

# Relatório de análise de tensão - Invólucro Smooth 3D



Arquivo analisado:	conceito4_S3D.ipt
Versão do Autodesk Inventor:	2024.2 (Build 282272000, 272)
Data de criação:	13/11/2024, 17:27
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, 17:21
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_S3D
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	Smooth 3D
Densidade	2,521 g/cm <sup>3</sup>
Massa	0,429683 kg
Área	88987,2 mm <sup>2</sup>
Volume	170442 mm <sup>3</sup>
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

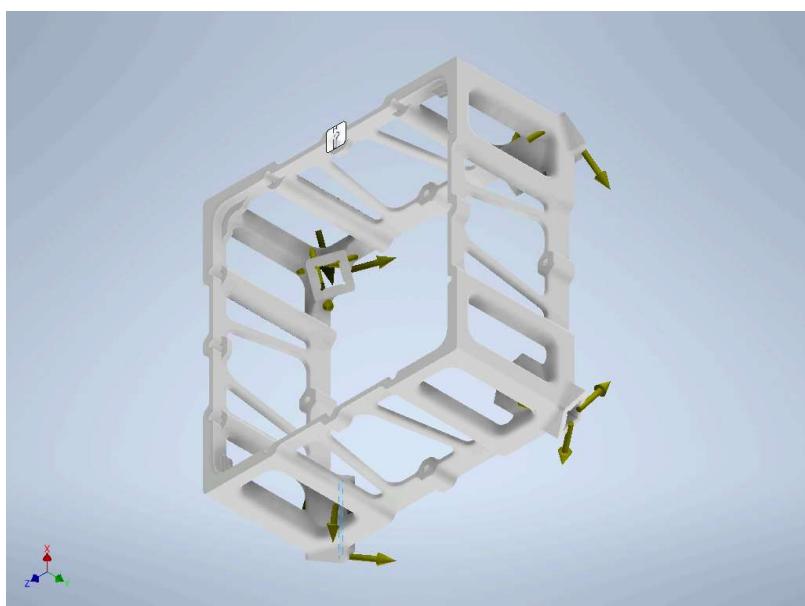
Nome	Smooth 3D	
Geral	Densidade de massa	2,521 g/cm <sup>3</sup>
	Resistência à escoamento	24,22 MPa
	Resistência máxima à tração	24,22 MPa
Tensão	Módulo de Young	1,5656 GPa
	Coeficiente de Poisson	0,47 s_m
	Módulo cortante	0,532517 GPa
Nome(s) de peça	conceito4_S3D.ipt	

## 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

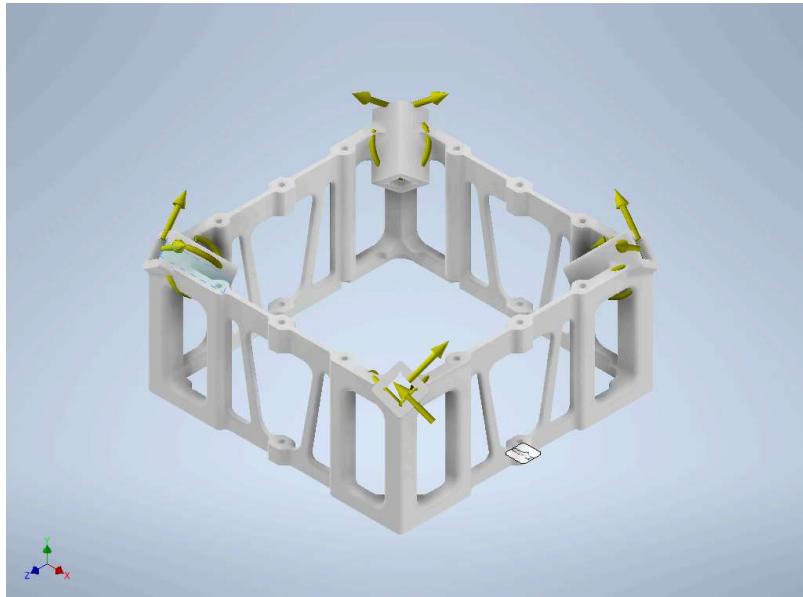
### Faces selecionadas



## 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

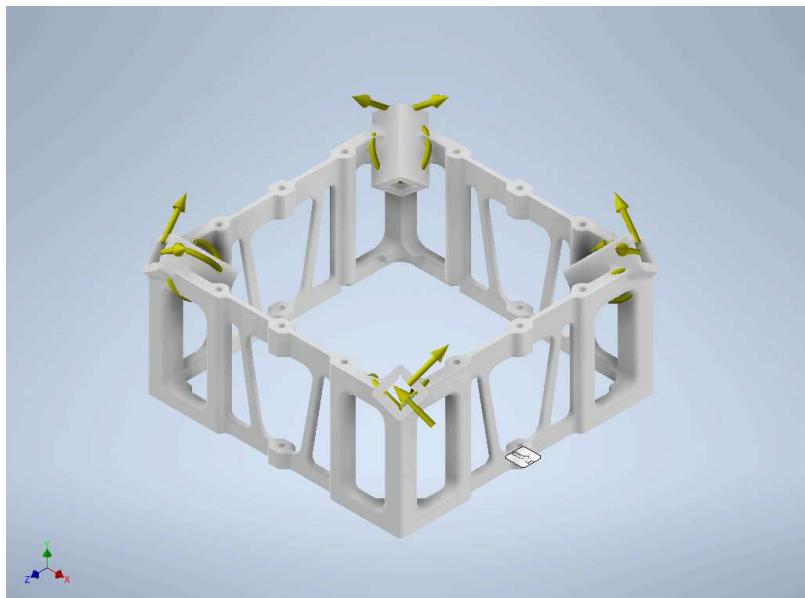
### Faces selecionadas



## 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

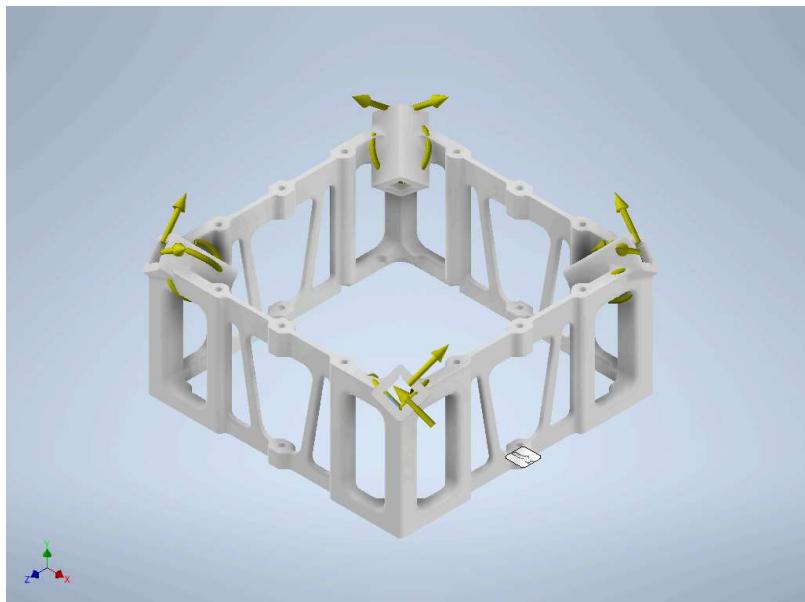
### Faces selecionadas



#### 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

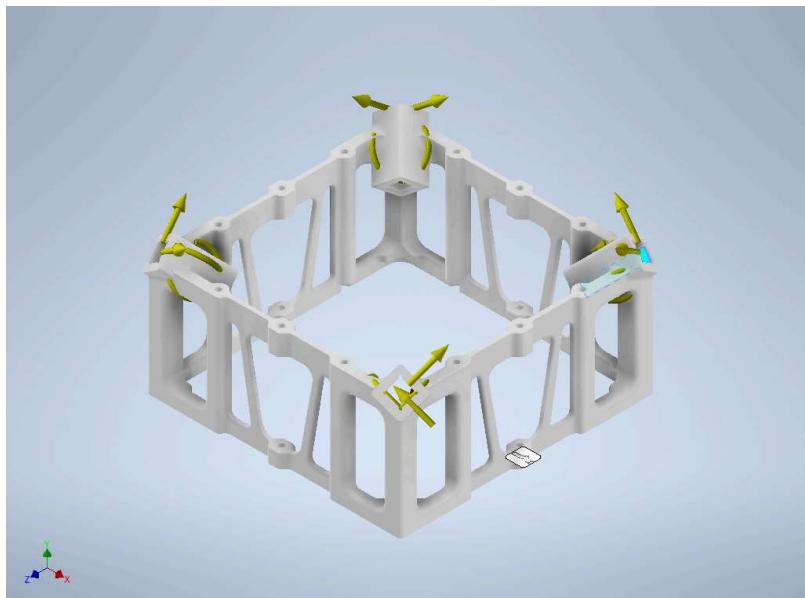
#### Faces selecionadas



### 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

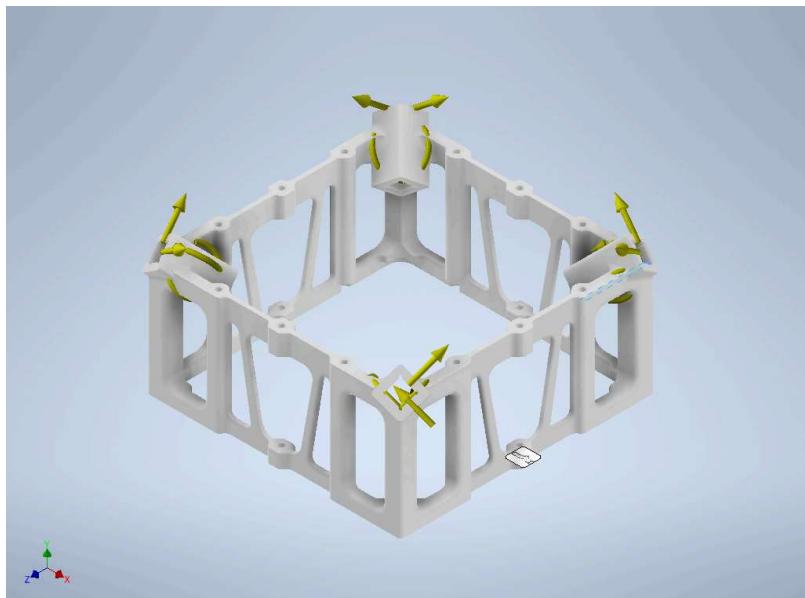
### Faces selecionadas



### 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

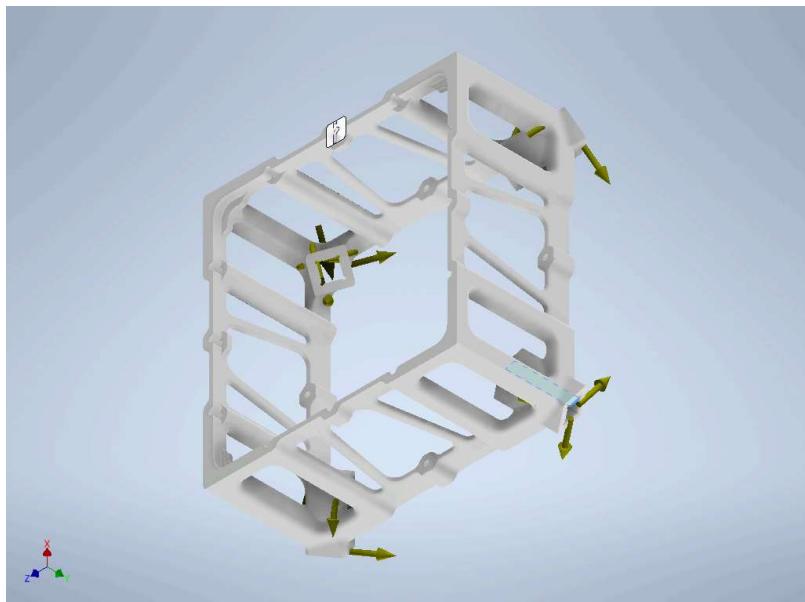
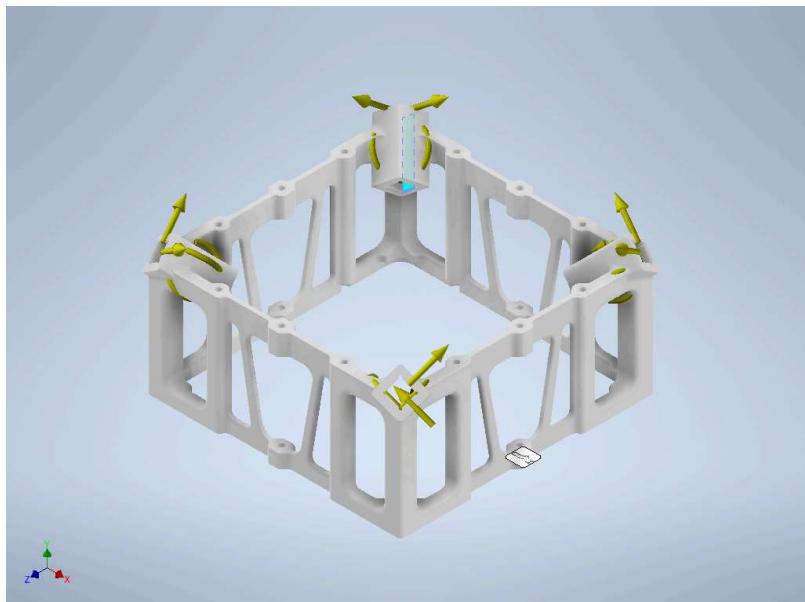
### Faces selecionadas



### 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

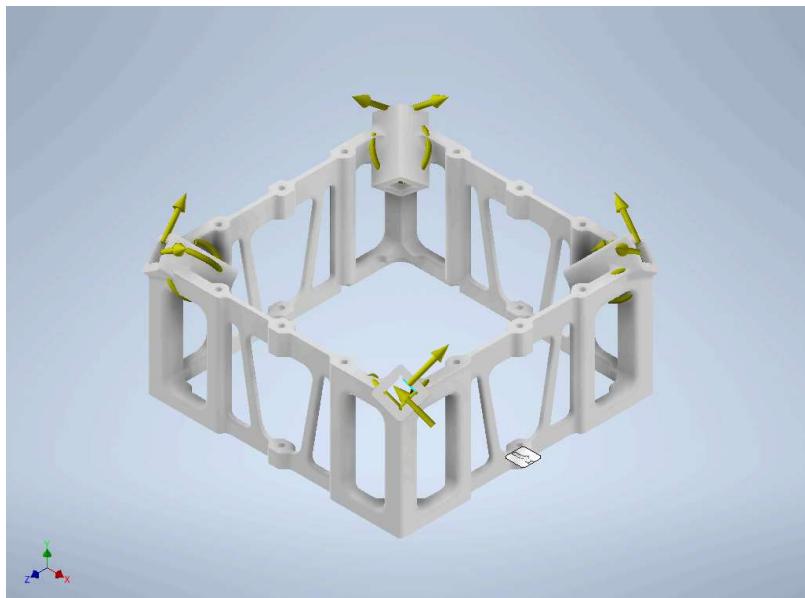
### Faces selecionadas



### 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

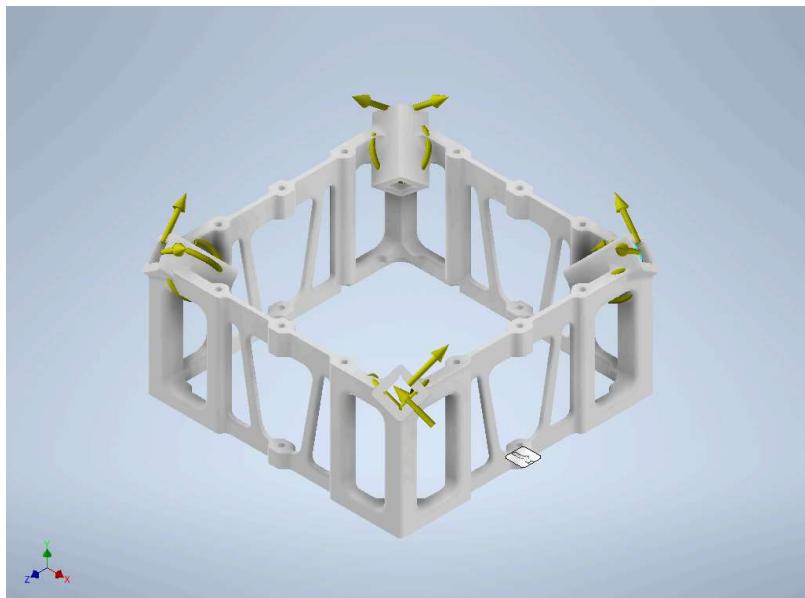
### Faces selecionadas



### 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

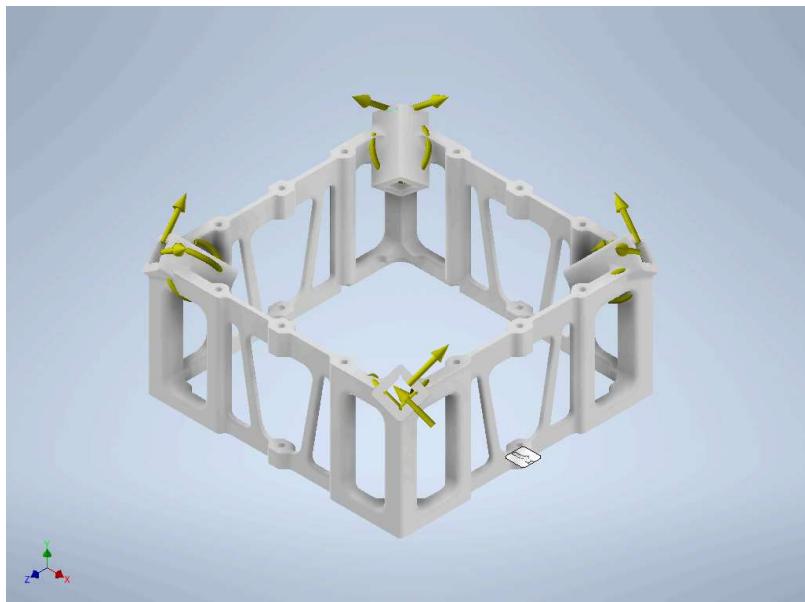
### Faces selecionadas



### 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

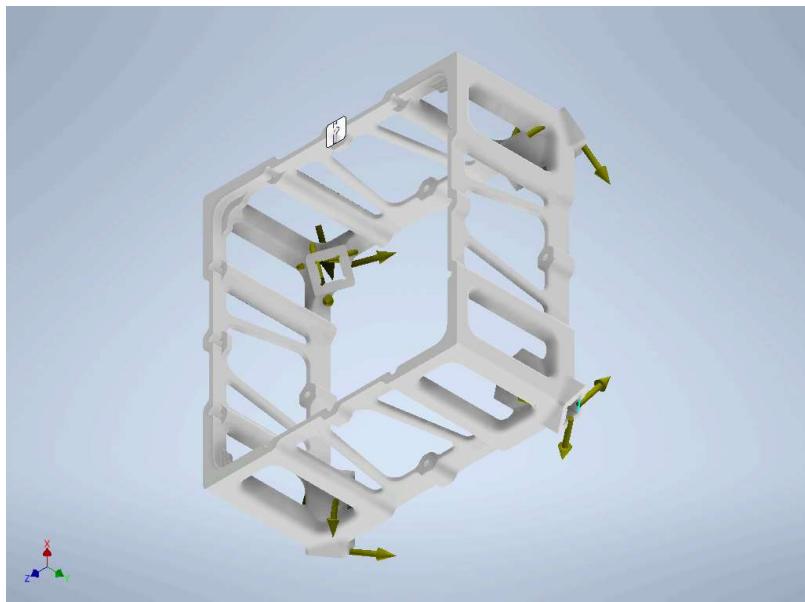
### Faces selecionadas



### 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

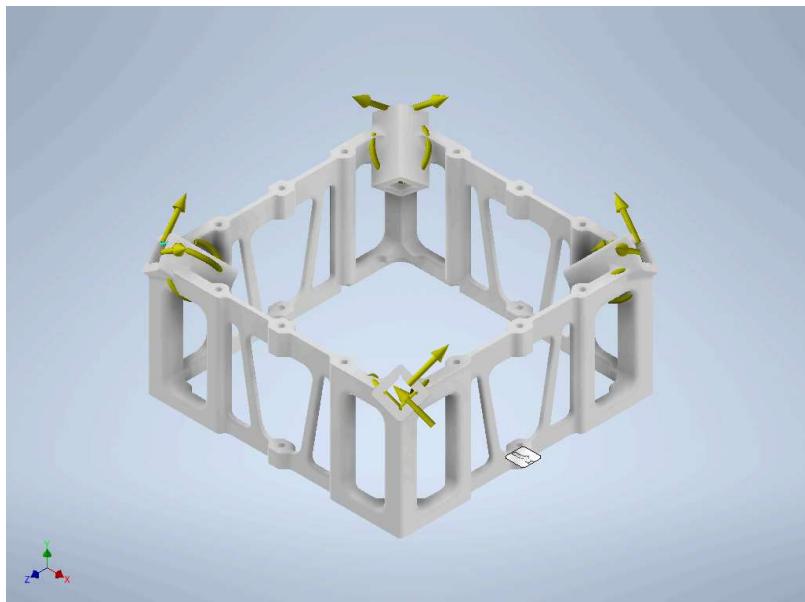
### Faces selecionadas



### 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

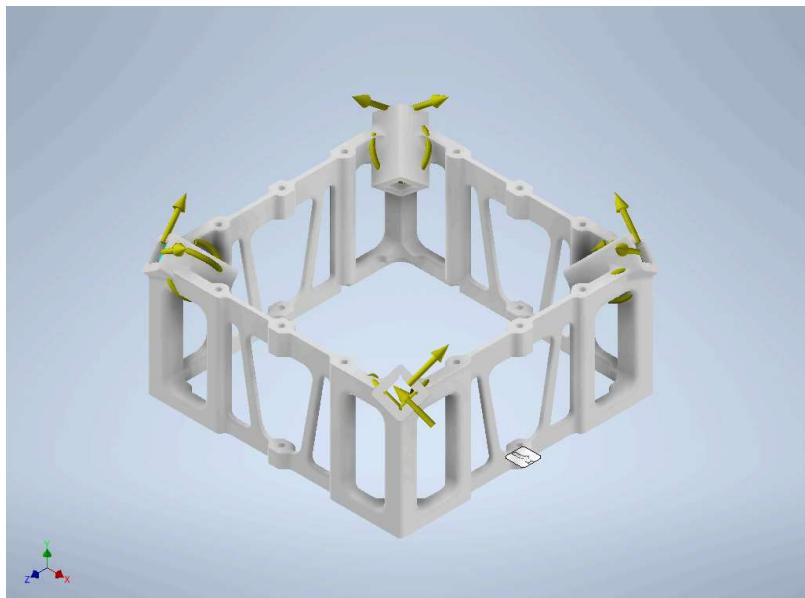
### Faces selecionadas



### 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

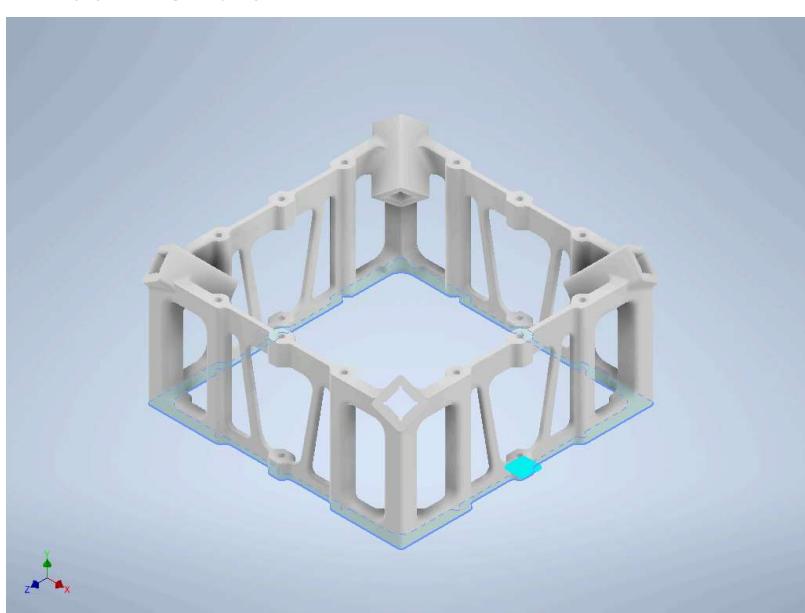
### Faces selecionadas

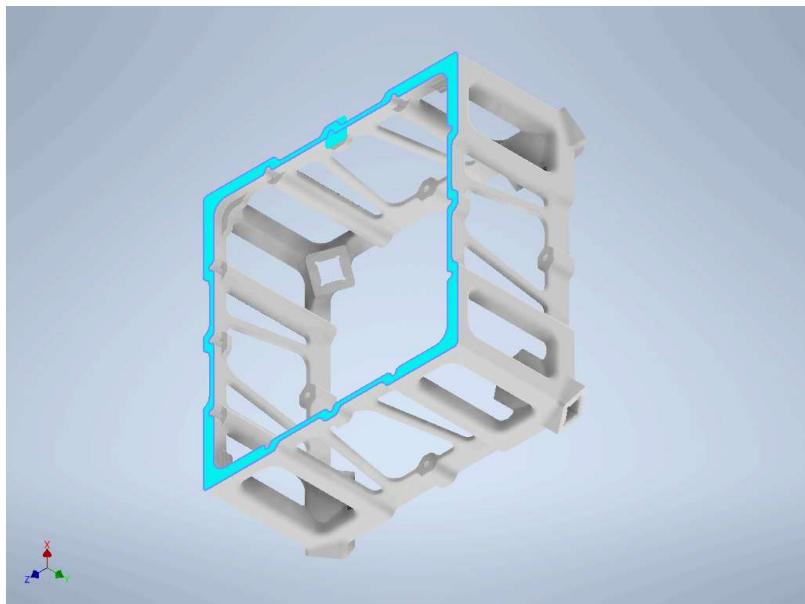


### Restrição fixa:1

Tipo de restrição | Restrição fixa

#### Faces selecionadas





## Resultados

### Força e momento de reação em restrições

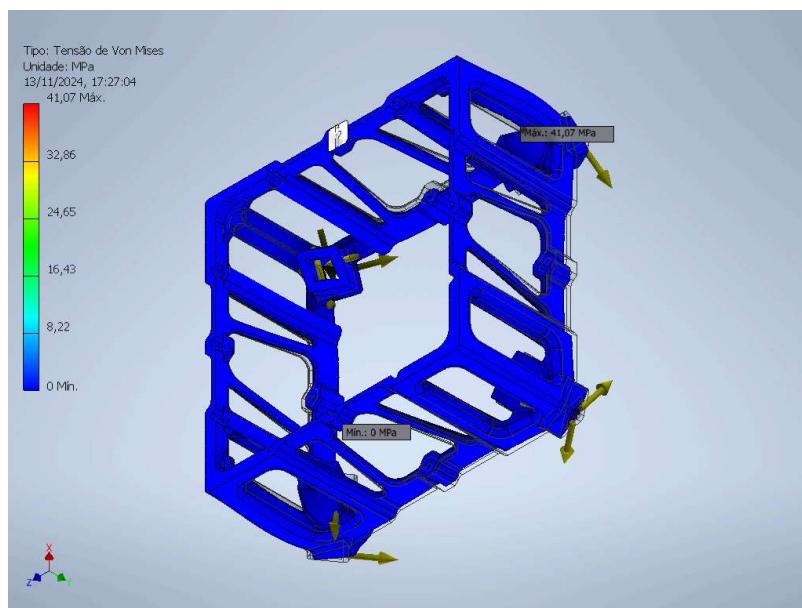
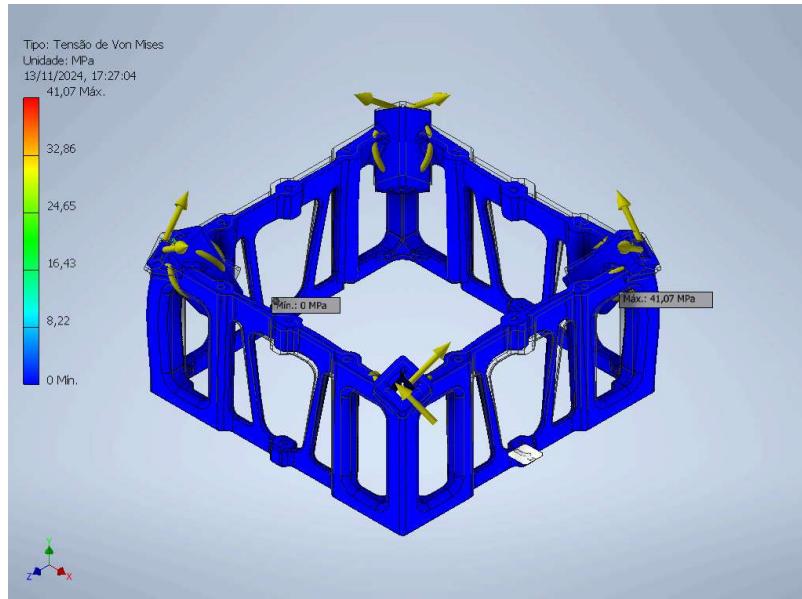
Nome da restrição	Força de reação		Momento de reação	
	Magnitude	"Componente (X,Y,Z)"	Magnitude	"Componente (X,Y,Z)"
Restrição fixa:1	48,9897 N	0 N	0 N m	0 N m
		-48,9897 N		0 N m
		0 N		0 N m

### Resumo de resultados

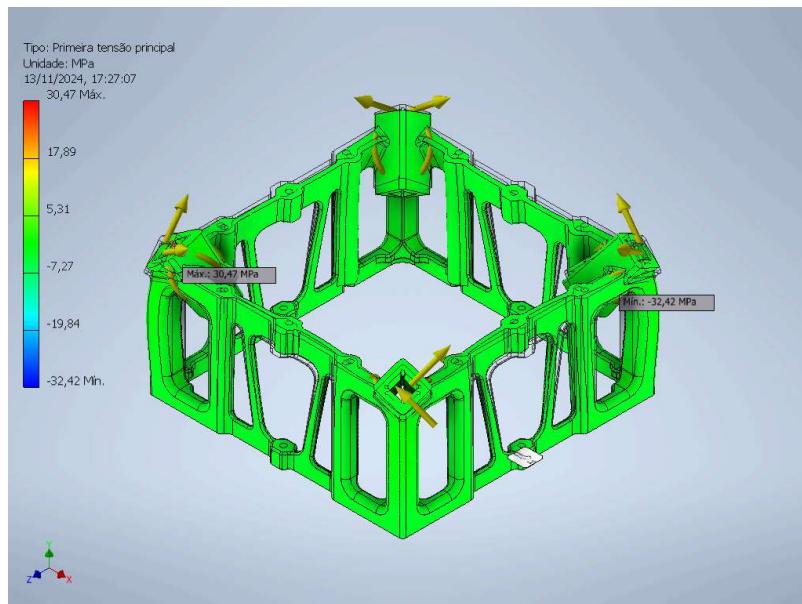
Nome	Mínima	Máxima
Volume	170442 mm <sup>3</sup>	
Massa	0,429683 kg	
Tensão de Von Mises	0,00198198 MPa	41,0739 MPa
Primeira tensão principal	-32,4225 MPa	30,4689 MPa
Terceira tensão principal	-75,121 MPa	19,9407 MPa
Deslocamento	0 mm	0,368545 mm
Fator de segurança	0,589669 s_m	15 s_m
Tensão XX	-50,9585 MPa	20,2473 MPa
Tensão XY	-9,26666 MPa	14,6491 MPa
Tensão XZ	-12,7897 MPa	18,6816 MPa
Tensão YY	-46,8629 MPa	27,4765 MPa
Tensão YZ	-11,3928 MPa	18,4159 MPa
Tensão ZZ	-51,3287 MPa	27,1854 MPa
Deslocamento X	-0,138965 mm	0,233234 mm
Deslocamento Y	-0,366891 mm	0,121865 mm
Deslocamento Z	-0,233503 mm	0,138255 mm
Deformação equivalente	0,0000012763 s_m	0,0258408 s_m
Primeira deformação principal	0,000000762654 s_m	0,0167758 s_m
Terceira deformação principal	-0,027474 s_m	-0,000000727482 s_m
Deformação XX	-0,00798152 s_m	0,00829179 s_m
Deformação XY	-0,00870082 s_m	0,0137545 s_m
Deformação XZ	-0,0120087 s_m	0,0175409 s_m
Deformação YY	-0,0143788 s_m	0,00965088 s_m
Deformação YZ	-0,0106971 s_m	0,0172914 s_m
Deformação ZZ	-0,00878668 s_m	0,00897684 s_m

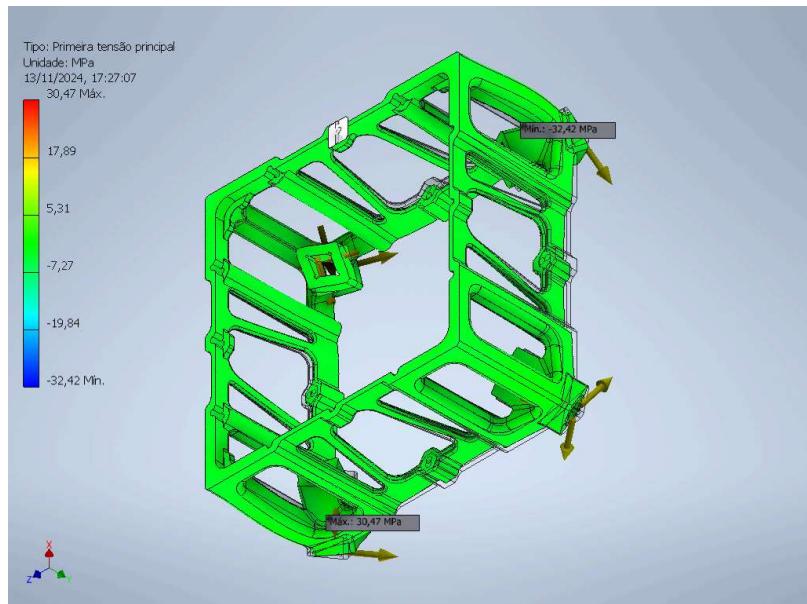
## Figuras

### Tensão de Von Mises

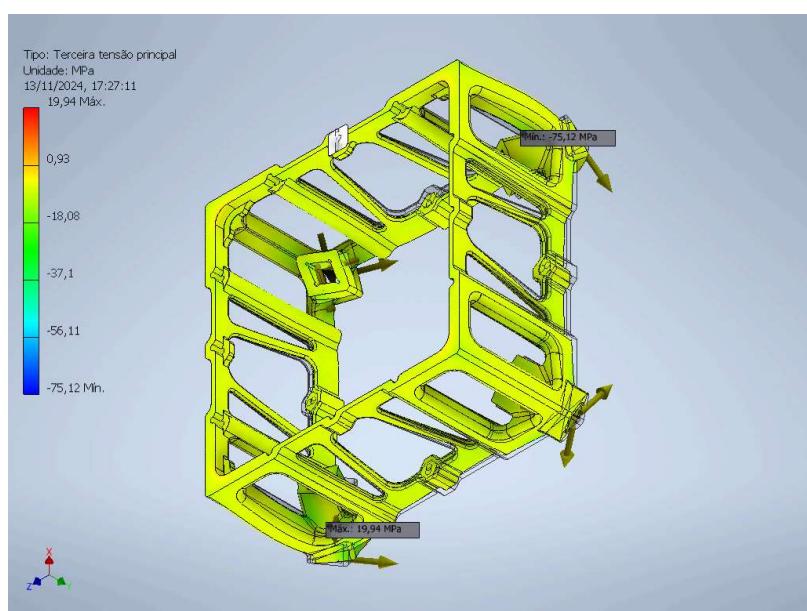
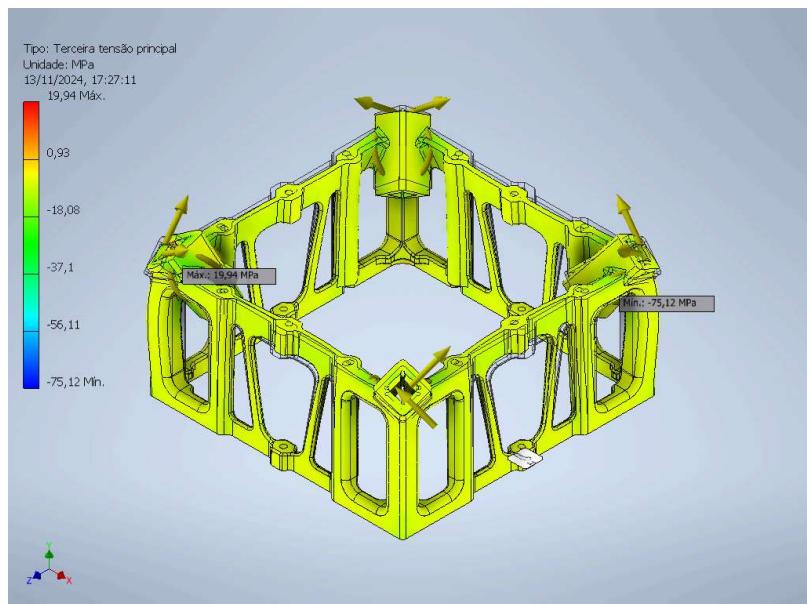


### Primeira tensão principal

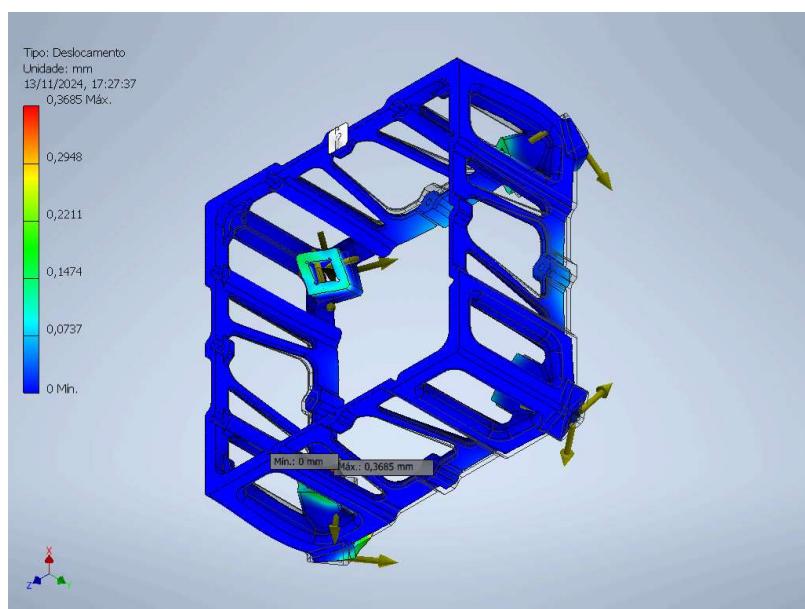
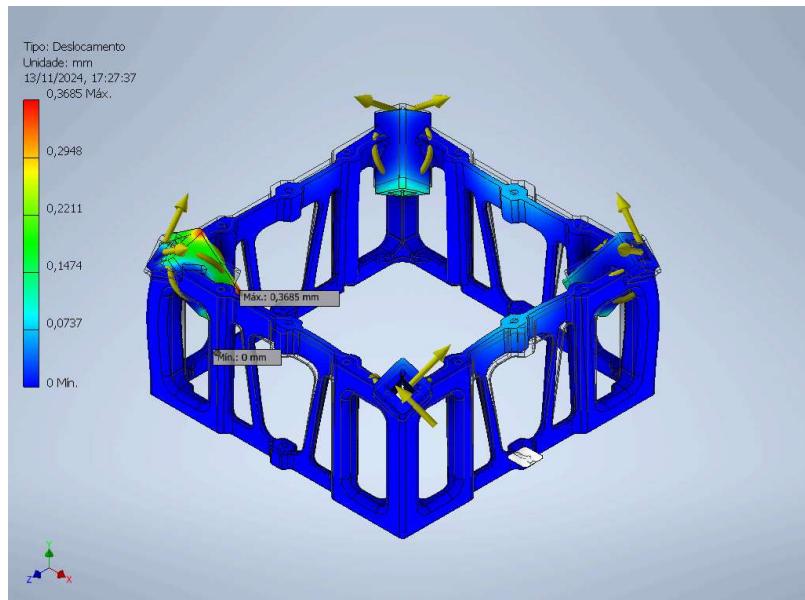




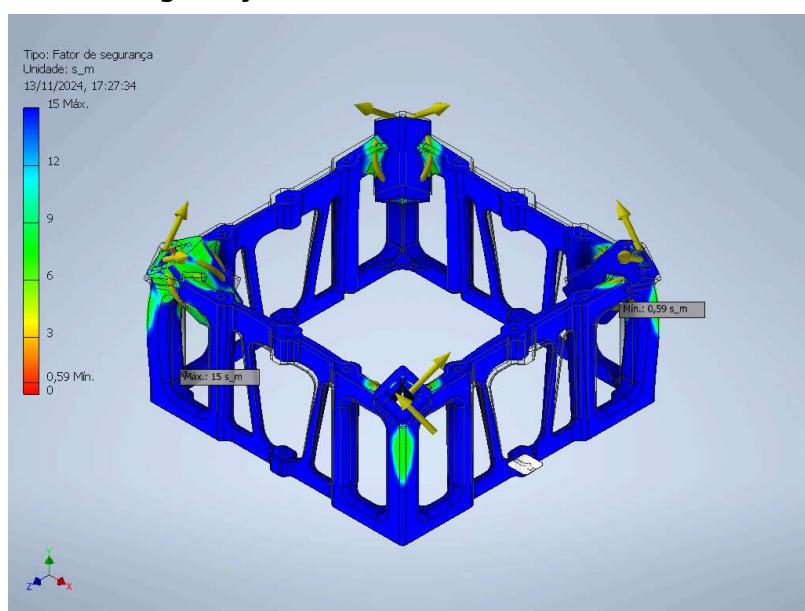
### Terceira tensão principal

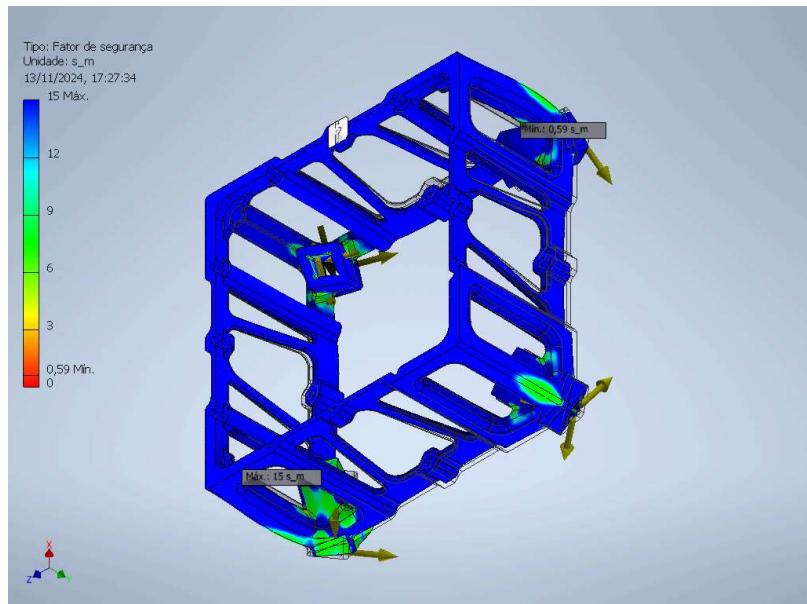


### Deslocamento

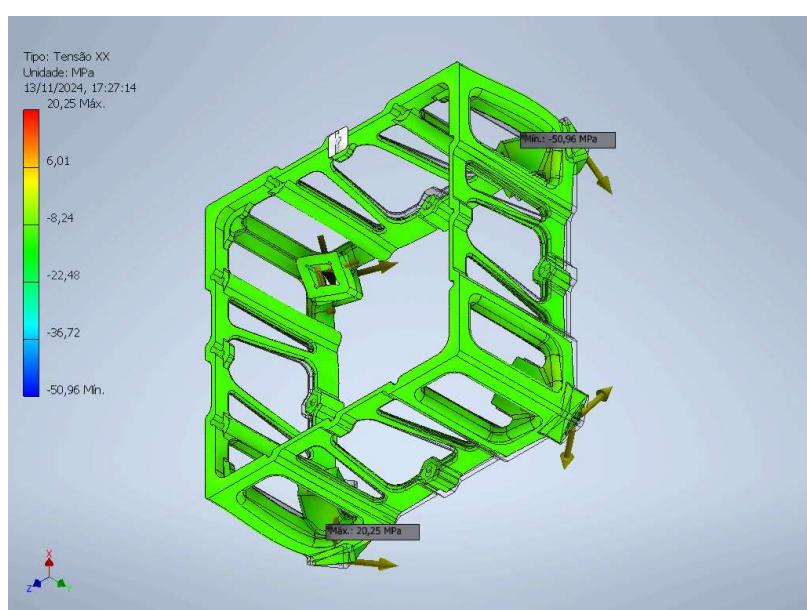
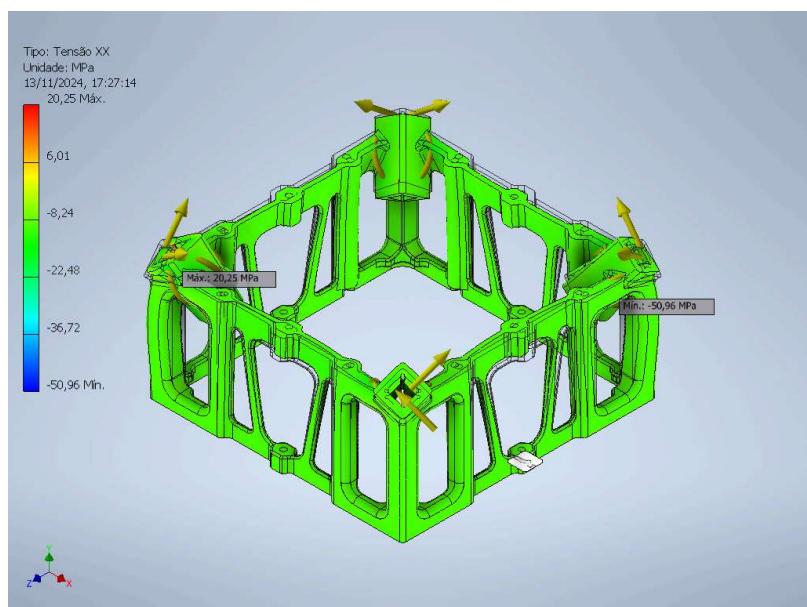


## Fator de segurança

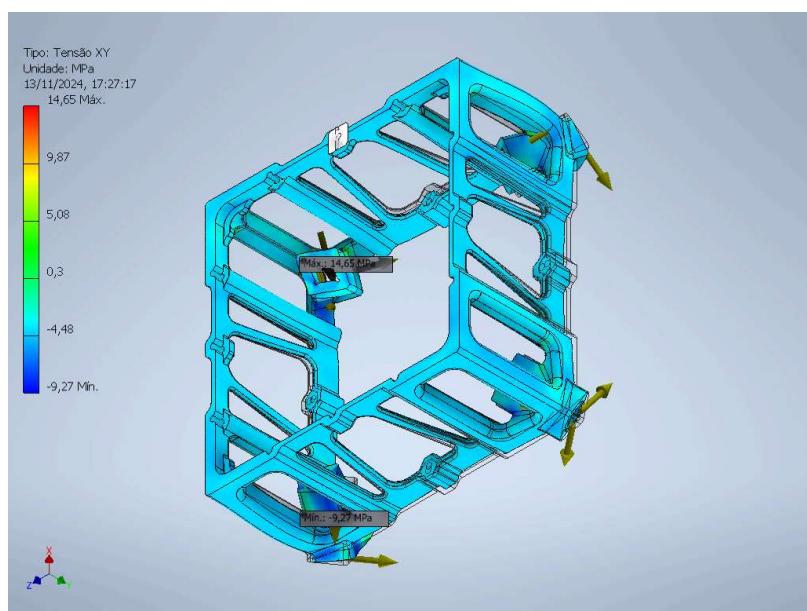
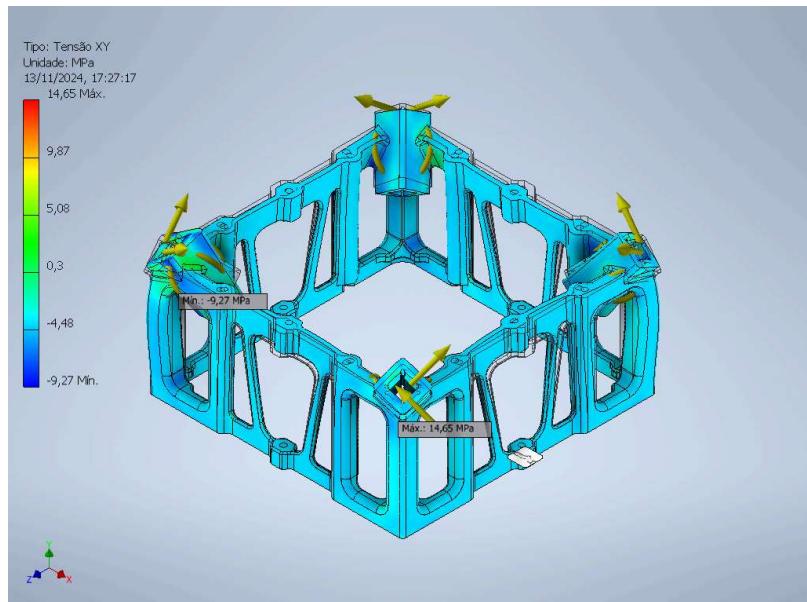




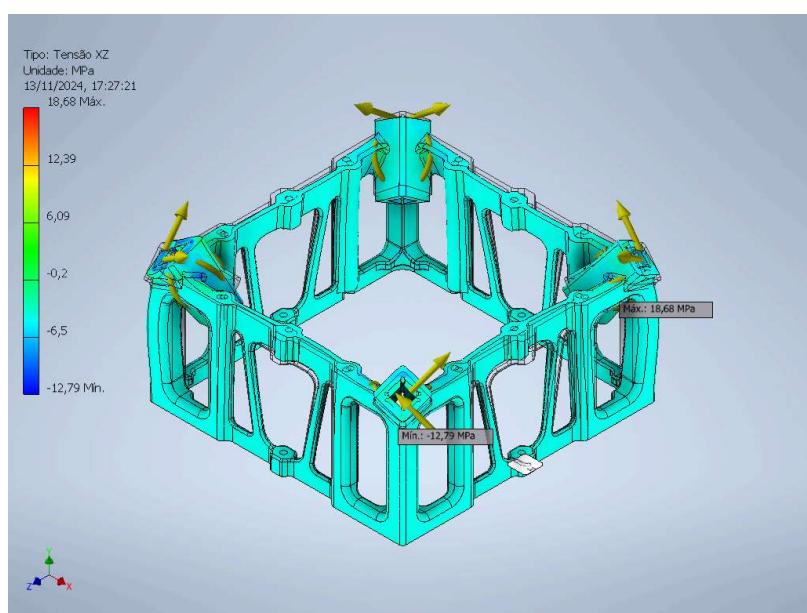
**Tensão XX**

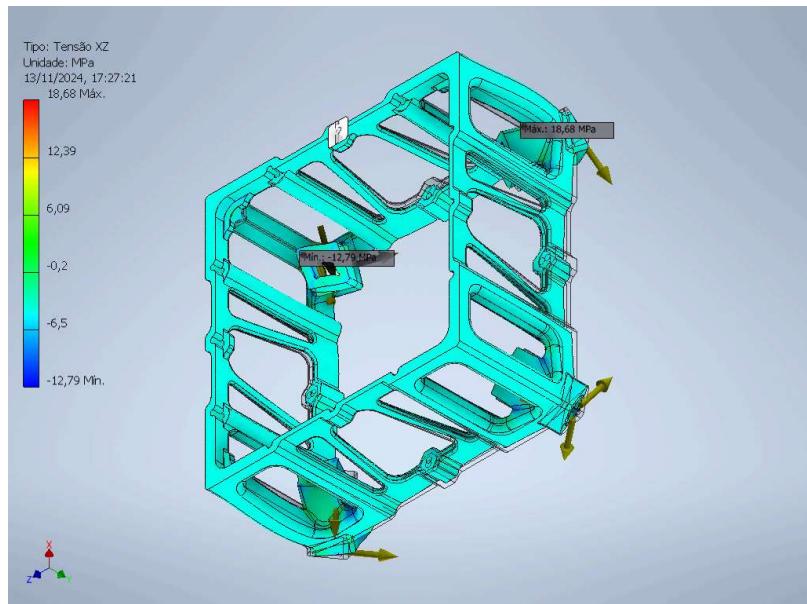


**Tensão XY**

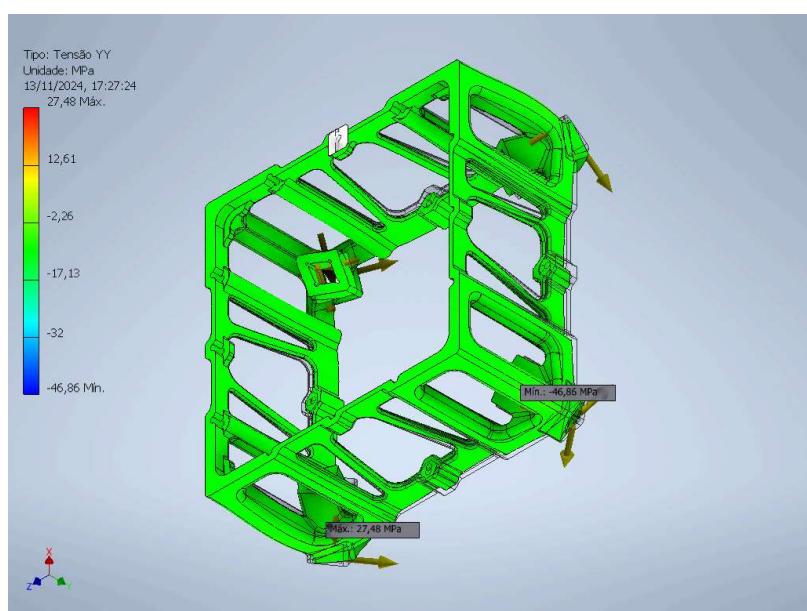
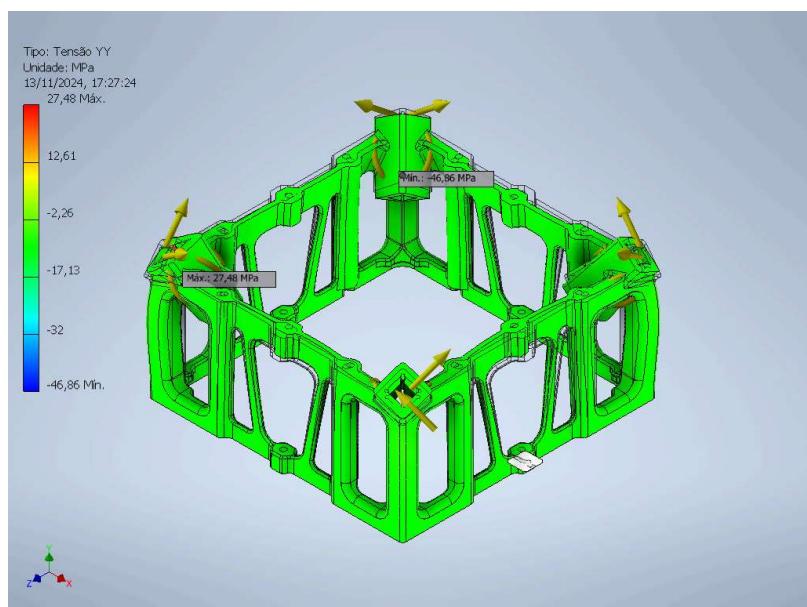


### Tensão XZ

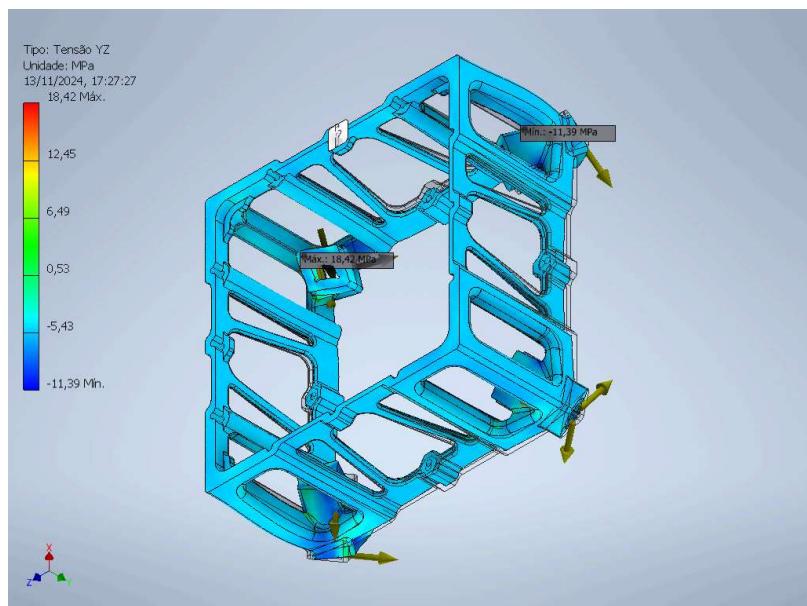
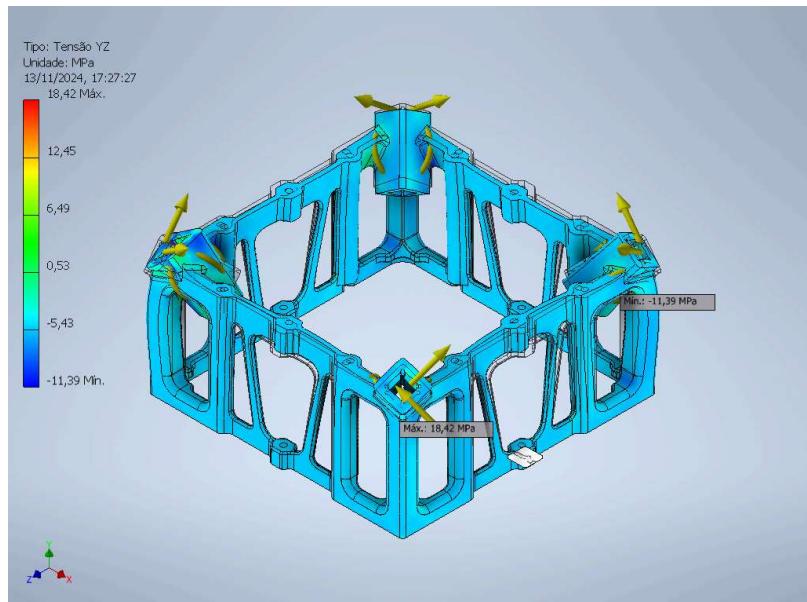




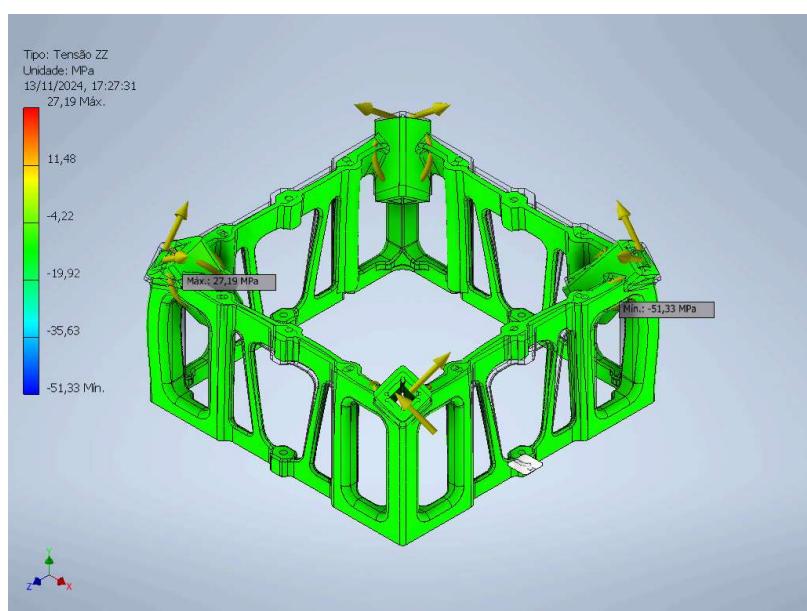
**Tensão YY**

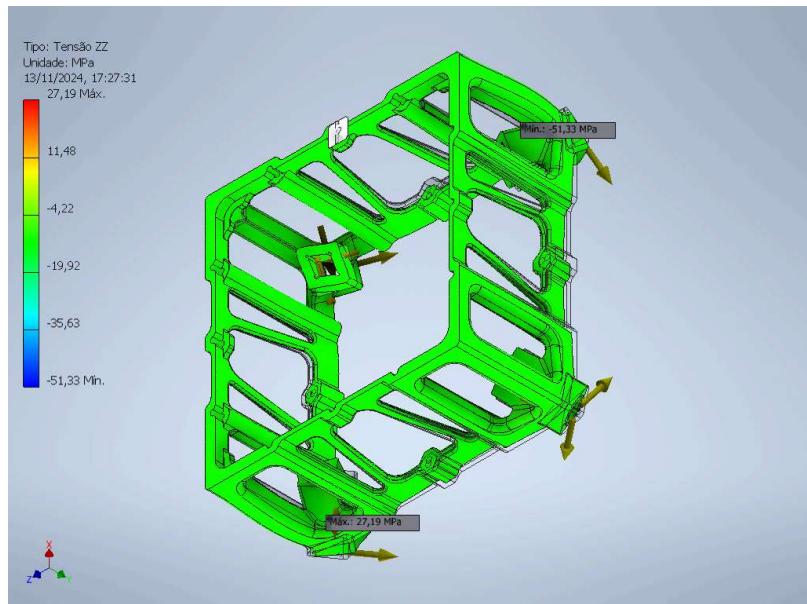


**Tensão YZ**

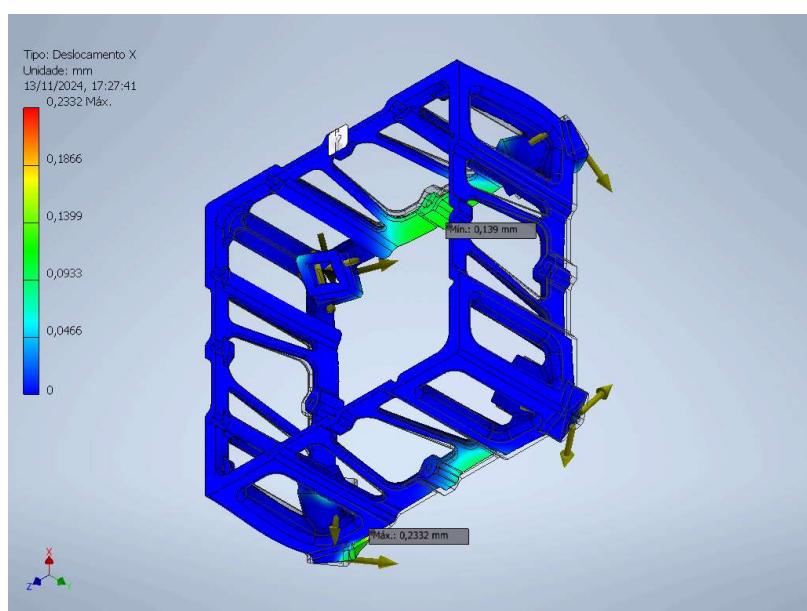
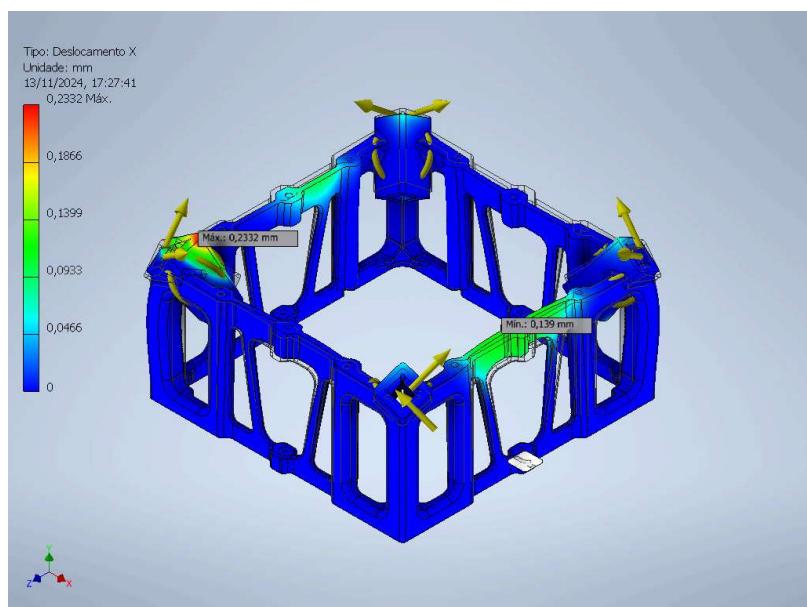


## Tensão ZZ

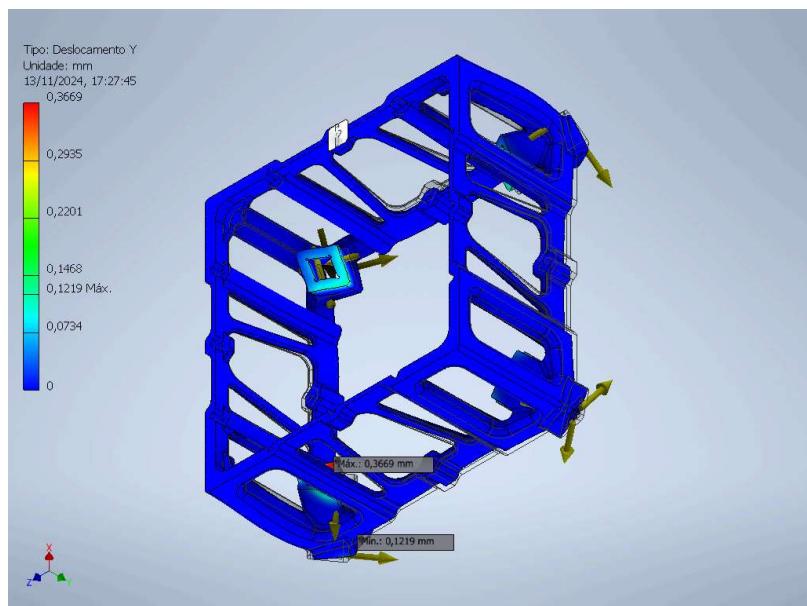
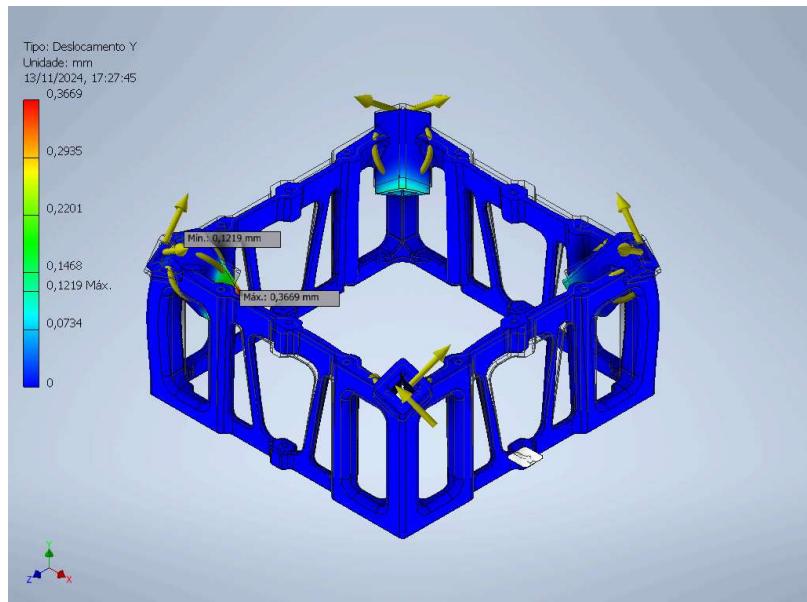




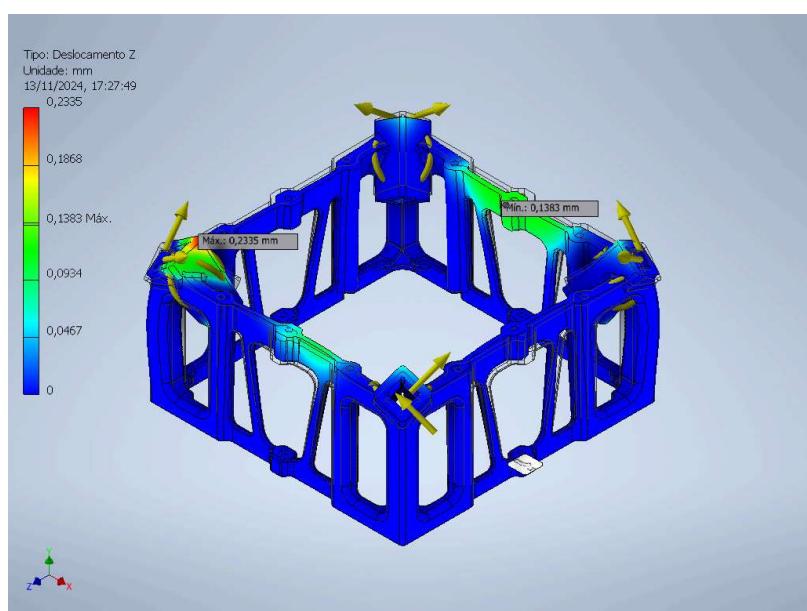
### Deslocamento X

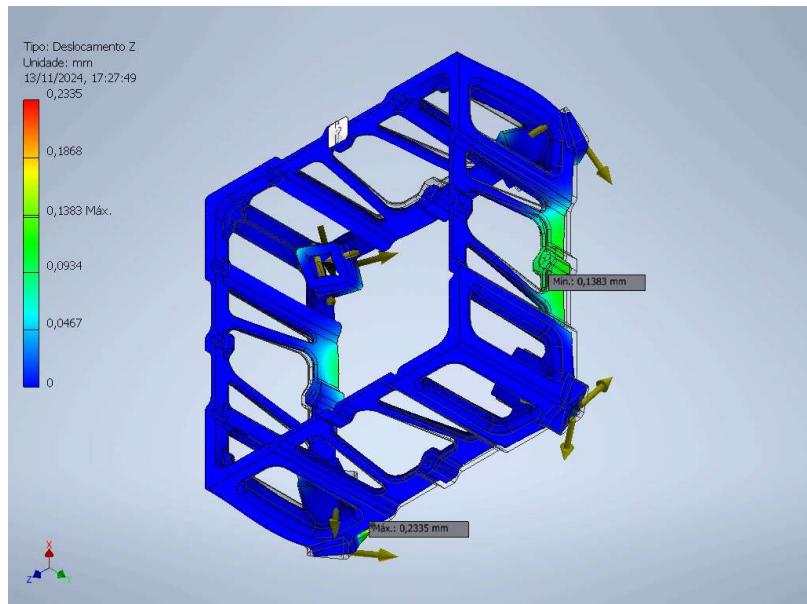


### Deslocamento Y

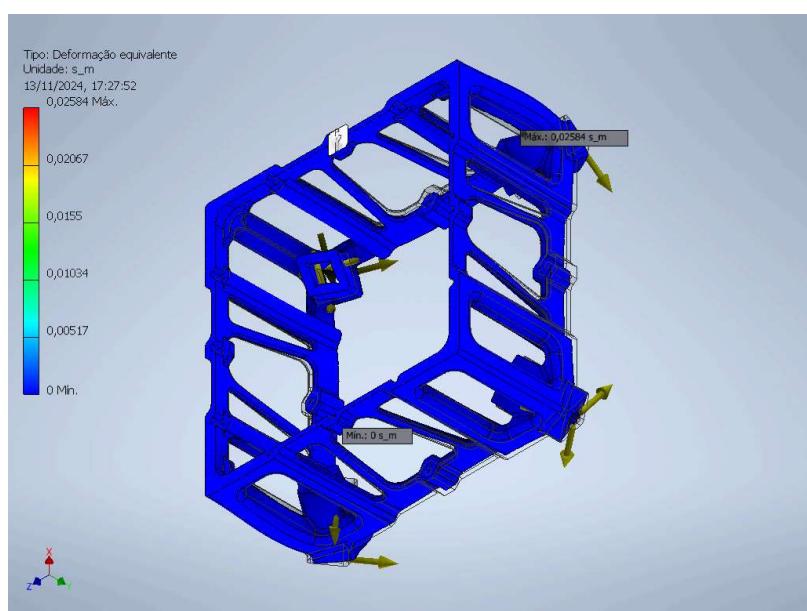
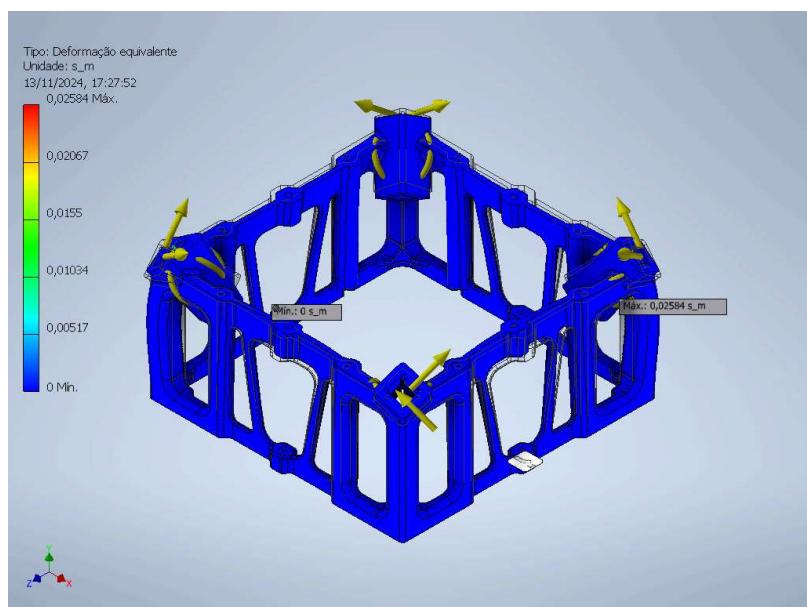


## Deslocamento Z

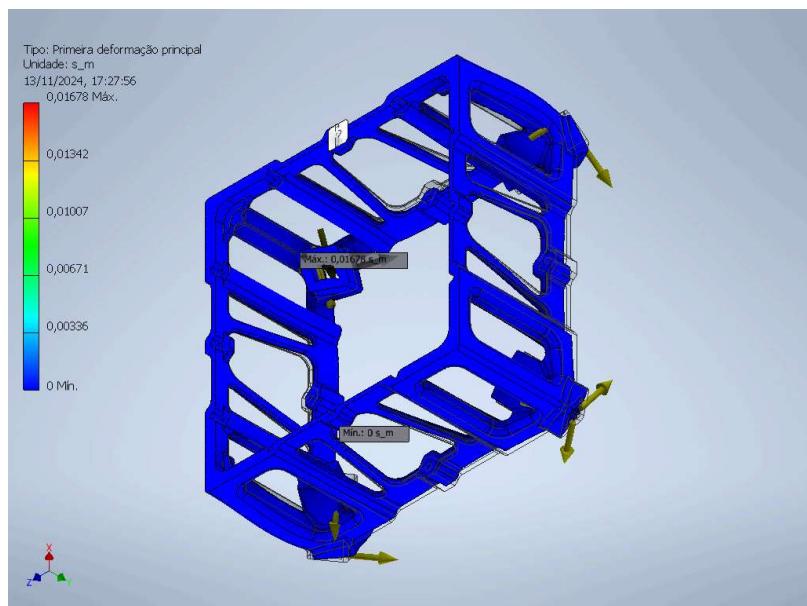
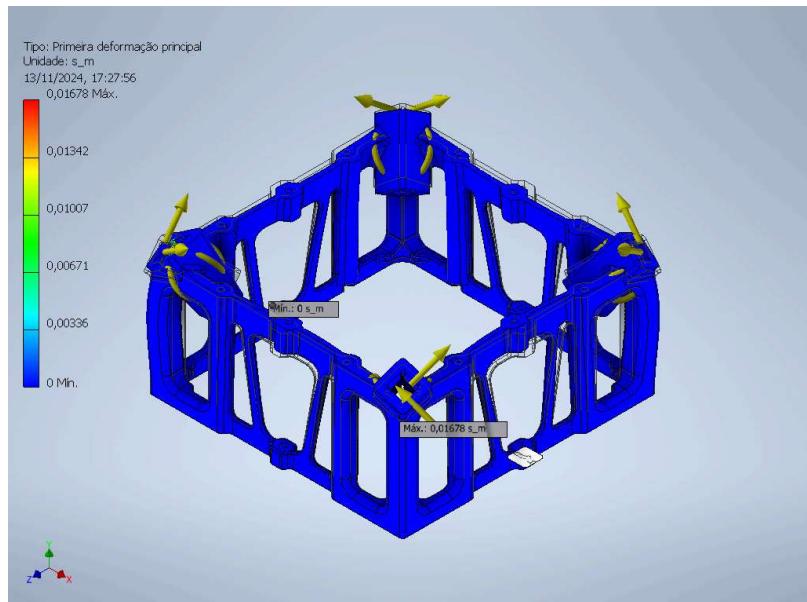




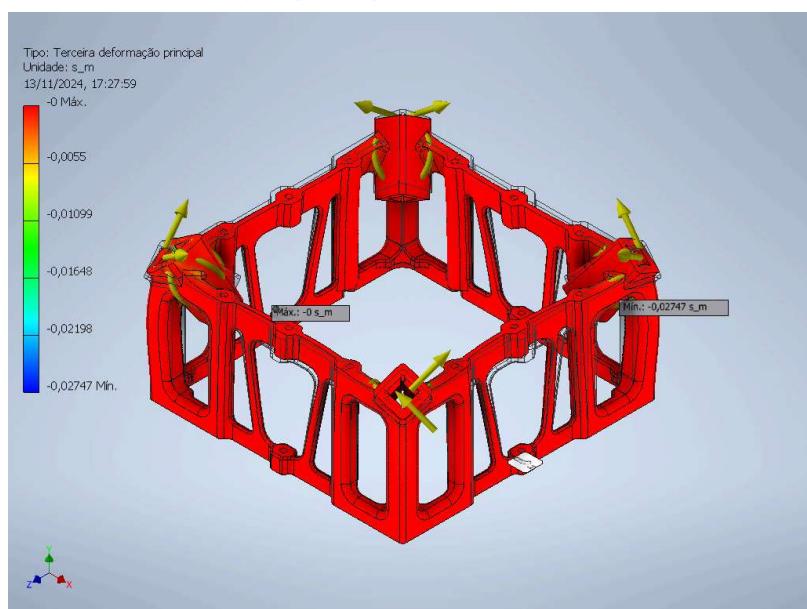
### Deformação equivalente

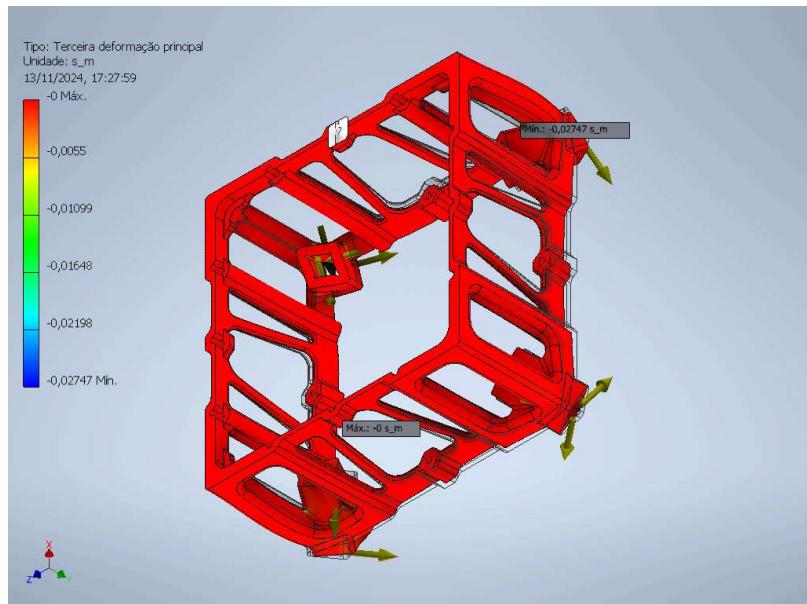


### Primeira deformação principal

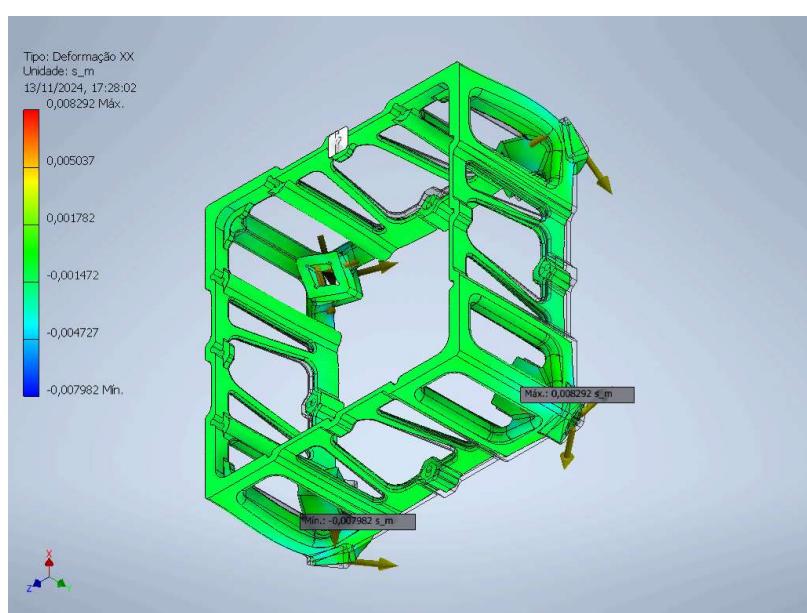
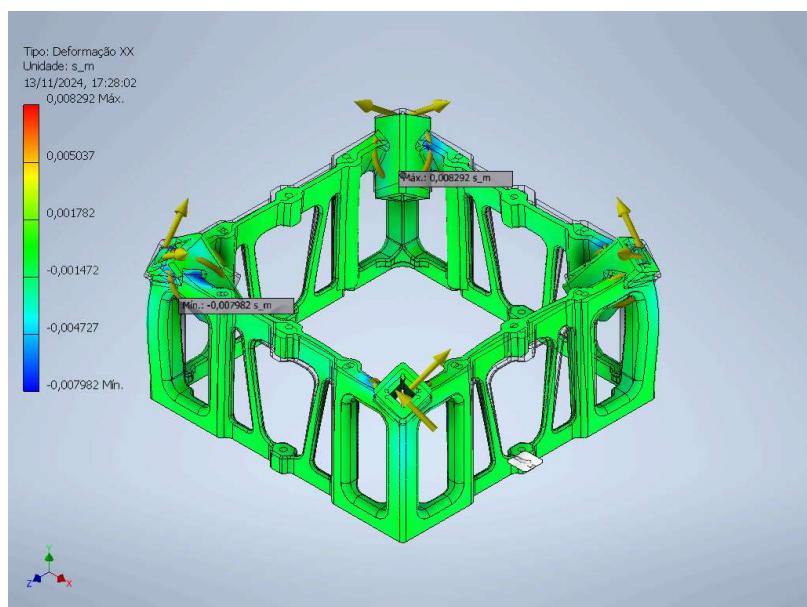


### Terceira deformação principal

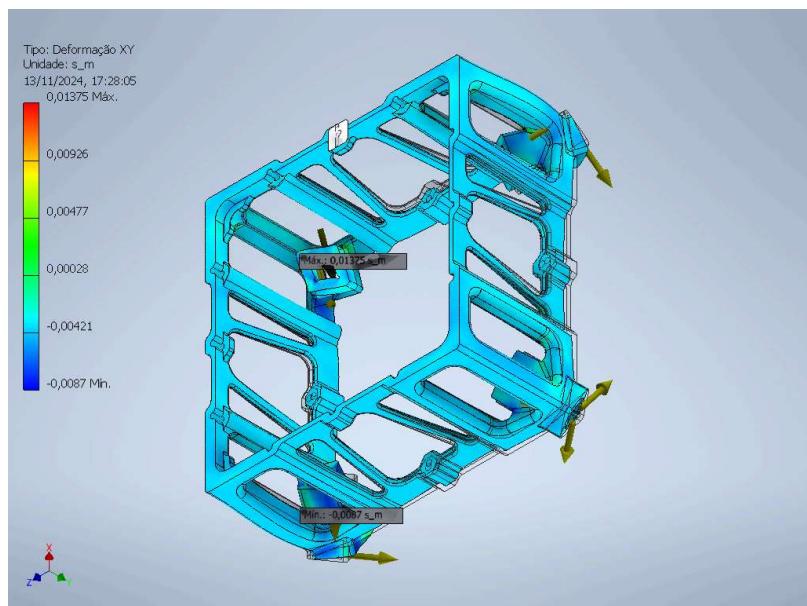
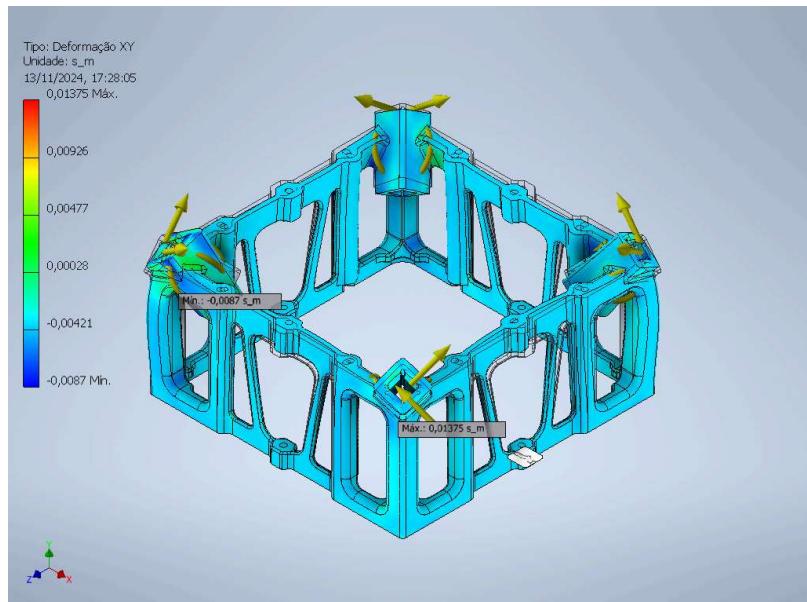




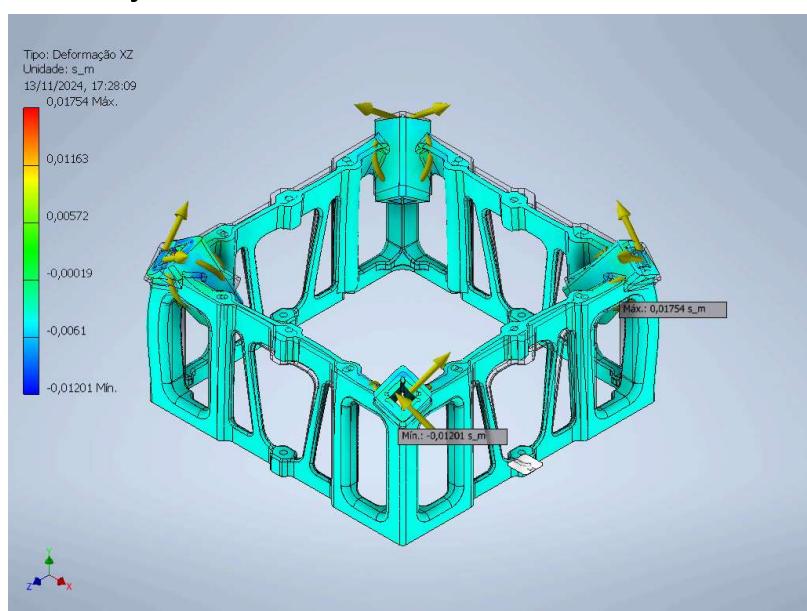
**Deformação XX**

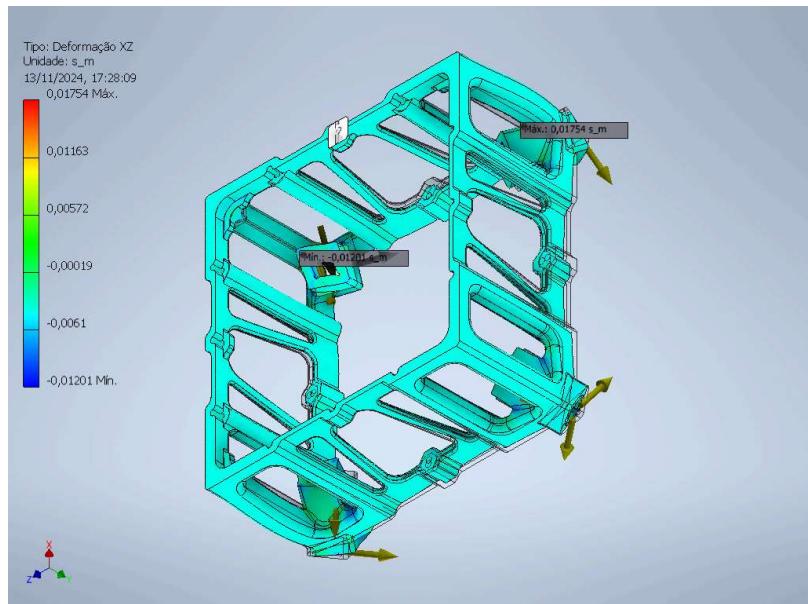


**Deformação XY**

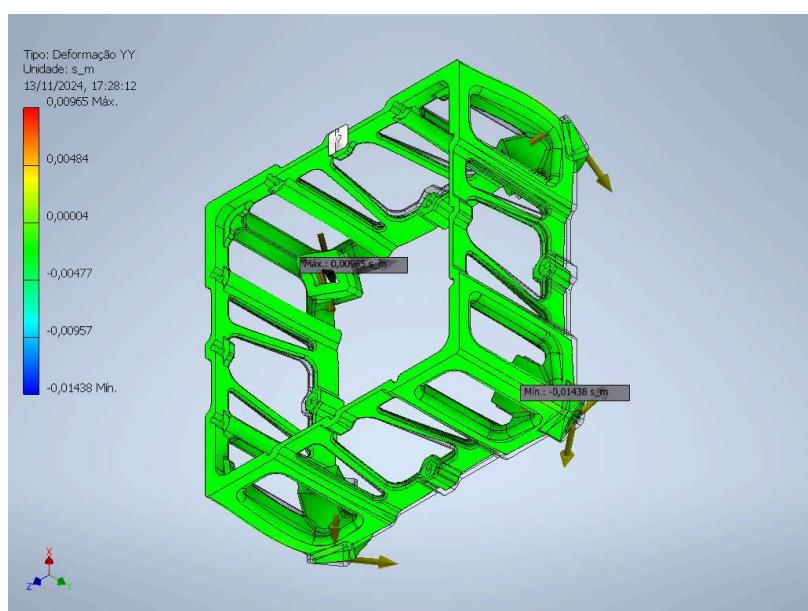
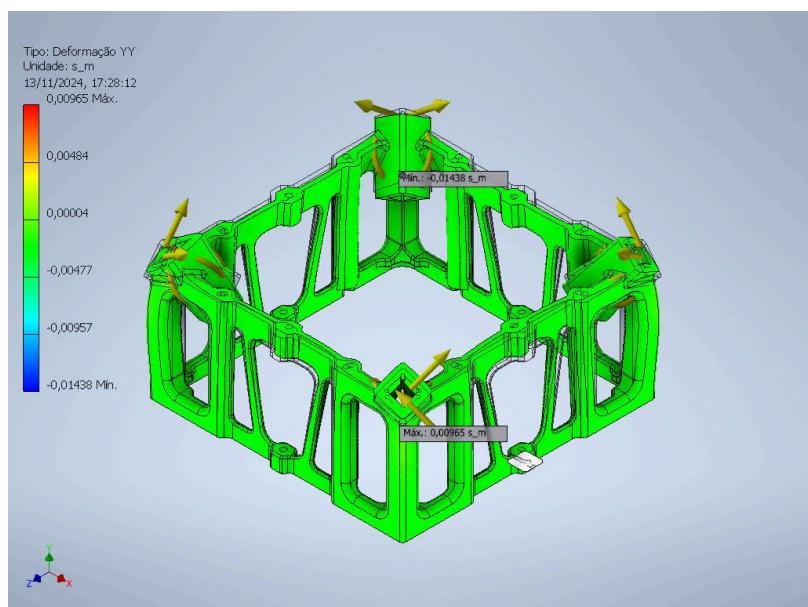


## Deformação XZ

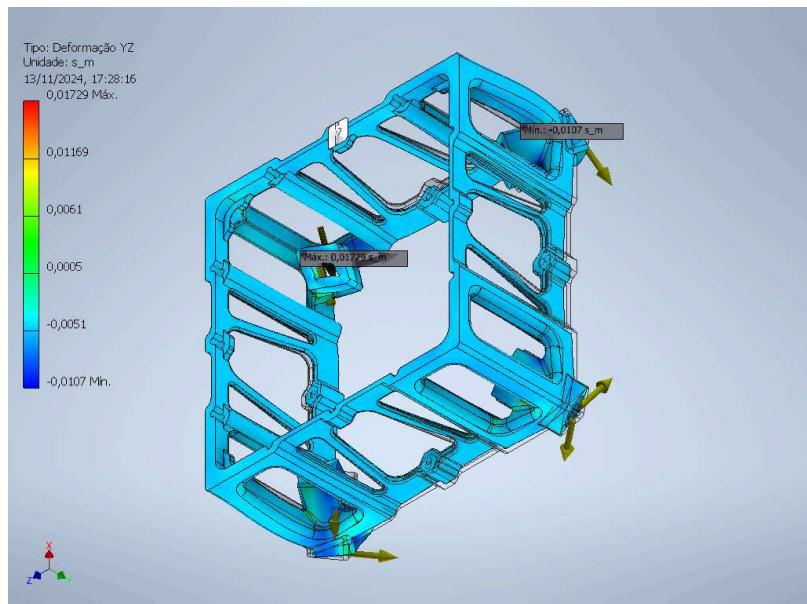
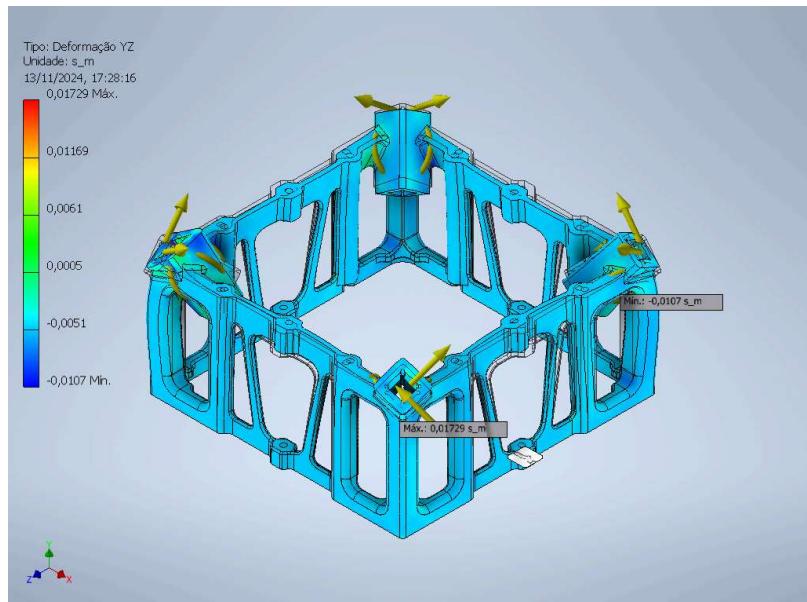




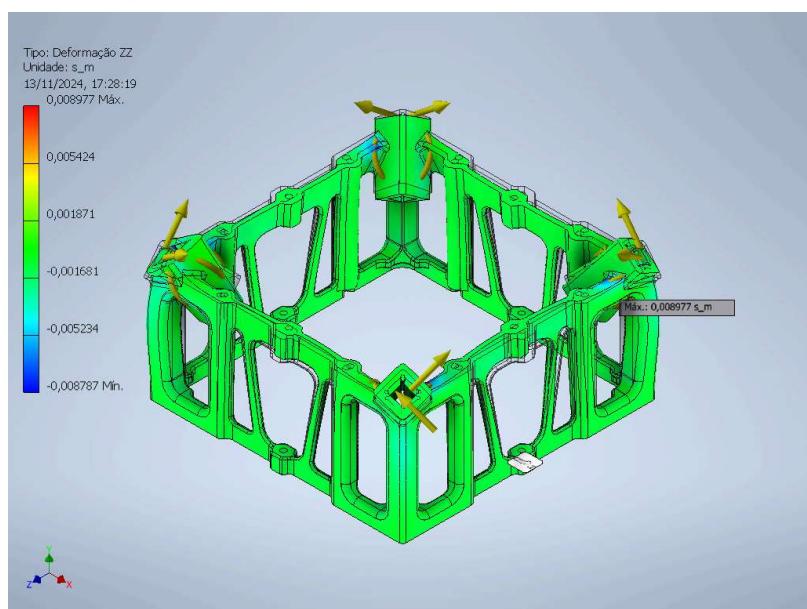
**Deformação YY**

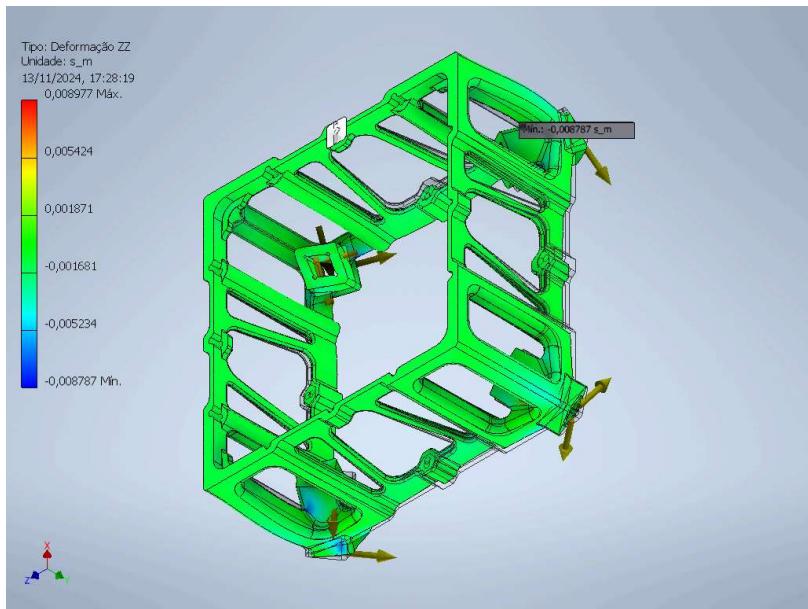


**Deformação YZ**



## Deformação ZZ





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