

TOF Structure primary analysis 31.03.2022

General

Material: Aluminium alloy

Yield strength, Mpa: 280

Ultimate strength, MPa: 310

Young's modulus, Gpa: 70

Mass

TOF Chamber, kg: 20

TOF Structure var.1.1 full, kg: 136,6

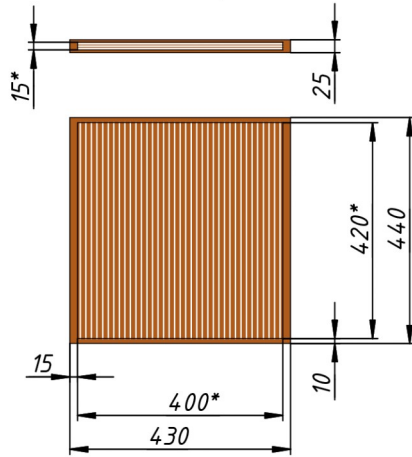
TOF Structure var.2.1 full, kg: 176,8

TOF Structure var.2.1 full, kg: 200

A. Korzenev, I. Moshkovskii

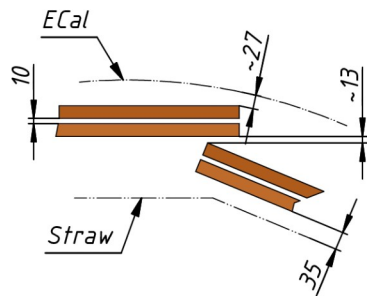
TOF scheme 01.02.2022

TOF Chamber (zoom x3)
32 strips

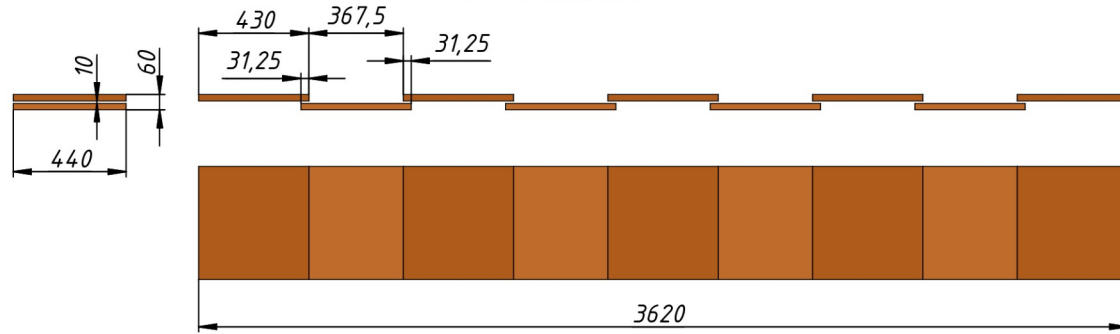


*Active area

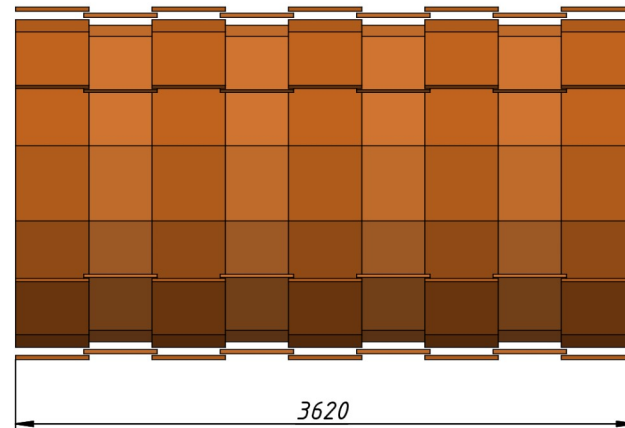
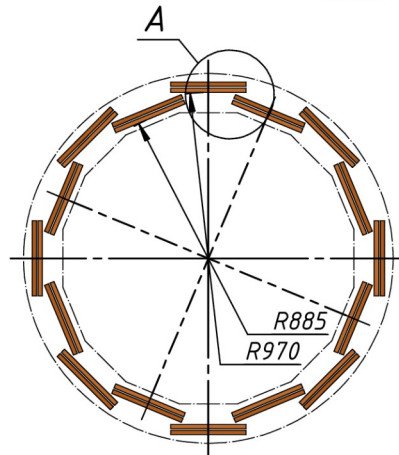
A (zoom x3)



TOF 1/16 Barrel (zoom x1,5)
5+4=9 chambers

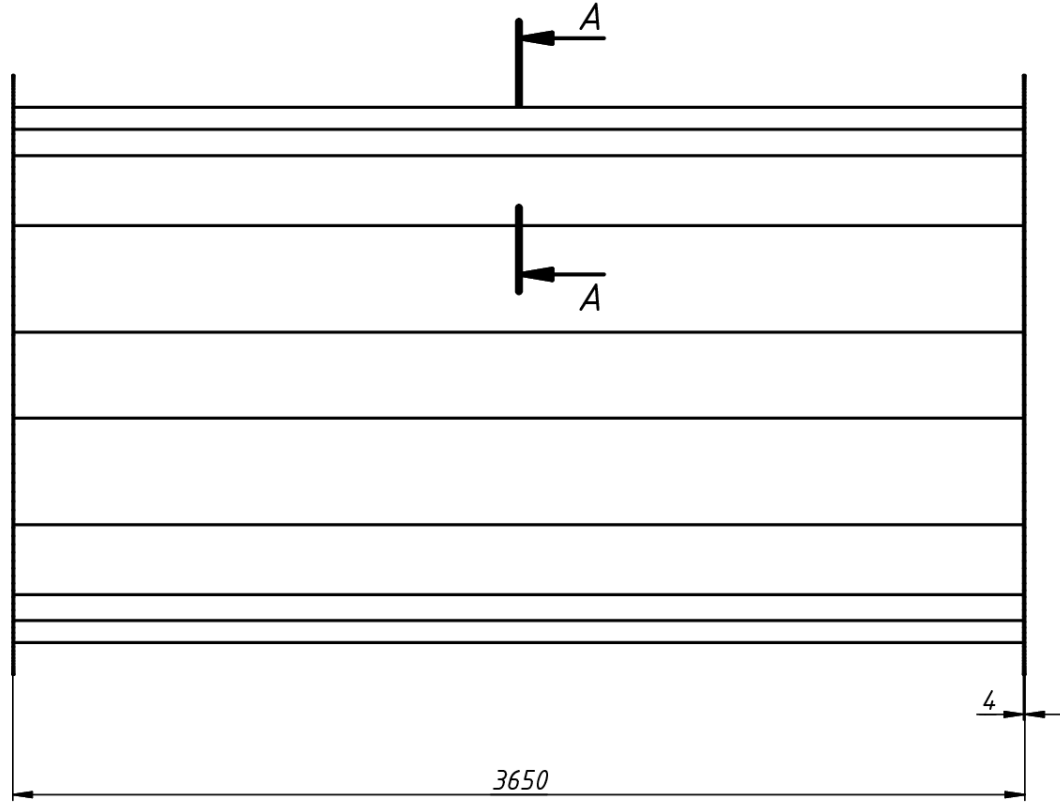
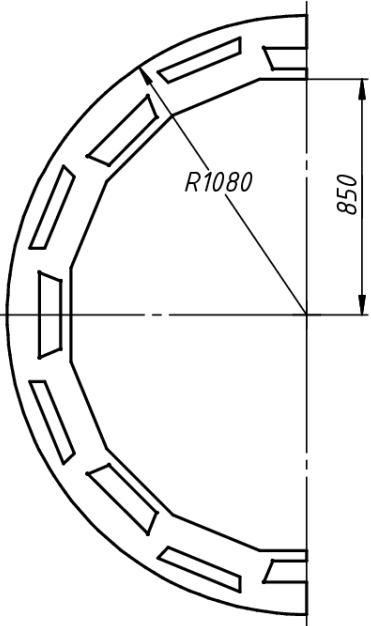


TOF Barrel
9x16=144 chambers

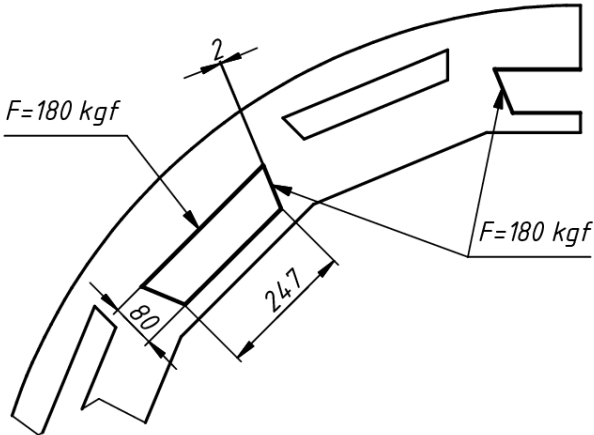


TOF Structure var.1.1

TOF Structure var.1.1

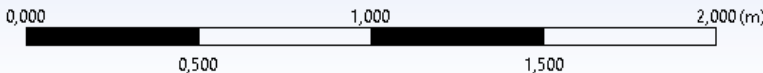
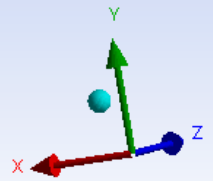
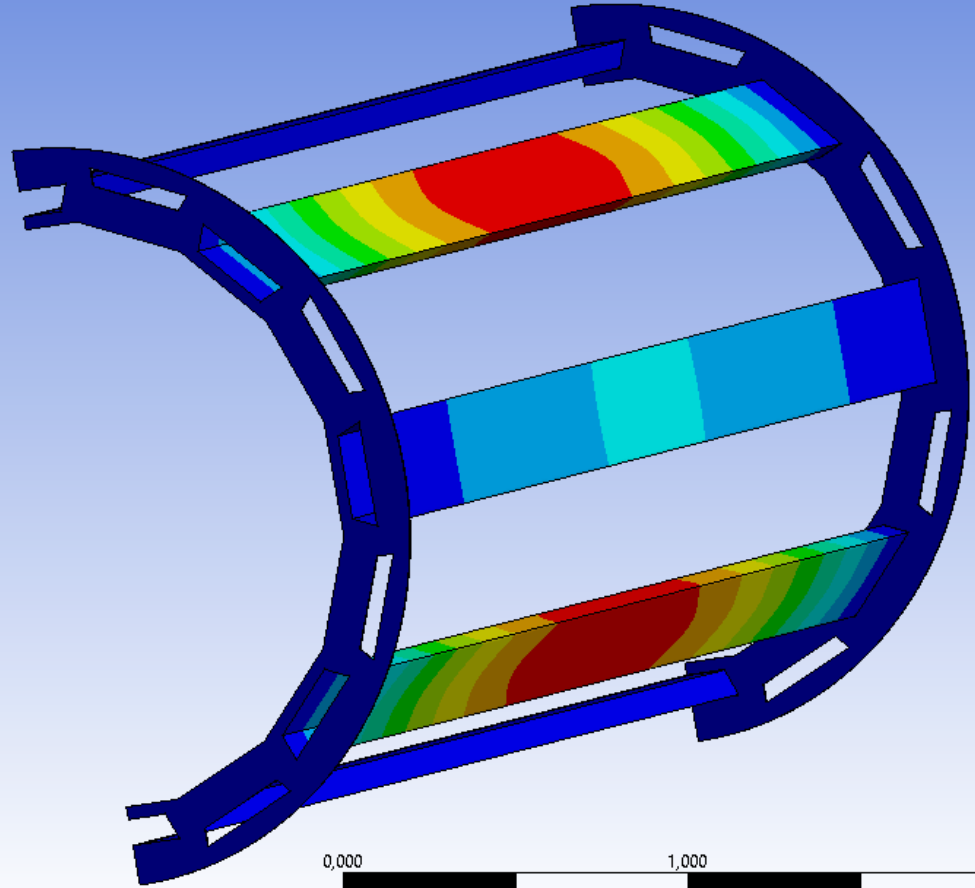
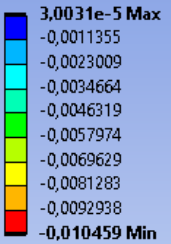


A-A zoom x2



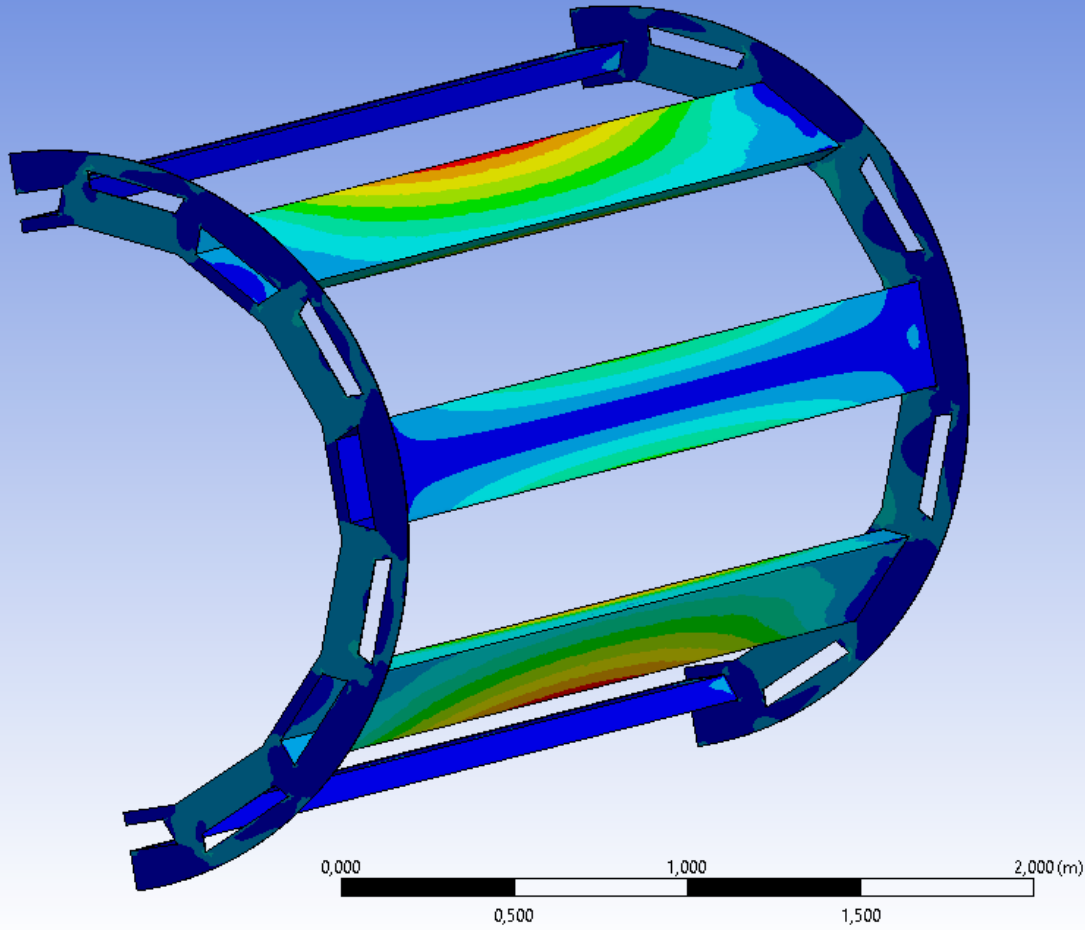
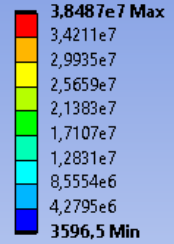
TOF Structure var.1.1

E: Static Structural
Directional Deformation
Type: Directional Deformation(Y Axis)
Unit: m
Global Coordinate System
Time: 1 s
24.03.2022 7:27

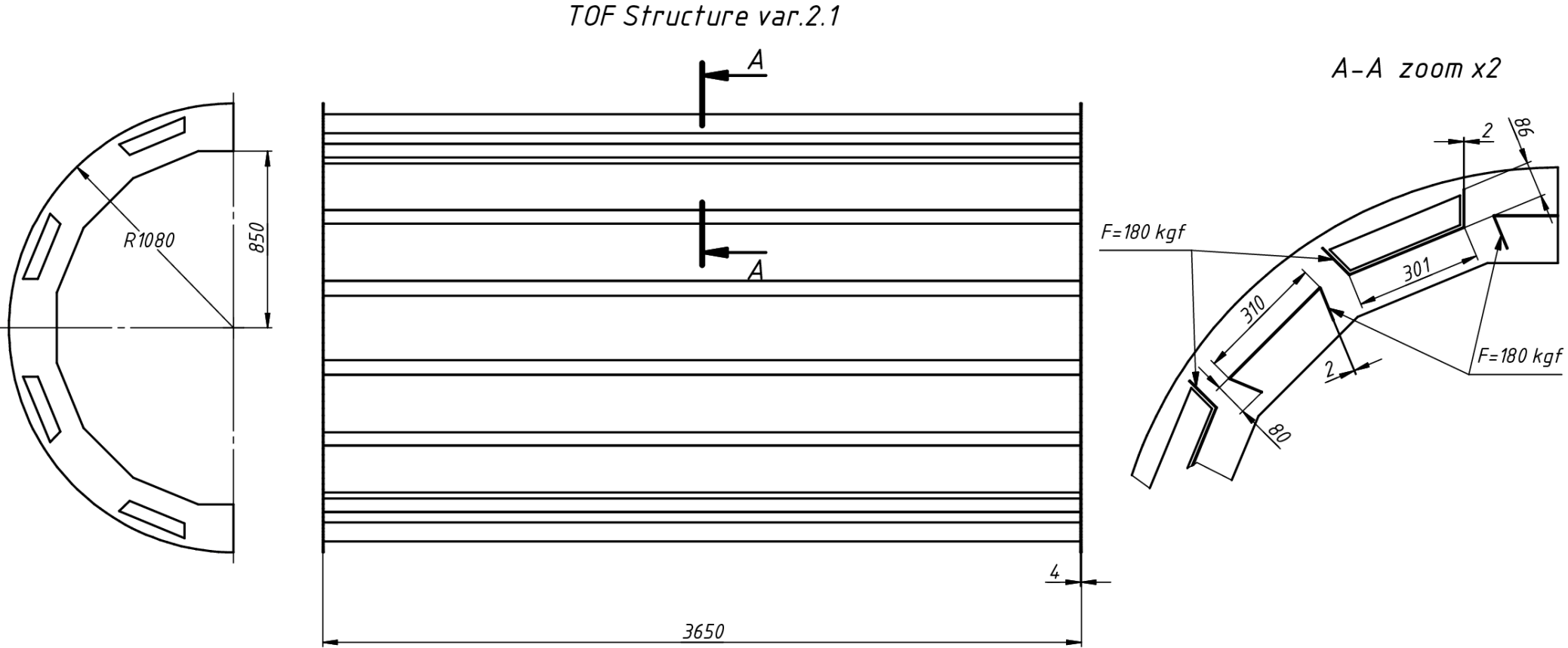


TOF Structure var.1.1

E: Static Structural
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: Pa
Time: 1 s
24.03.2022 7:27

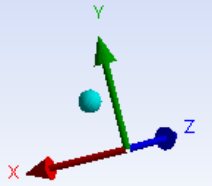
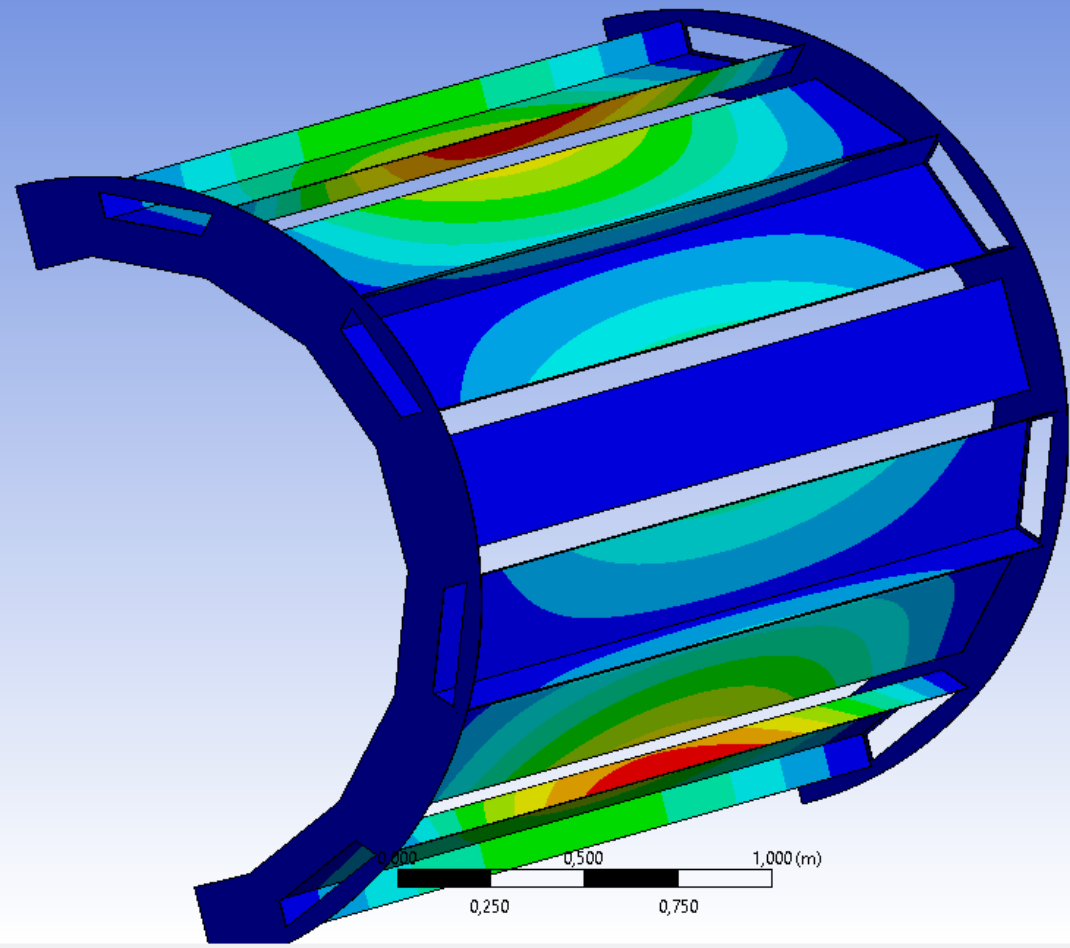
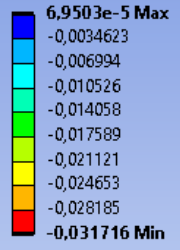


TOF Structure var.2.1



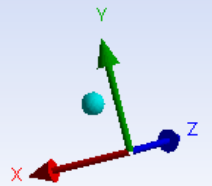
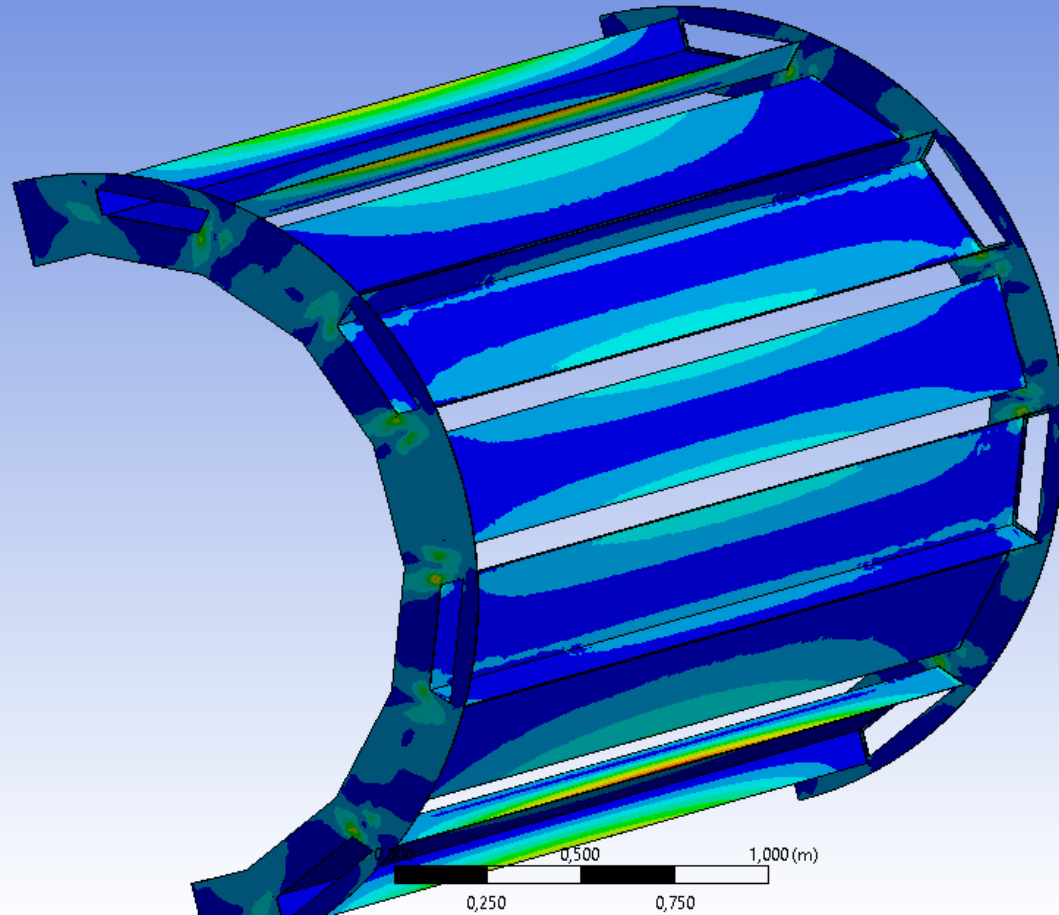
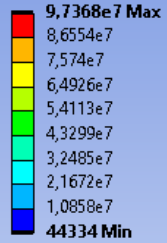
TOF Structure var.2.1

D: V 1.1
Directional Deformation
Type: Directional Deformation(Y Axis)
Unit: m
Global Coordinate System
Time: 1 s
24.03.2022 7:15

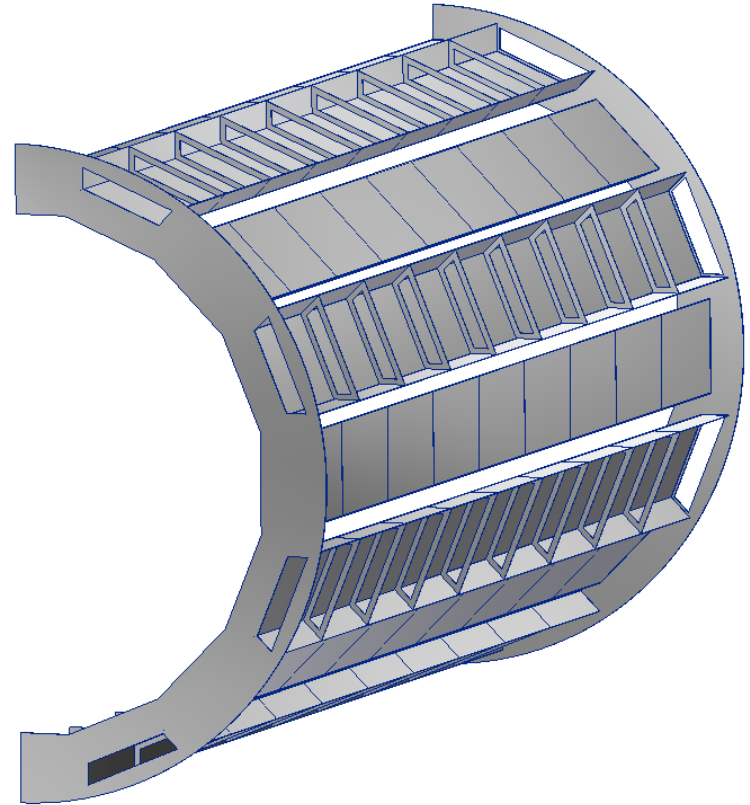
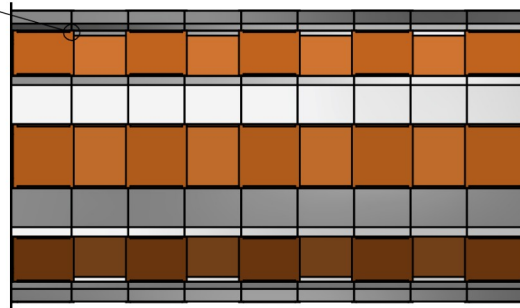
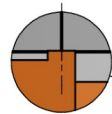
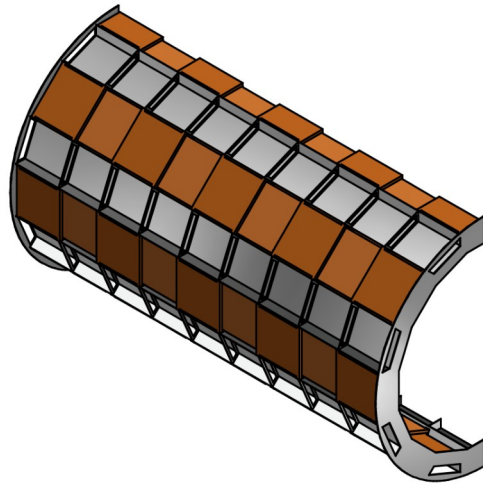
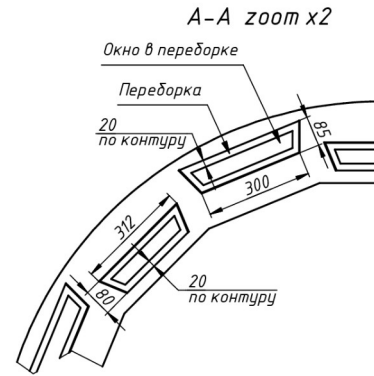
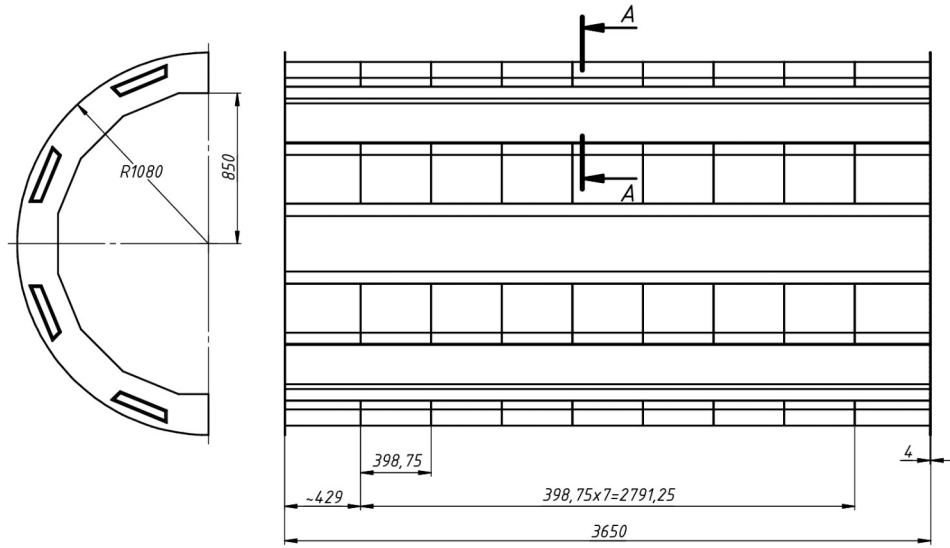


TOF Structure var.2.1

D: V 1.1
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: Pa
Time: 1 s
24.03.2022 7:08

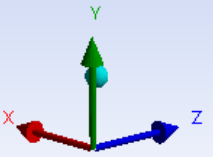
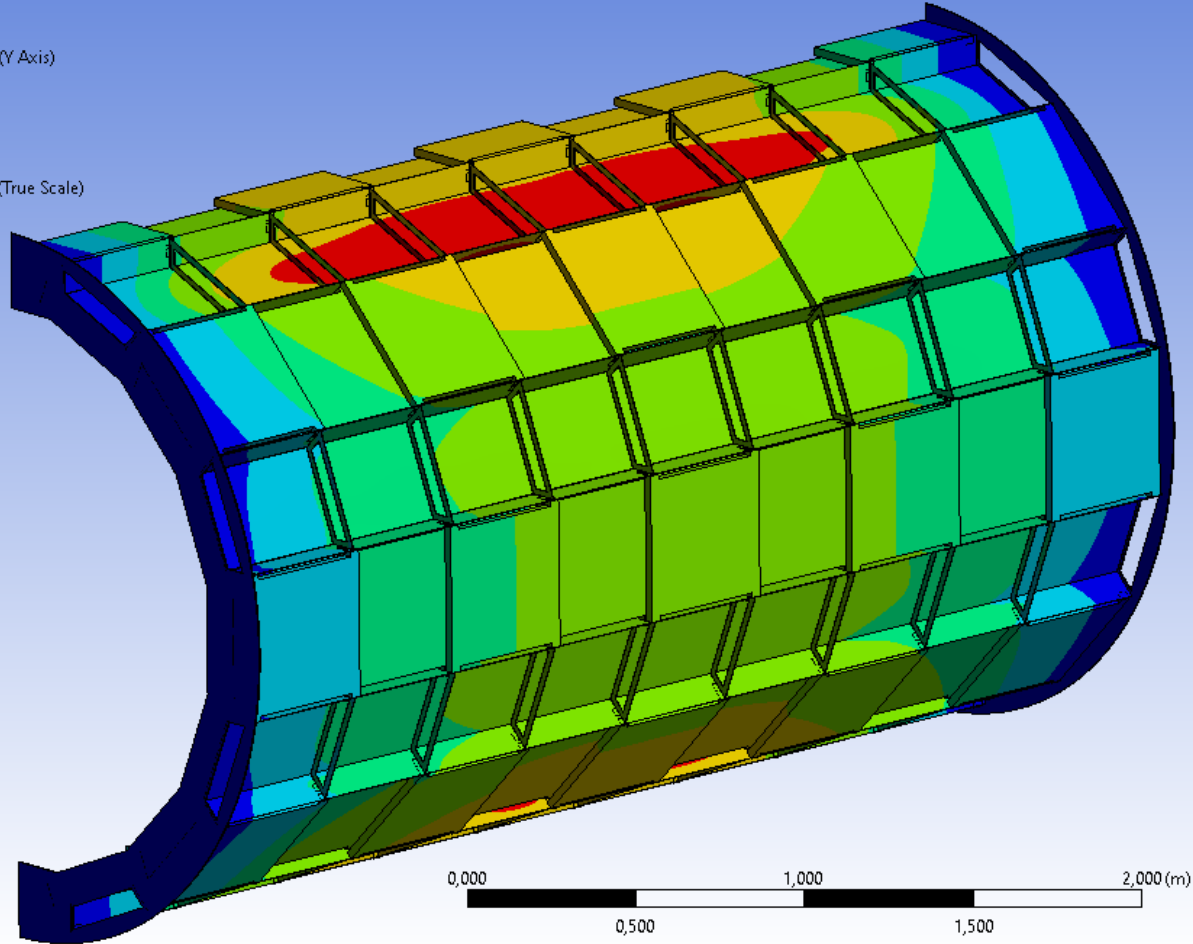
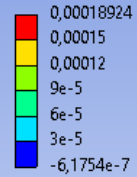


TOF Structure var.3



TOF var.3 Deformations Y

C: Static Structural
Directional Deformation
Type: Directional Deformation(Y Axis)
Unit: m
Global Coordinate System
Time: 1 s
Max: 0,00018924
Min: -6,1754e-7
Deformation Scale Factor: 1.0 (True Scale)
31.03.2022 10:53

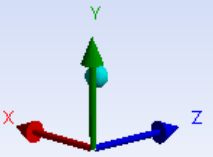
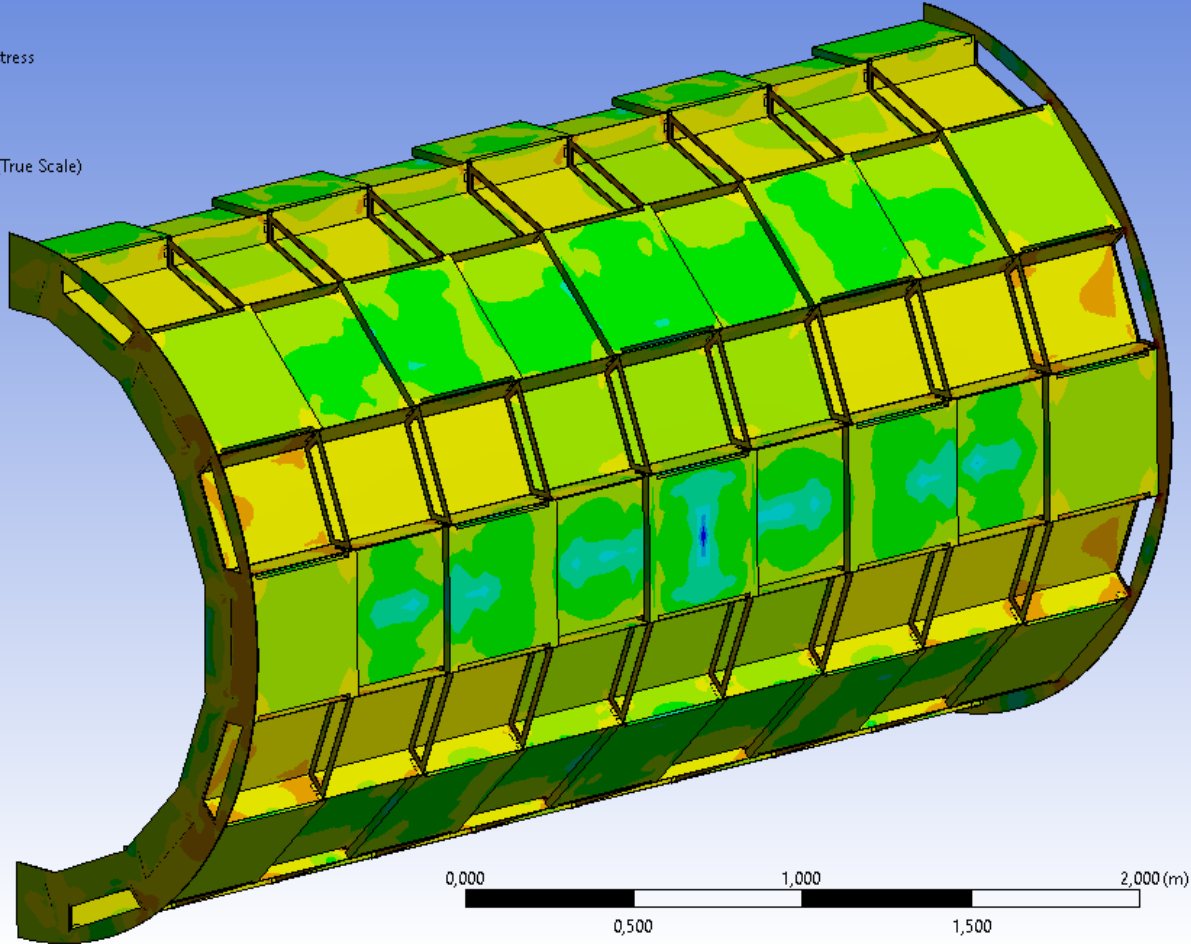


TOF Structure var.3 Stress logarithmic

Ansys
2021 R2

C: Static Structural
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: Pa
Time: 1 s
Max: 3,8043e7
Min: 583,9
Deformation Scale Factor: 1.0 (True Scale)
31.03.2022 10:54

3,8043e7
1,1102e7
3,2397e6
9,4543e5
2,759e5
80513
23495
6856,5
2000,9
583,9

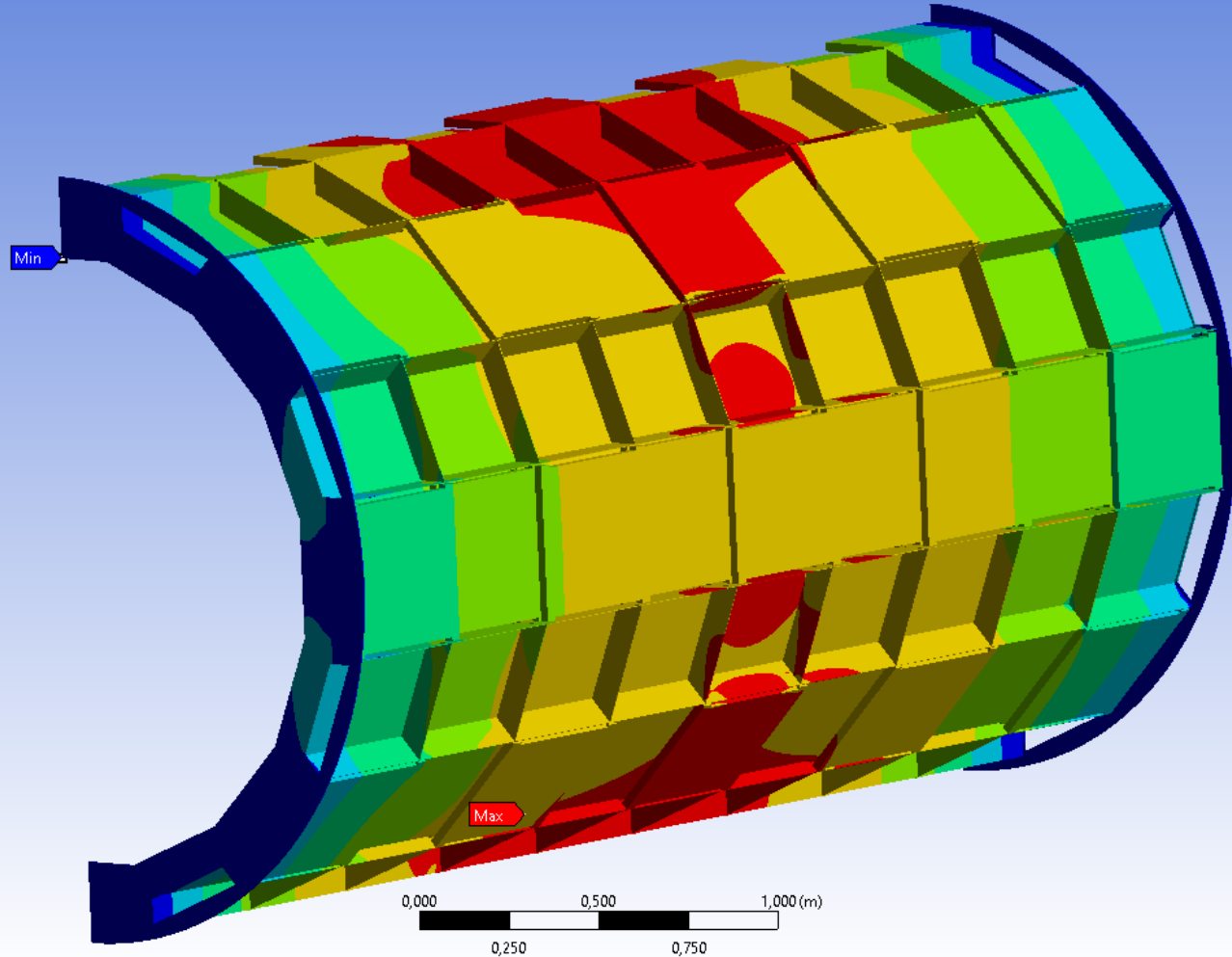
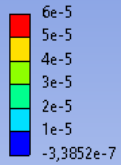


EXTRA MATERIALS

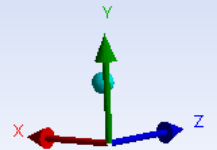
TOF var.3 (without windows) Deformations Y

B: Static Structural

Directional Deformation
Type: Directional Deformation(Y Axis)
Unit: m
Global Coordinate System
Time: 1 s
Max: 5,8552e-5
Min: -3,3852e-7
Deformation Scale Factor: 1.0 (True Scale)
30.03.2022 14:15



Ansys
2021 R2



TOF Structure var.3 (without windows) Stress logarithmic

B: Static Structural

Equivalent Stress

Type: Equivalent (von-Mises) Stress

Unit: Pa

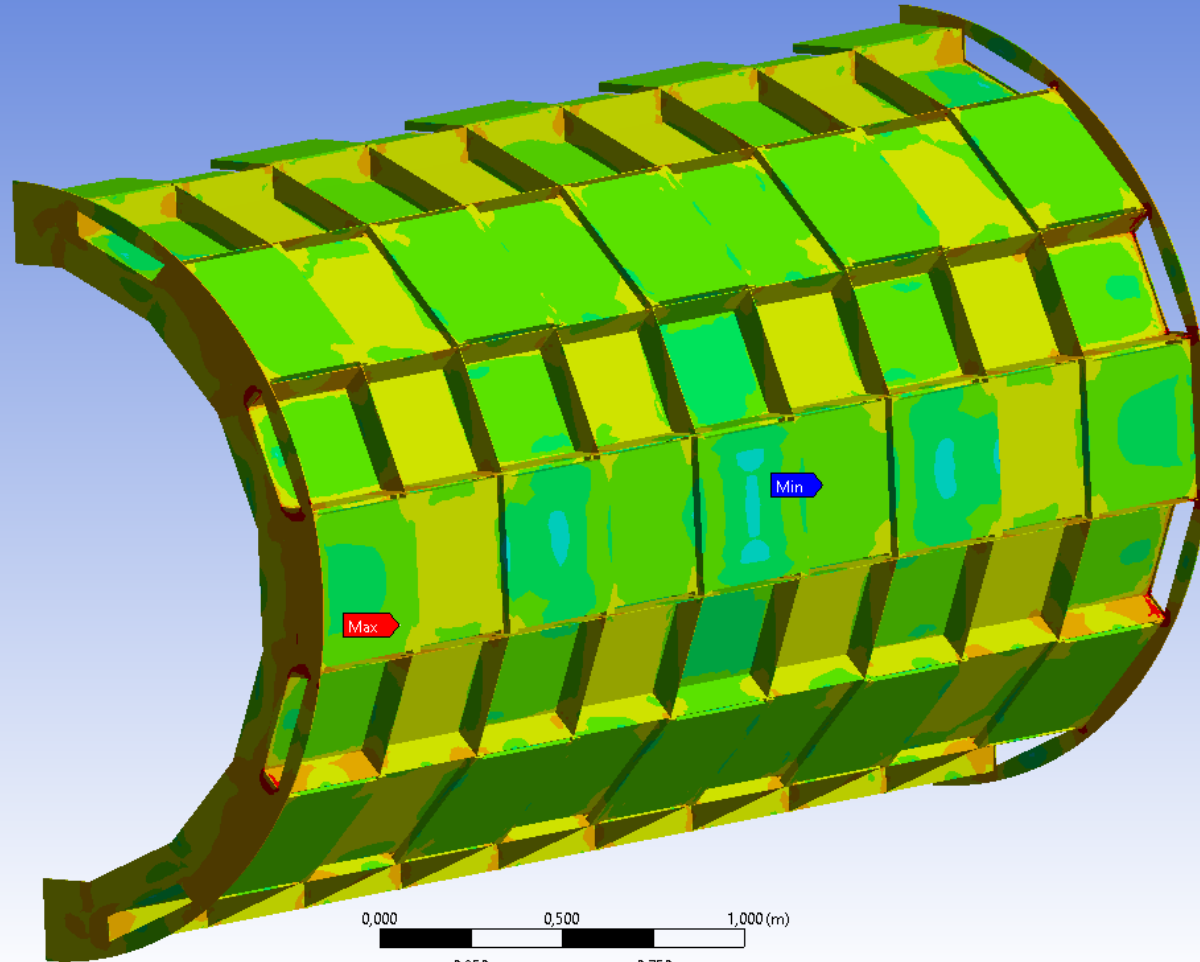
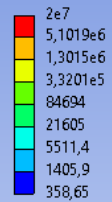
Time: 1 s

Max: 1,9235e7

Min: 358,65

Deformation Scale Factor: 1.0 (True Scale)

30.03.2022 14:06



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2021 R2