

Relatório de análise de tensão - Invólucro Quanton Iron



Arquivo analisado:	conceito4_QIron.upt
Versão do Autodesk Inventor:	2024.2 (Build 282272000, 272)
Data de criação:	13/11/2024, 17:49
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, 17:48
Estado do modelo	[Principal]
Detectar e eliminar modos de corpo rígido	Não

iProperties

Resumo

Autor	Fabio P. C.
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Projeto

Nº da peça	conceito4_QIron
Projetista	Fabio P. C.
Custo estimado	R\$ 0,00
Data da criação	15/01/2022

Status

Estado do projeto	TrabalhoEmCurso
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Física

Material	Quanton Iron
Densidade	2,5 g/cm ³
Massa	0,426104 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

Materiais

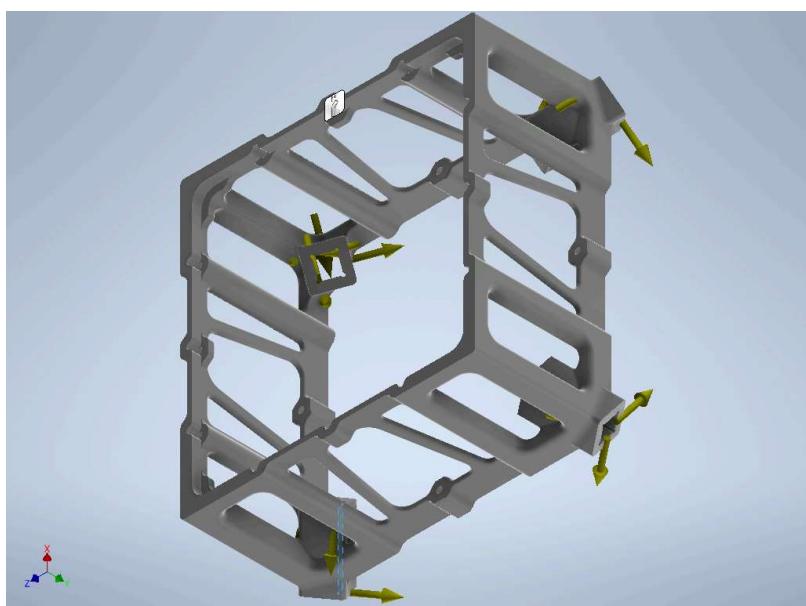
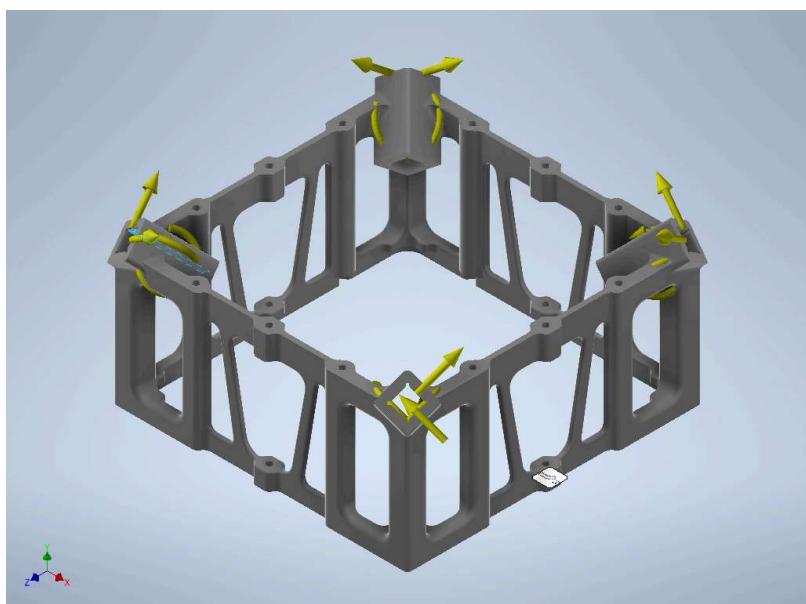
Nome	Quanton Iron	
Geral	Densidade de massa	2,5 g/cm ³
	Resistência à escoamento	15,9 MPa
	Resistência máxima à tração	15,9 MPa
Tensão	Módulo de Young	4,946 GPa
	Coeficiente de Poisson	0,47 s_m
	Módulo cortante	1,68231 GPa
Nome(s) de peça	conceito4_QIron.ckpt	

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

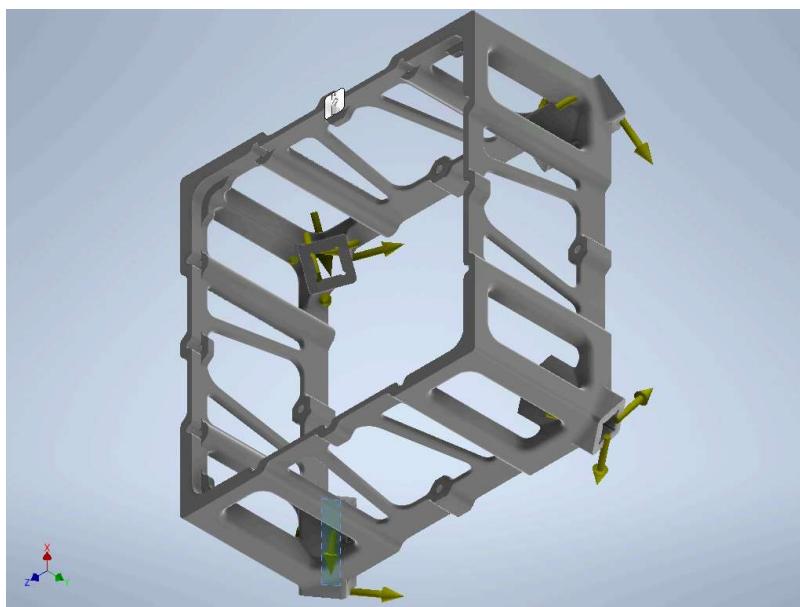
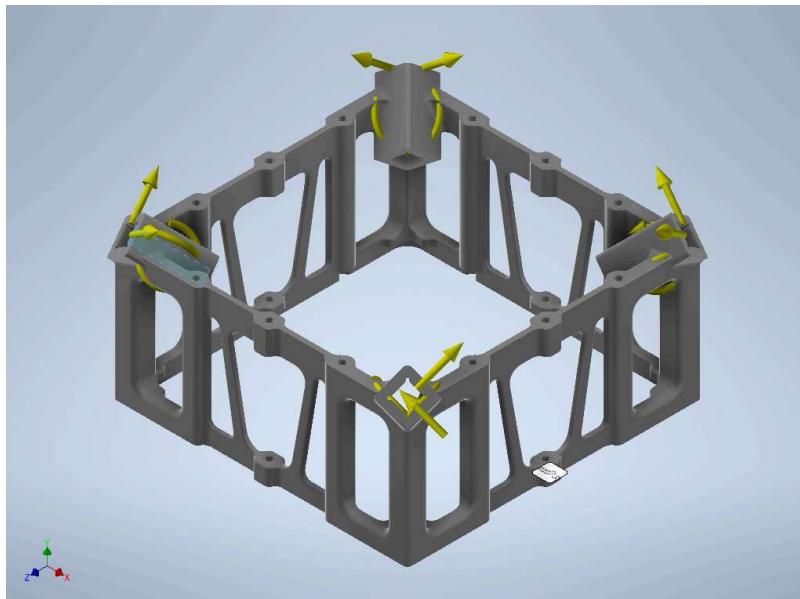
Faces selecionadas



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

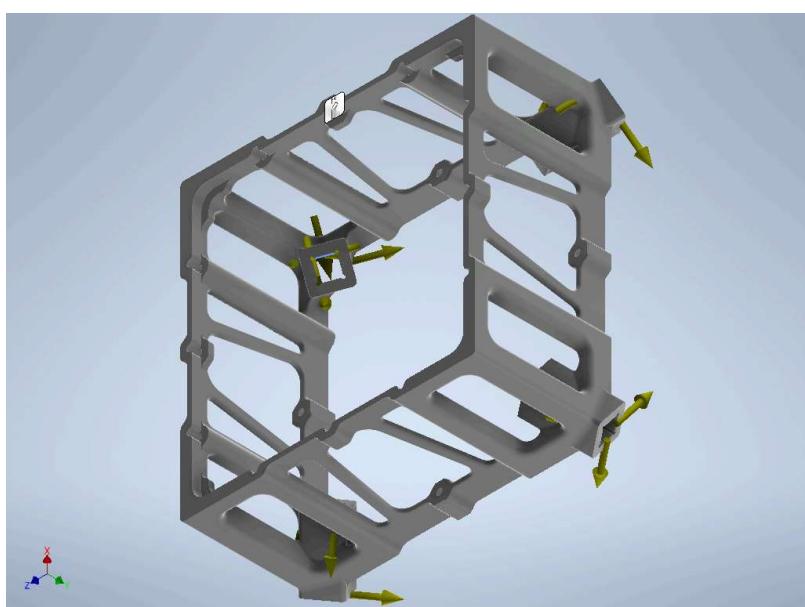
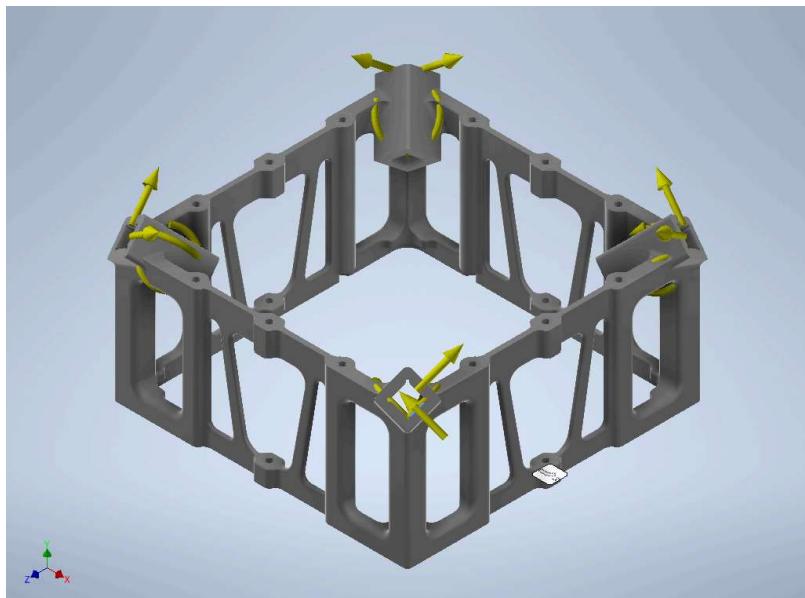
Faces selecionadas



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

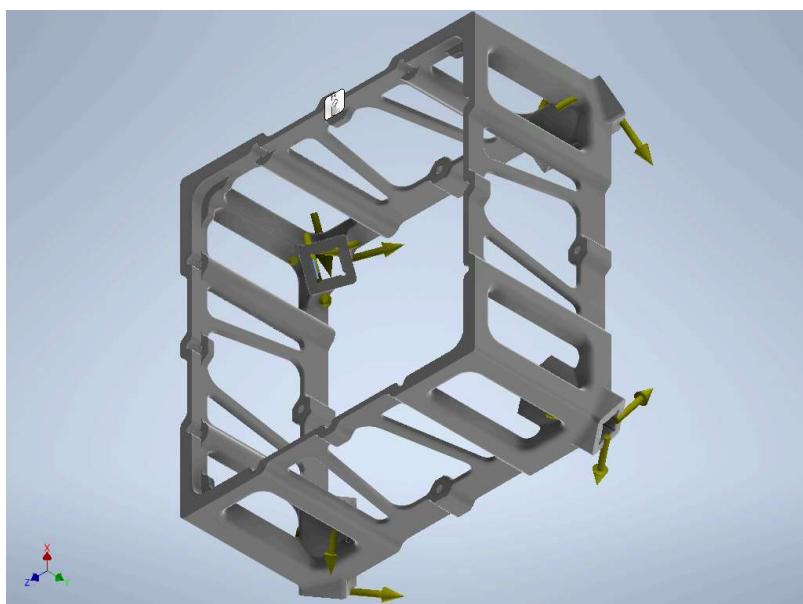
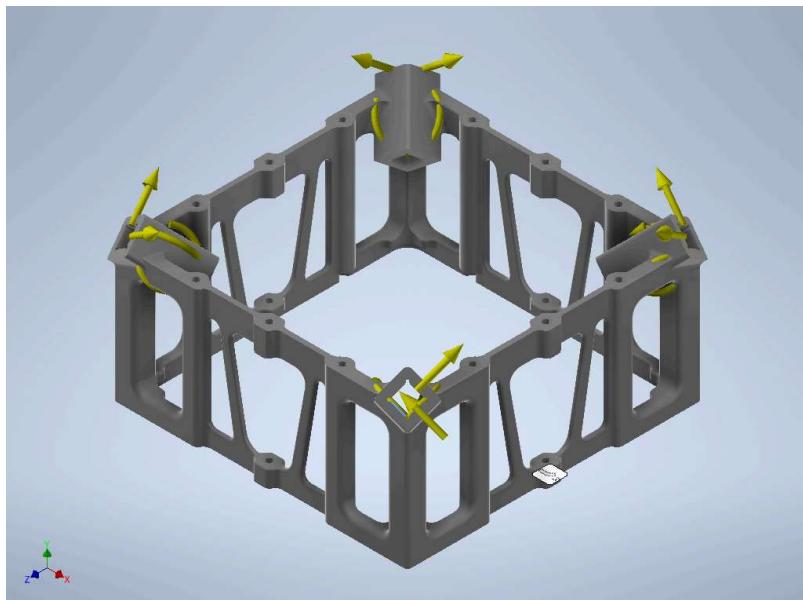
Faces selecionadas



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

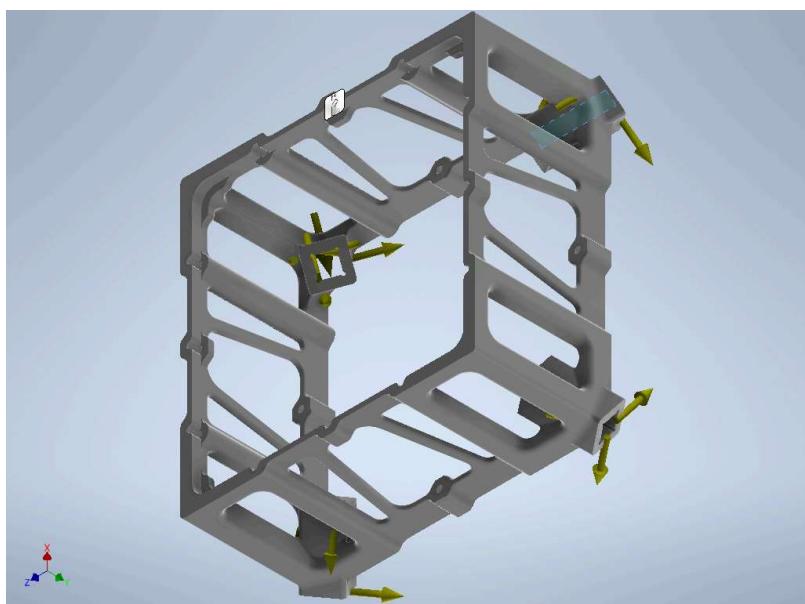
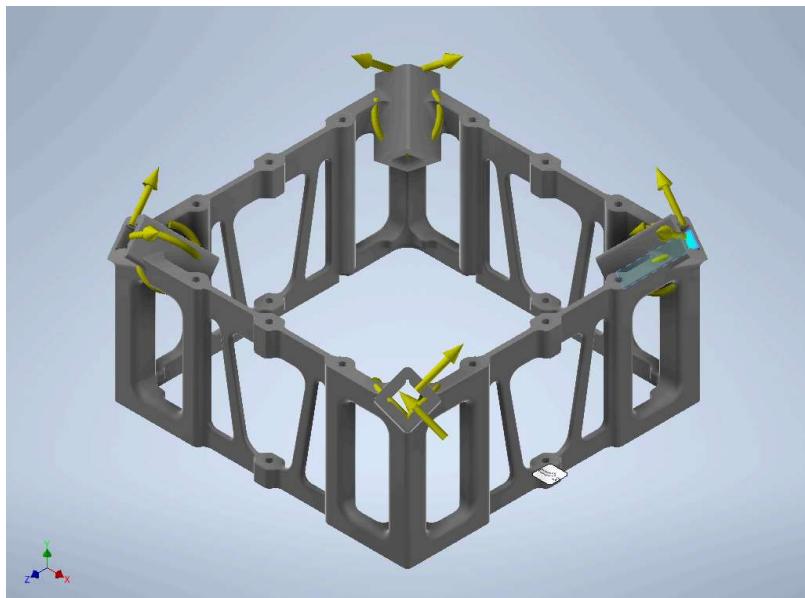
Faces selecionadas



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

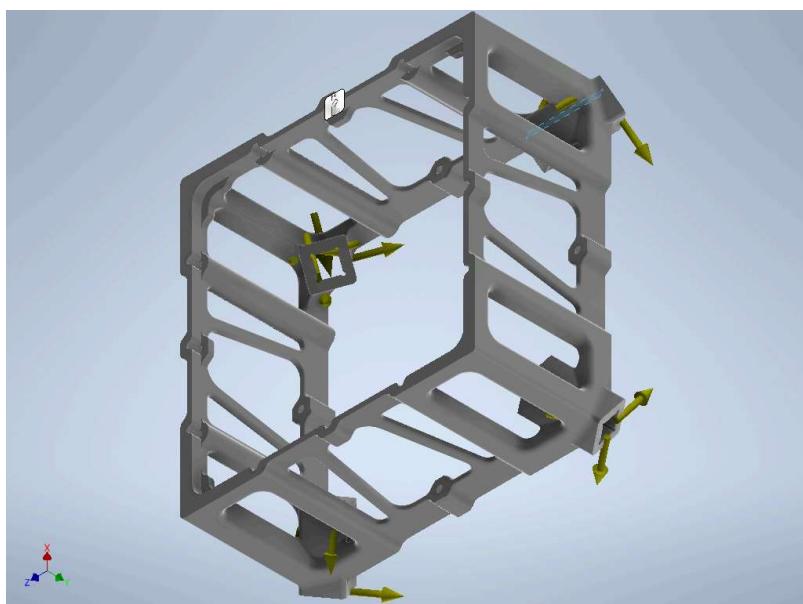
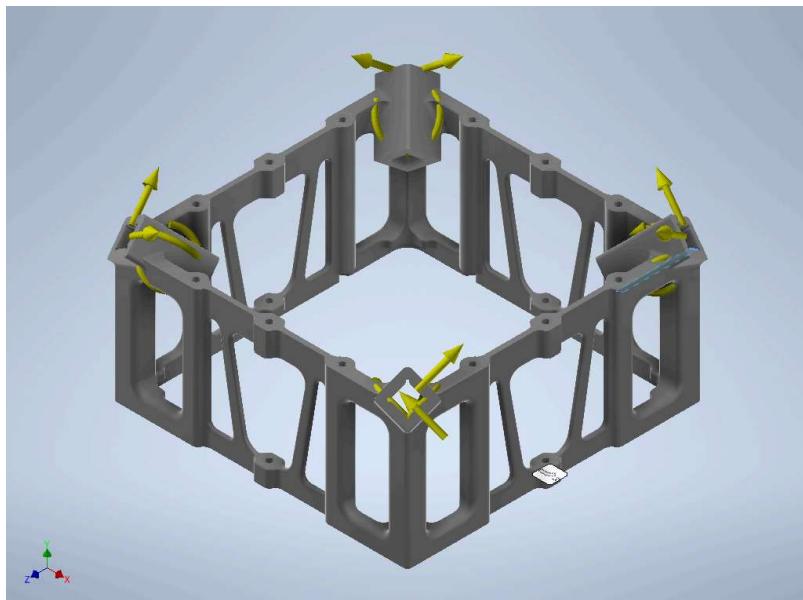
Faces selecionadas



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

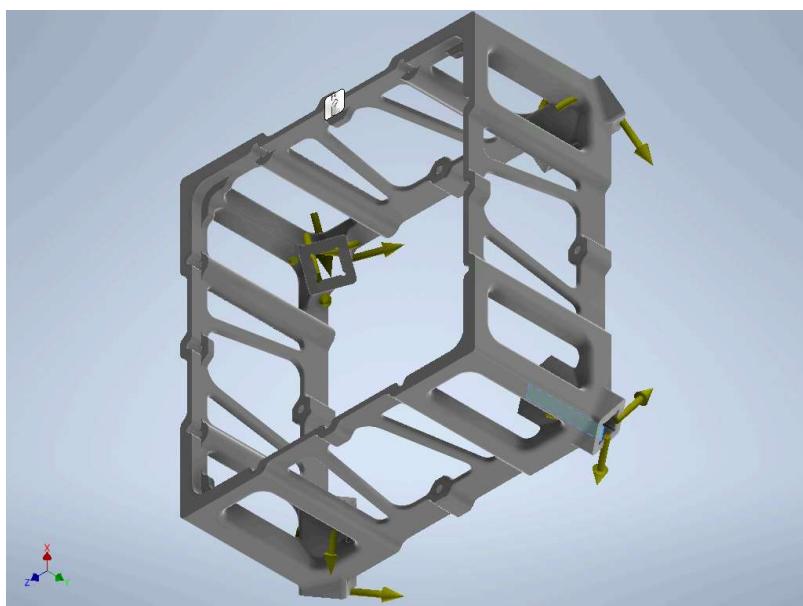
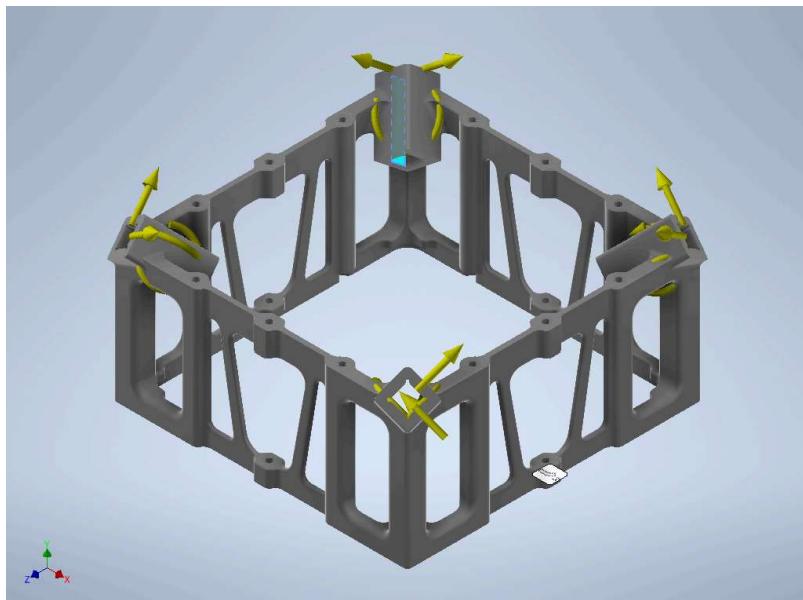
Faces selecionadas



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

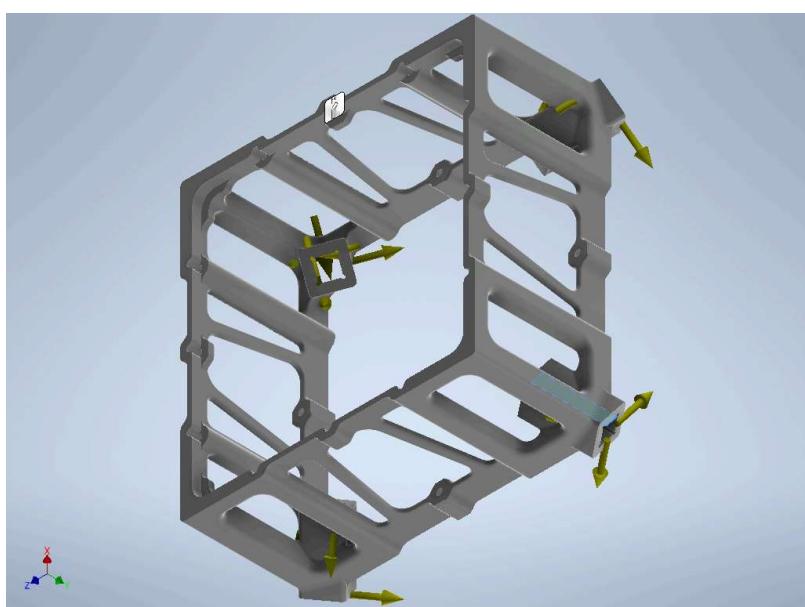
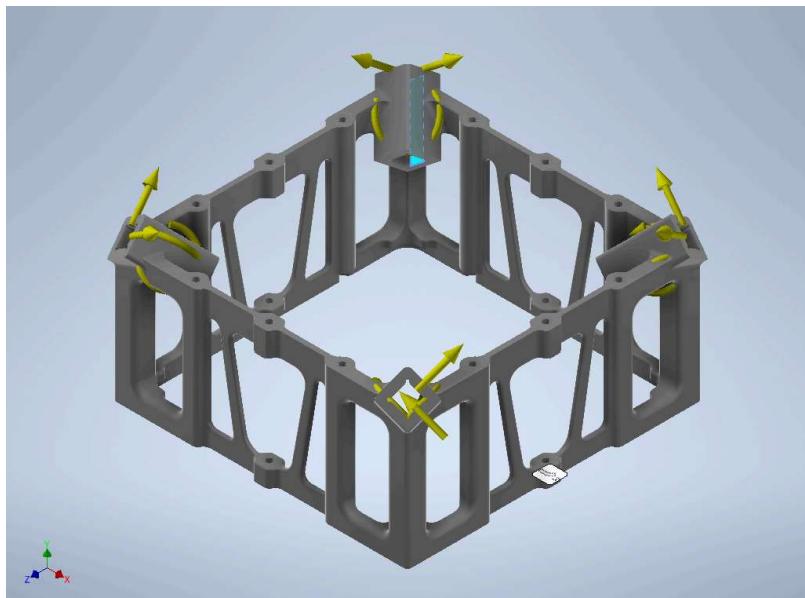
Faces selecionadas



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

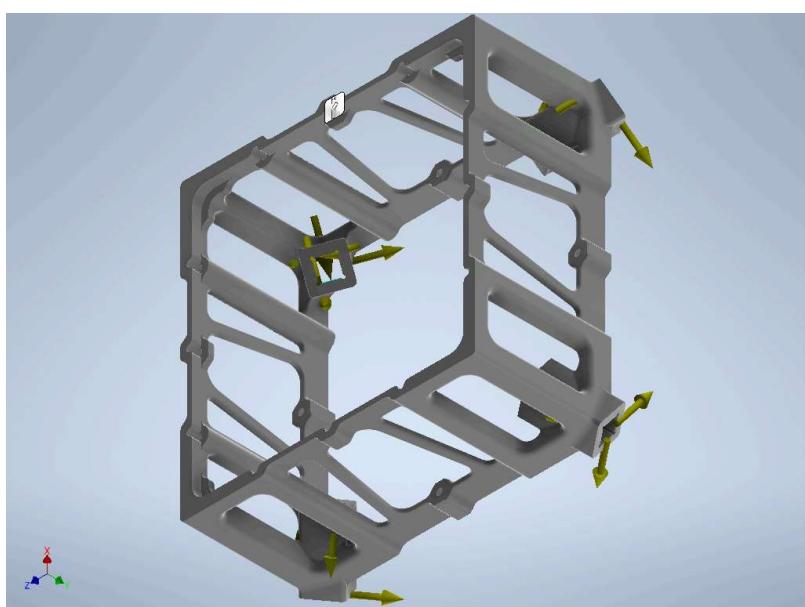
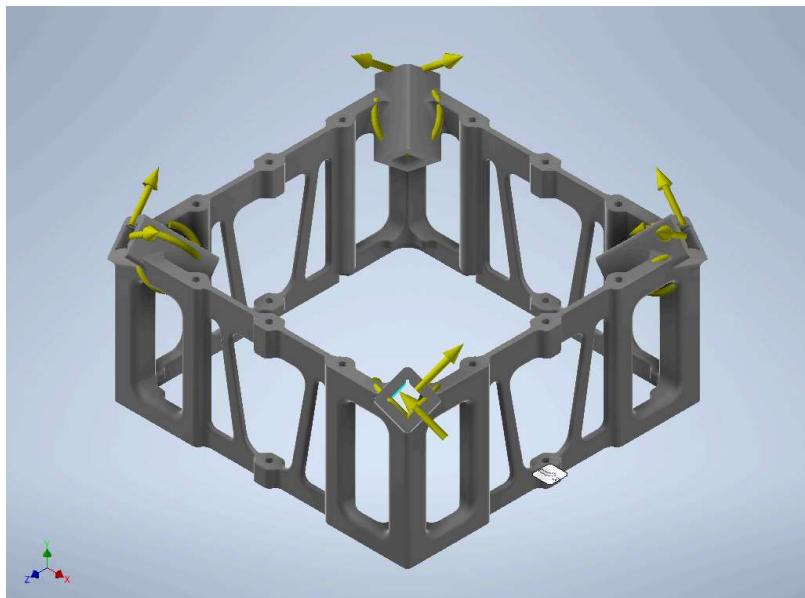
Faces selecionadas



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

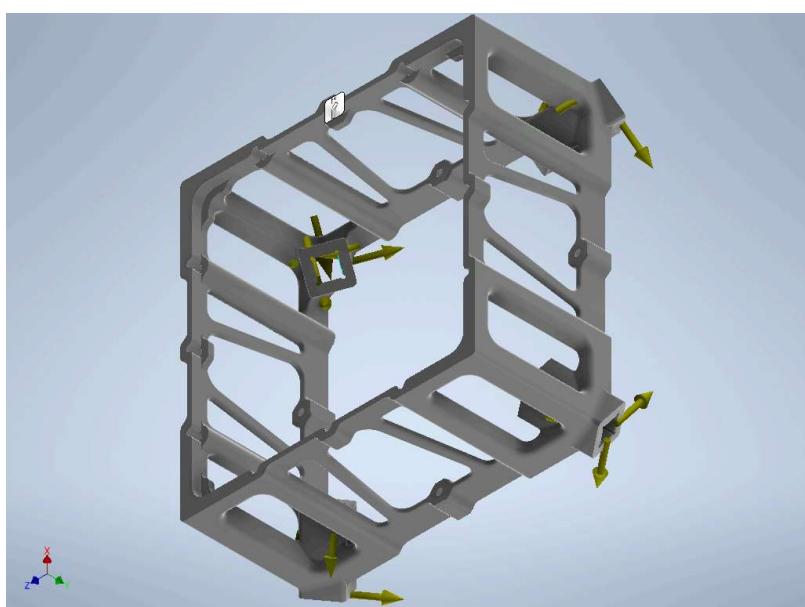
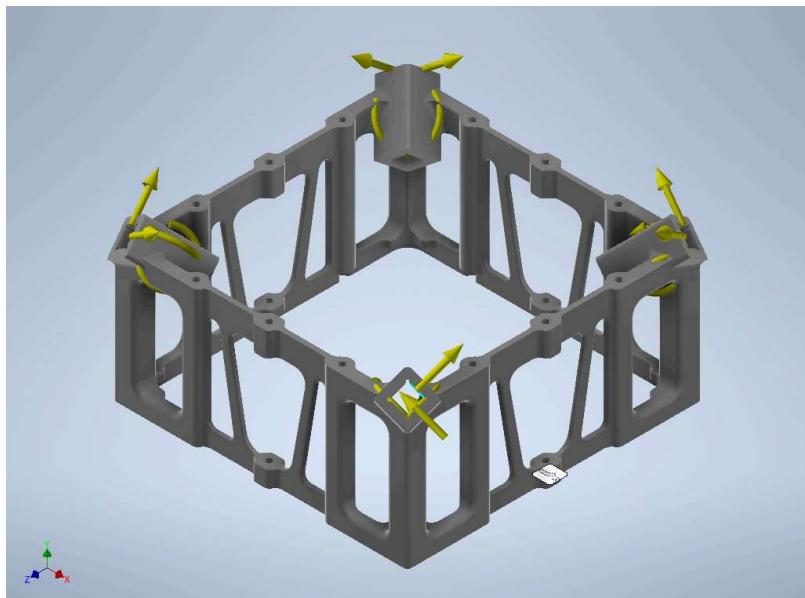
Faces selecionadas



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

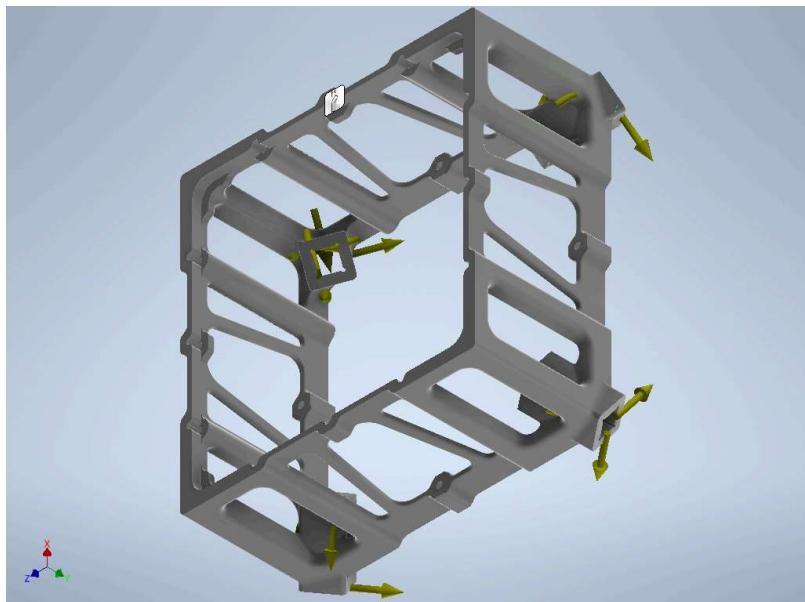
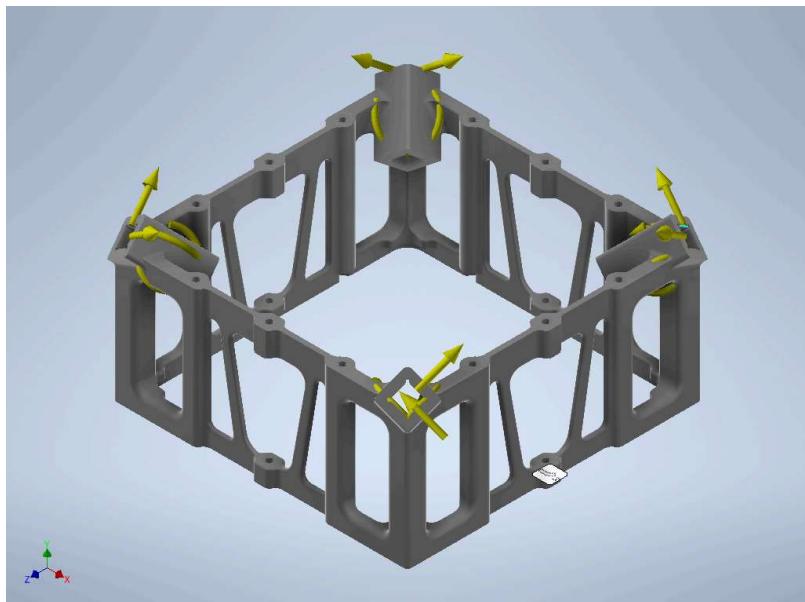
Faces selecionadas



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

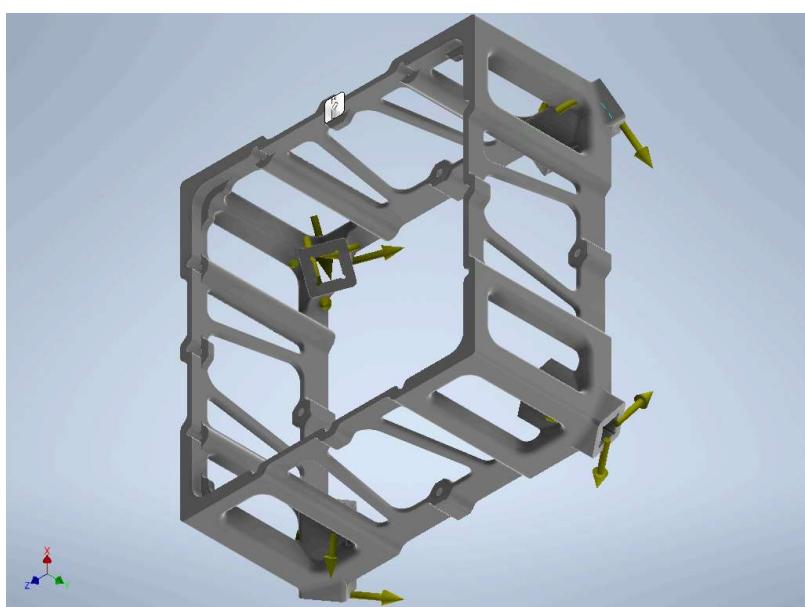
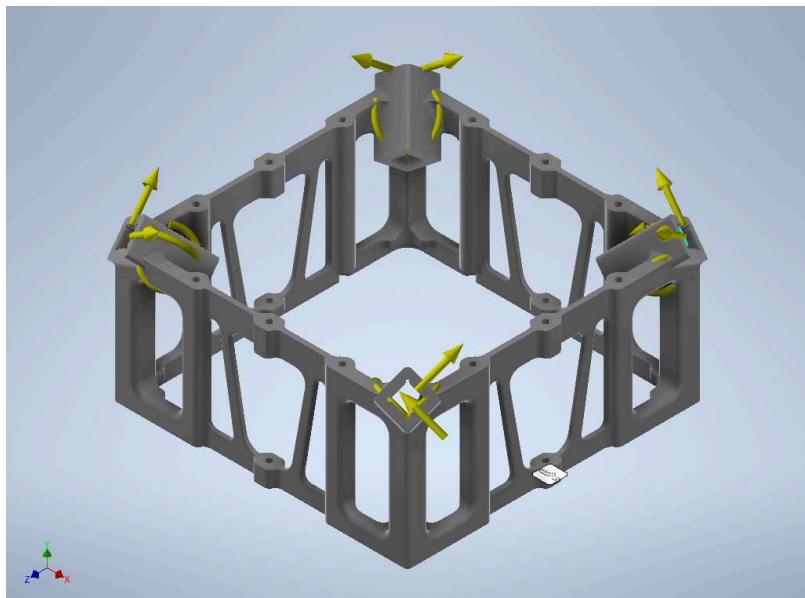
Faces selecionadas



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

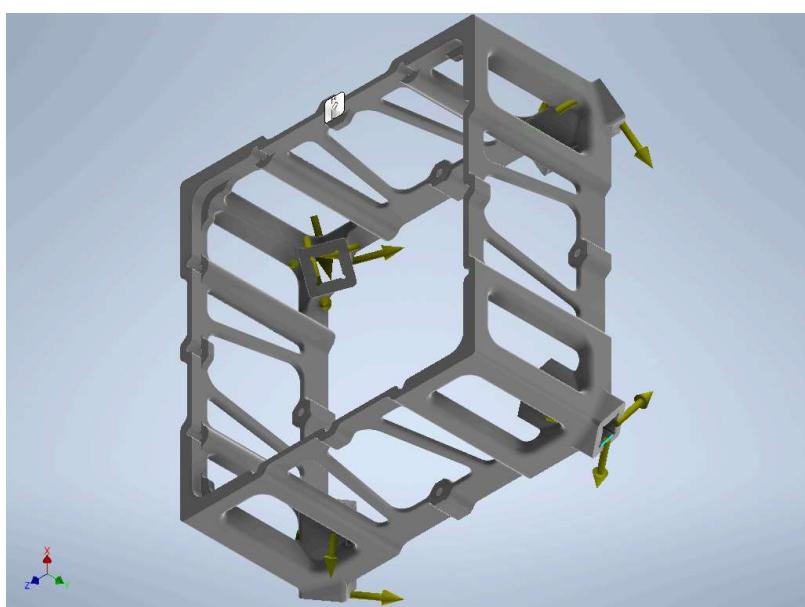
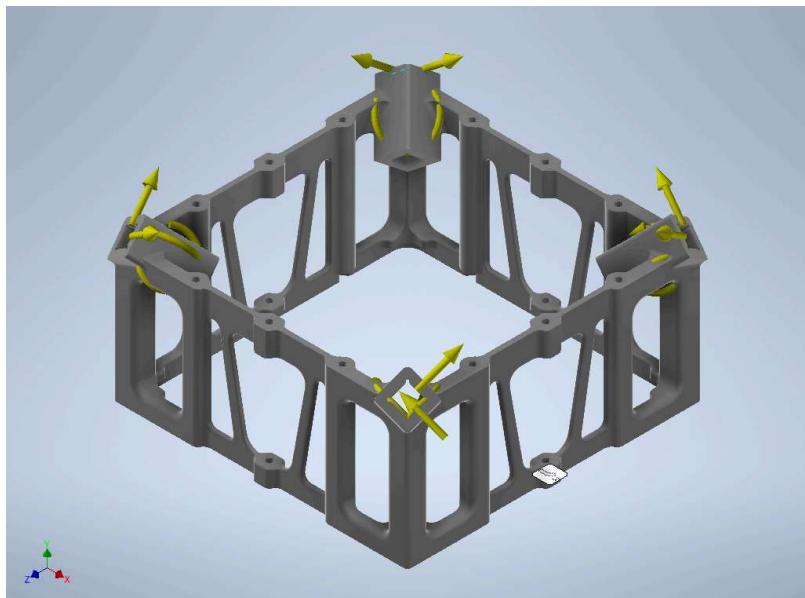
Faces selecionadas



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

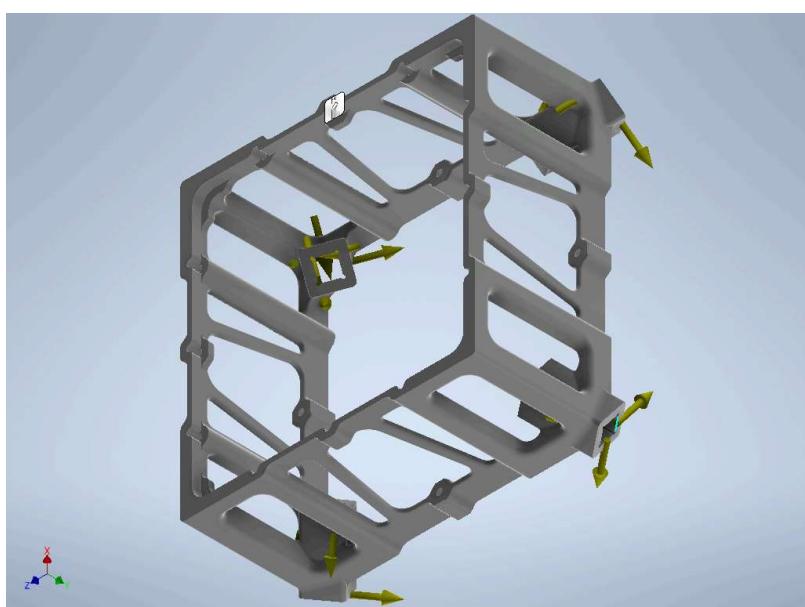
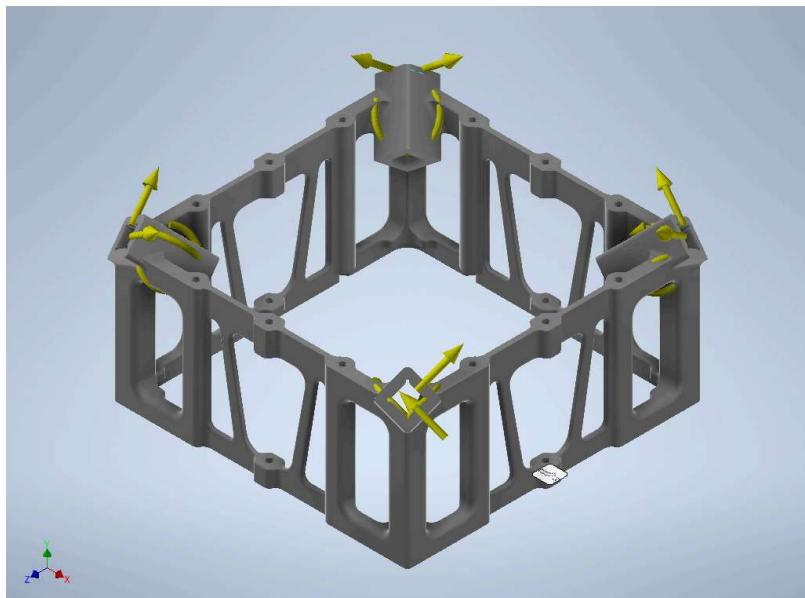
Faces selecionadas



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

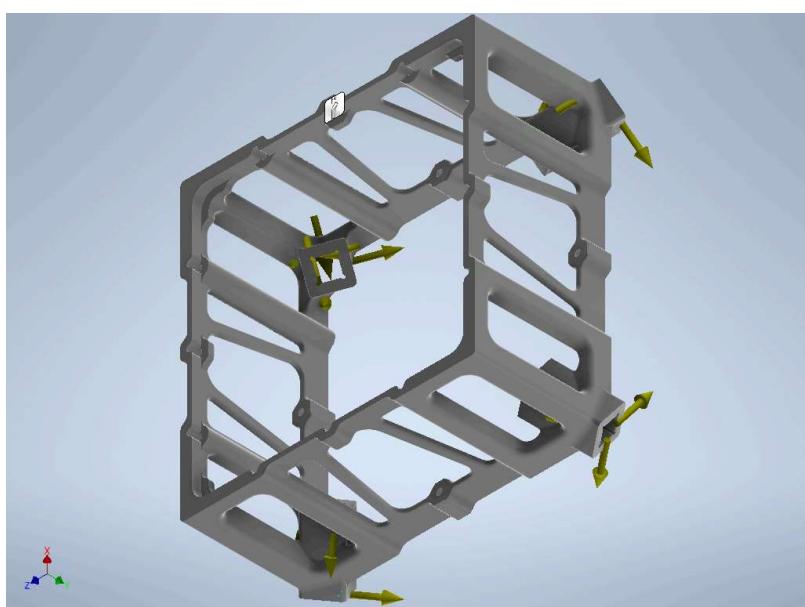
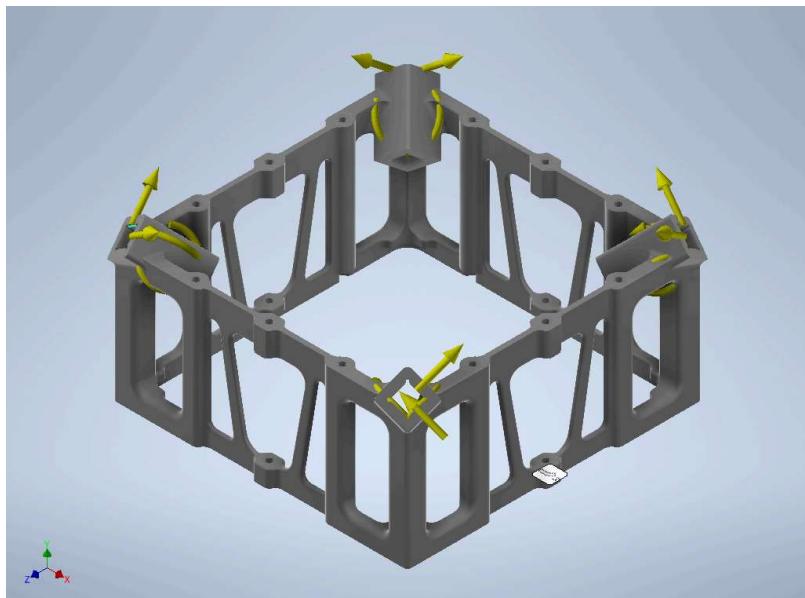
Faces selecionadas



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

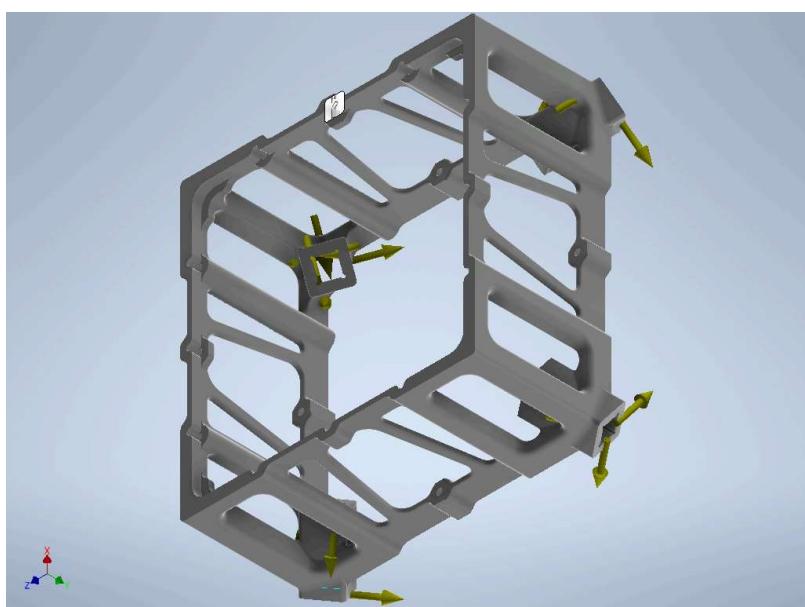
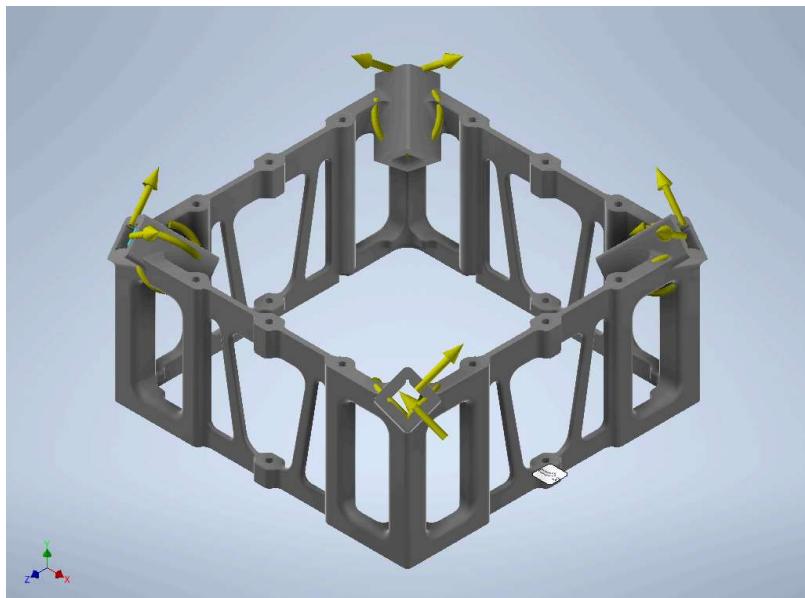
Faces selecionadas



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

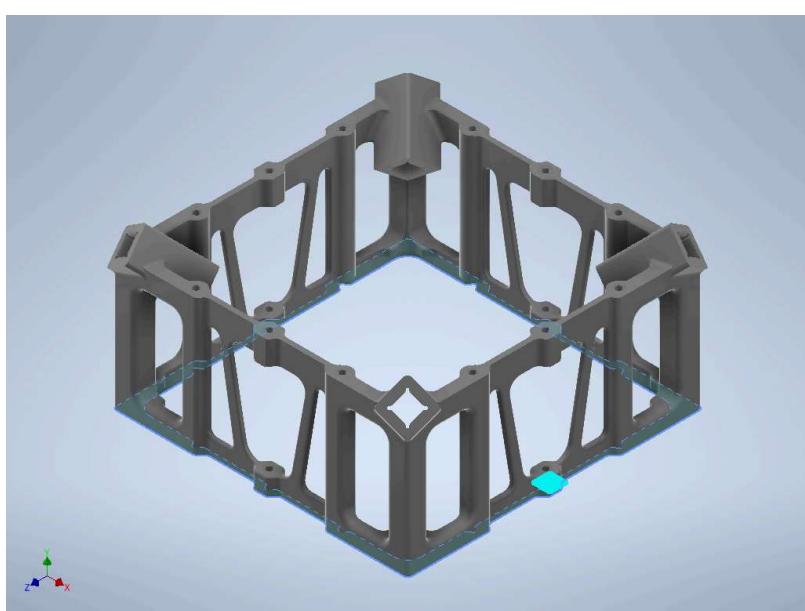
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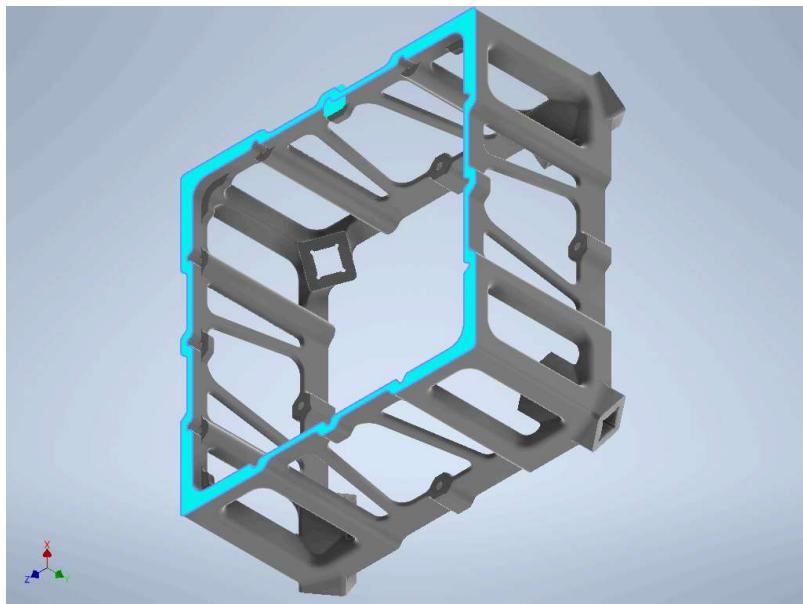


Restrição fixa:1

Tipo de restrição | Restrição fixa

Faces selecionadas





Resultados

Força e momento de reação em restrições

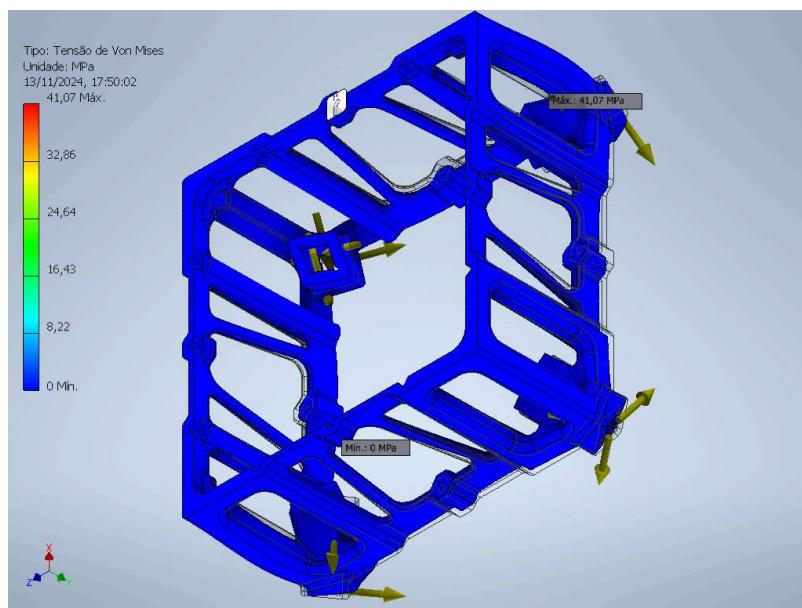
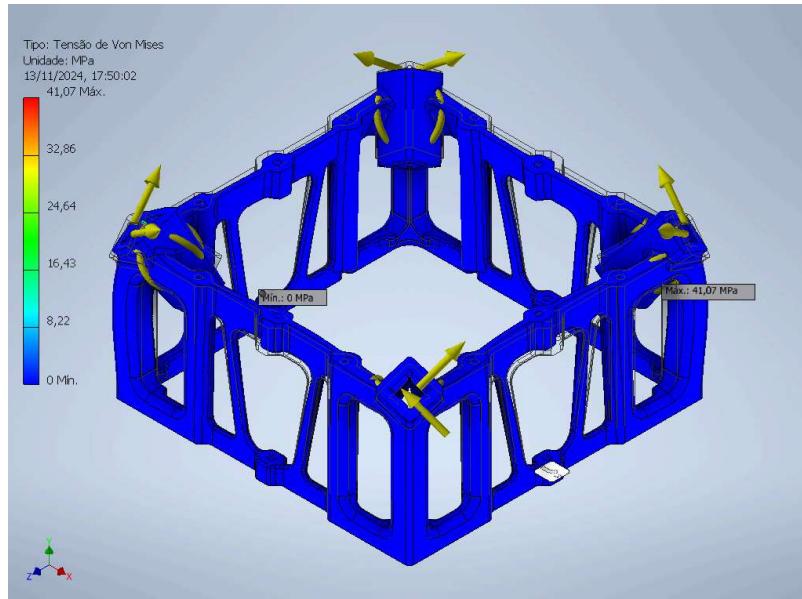
Nome da restrição	Força de reação		Momento de reação	
	Magnitude	"Componente (X,Y,Z)"	Magnitude	"Componente (X,Y,Z)"
Restrição fixa:1	48,9897 N	0 N	0 N m	0 N m
		-48,9897 N		0 N m
		0 N		0 N m

Resumo de resultados

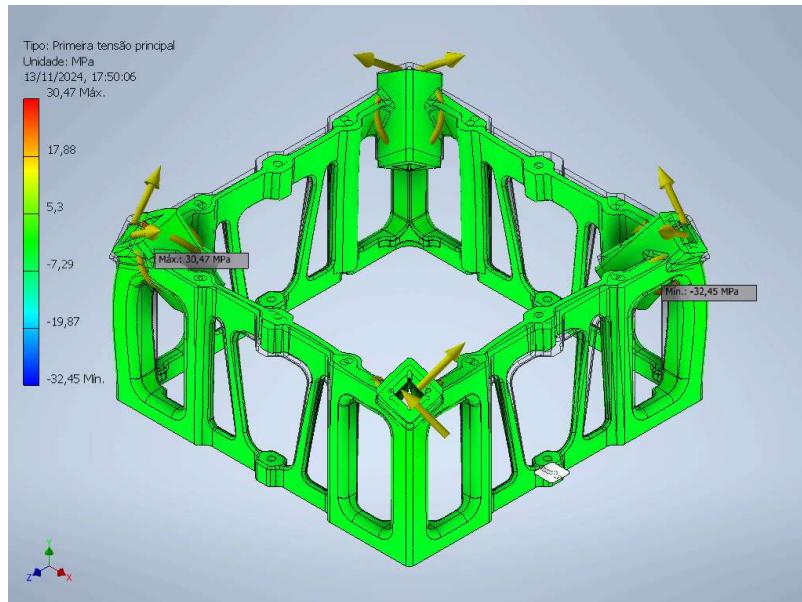
Nome	Mínima	Máxima
Volume	170442 mm ³	
Massa	0,426104 kg	
Tensão de Von Mises	0,0019868 MPa	41,0722 MPa
Primeira tensão principal	-32,4539 MPa	30,4678 MPa
Terceira tensão principal	-75,1502 MPa	19,9399 MPa
Deslocamento	0 mm	0,116659 mm
Fator de segurança	0,387124 s_m	15 s_m
Tensão XX	-50,9885 MPa	20,2465 MPa
Tensão XY	-9,26671 MPa	14,6492 MPa
Tensão XZ	-12,7898 MPa	18,6806 MPa
Tensão YY	-46,8632 MPa	27,4755 MPa
Tensão YZ	-11,3928 MPa	18,416 MPa
Tensão ZZ	-51,3596 MPa	27,1843 MPa
Deslocamento X	-0,0439879 mm	0,0738275 mm
Deslocamento Y	-0,116135 mm	0,0385748 mm
Deslocamento Z	-0,0739129 mm	0,0437626 mm
Deformação equivalente	0,000000404921 s_m	0,00817932 s_m
Primeira deformação principal	0,000000241417 s_m	0,0053102 s_m
Terceira deformação principal	-0,00869662 s_m	-0,000000230509 s_m
Deformação XX	-0,00252647 s_m	0,00262466 s_m
Deformação XY	-0,00275416 s_m	0,00435388 s_m
Deformação XZ	-0,00380124 s_m	0,00555205 s_m
Deformação YY	-0,00455147 s_m	0,00305488 s_m
Deformação YZ	-0,00338604 s_m	0,00547341 s_m
Deformação ZZ	-0,00278158 s_m	0,00284139 s_m

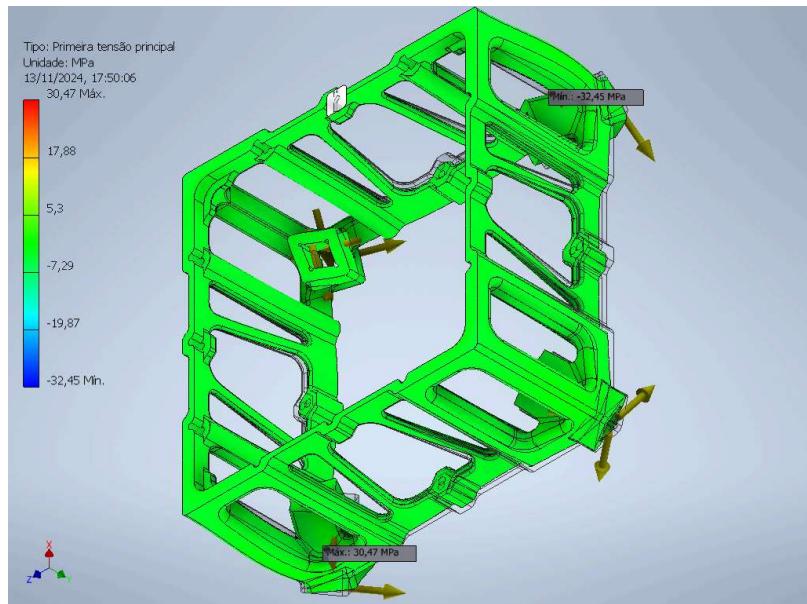
Figuras

Tensão de Von Mises

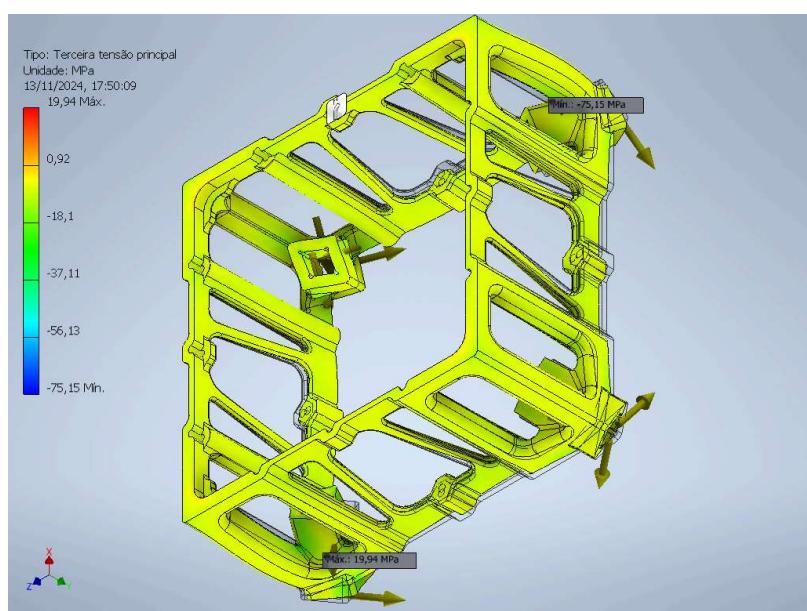
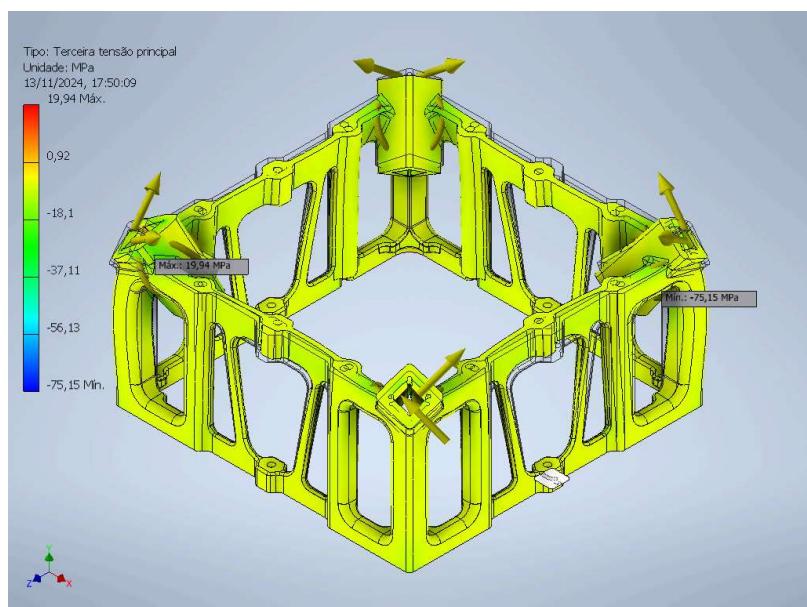


Primeira tensão principal

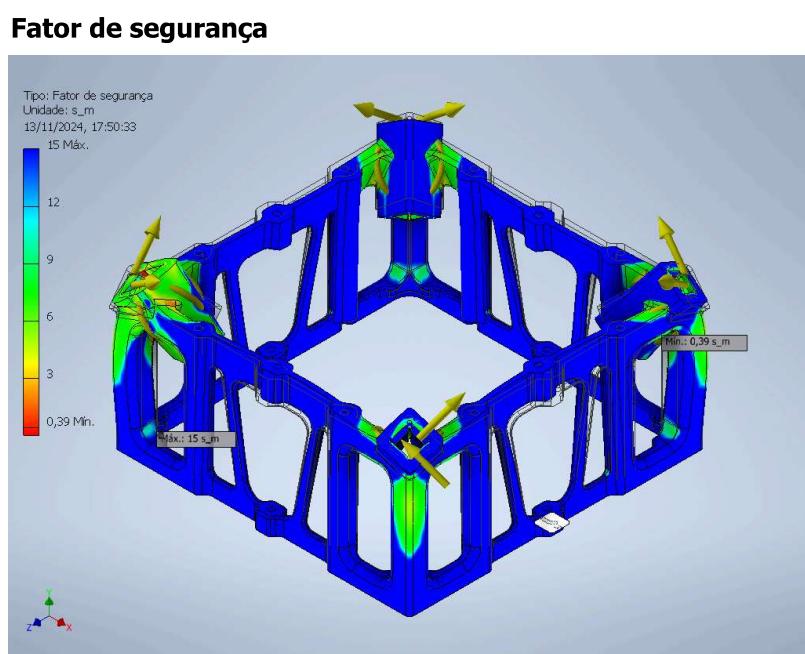
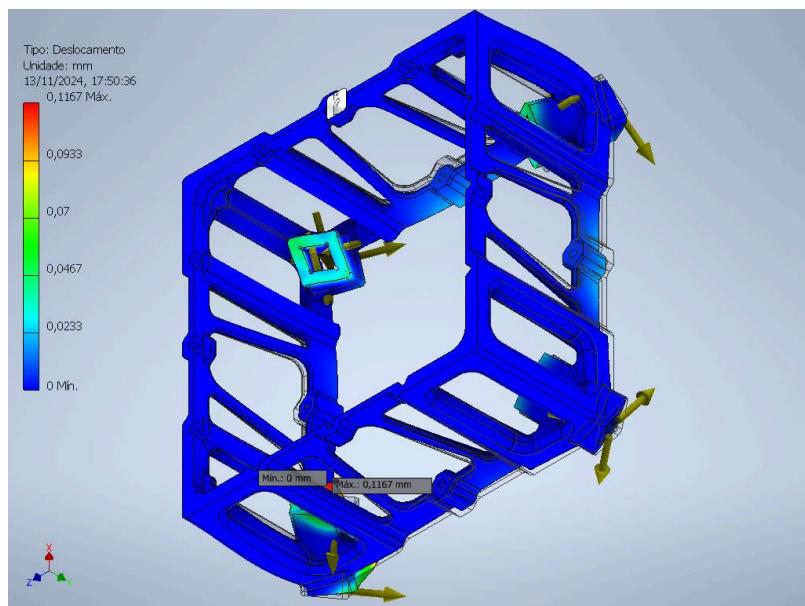
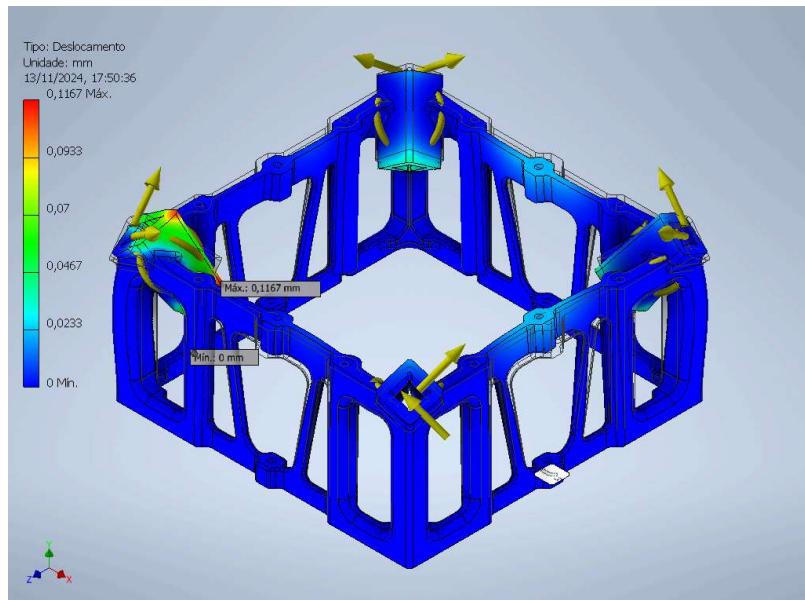


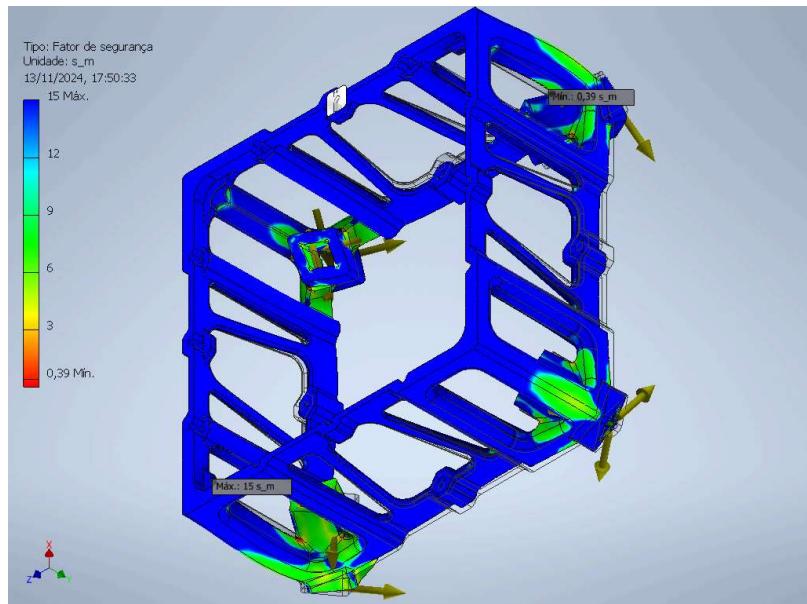


Terceira tensão principal

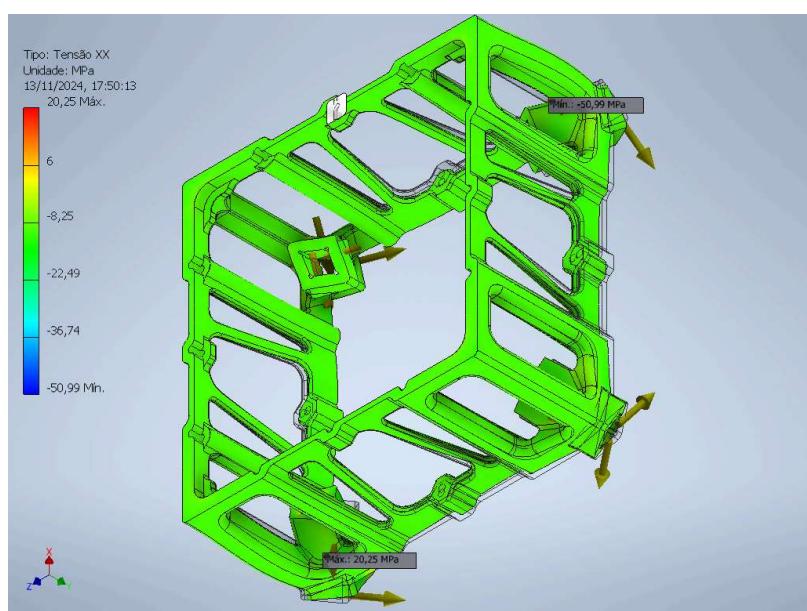
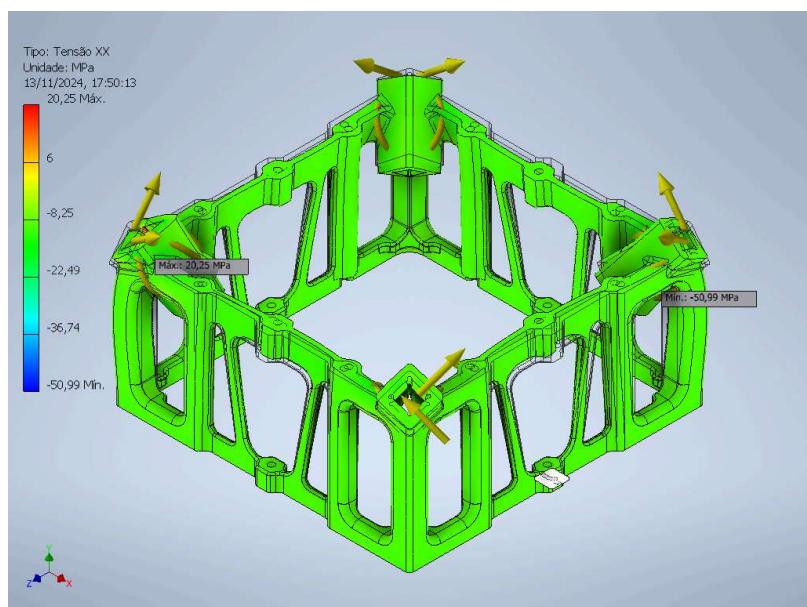


Deslocamento

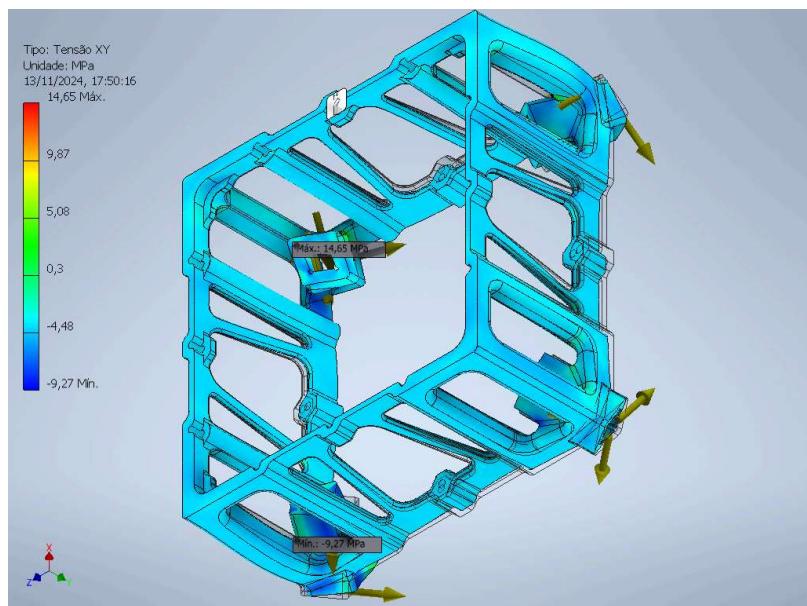
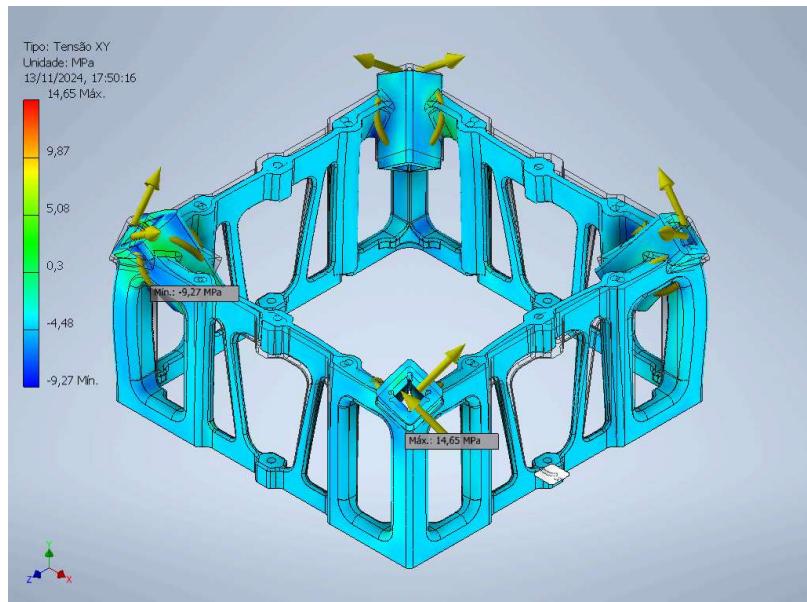




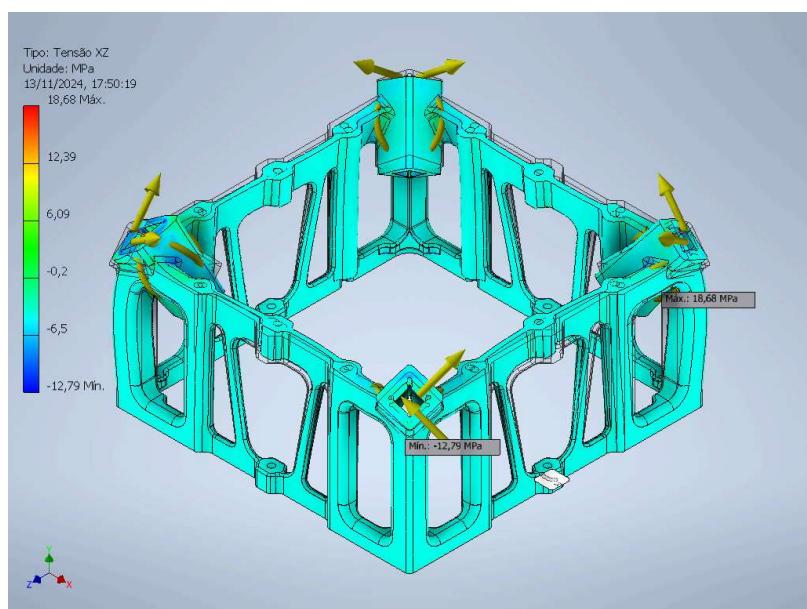
Tensão XX

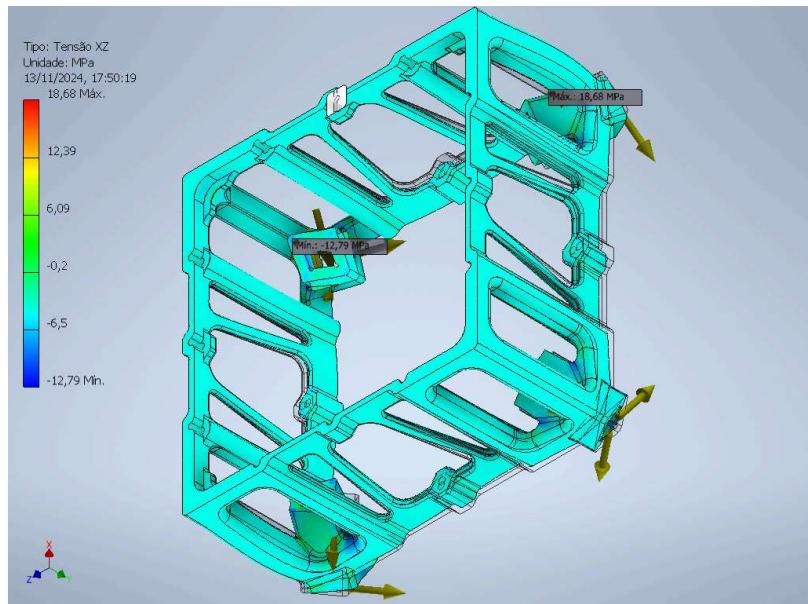


Tensão XY

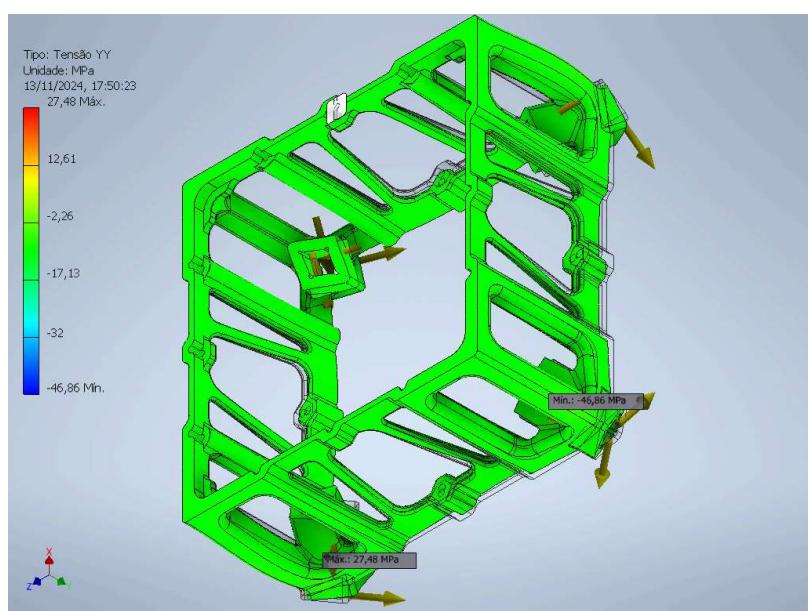
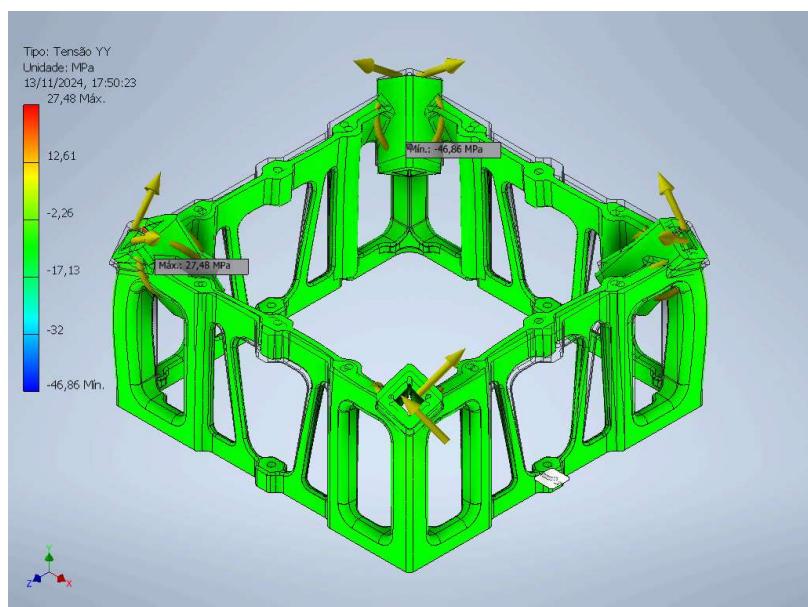


Tensão XZ

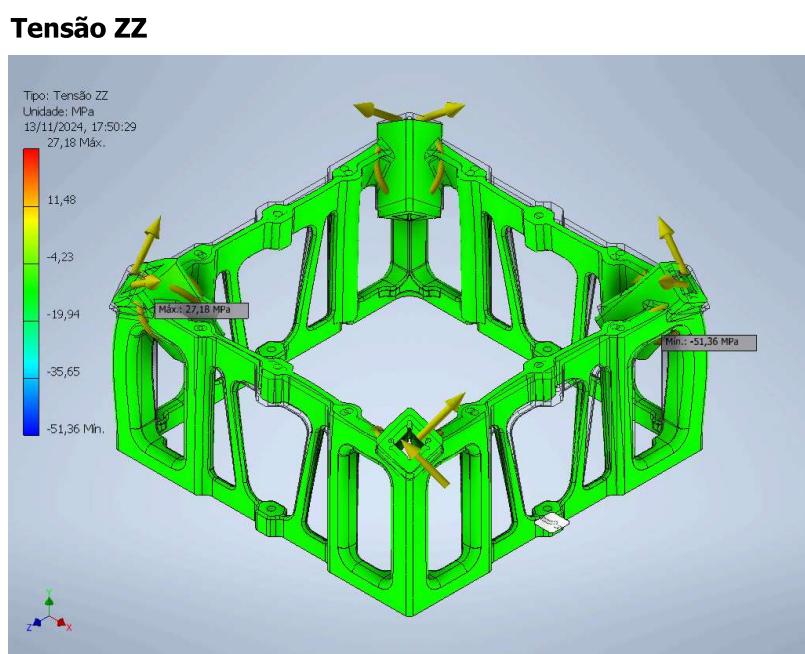
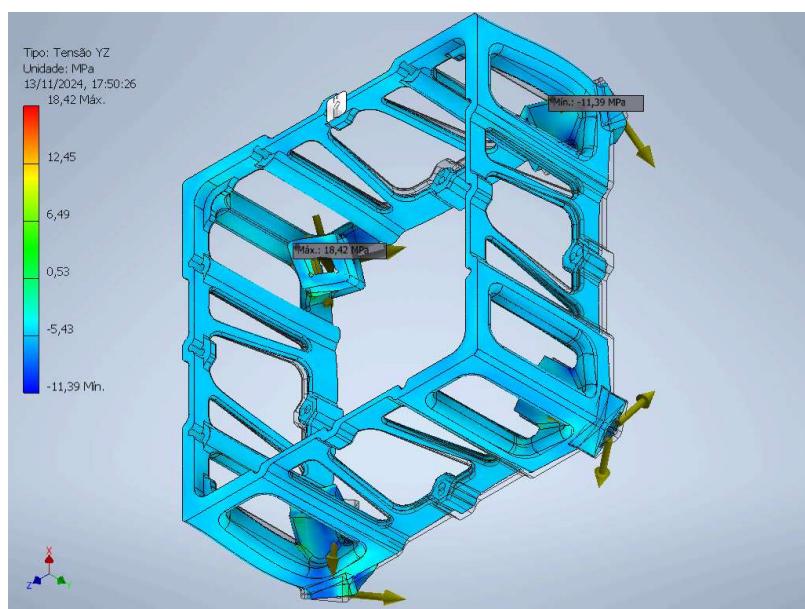
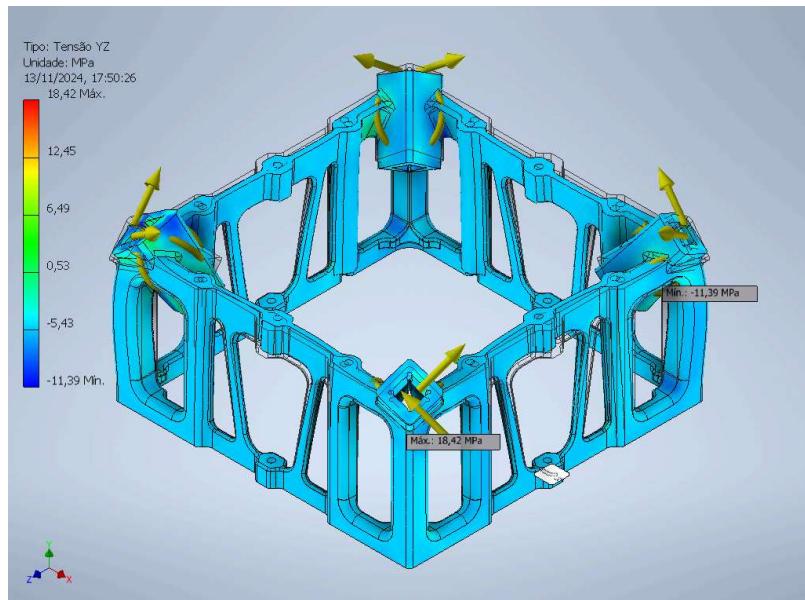


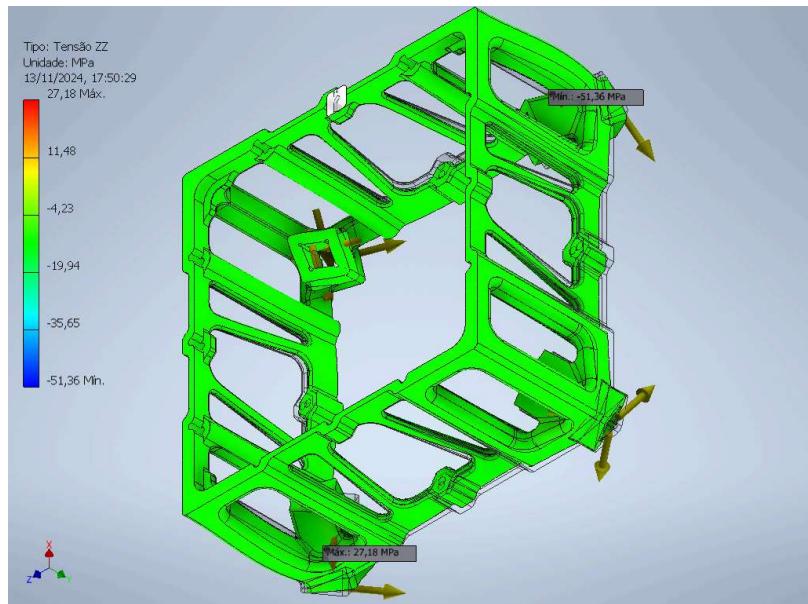


Tensão YY

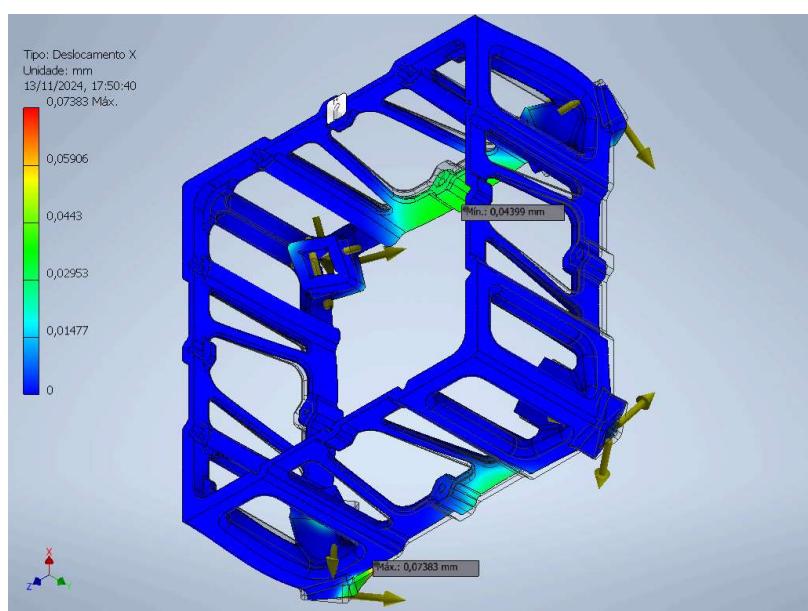
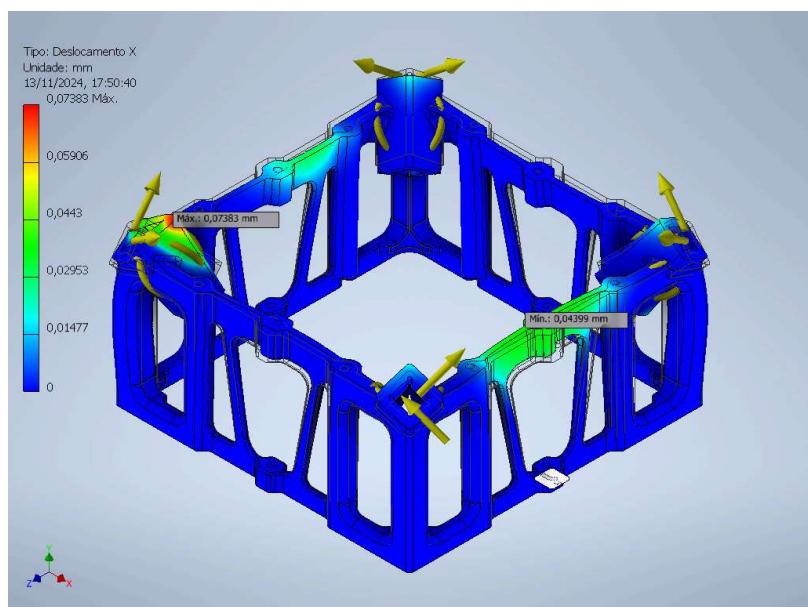


Tensão YZ

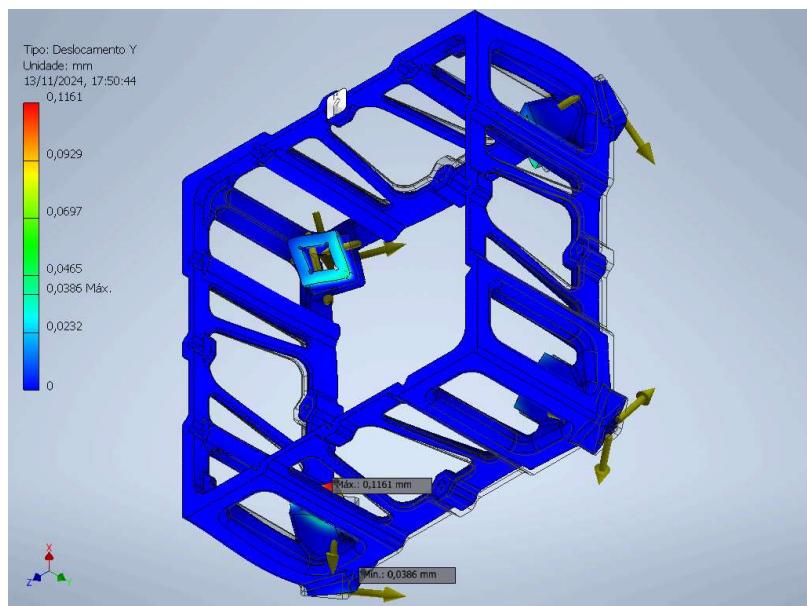
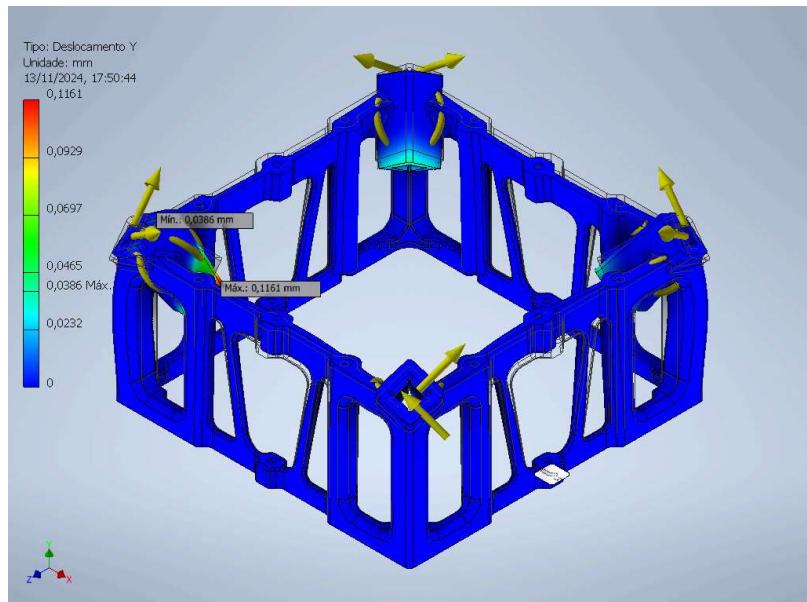




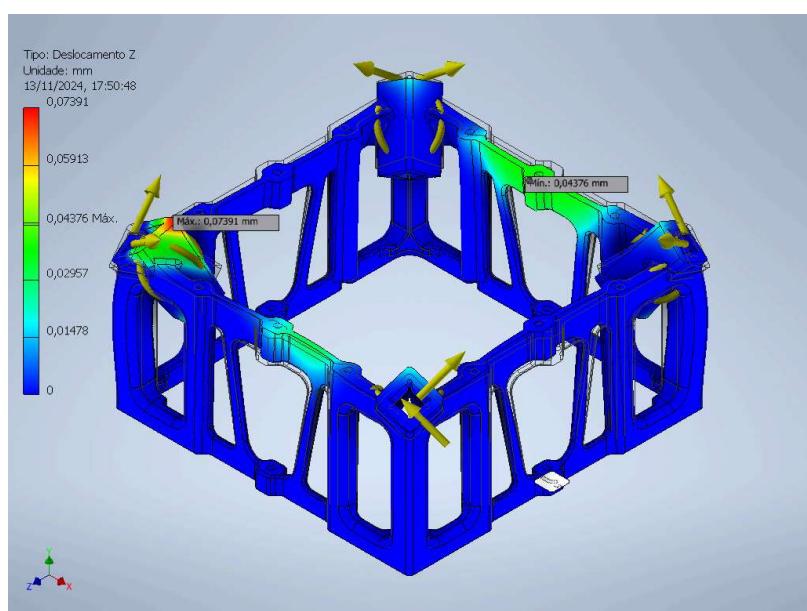
Deslocamento X

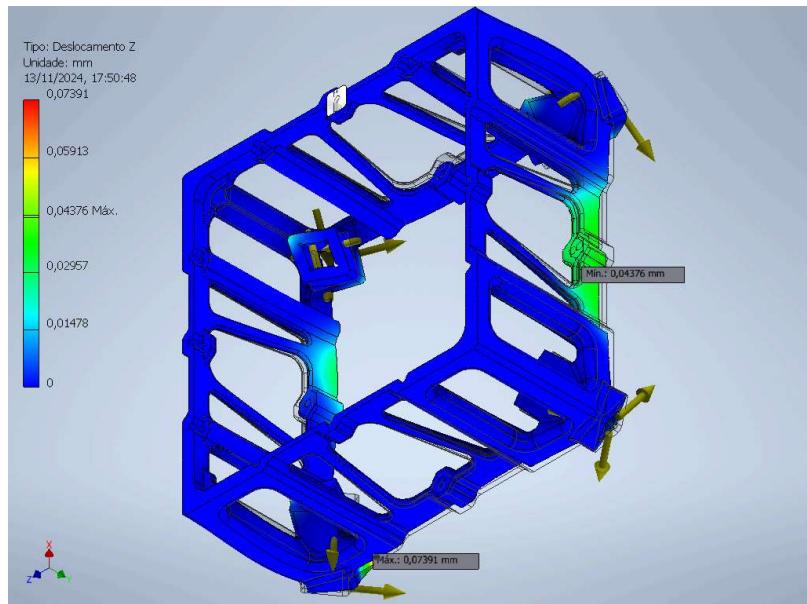


Deslocamento Y

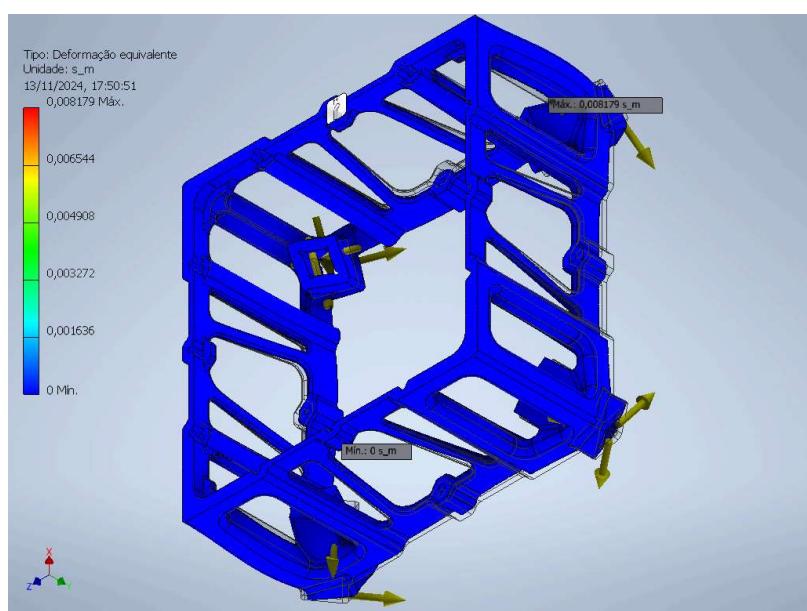
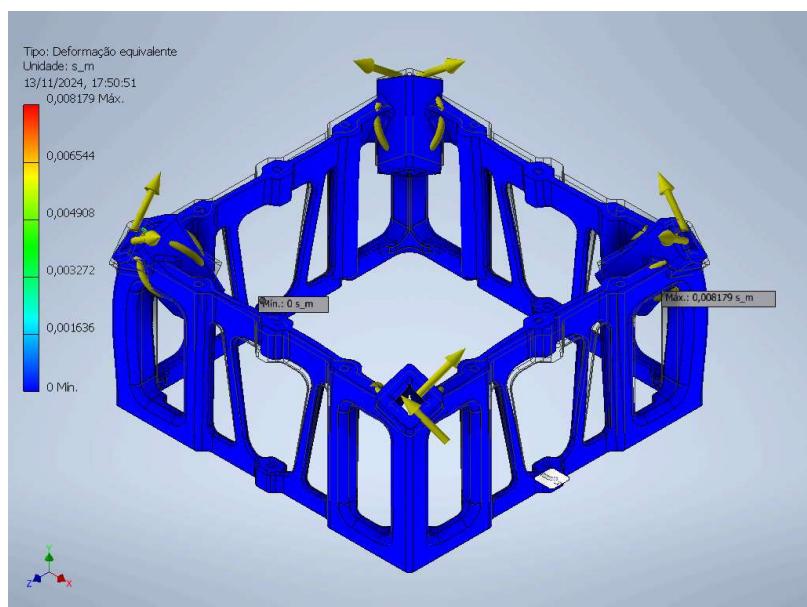


Deslocamento Z

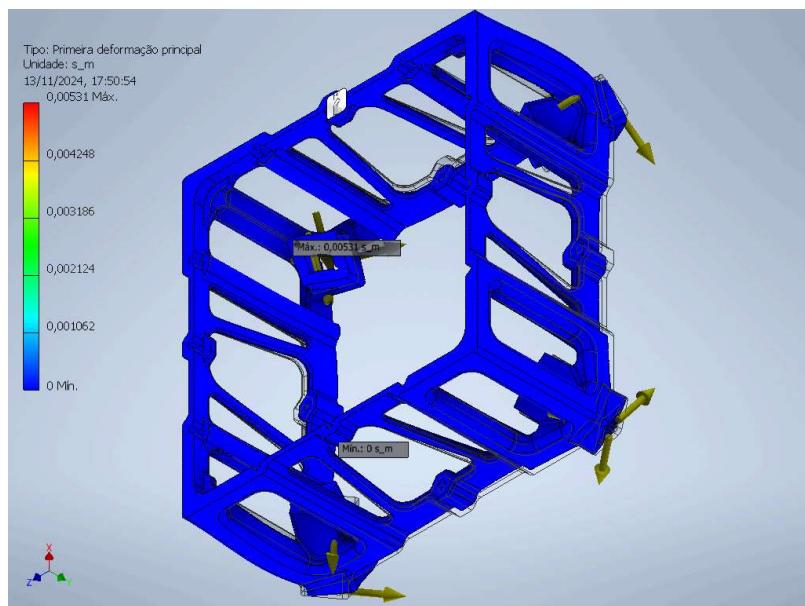
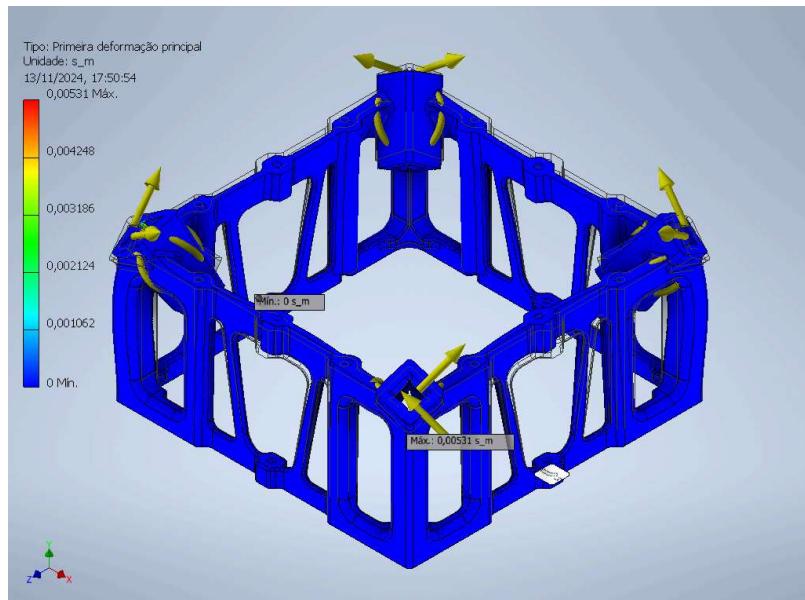




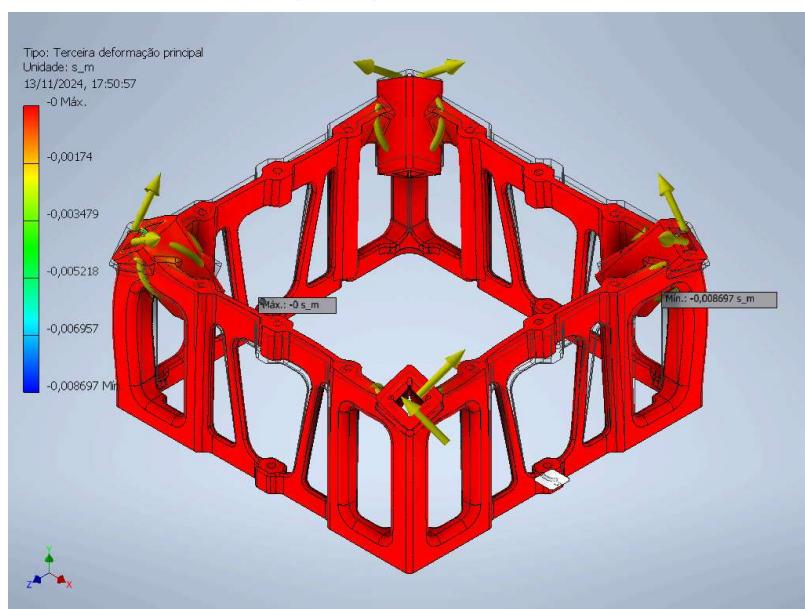
Deformação equivalente

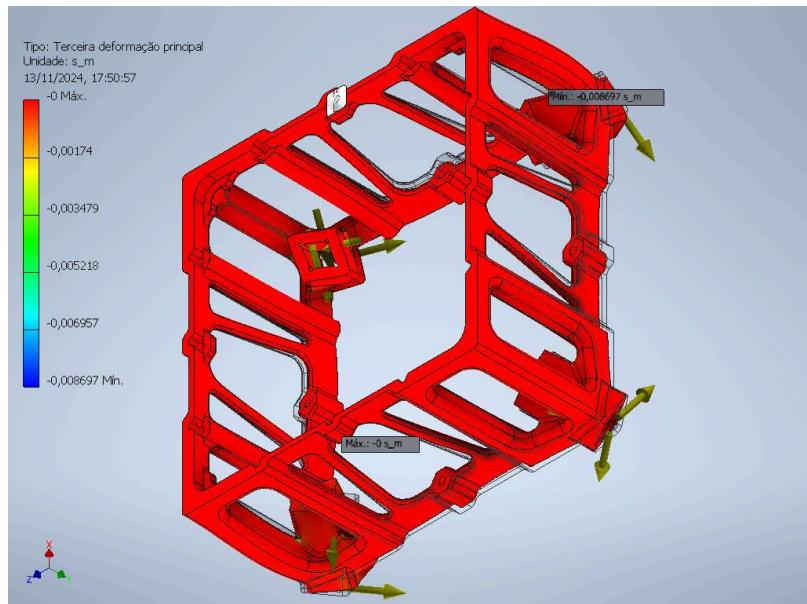


Primeira deformação principal

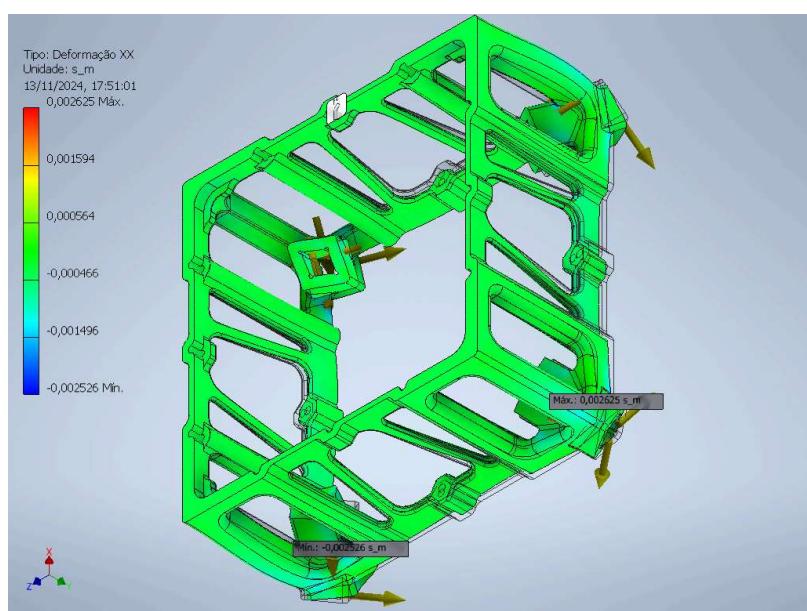
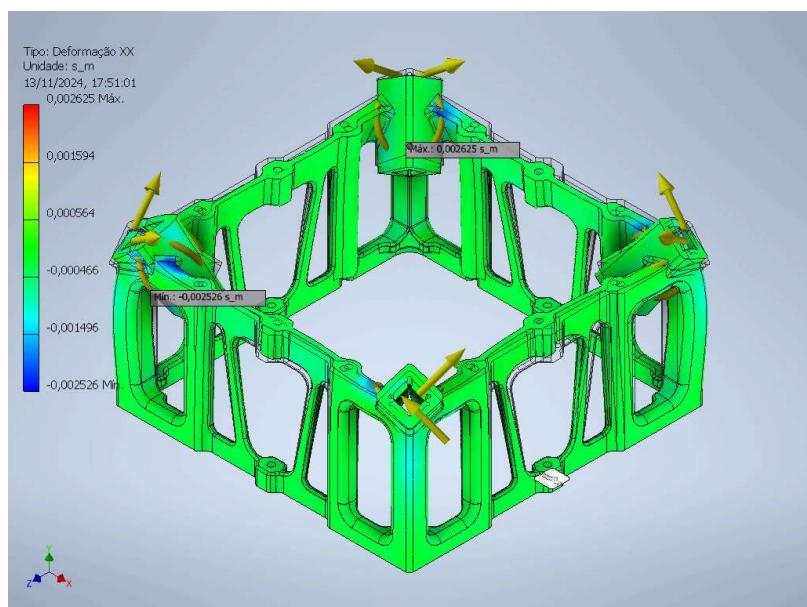


Terceira deformação principal

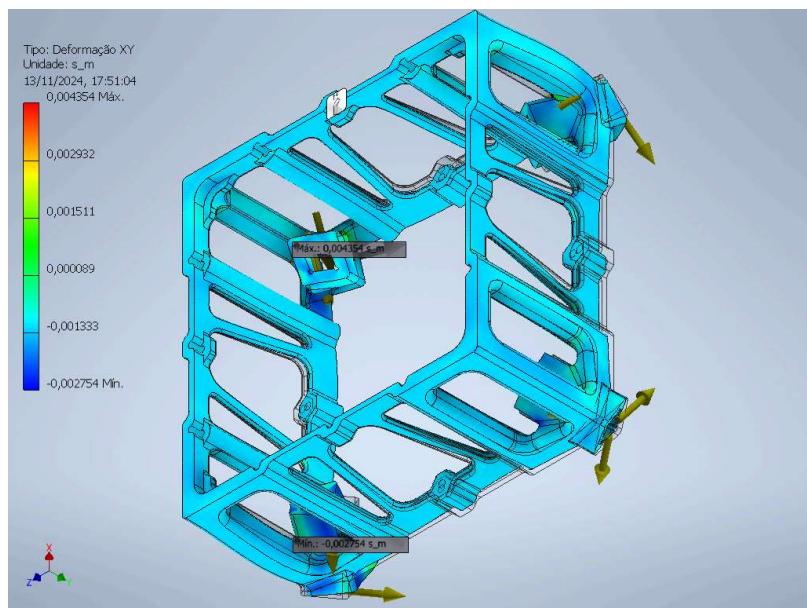
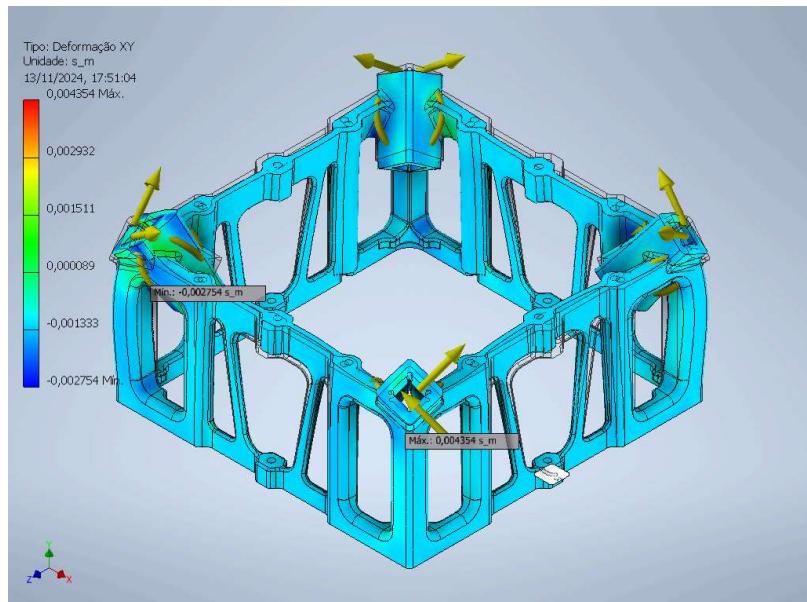




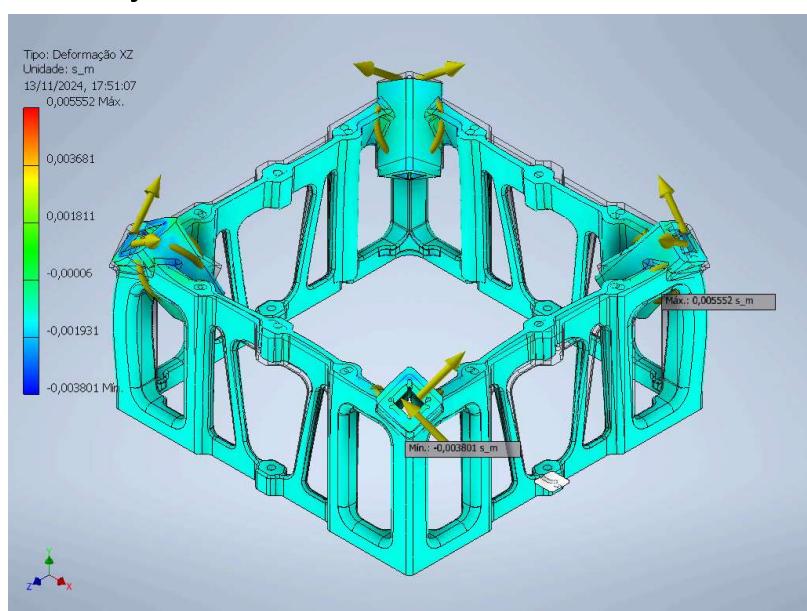
Deformação XX

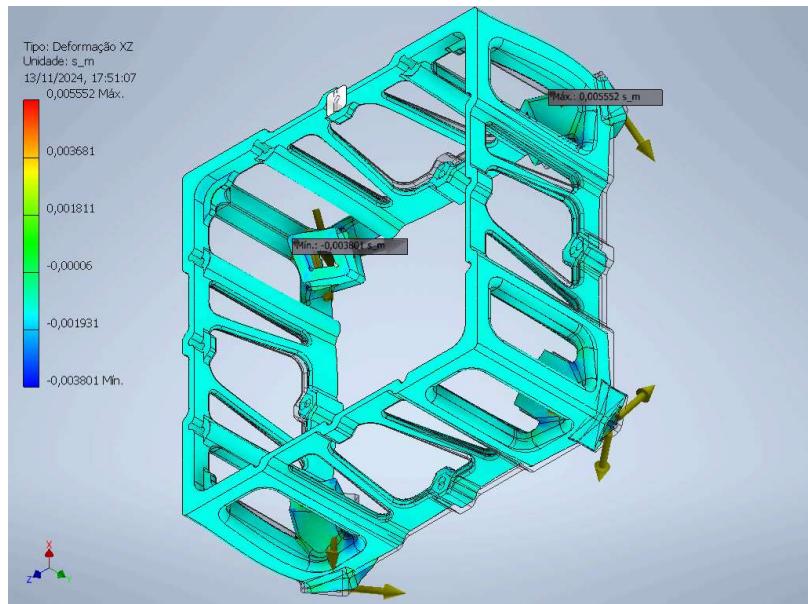


Deformação XY

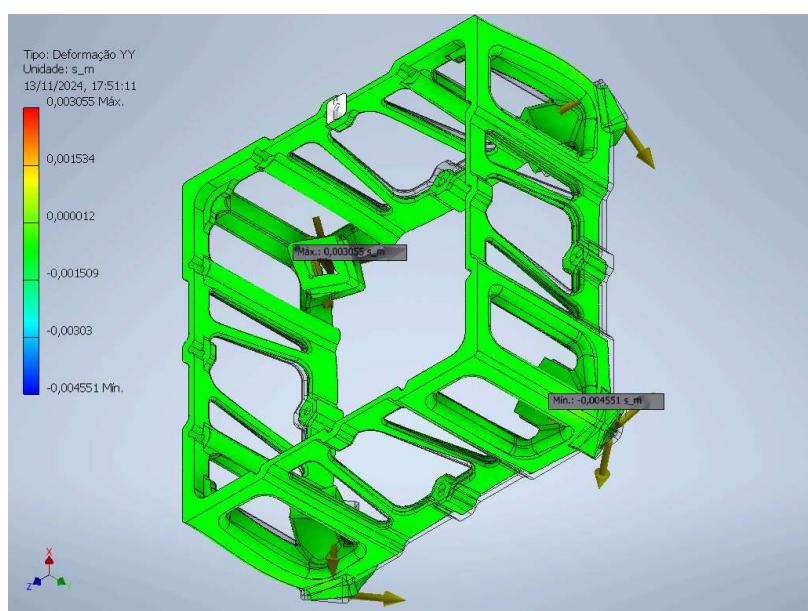
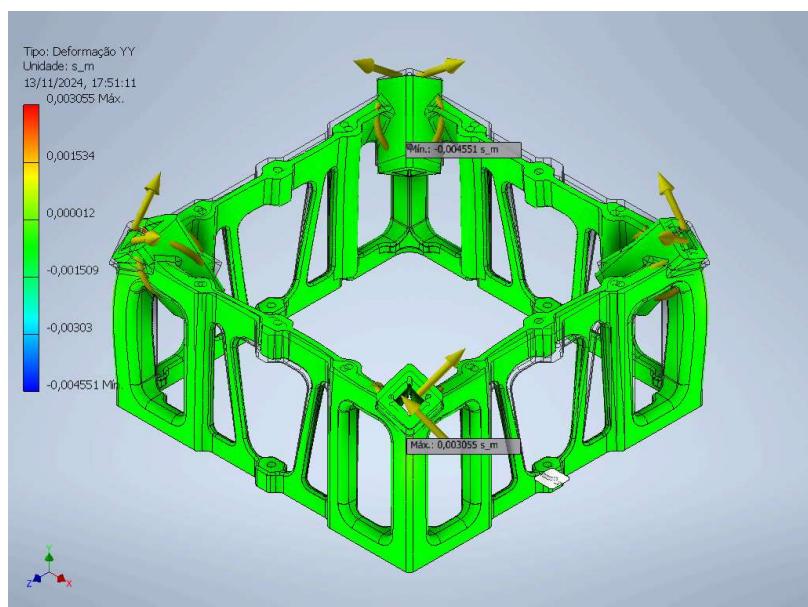


Deformação XZ

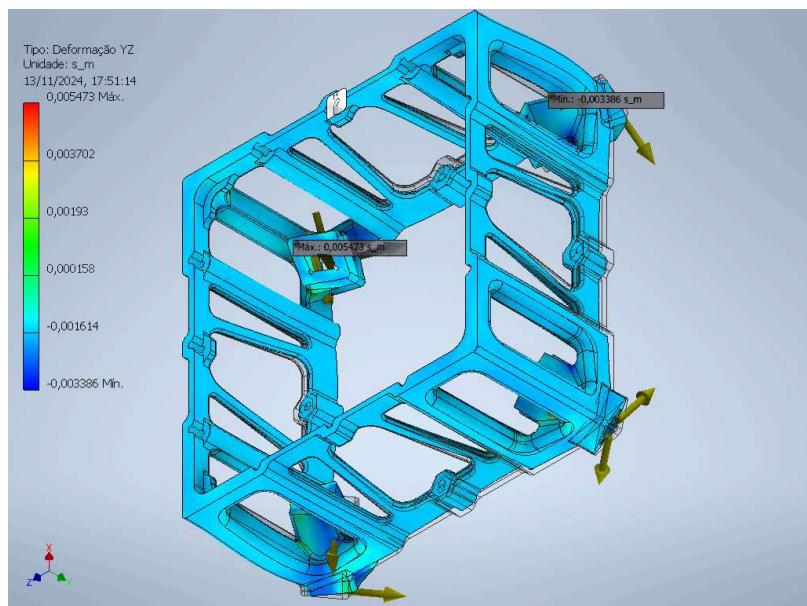
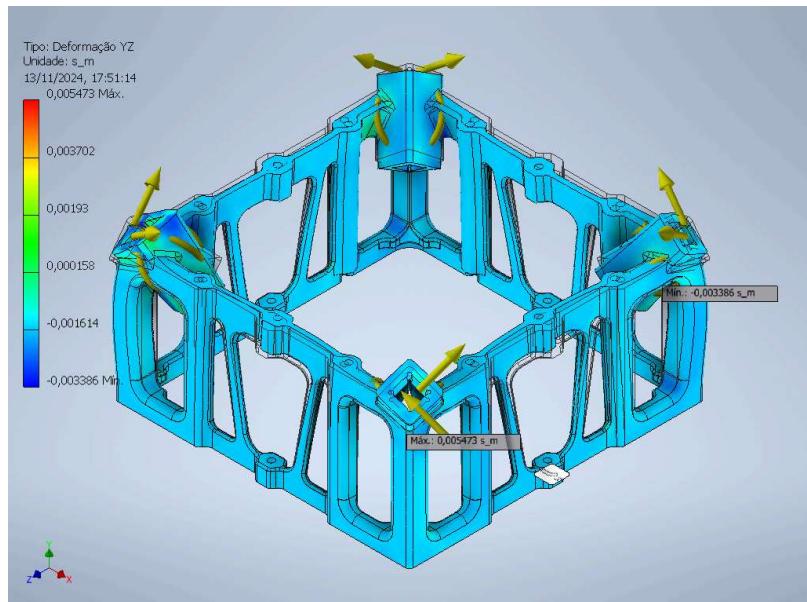




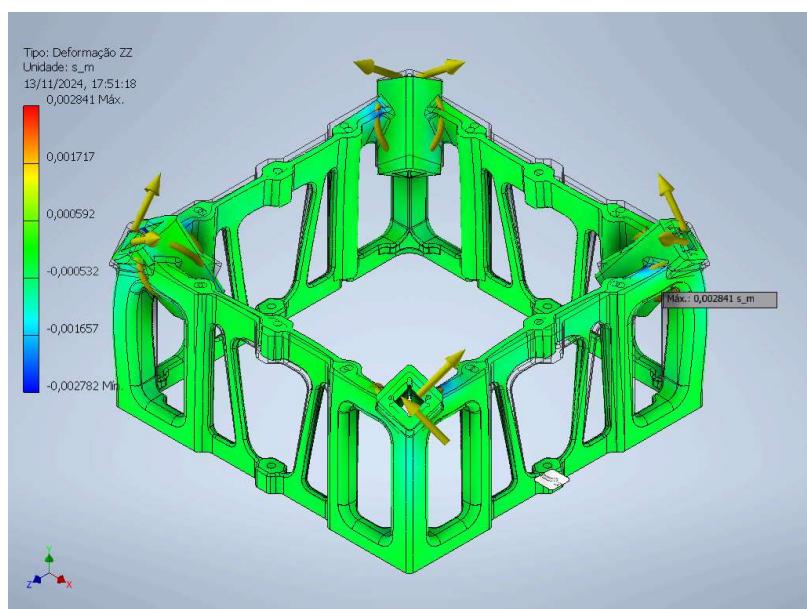
Deformação YY

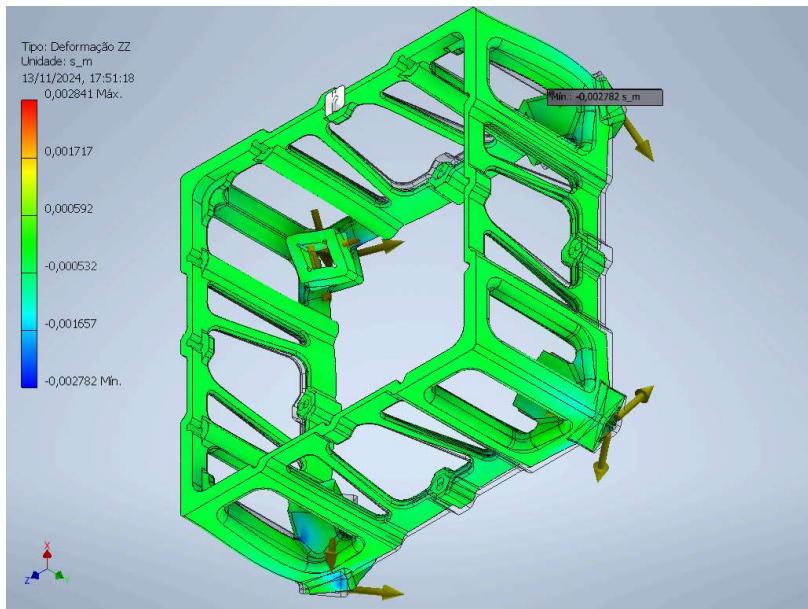


Deformação YZ



Deformação ZZ





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