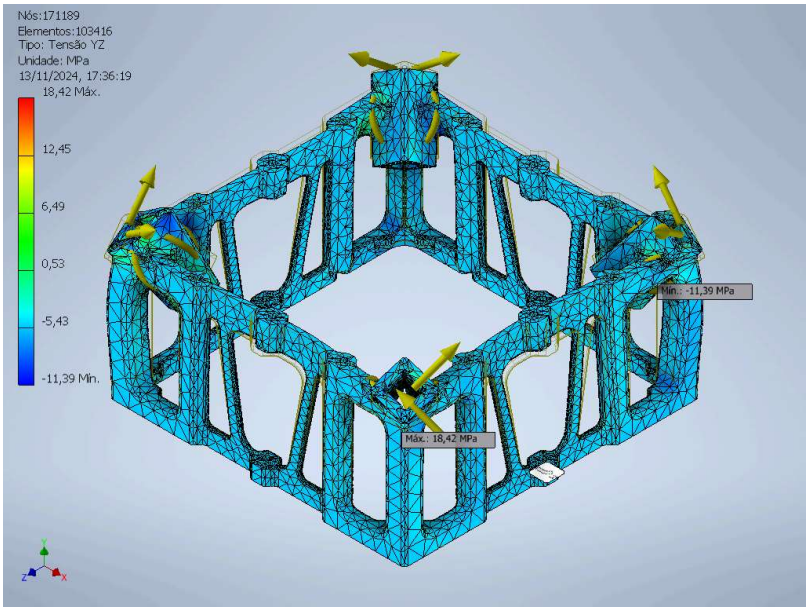


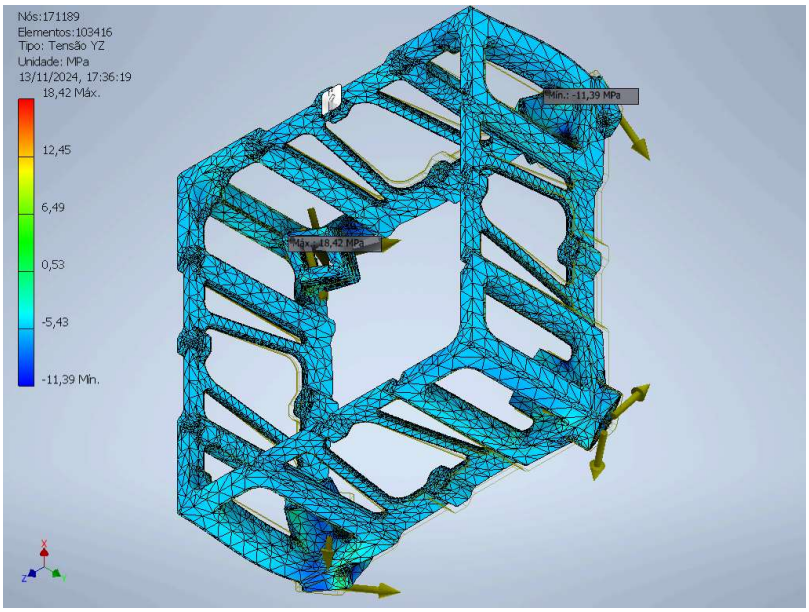
Tensão YY



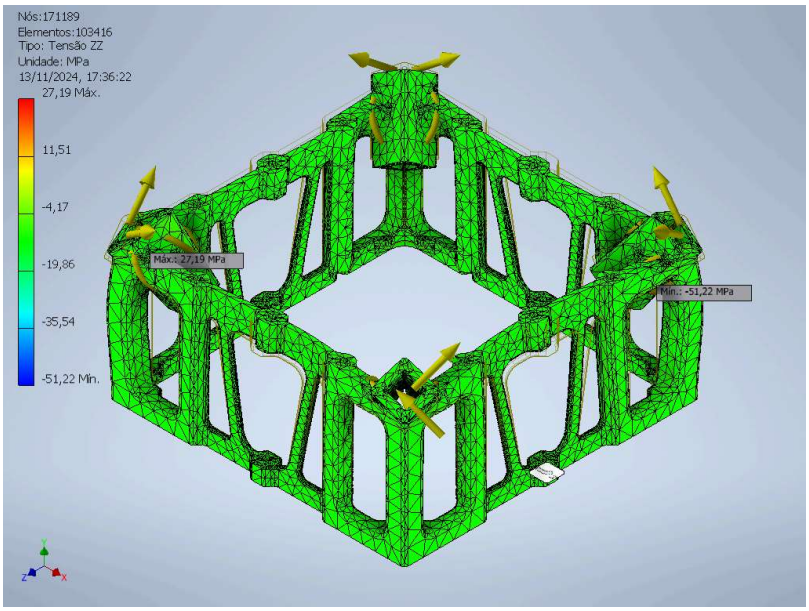


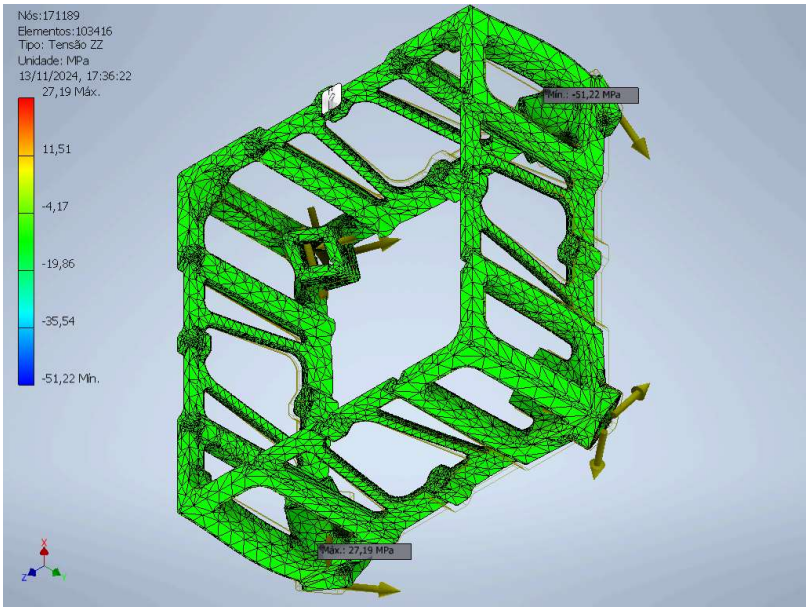
Tensão YZ


Nós:171189
Elementos:103416
Tipo: Tensão YZ
Unidade: MPa
13/11/2024, 17:36:19
18,42 Máx.
12,45
6,49
0,53
-5,43
-11,39 Mín.
Mín.: -11,39 MPa
Máx.: 18,42 MPa

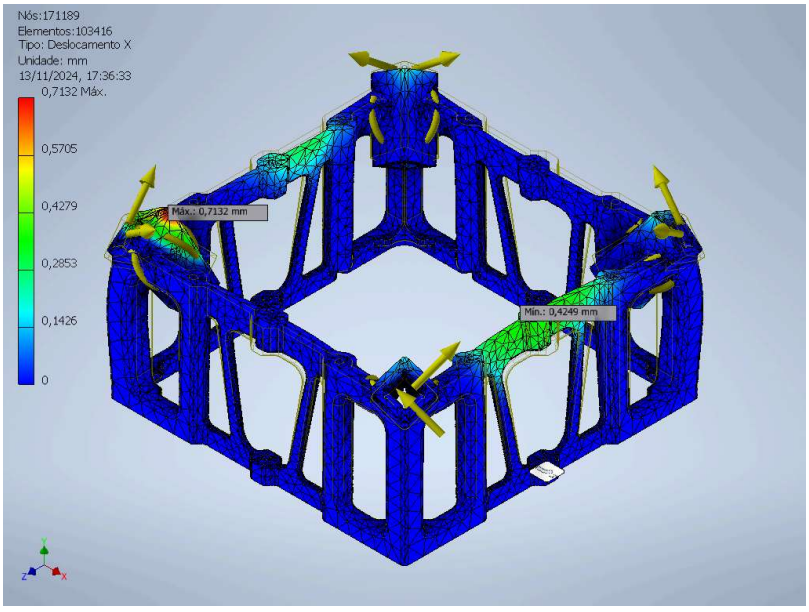

Nós:171189
Elementos:103416
Tipo: Tensão YZ
Unidade: MPa
13/11/2024, 17:36:19
18,42 Máx.
12,45
6,49
0,53
-5,43
-11,39 Mín.
Mín.: -11,39 MPa
Máx.: 18,42 MPa

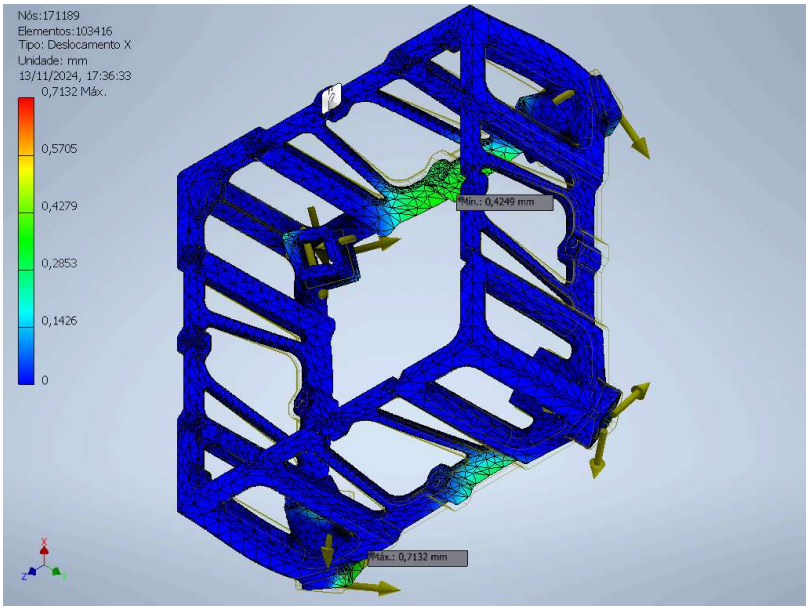
Tensão ZZ


Nós:171189
Elementos:103416
Tipo: Tensão ZZ
Unidade: MPa
13/11/2024, 17:36:22
27,19 Máx.
11,51
-4,17
-19,86
-35,54
-51,22 Mín.
Máx.: 27,19 MPa
Mín.: -51,22 MPa

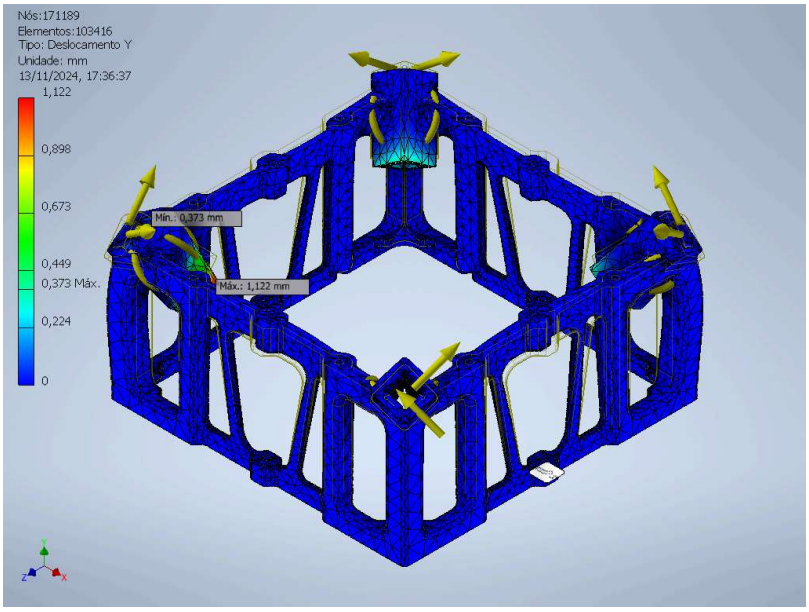


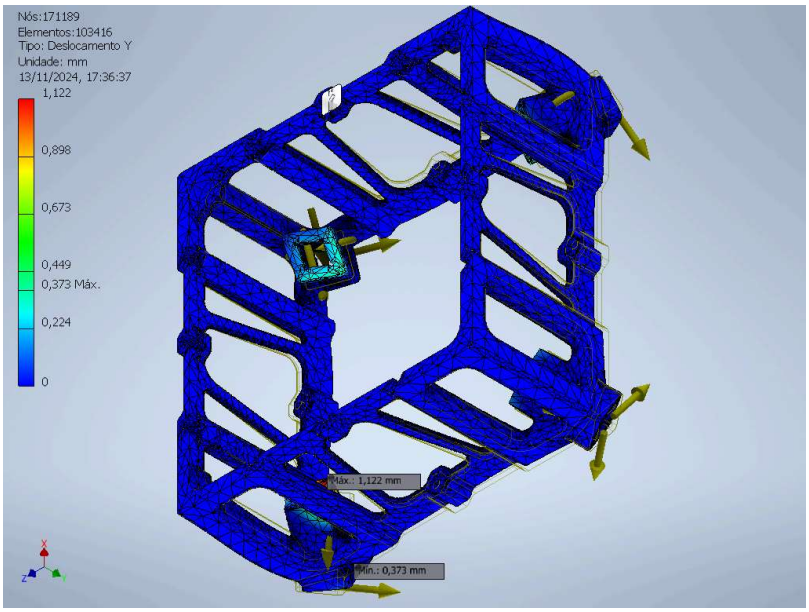
Deslocamento X



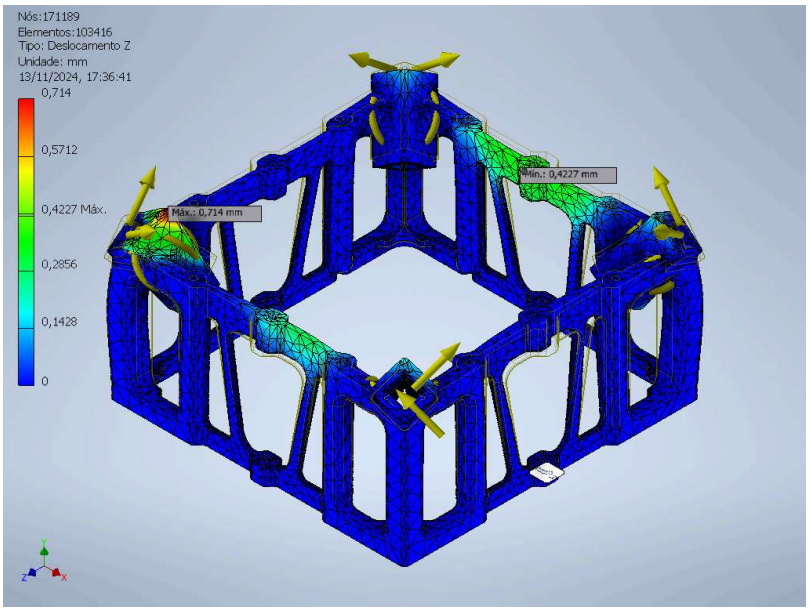


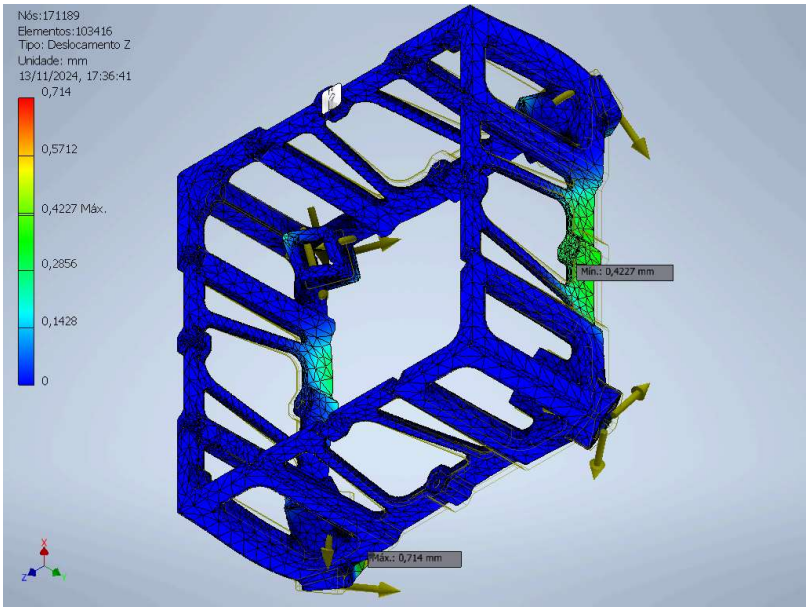
Deslocamento Y



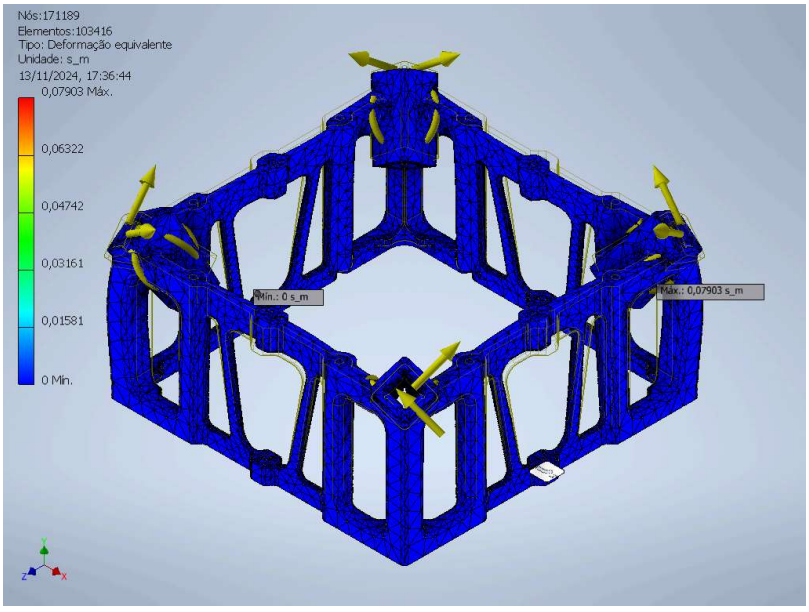


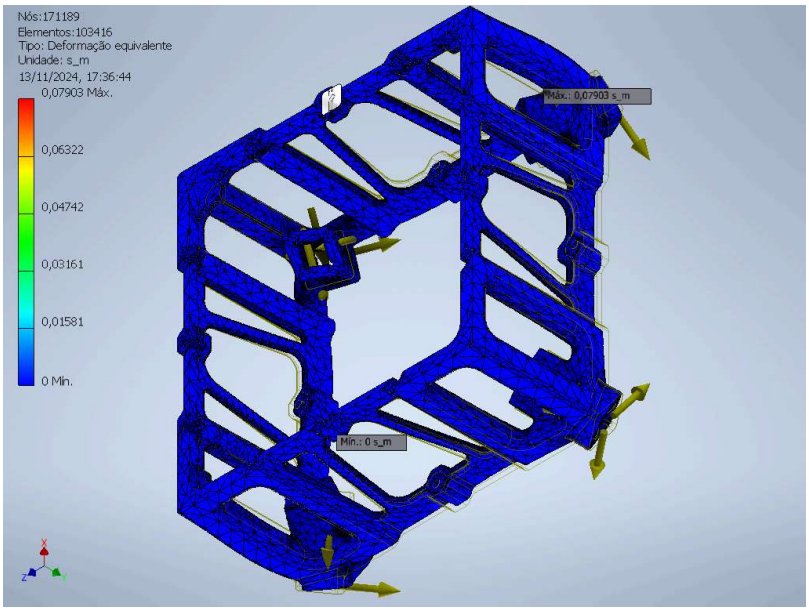
Deslocamento Z



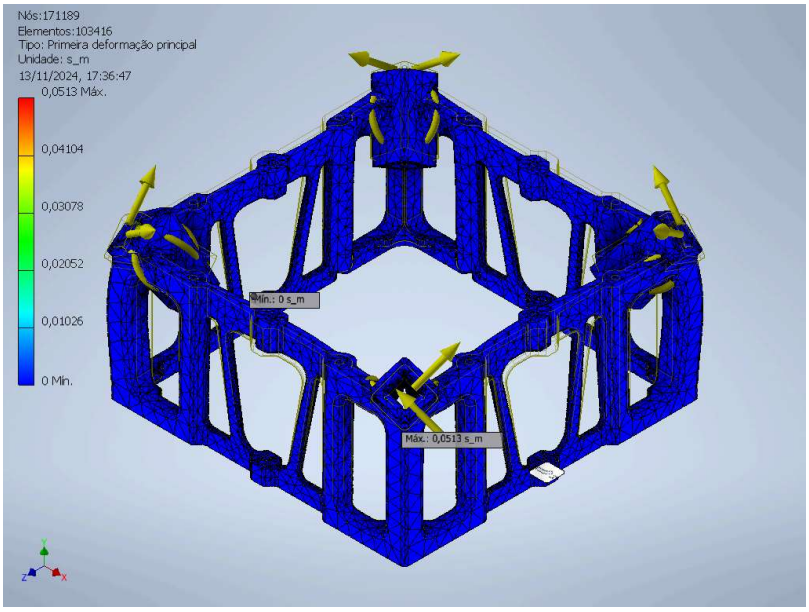


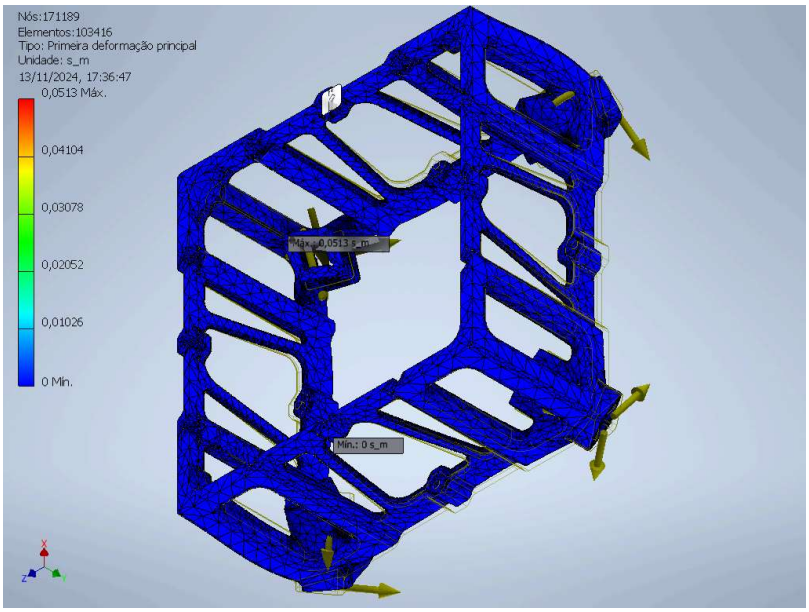
Deformação equivalente



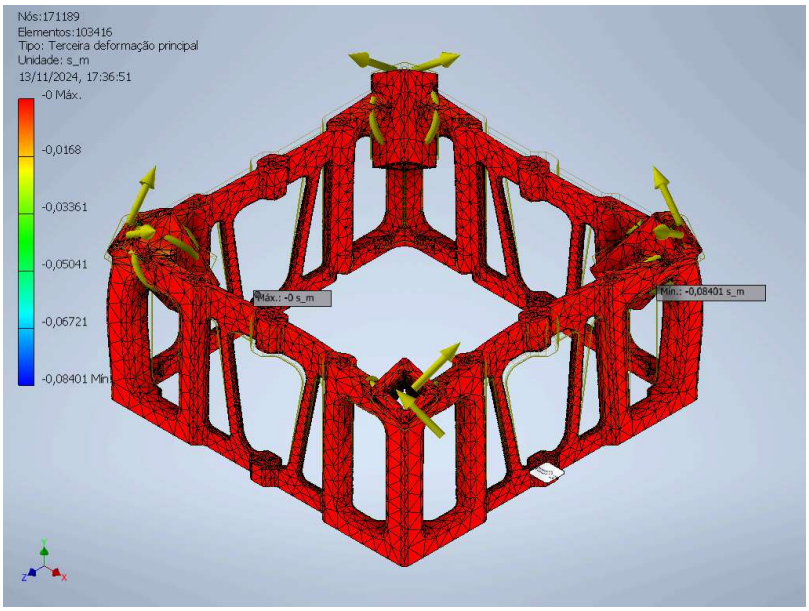


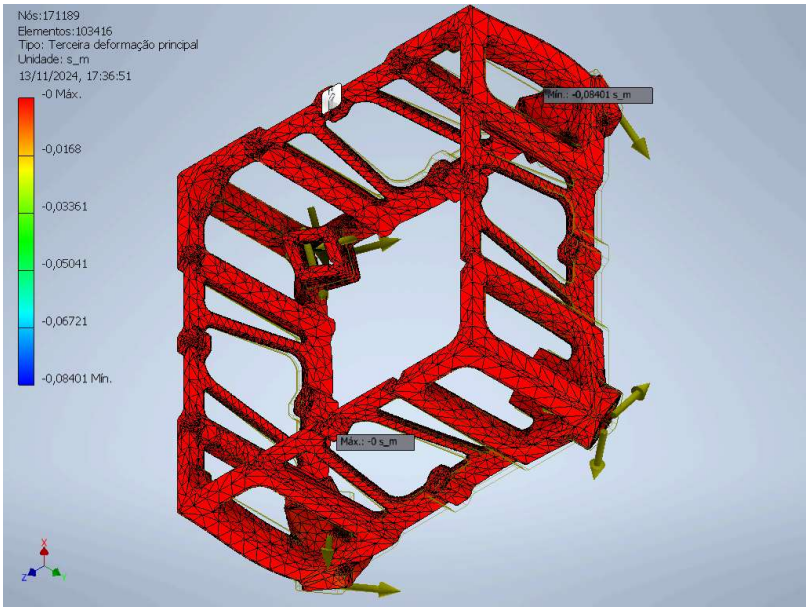
Primeira deformação principal



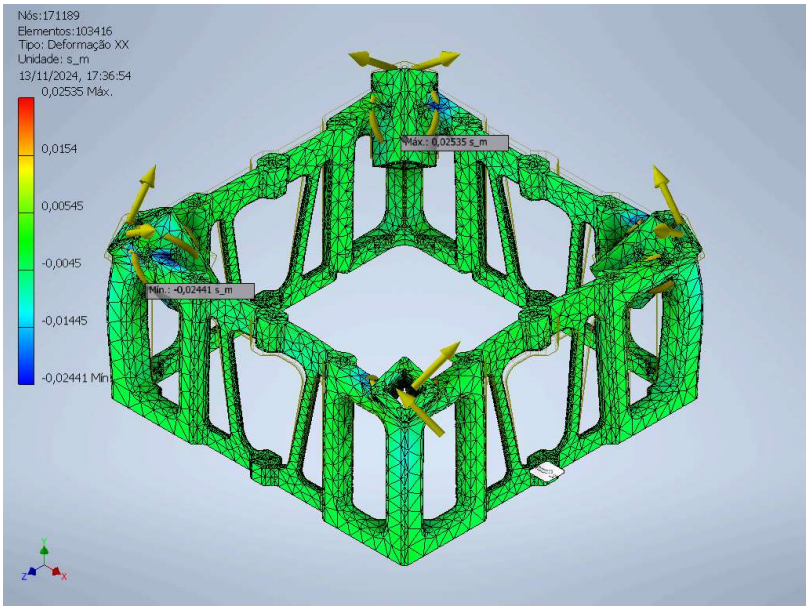


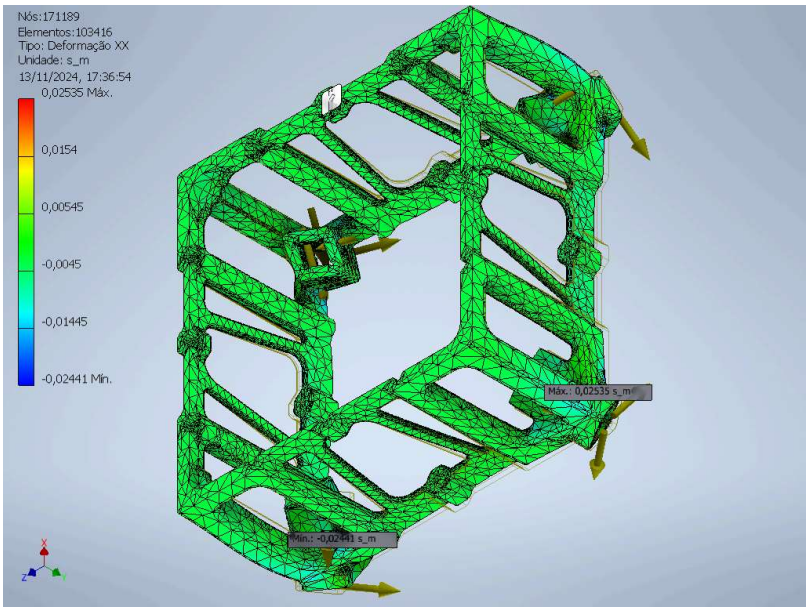
Terceira deformação principal



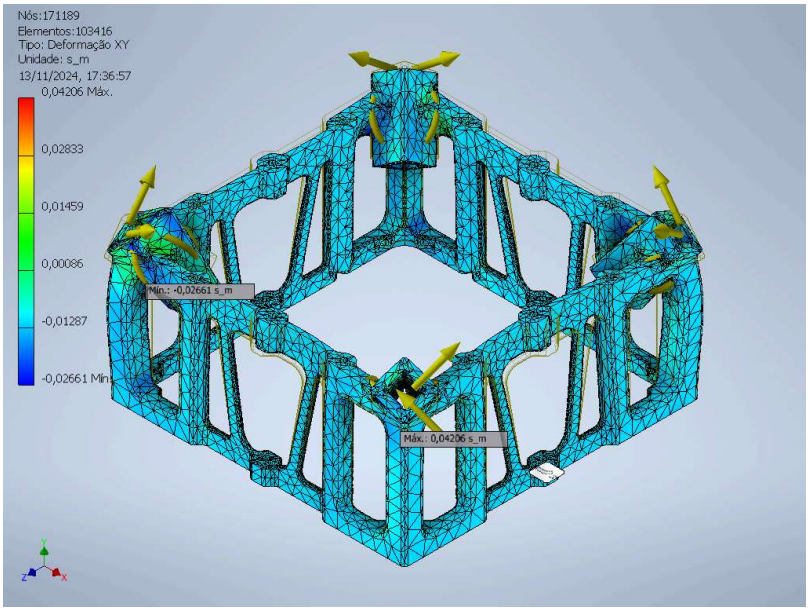


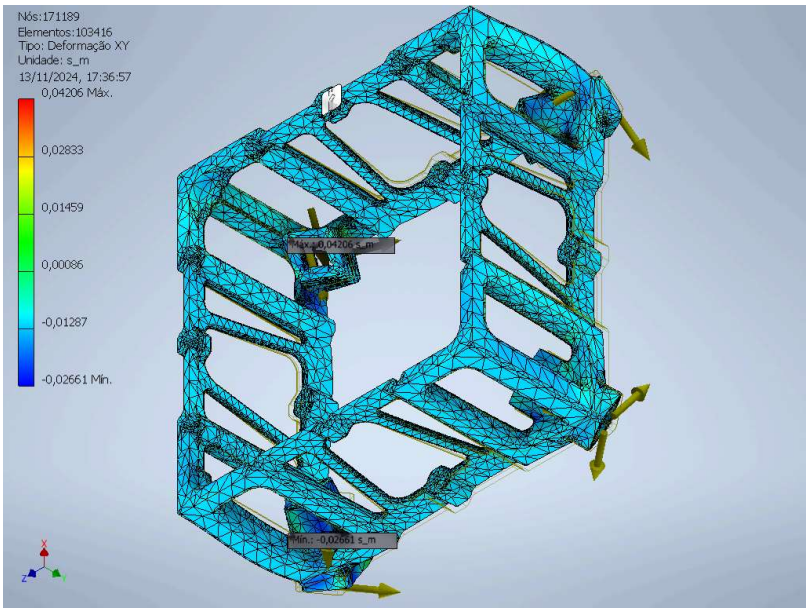
Deformação XX



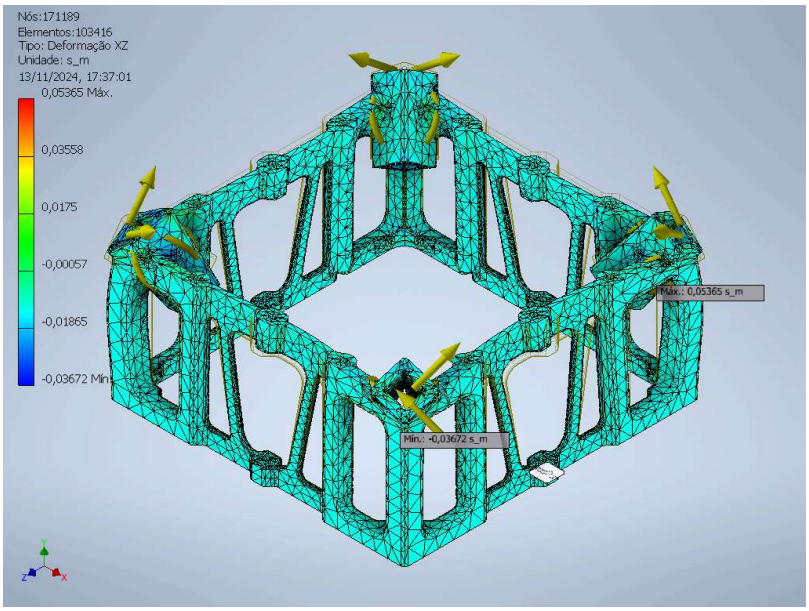


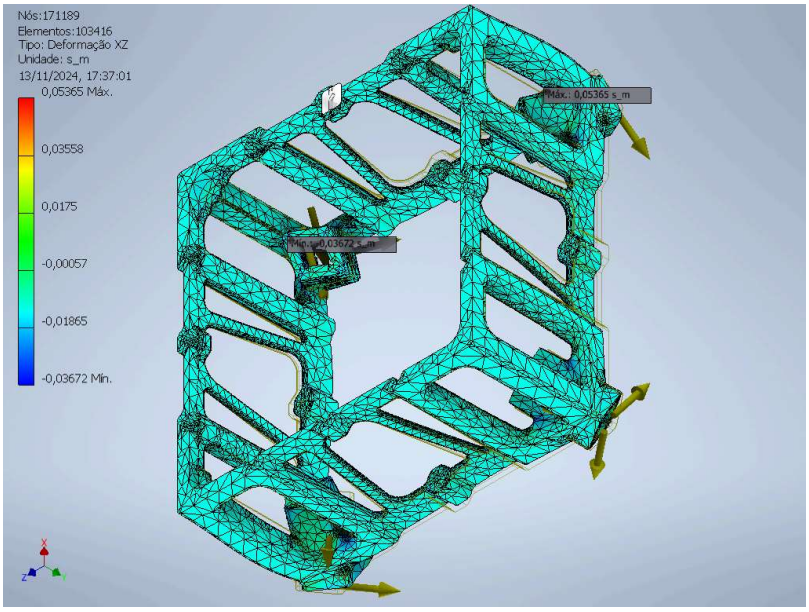
Deformação XY



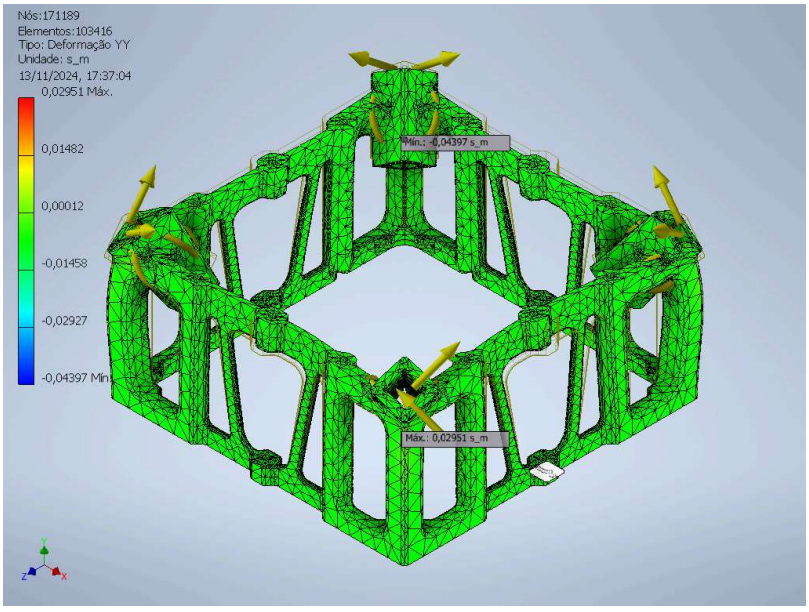


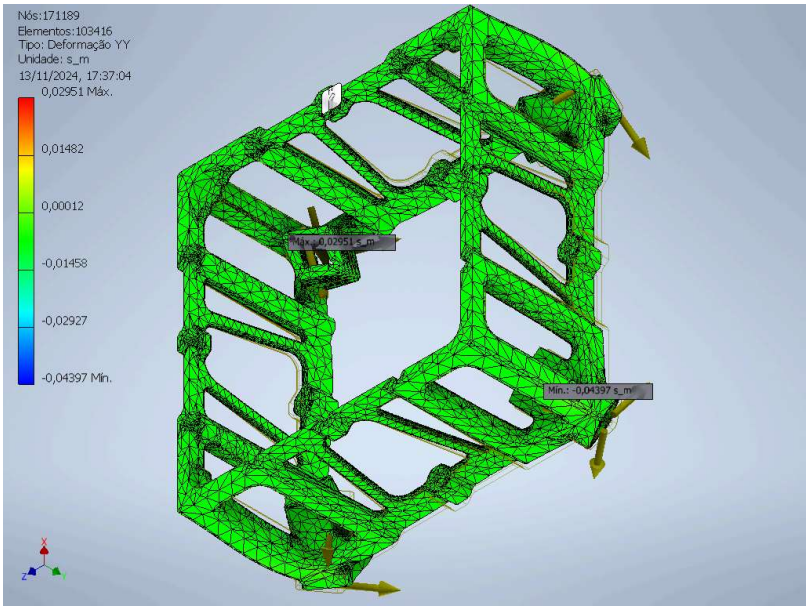
Deformação XZ



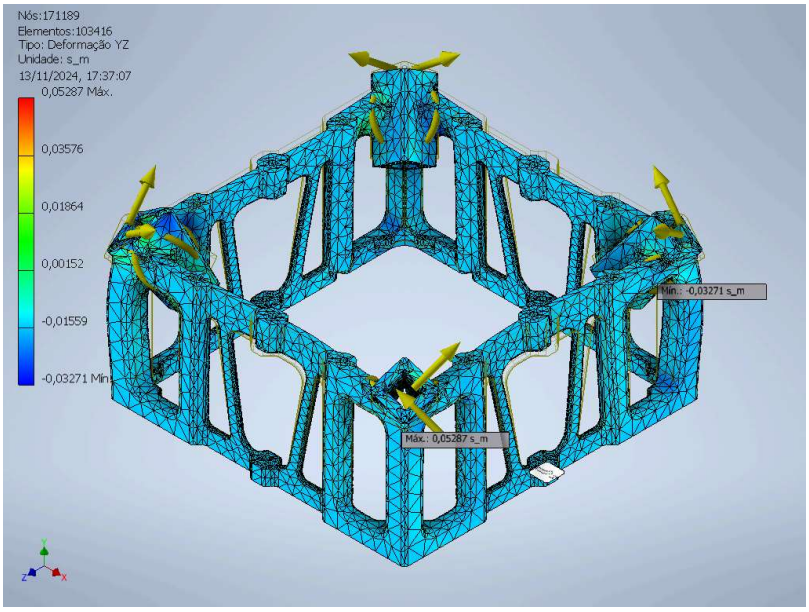


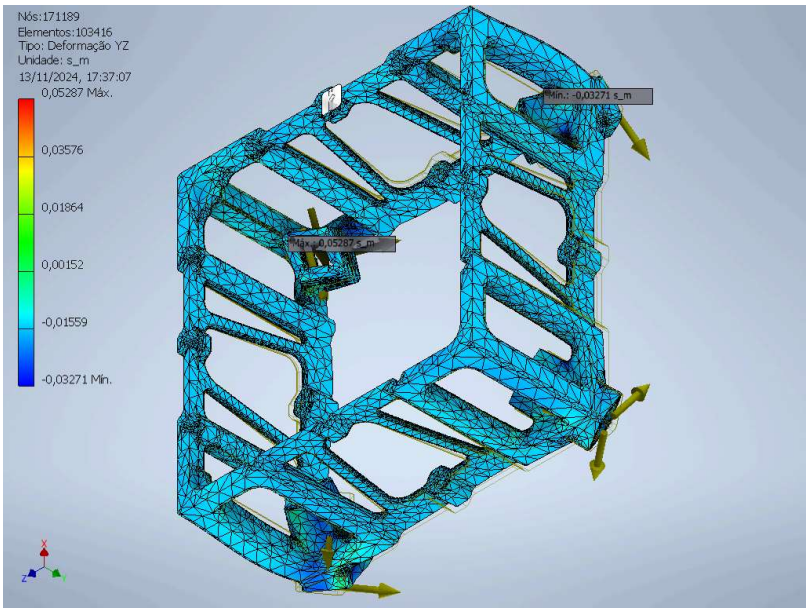
Deformação YY



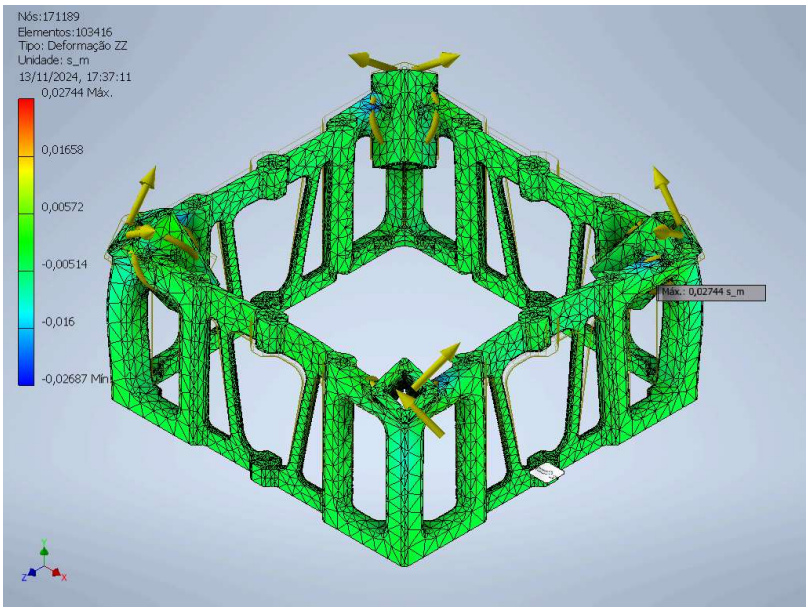


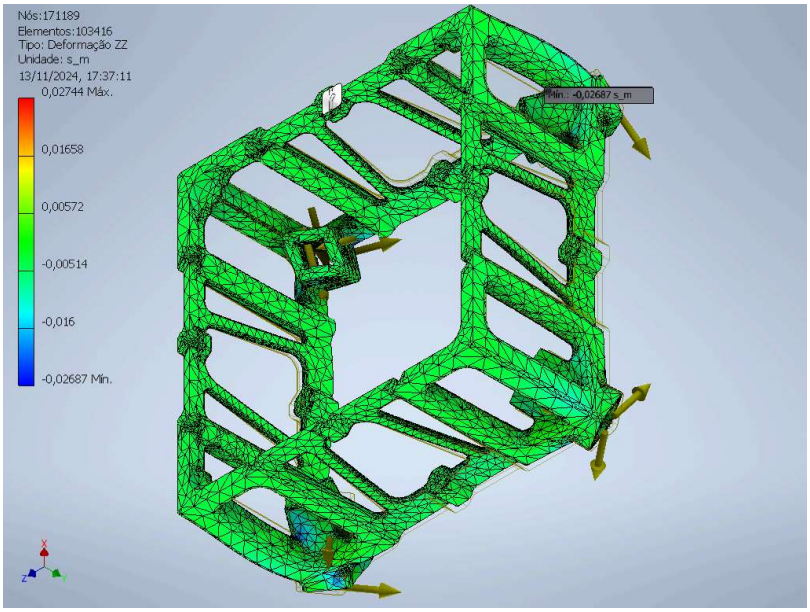
Deformação YZ





Deformação ZZ





D:\fabio\OneDrive\cursos\puc\00_DISSERTAÇÃO\04_Desenvolvimentos\D_Modelo Físico\Projeto\MEF\conceito4_IS3D.ipt