

VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ
BRNO UNIVERSITY OF TECHNOLOGY



FAKULTA STAVEBNÍ
ÚSTAV BETONOVÝCH A ZDĚNÝCH
KONSTRUKCÍ

FACULTY OF CIVIL ENGINEERING
INSTITUTE OF CONCRETE AND MASONRY STRUCTURES

STATICKÉ ŘEŠENÍ STŘEŠNÍ KONSTRUKCE STATIC DESIGN OF ROOF STRUCTURE

P5. STATICKÝ VÝPOČET - PŘÍLOHY

DIPLOMOVÁ PRÁCE
DIPLOMA THESIS

AUTOR PRÁCE
AUTHOR

Bc. TOMÁŠ DUDA

VEDOUCÍ PRÁCE
SUPERVISOR

doc. Ing. Miloš ZICH, Ph.D.

BRNO 2014

Obsah

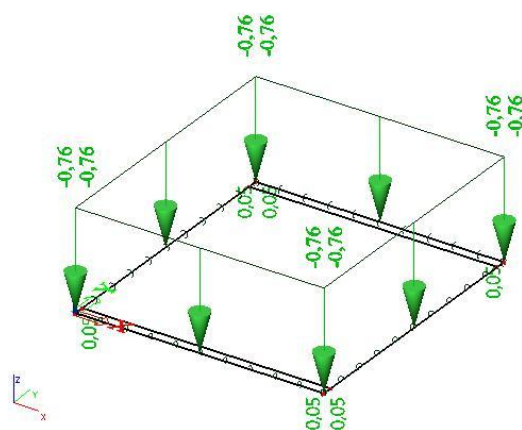
1	Přílohy ke statickému posouzení střešního panelu	3
1.1	Zatěžovací stavy	3
1.2	Vnitřní síly žebra (zapnutý checkbox žebro)	4
1.3	Vnitřní síly desky (zapnutý checkbox žebro)	7
2	Přílohy k časové analýze předpjaté membrány	10
2.1	Čas 1 – Výchozí rovnovážný stav	10
2.2	Čas 2 – Aktivace skořepiny	11
2.3	Čas 3 – Vnesení předpětí do skořepiny	20
2.4	Čas 4 – Zatížení ostatním stálým zatížením (skladba střechy)	29
2.5	Čas 5 – Zatížení sněhem ŠACH 1 (kombinace K1)	38
2.6	Čas 5 – Zatížení sněhem ŠACH 2 (kombinace K2)	47
2.7	Čas 5 – Zatížení sněhem ŠACH 3 (kombinace K3)	56
2.8	Čas 5 – Zatížení sněhem ŠACH 4 (kombinace K4)	65
2.9	Čas 5 – Zatížení sněhem ŠACH 5 (kombinace K5)	74

1 Přílohy ke statickému posouzení střešního panelu

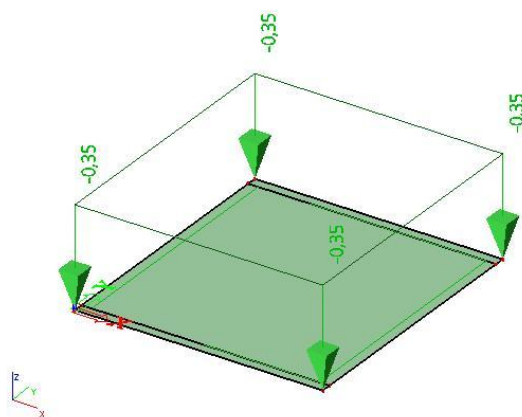
1.1 Zatěžovací stavy

ZS1 – Vlastní tíha modelu

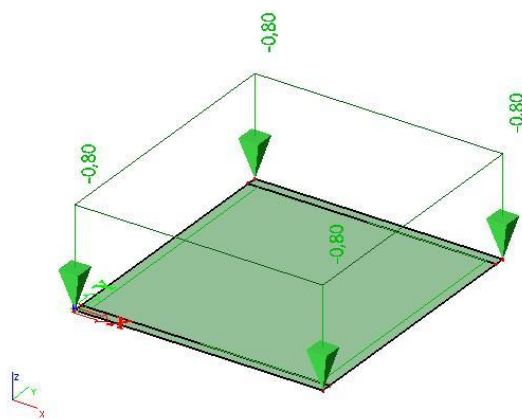
ZS1.1 – Vlastní tíha – přídavek – nahrazení obvodových žeber



ZS2 – Ostatní stálé zatížení – skladba střešního pláště (347 N/m²)

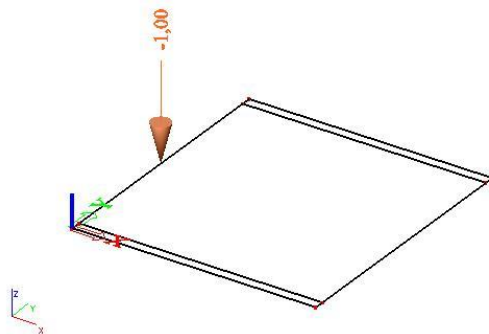
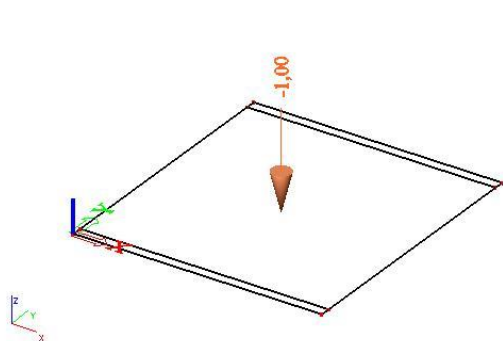


ZS3 – Klimatické zatížení – sníh (800 N/m²)

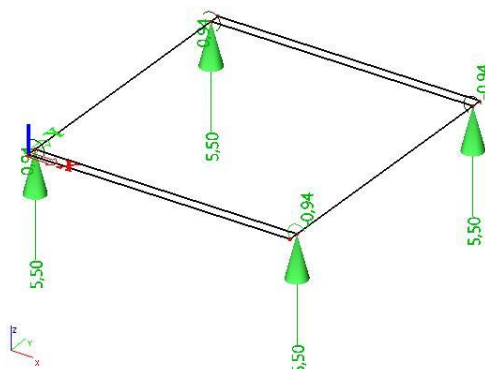


ZS4 – Proměnné zatížení – dělník, Šach1

ZS5 – Proměnné zatížení – dělník, Šach2



ZS6 – Zatížení osamělými momenty a reakcemi od vlastní tíhy = zatížení od uložení

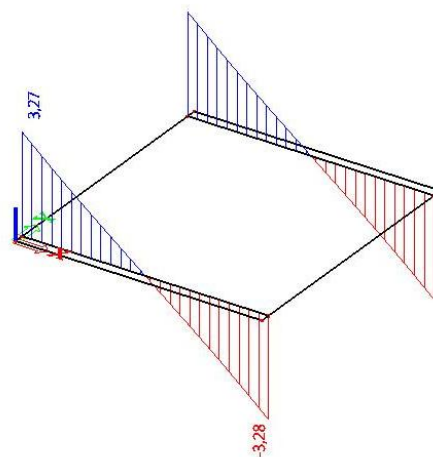
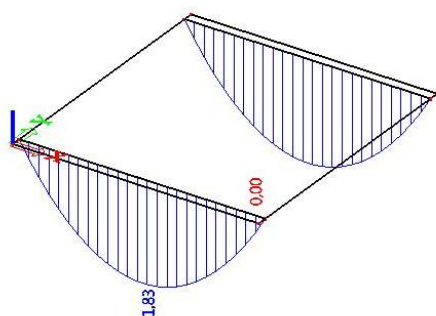


1.2 Vnitřní síly žebra (zapnutý checkbox žebro)

ZS1 – Vlastní tíha modelu

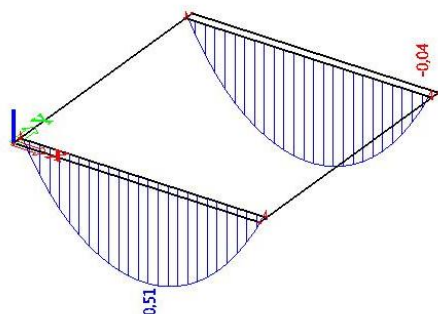
Ohybový moment M_y

Posouvající síly V_z

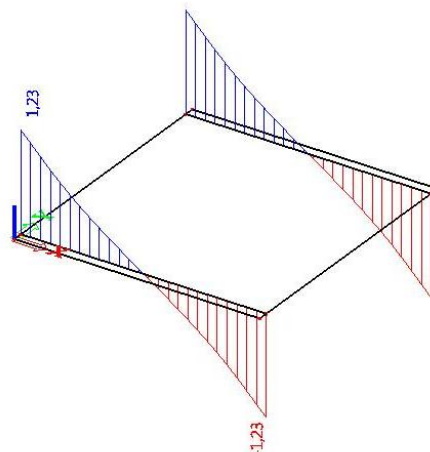


ZS1.1 – Vlastní tíha – přídavek – nahrazení obvodových žeber

Ohybový moment M_y

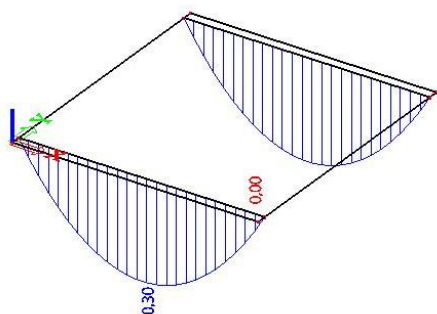


Posouvající síly V_z

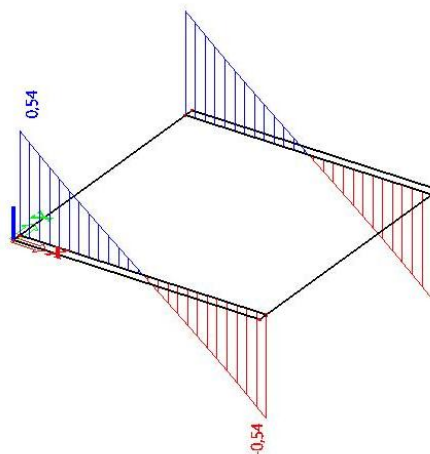


ZS2 – Ostatní stálé zatížení – skladba střešního pláště

Ohybový moment M_y

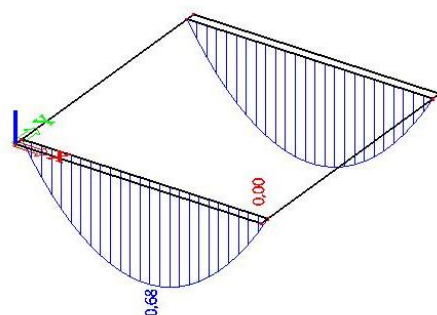


Posouvající síly V_z

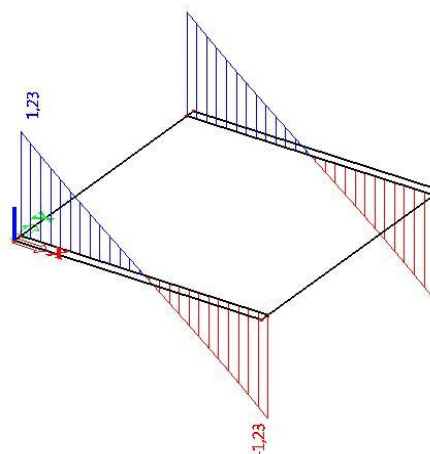


ZS3 – Klimatické zatížení

Ohybový moment M_y

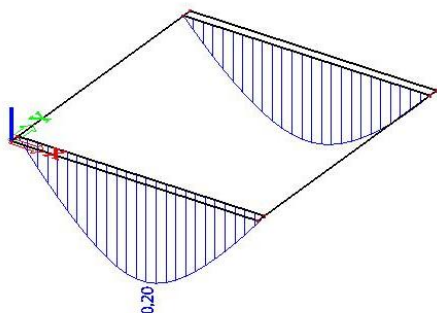


Posouvající síly V_z

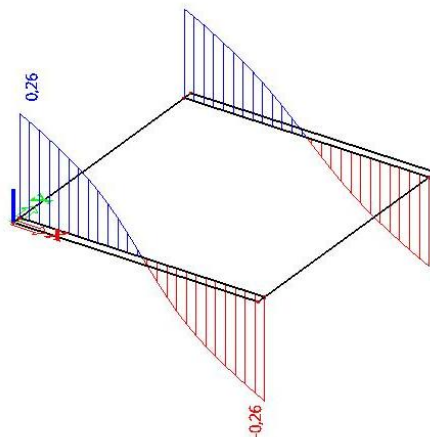


ZS4 – Proměnné zatížení – dělník, Šach1

Ohybový moment M_y

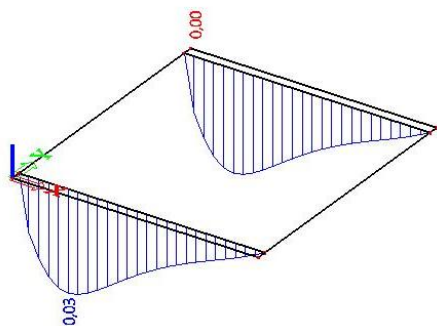


Posouvající síly V_z

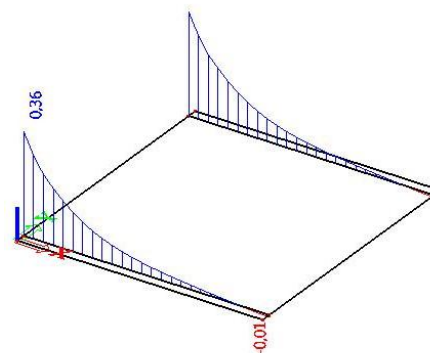


ZS5 – Proměnné zatížení – dělník, Šach2

Ohybový moment M_y

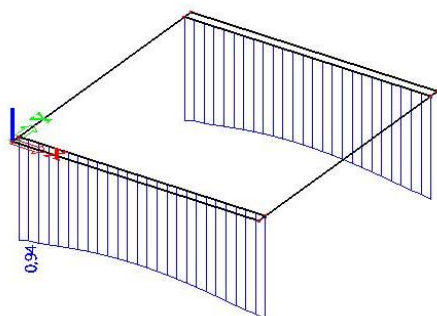


Posouvající síly V_z

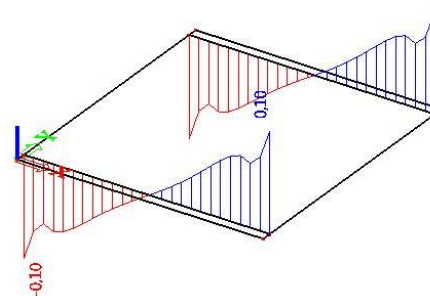


ZS6 – Zatížení osamělými momenty a reakcemi od vlastní tíhy = zatížení od uložení

Ohybový moment M_y

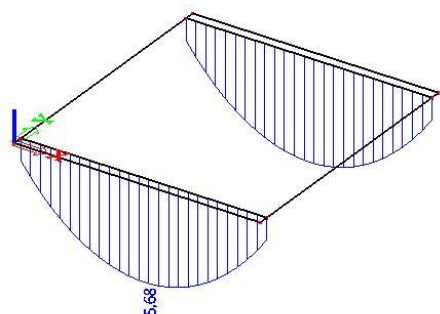


Posouvající síly V_z

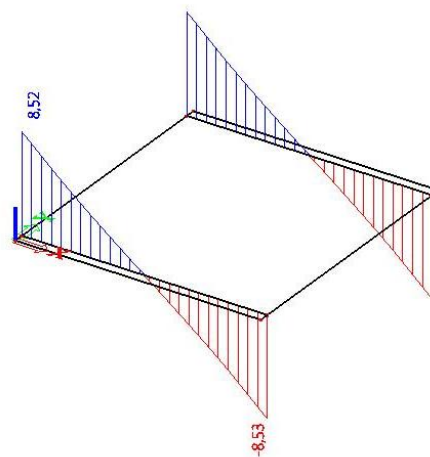


Kombinace MSÚ – STR/GEO sada B

Ohybový moment $M_{y,ed}$



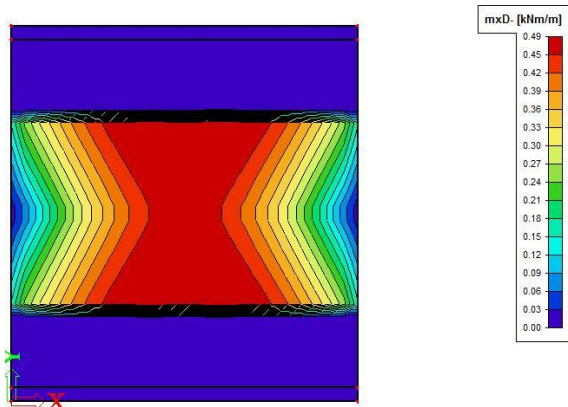
Posouvající síly $V_{z,ed}$



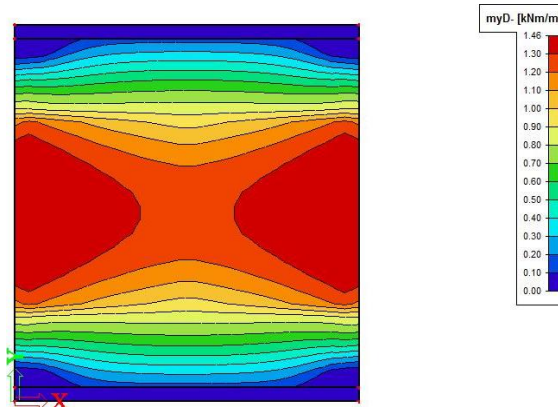
1.3 Vnitřní síly desky (zapnutý checkbox žebro)

ZS1 – Vlastní tíha modelu

Dimenzační moment m_{xD} -

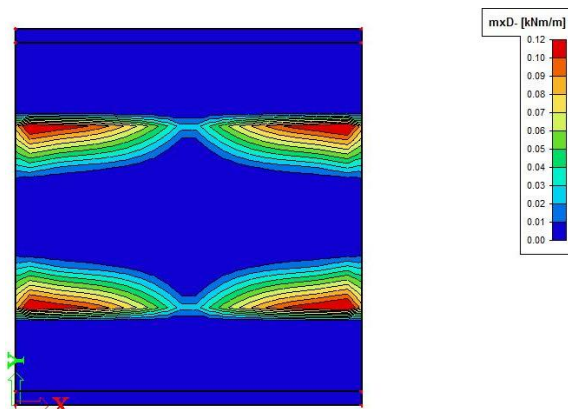


Dimenzační moment m_{yD} -

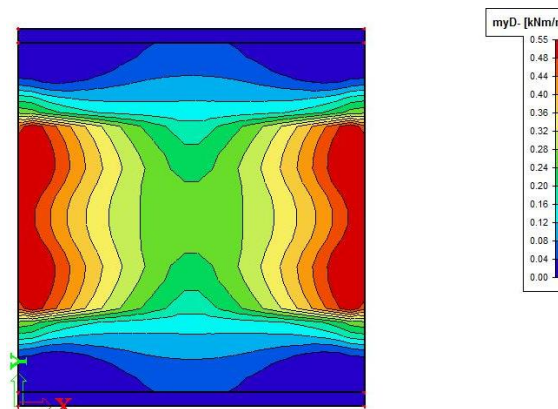


ZS2 – Ostatní stálé zatížení – skladba střešního pláště

Dimenzační moment m_{xD} -

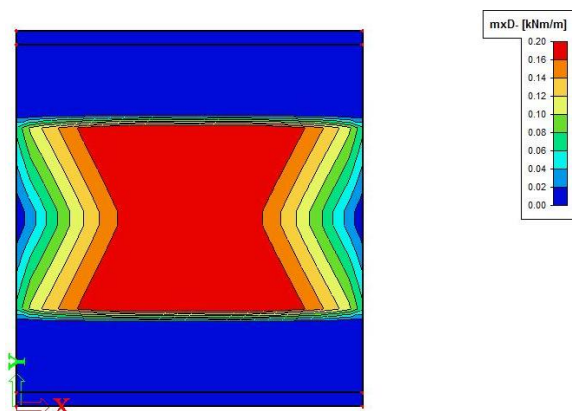


Dimenzační moment m_{yD} -

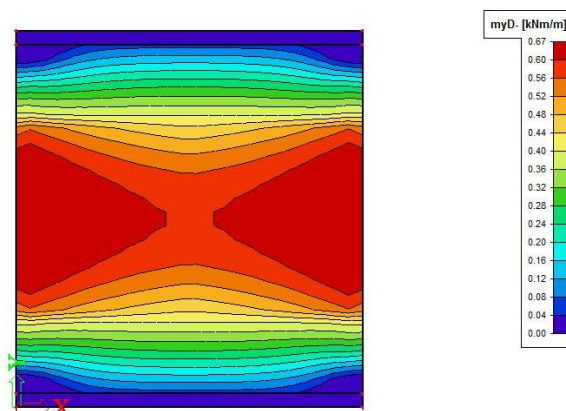


ZS3 – Klimatické zatížení

Dimenzační moment m_{xD} -

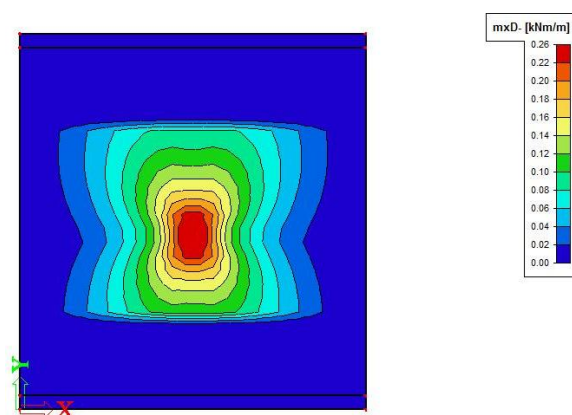


Dimenzační moment m_{yD} -

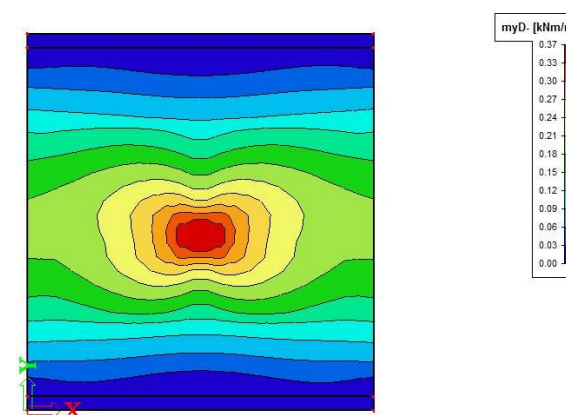


ZS4 – Proměnné zatížení – dělník, Šach1

Dimenzační moment m_{xD} -

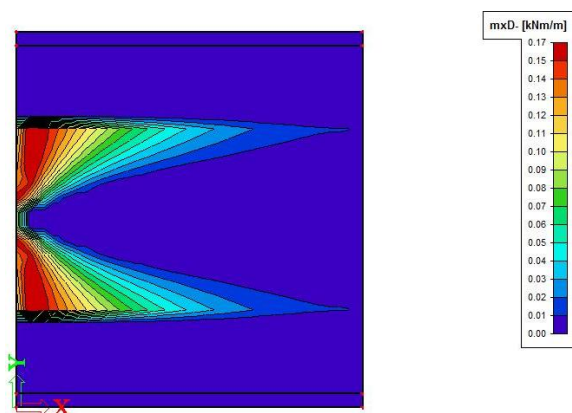


Dimenzační moment m_{yD} -

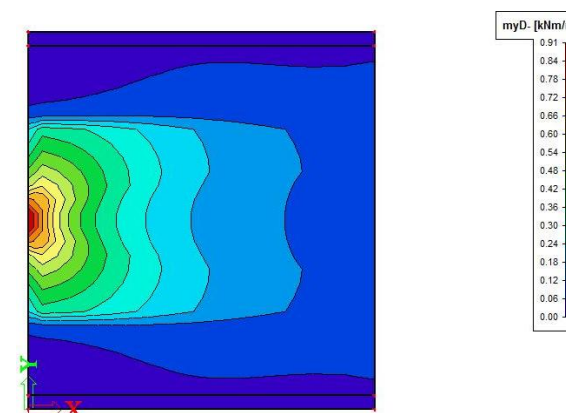


ZS5 – Proměnné zatížení – dělník, Šach2

Dimenzační moment m_{xD} -

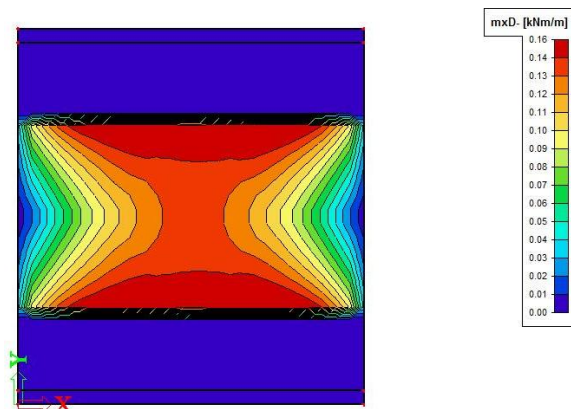


Dimenzační moment m_{yD} -

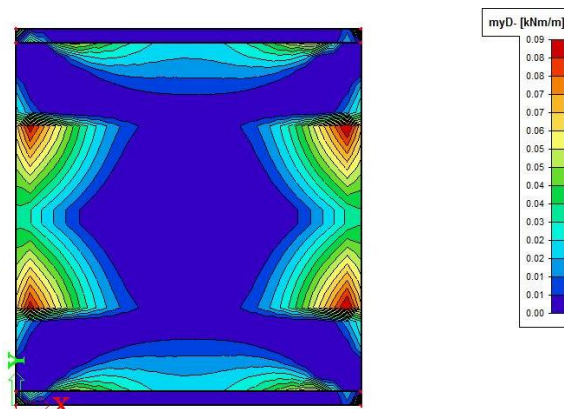


ZS6 – Zatížení osamělými momenty a reakcemi od vlastní tíhy = zatížení od uložení

Dimenzační moment m_{xD} -

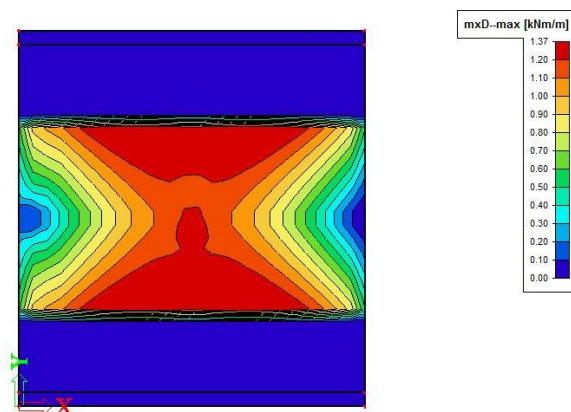


Dimenzační moment m_{yD} -

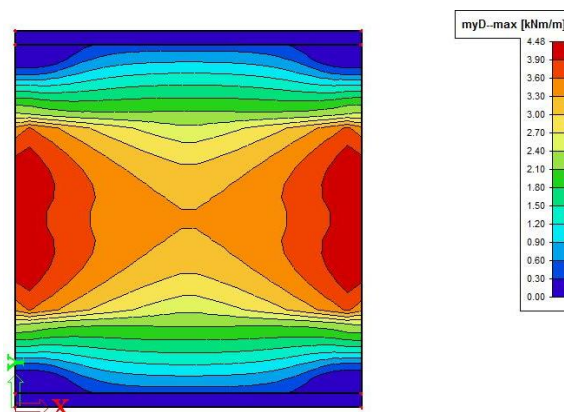


Kombinace MSÚ – STR/GEO sada B

Dimenzační moment m_{xD} -

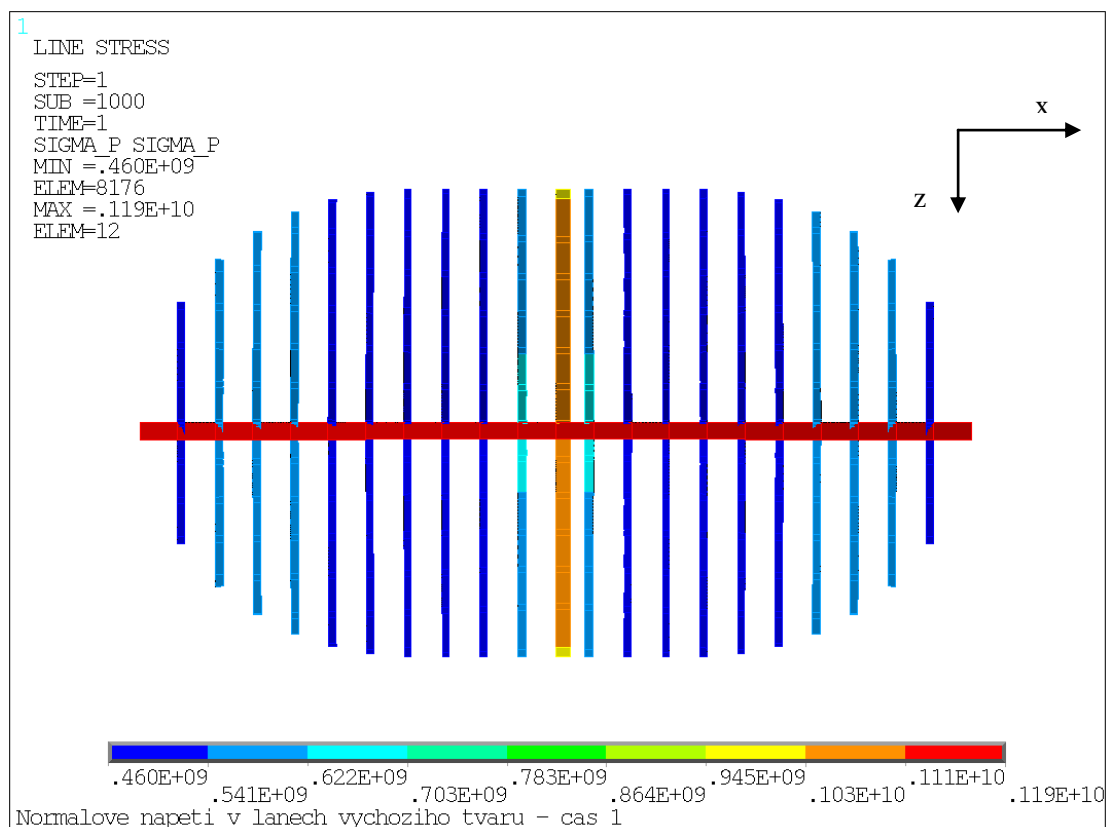
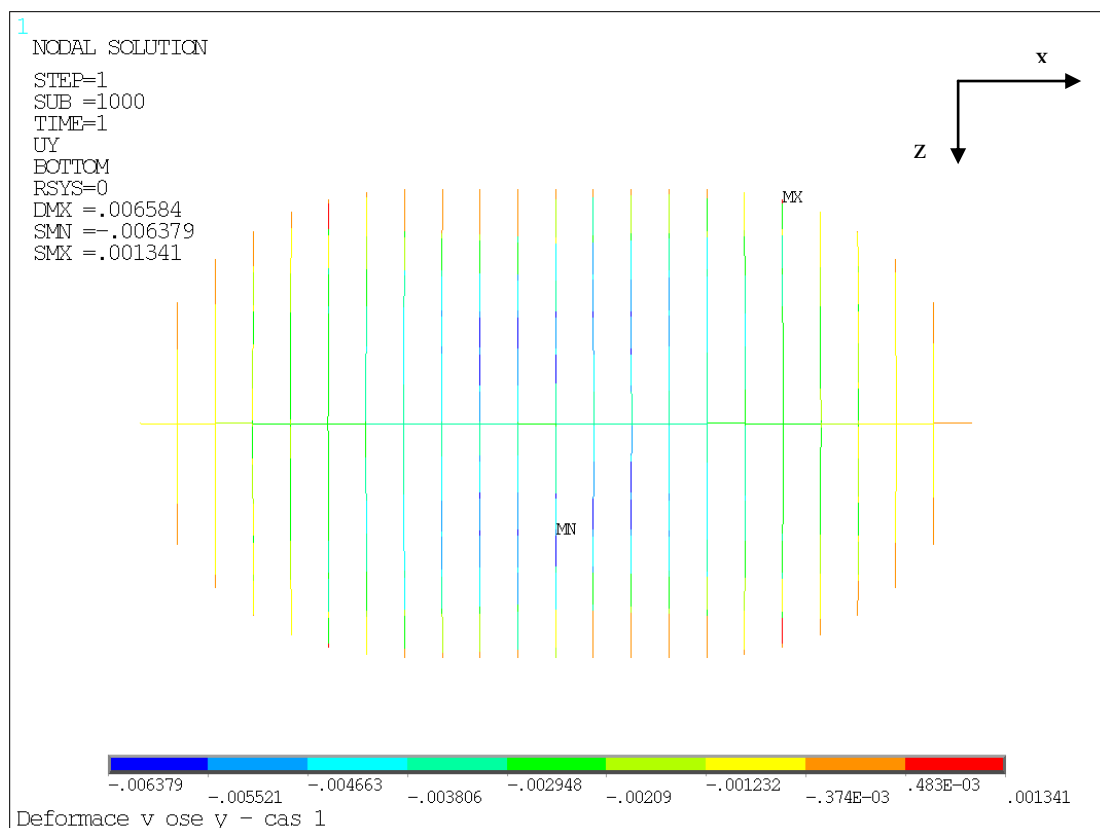


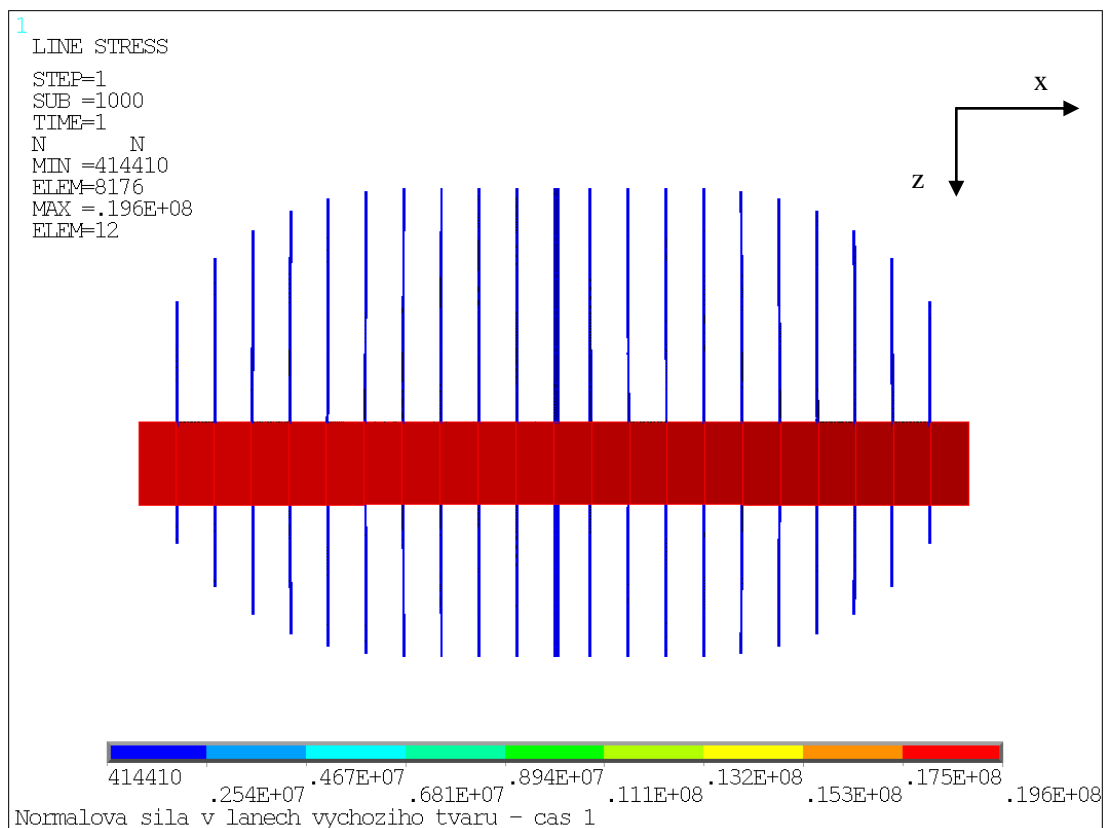
Dimenzační moment m_{yD} -



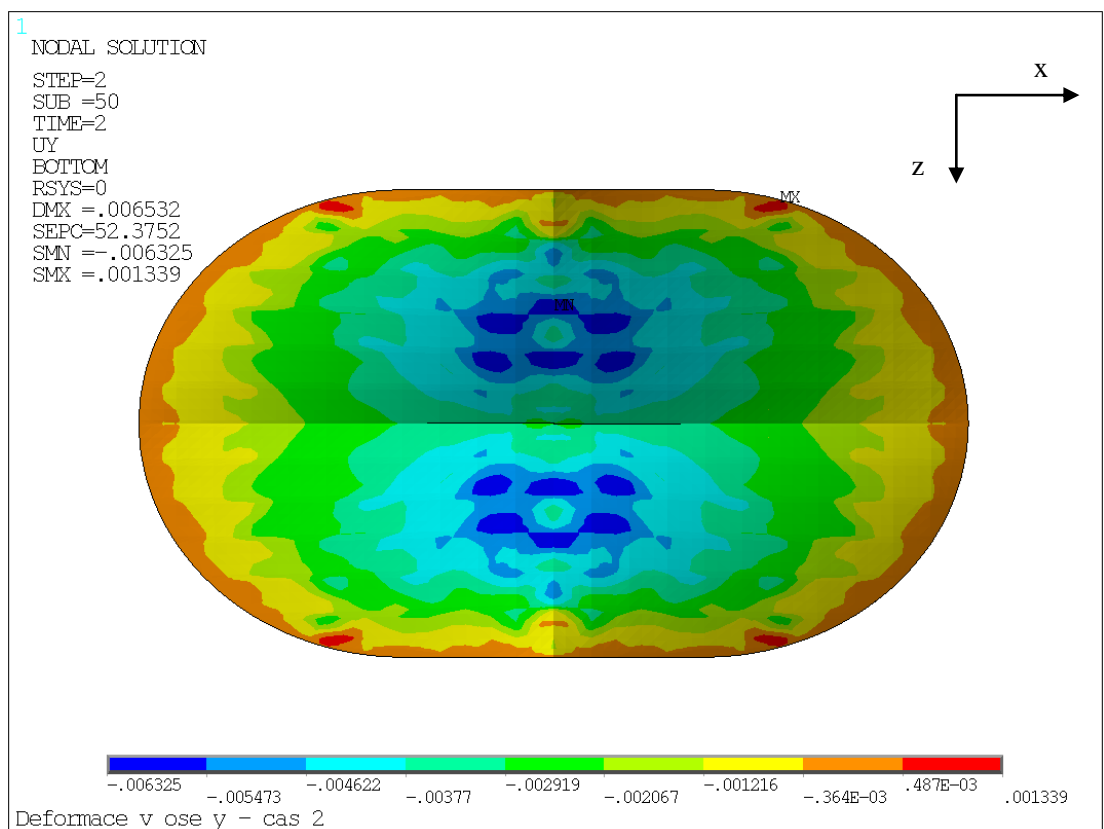
2 Přílohy k časové analýze předpjaté membrány

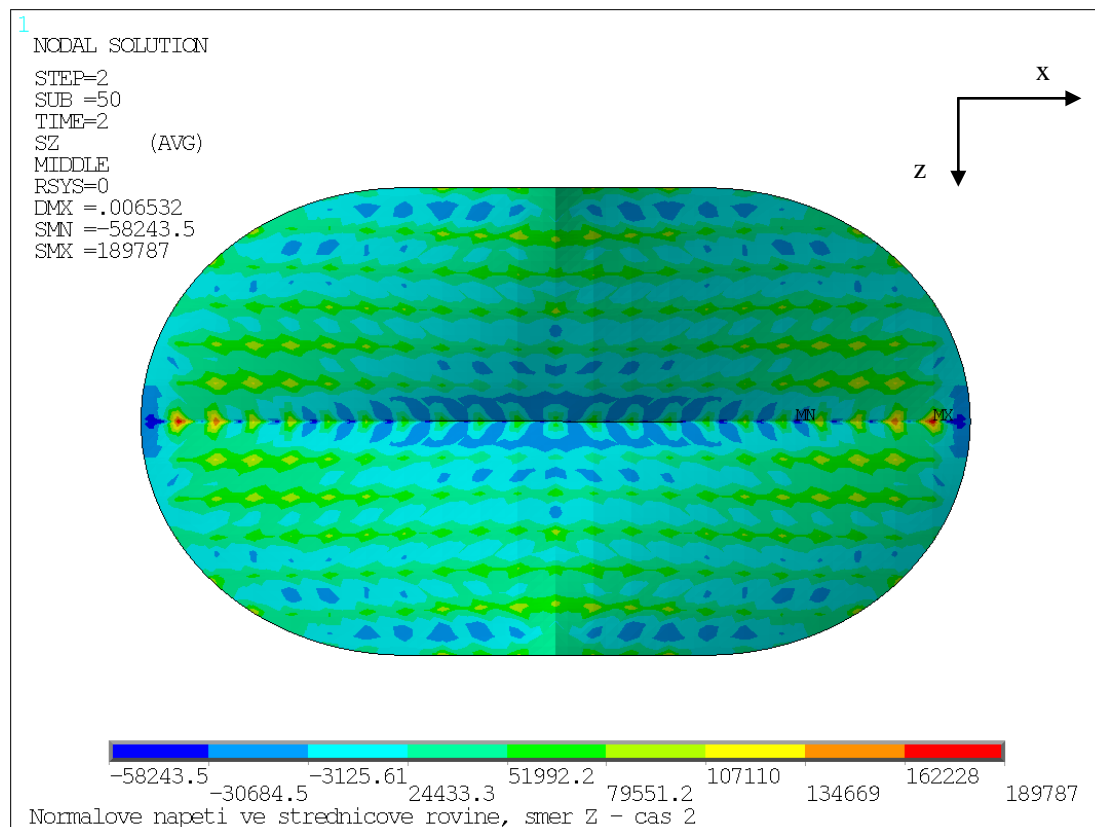
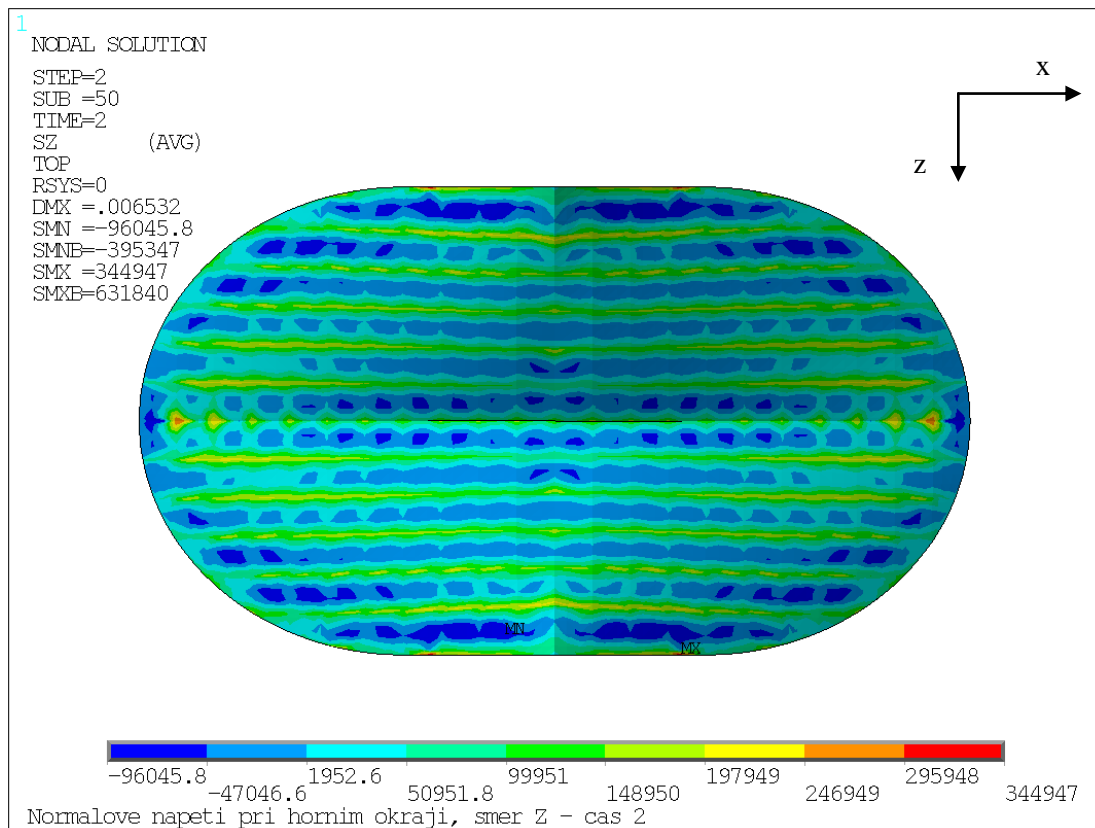
2.1 Čas 1 – Výchozí rovnovážný stav

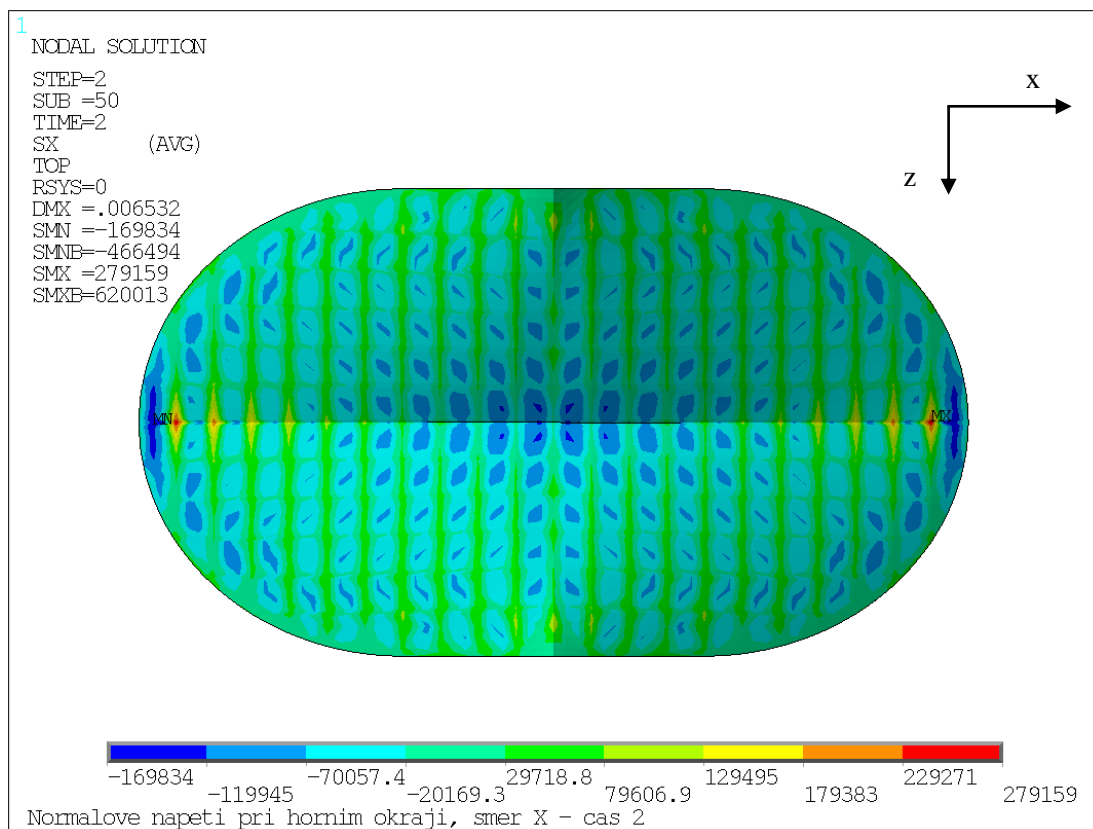
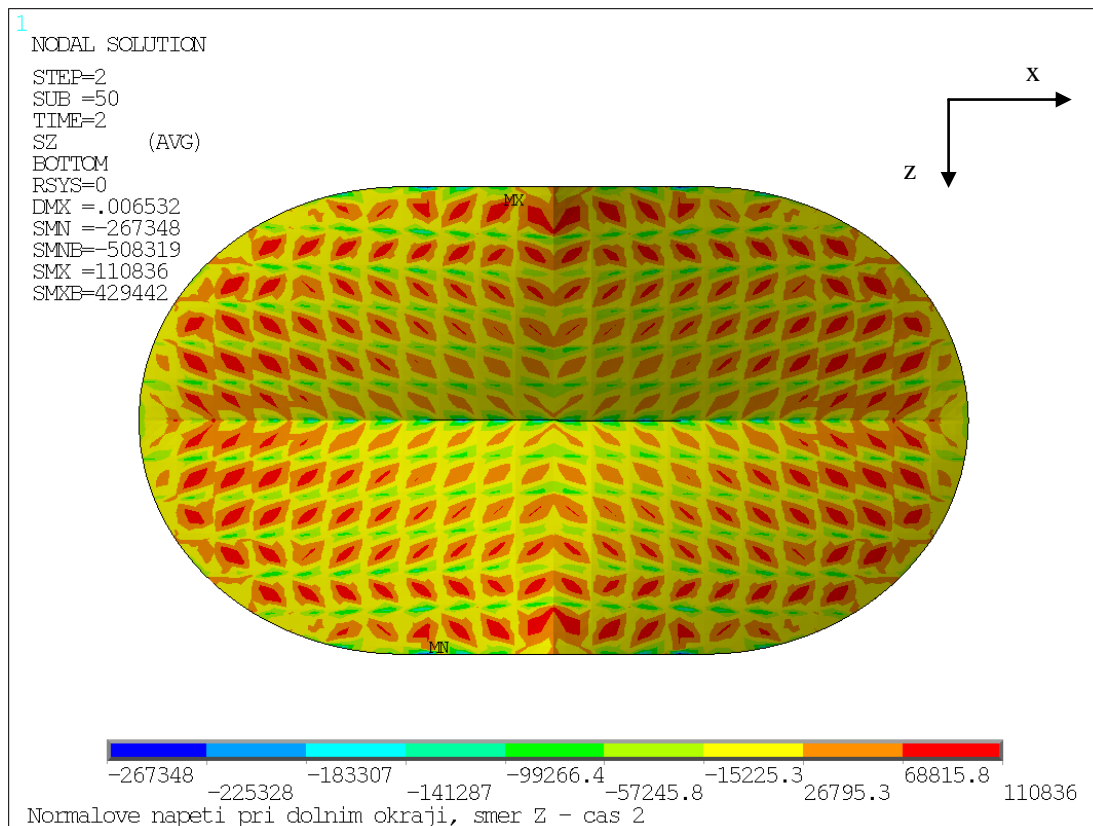


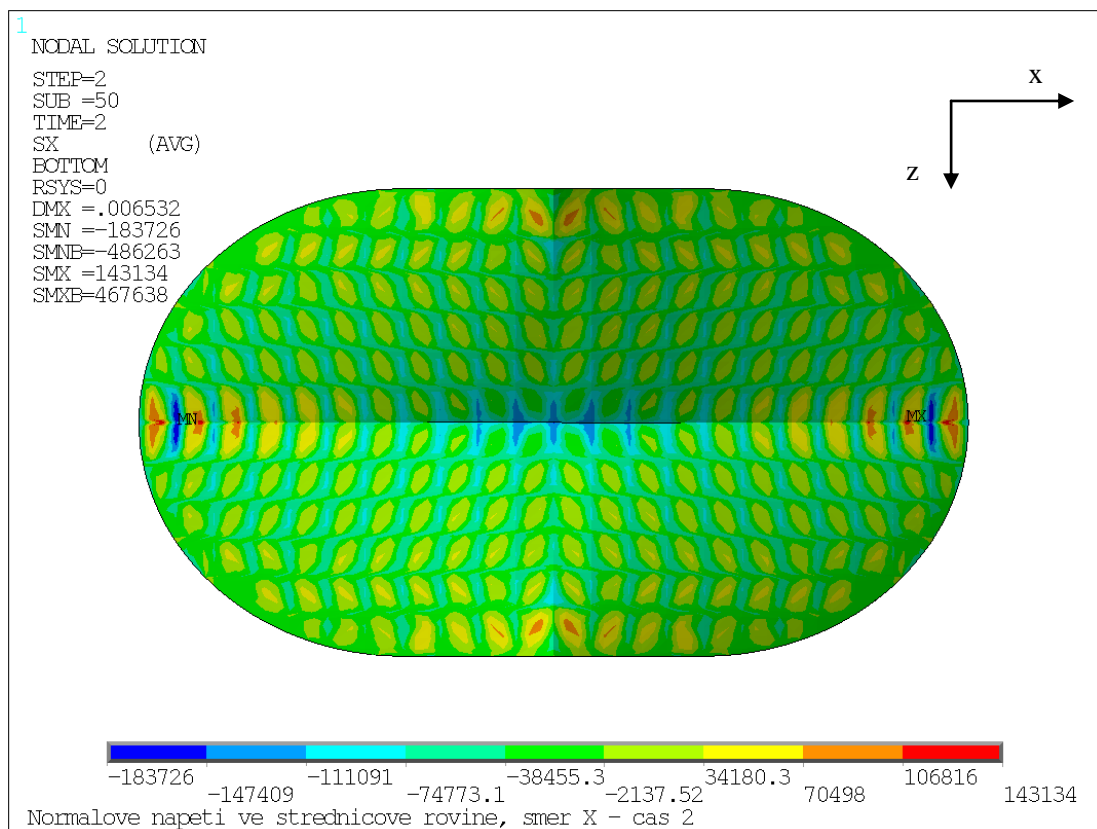
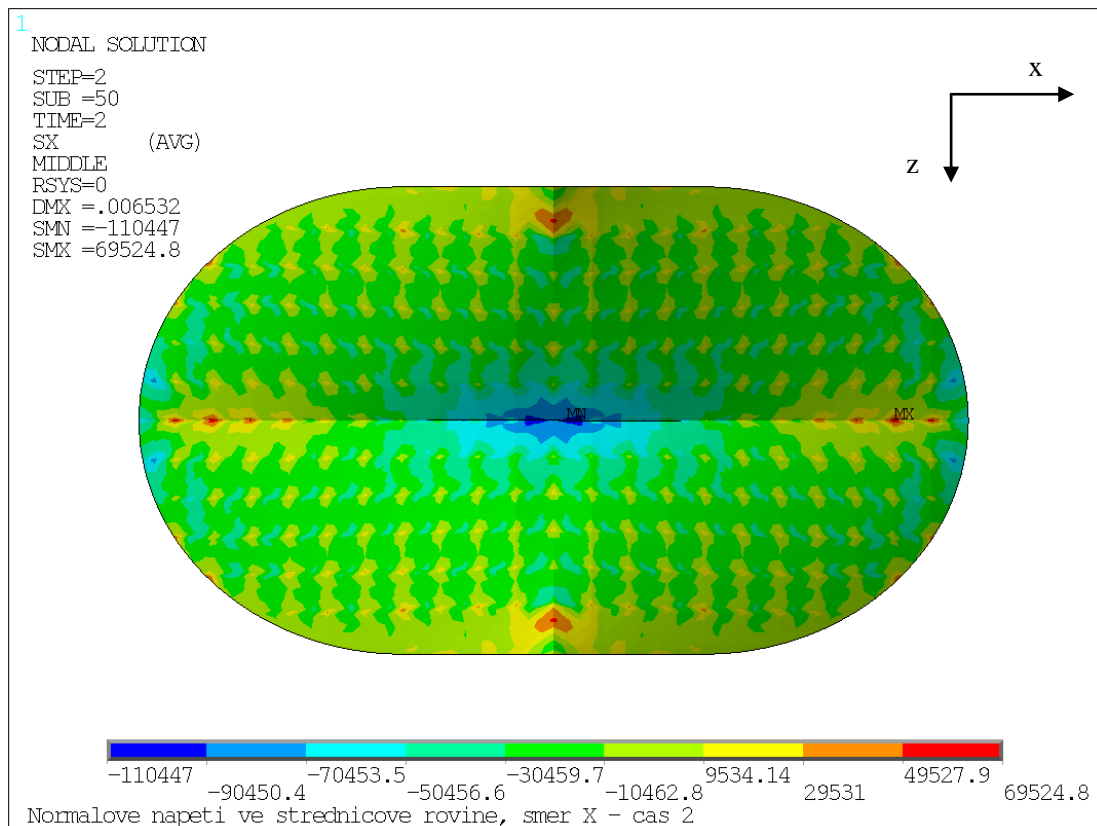


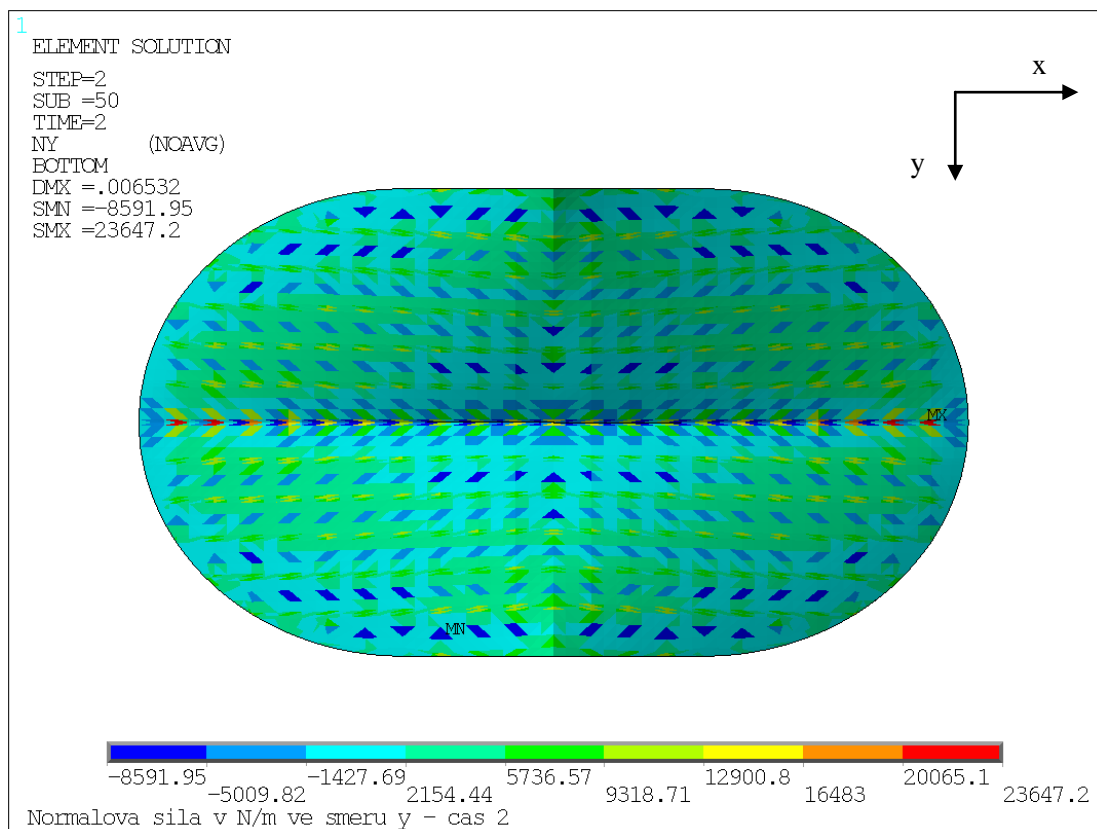
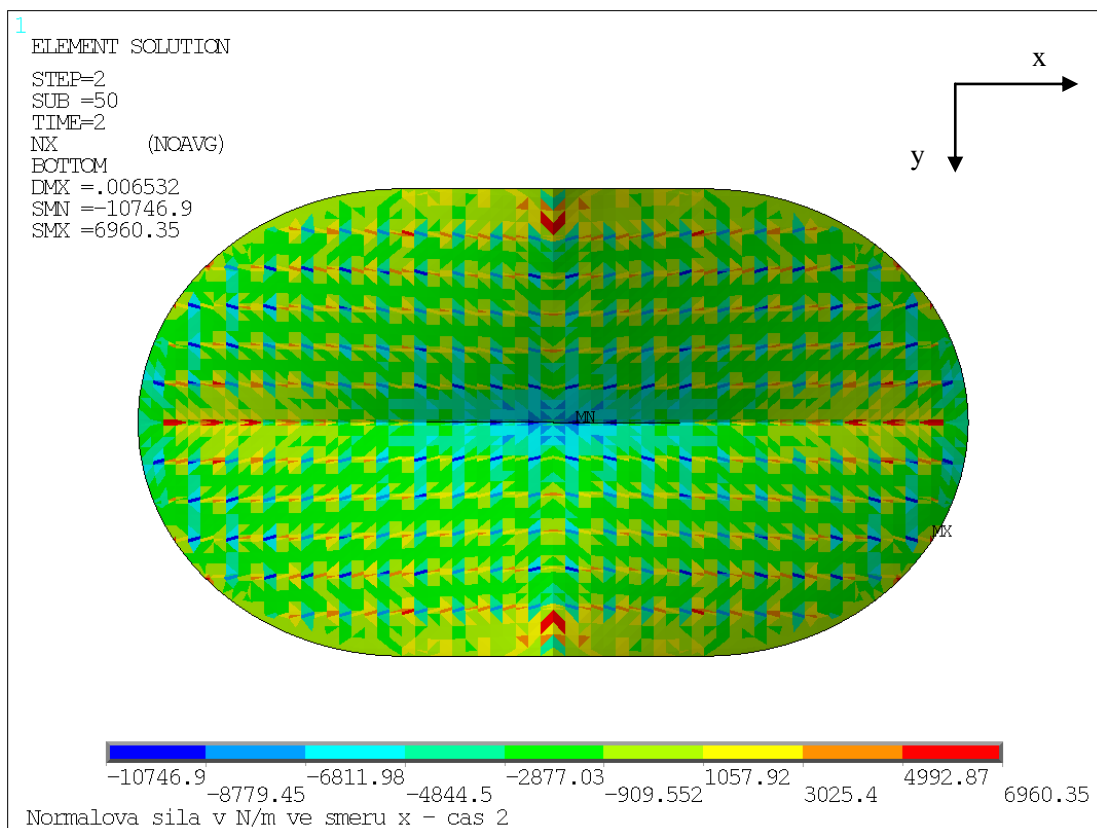
2.2 Čas 2 – Aktivace skořepiny

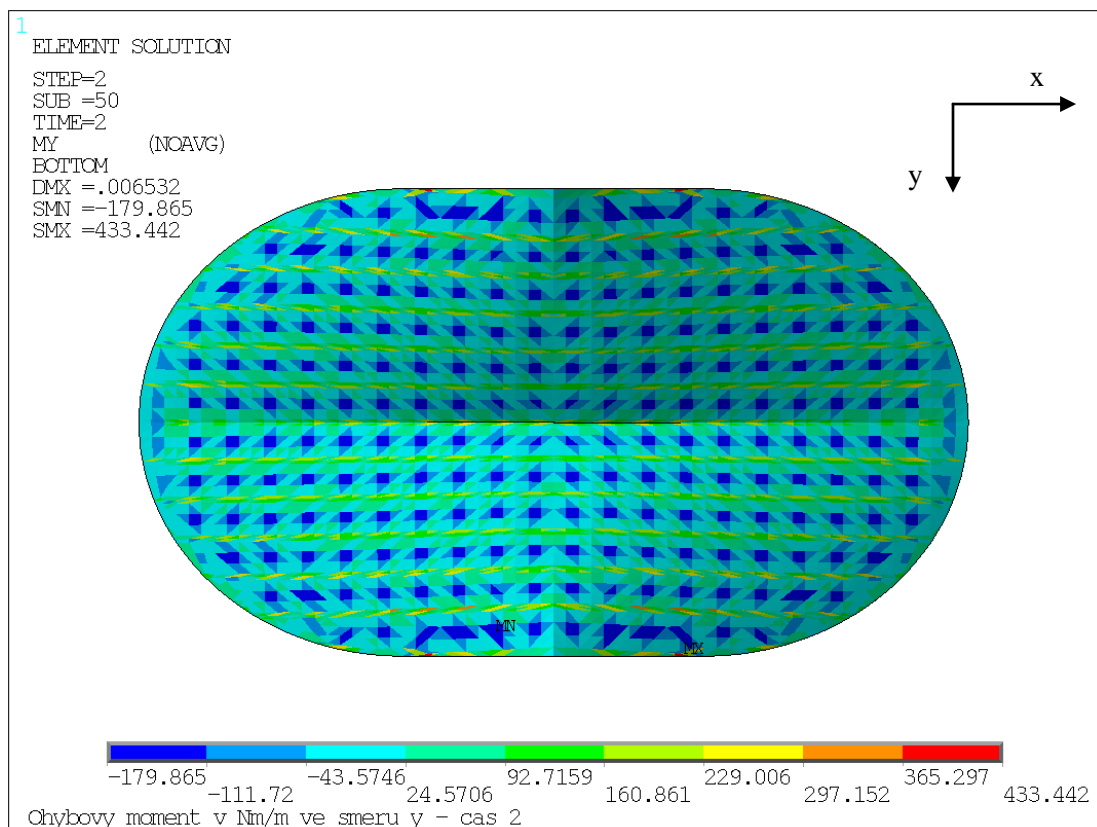
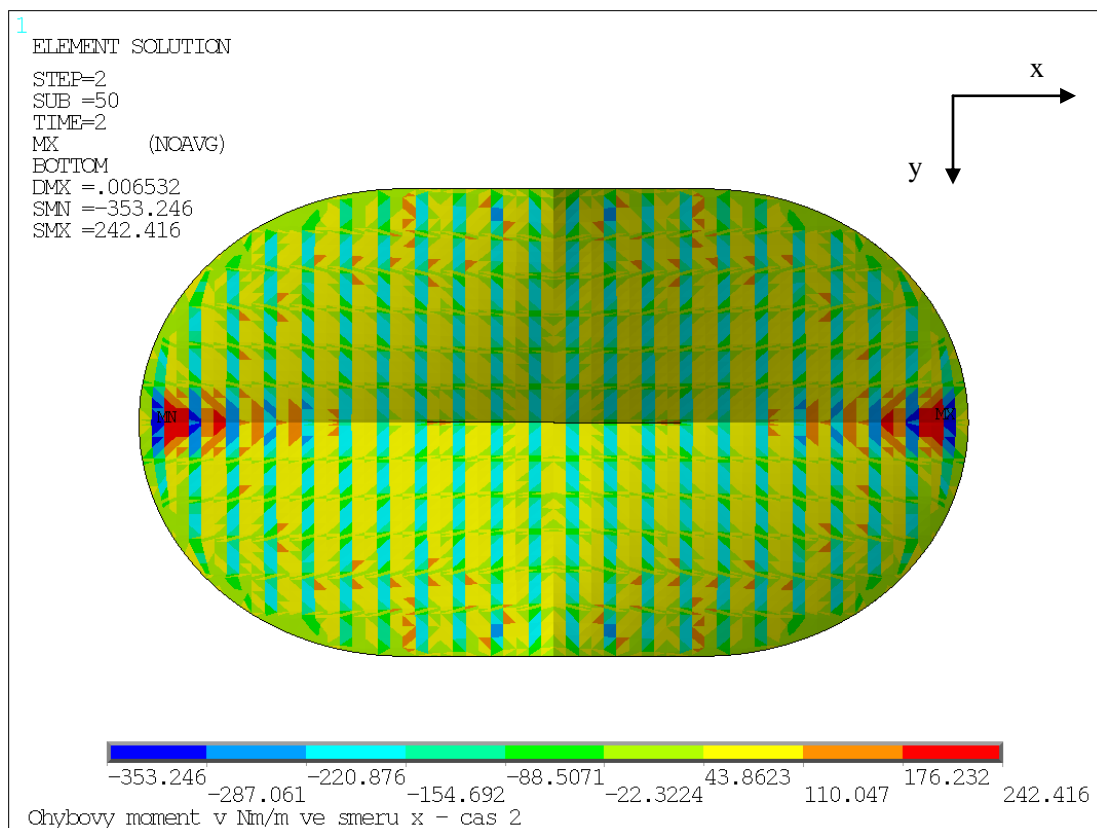


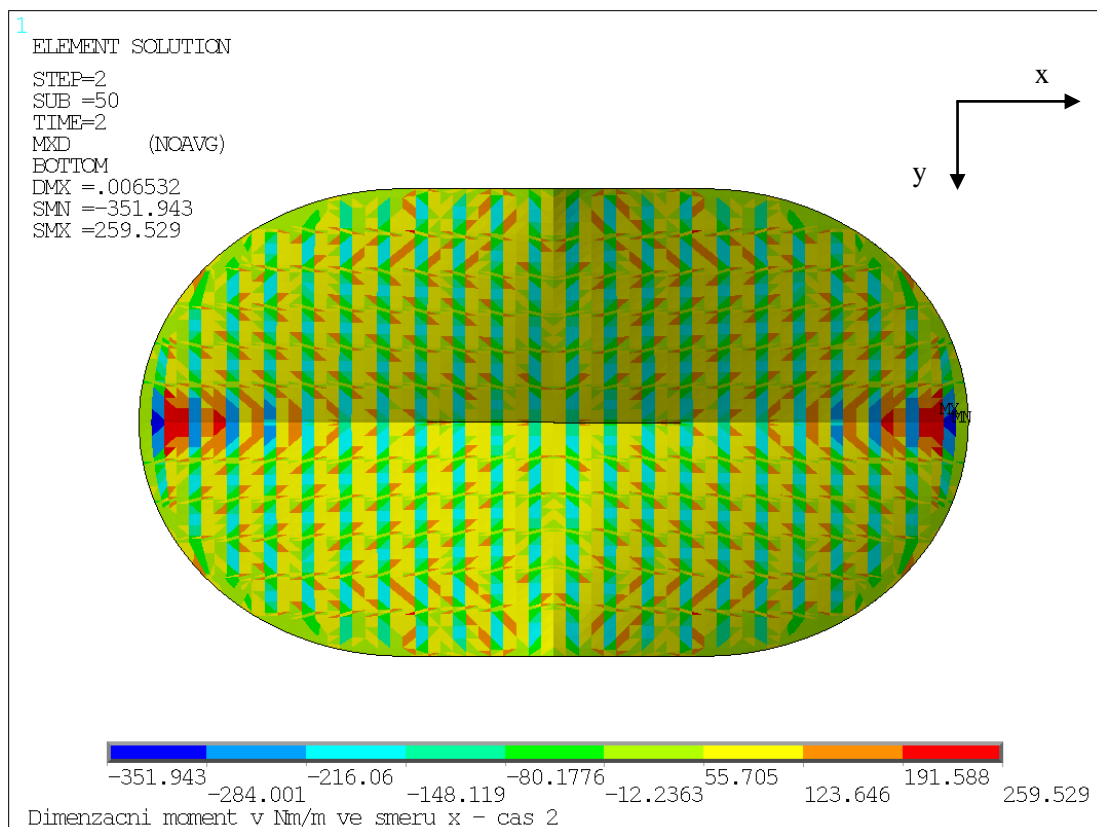
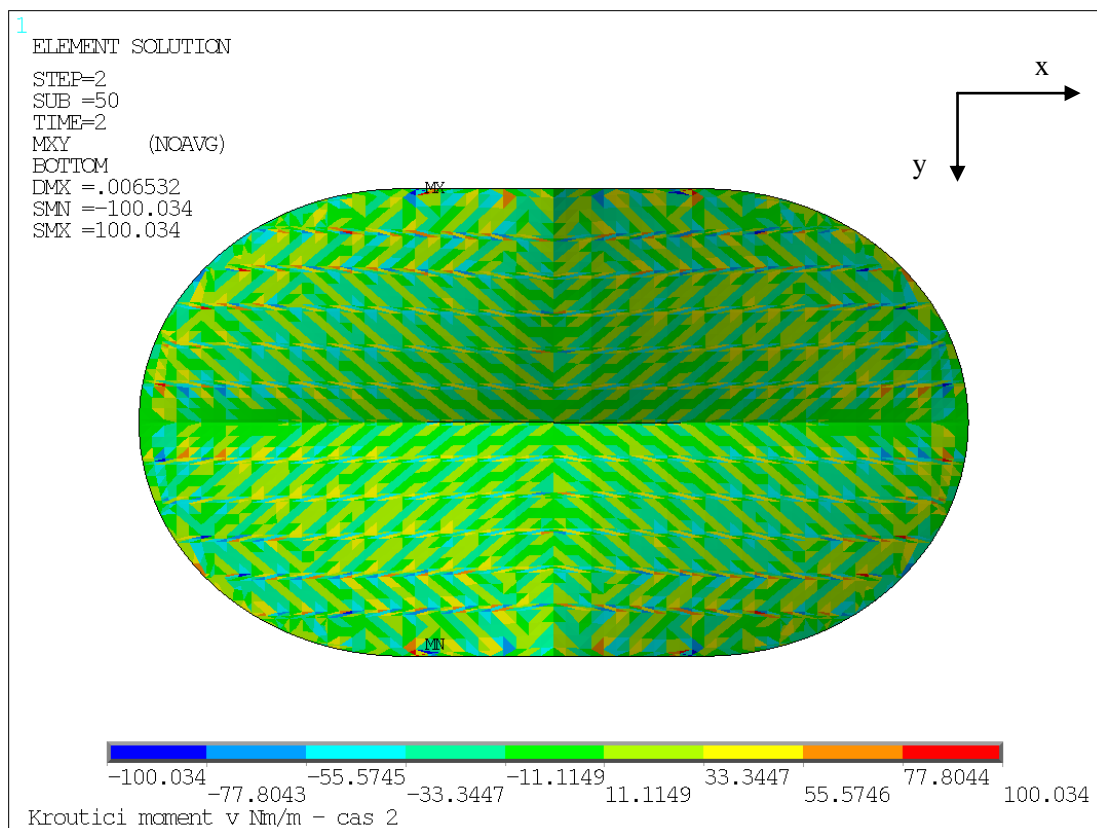


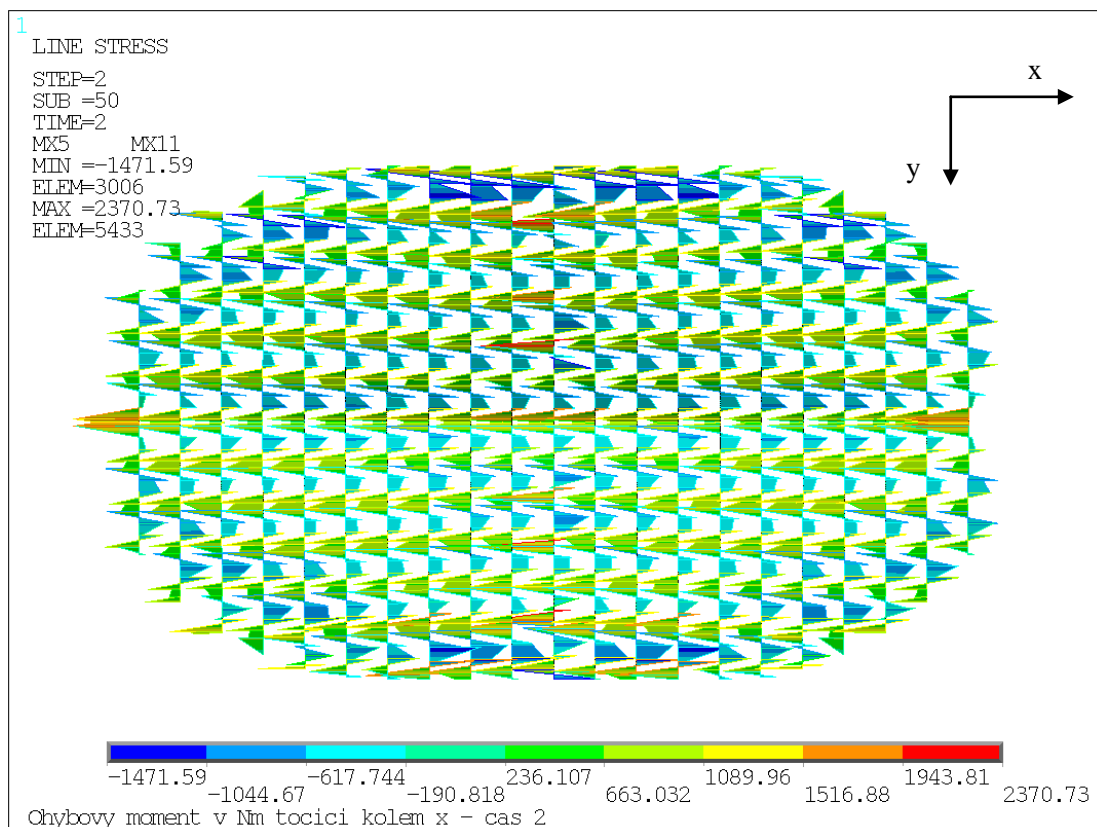
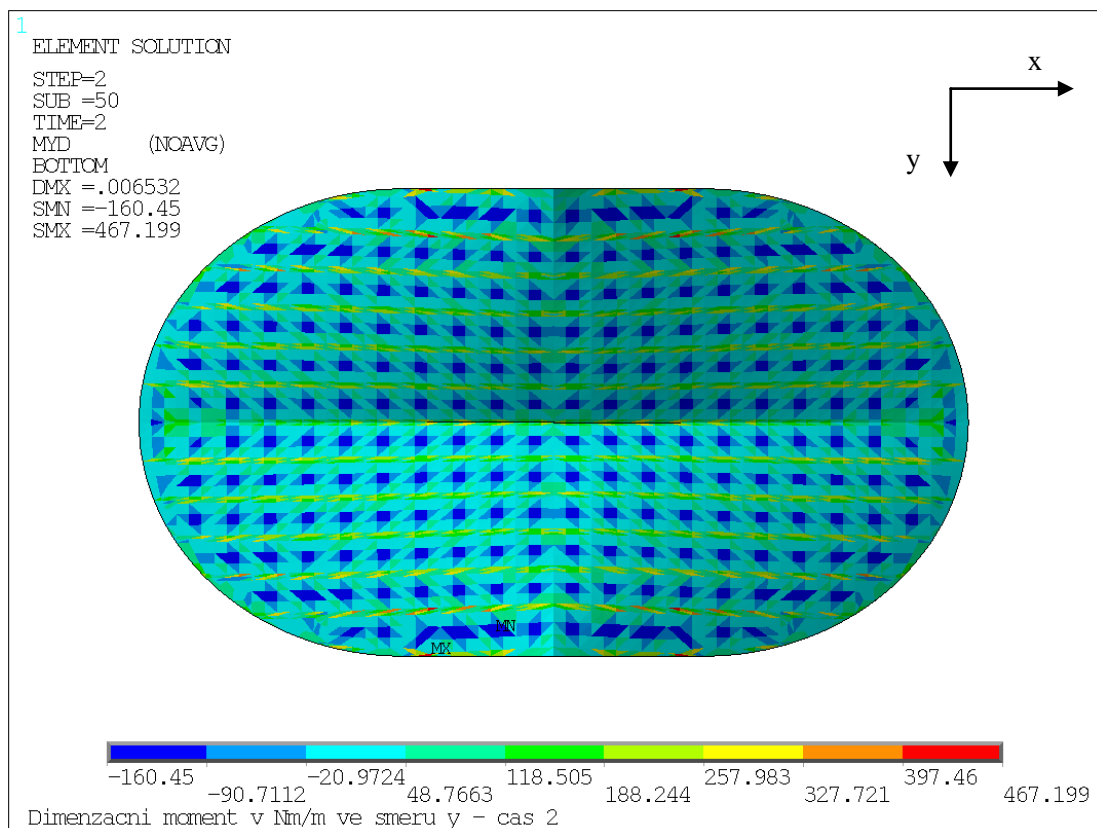


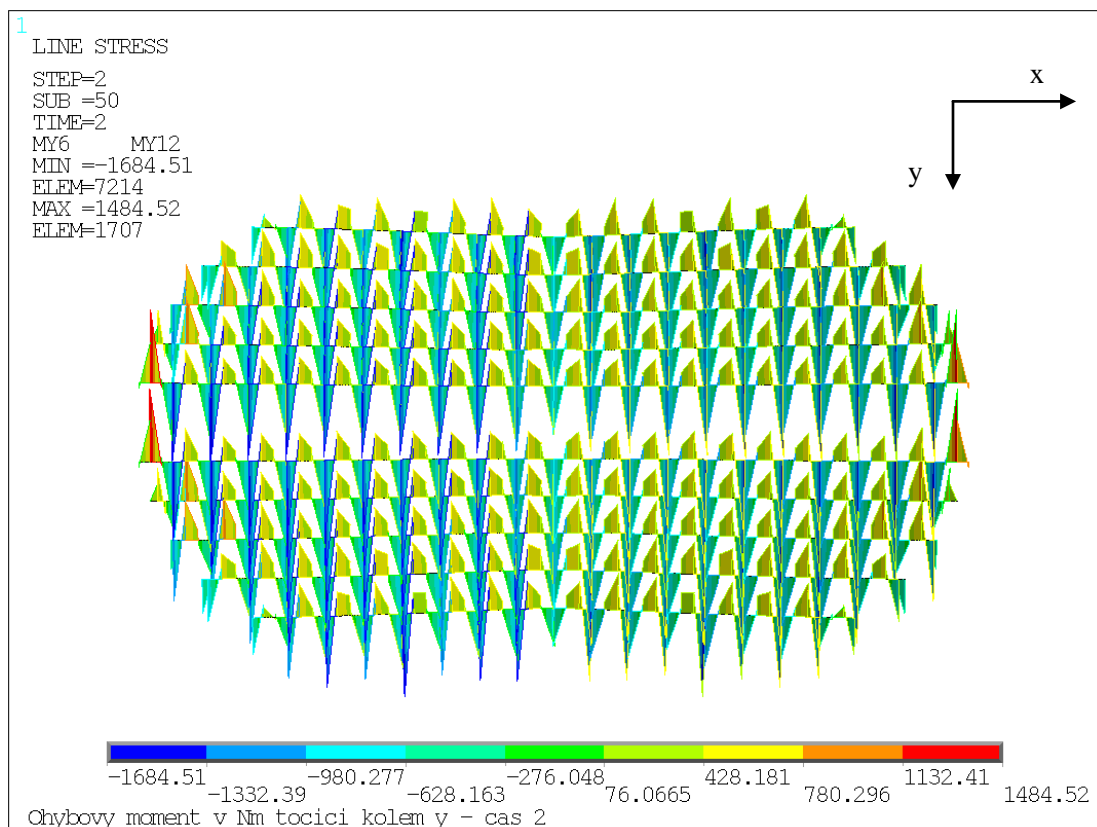
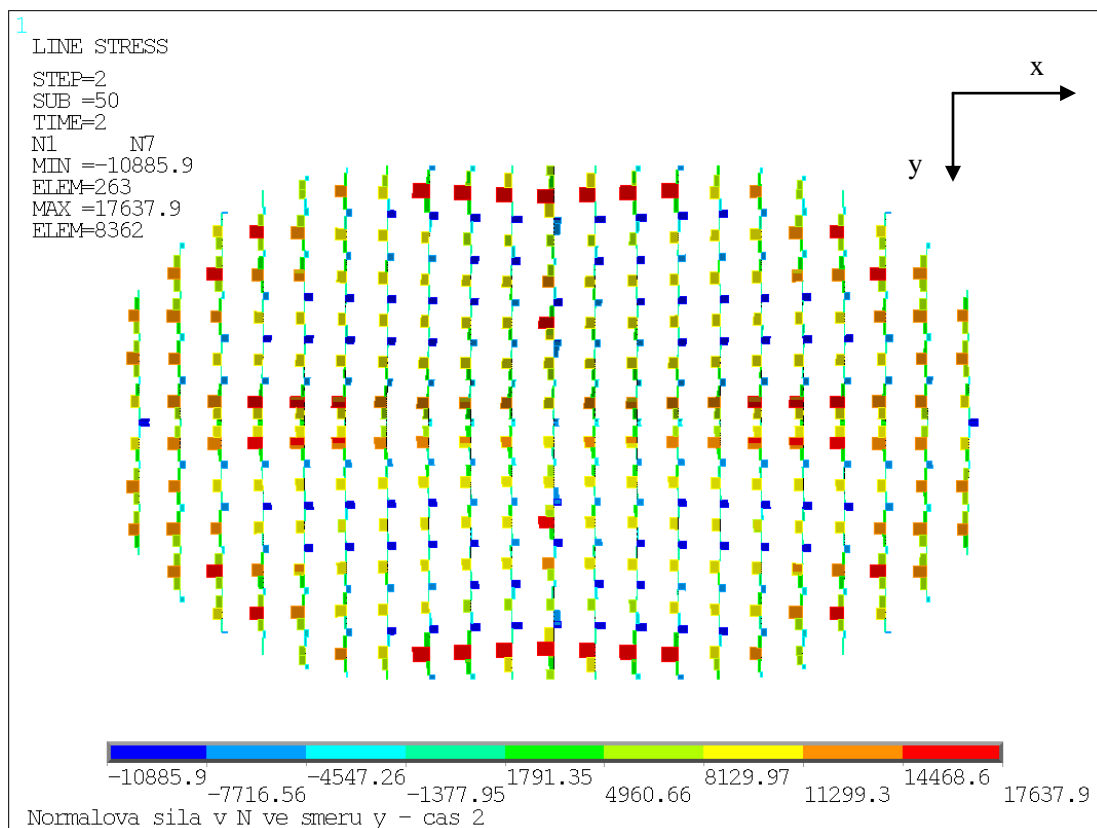


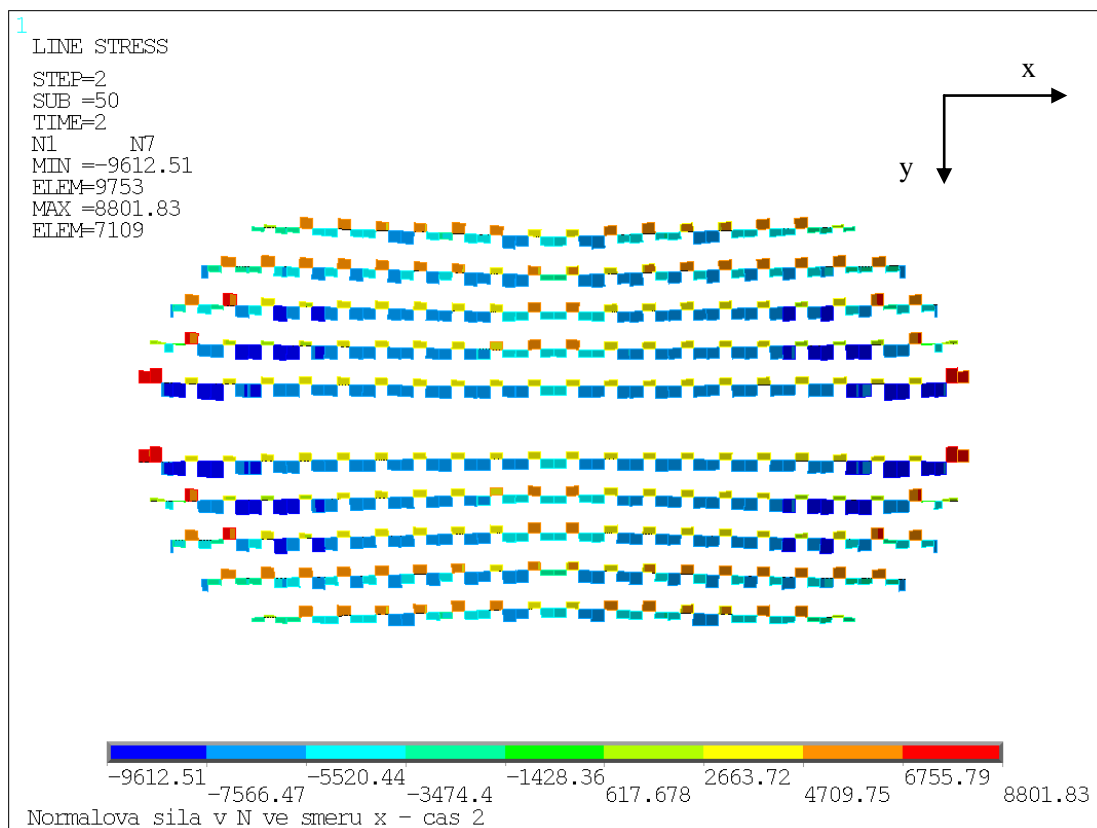




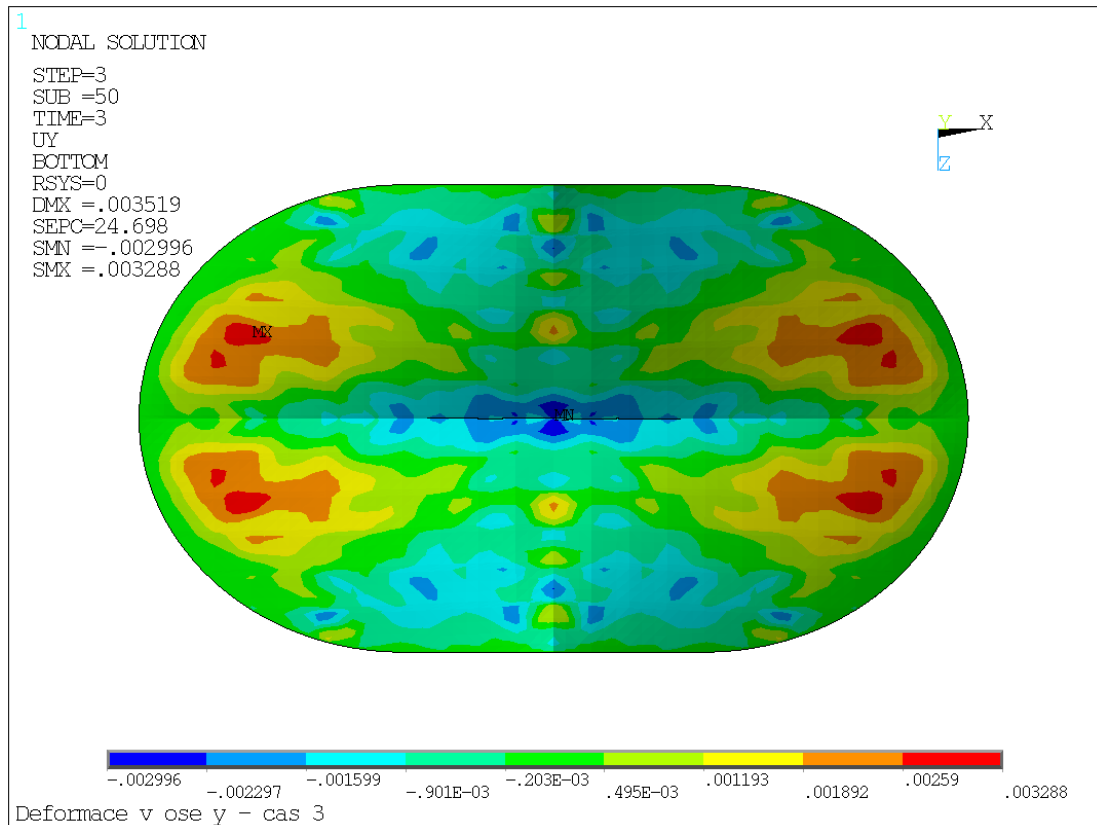


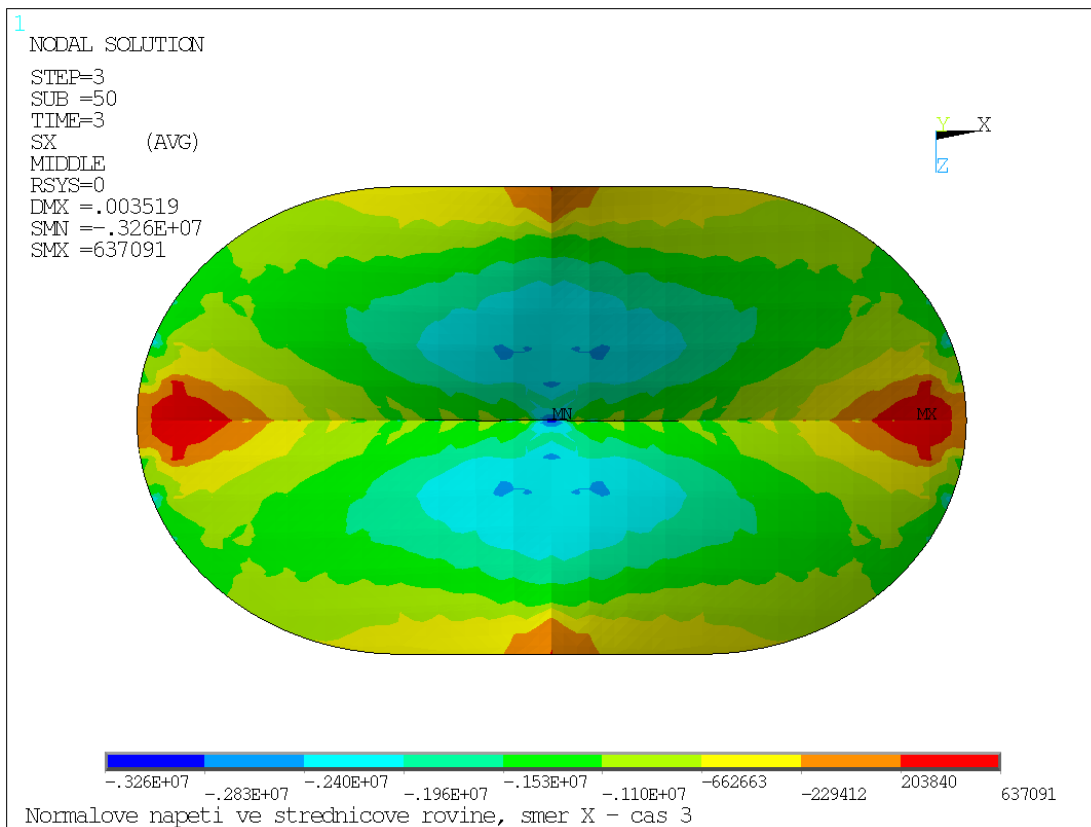
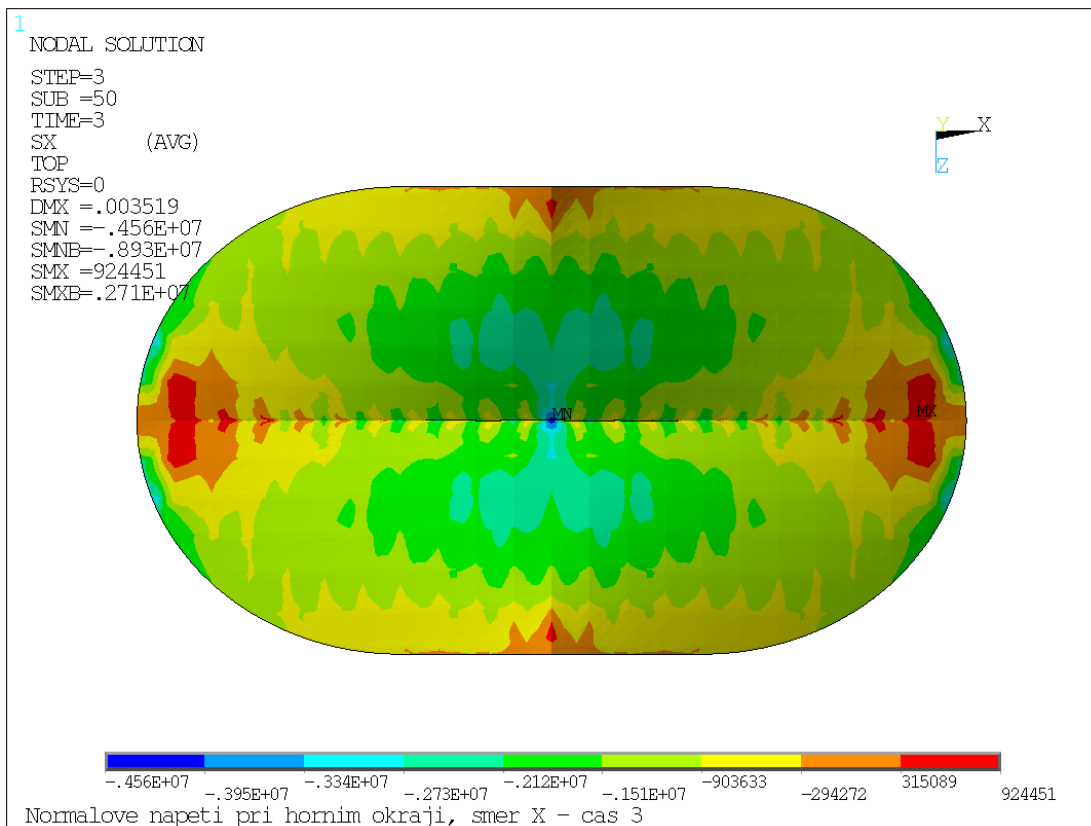


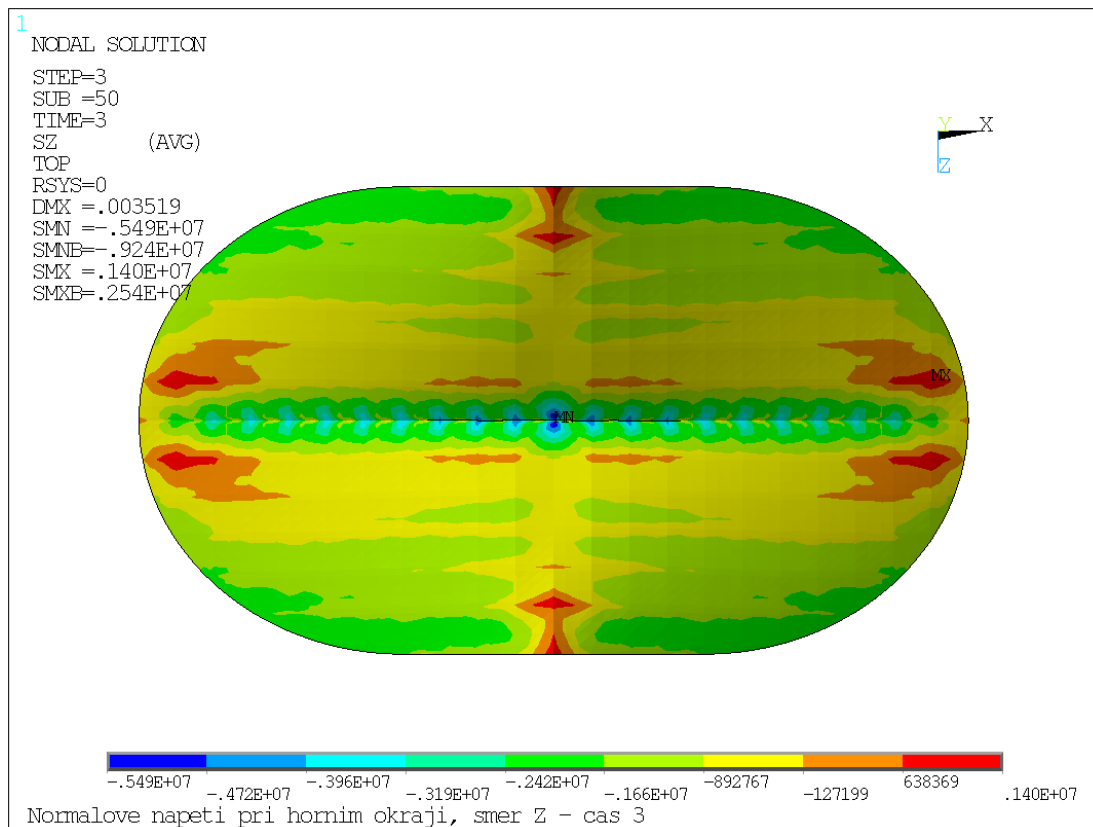
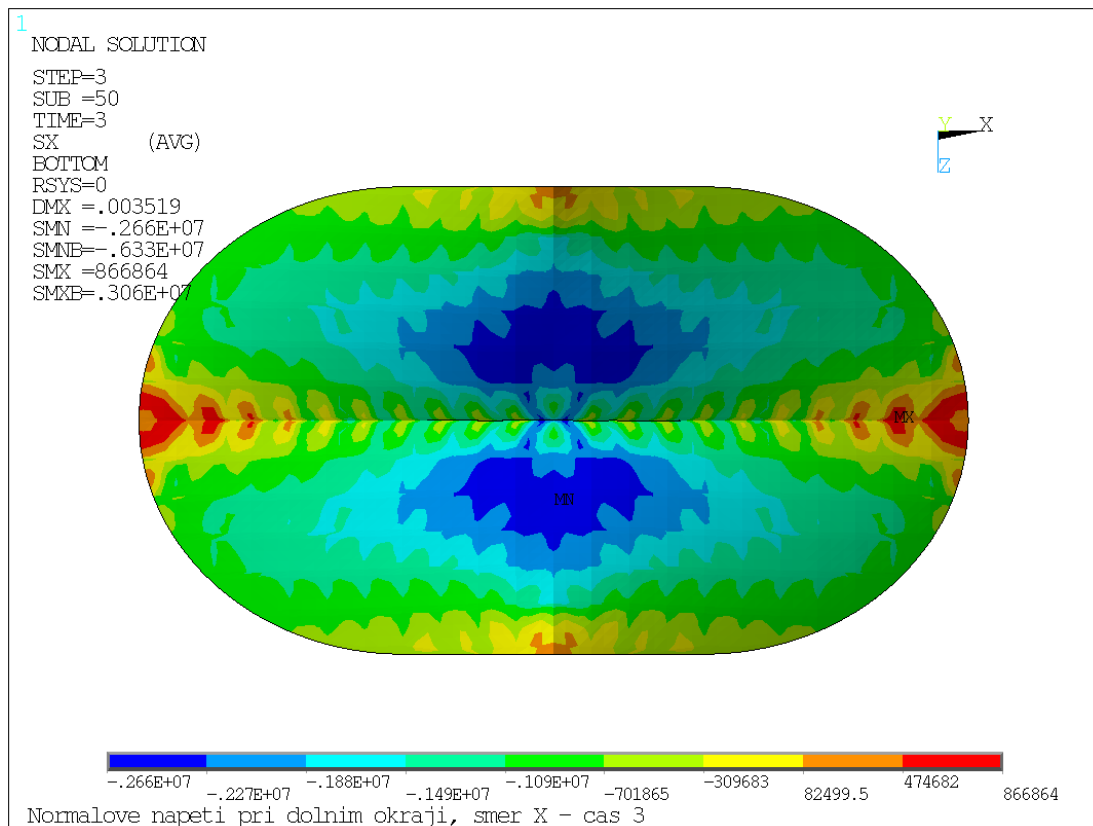


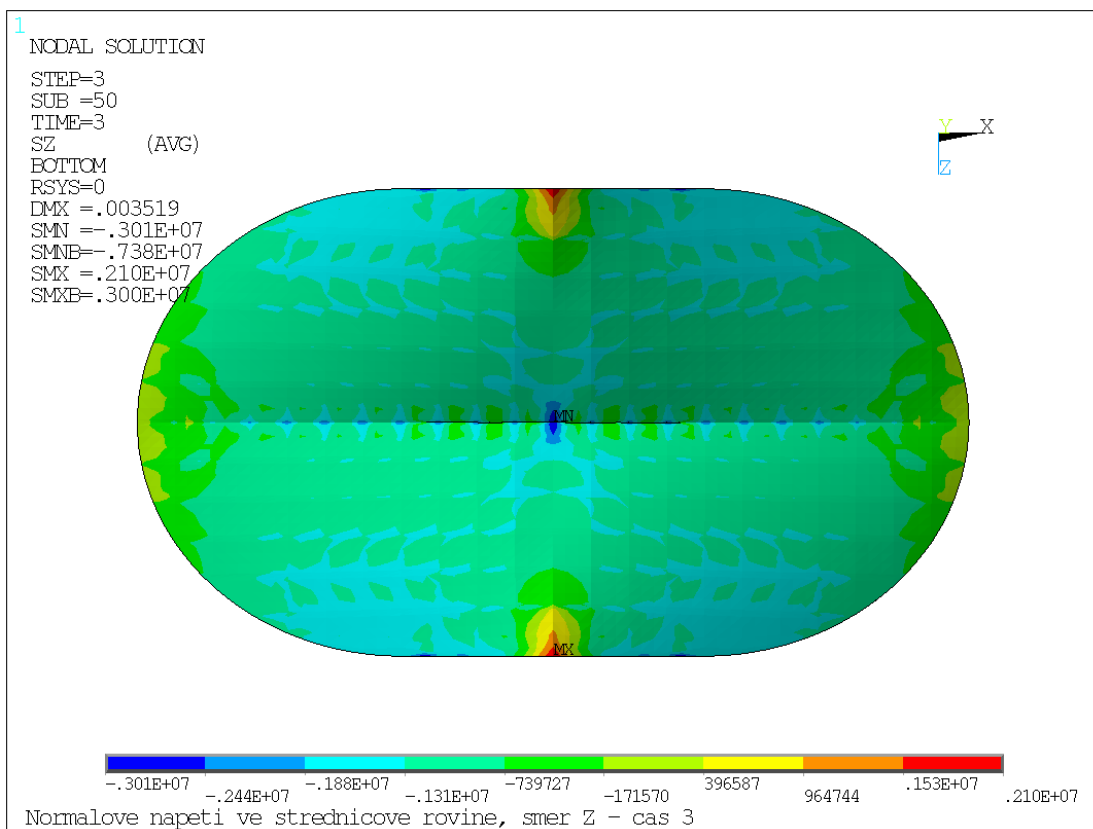
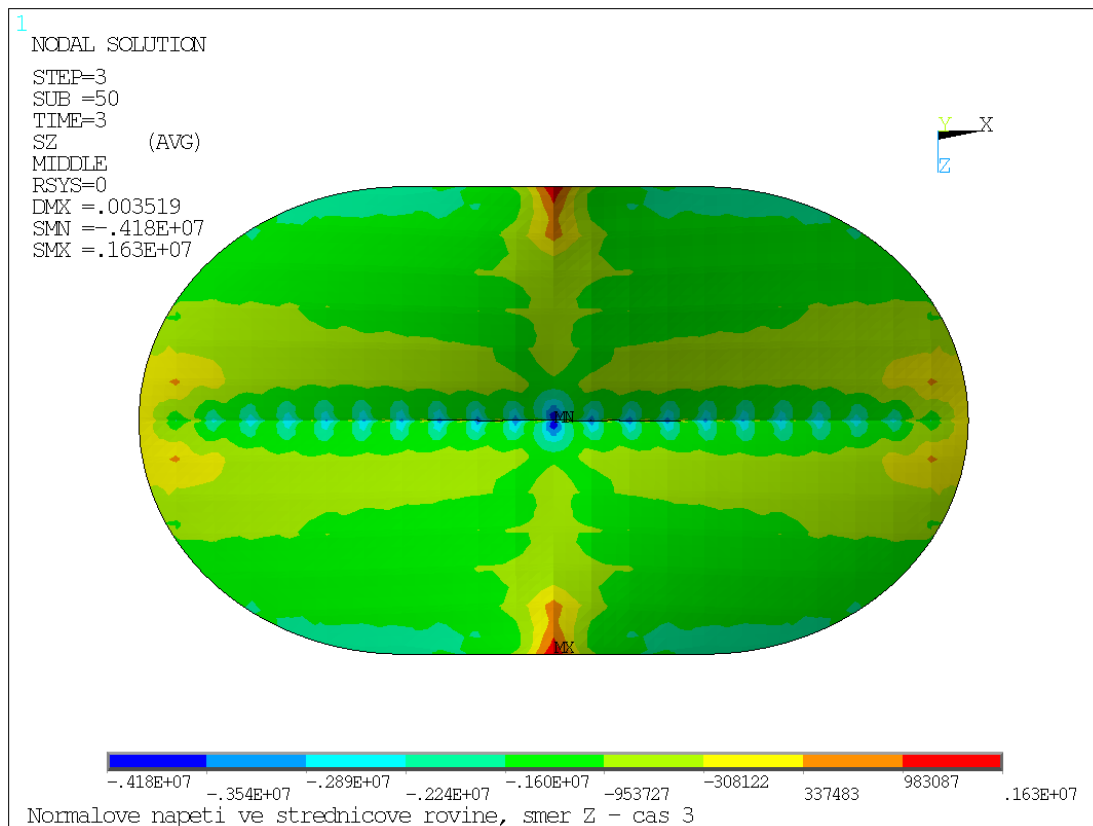


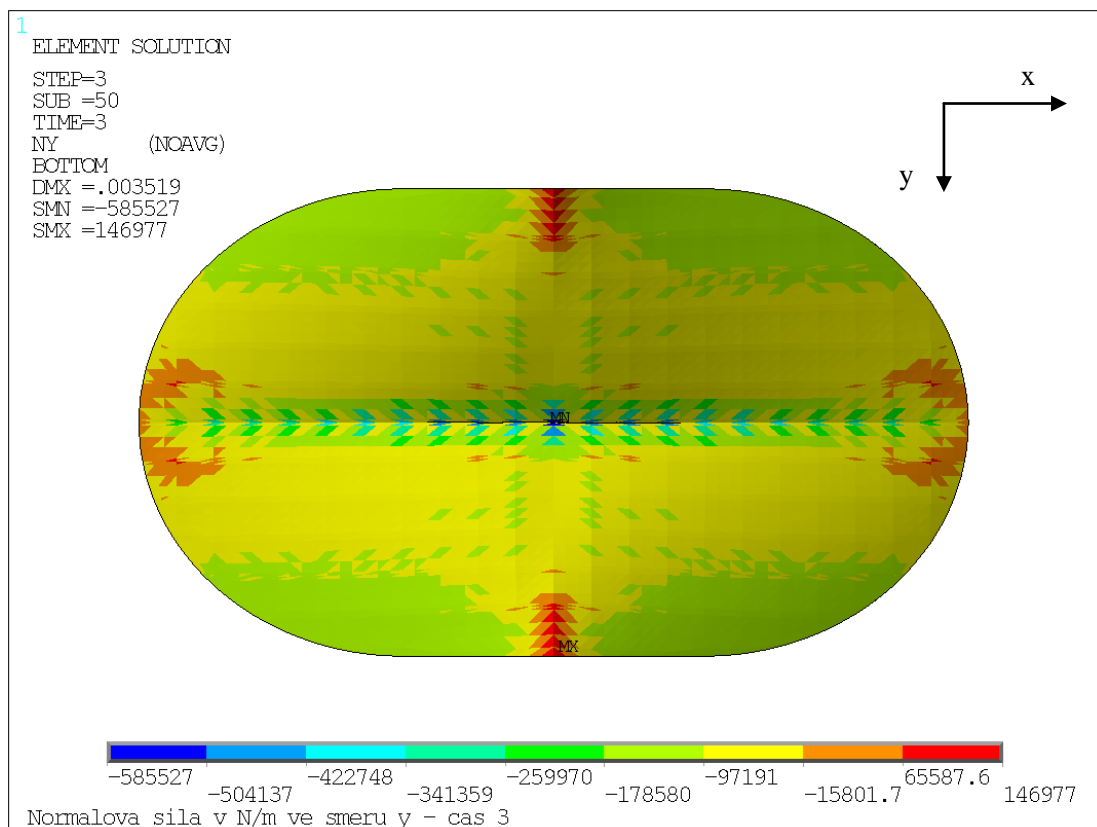
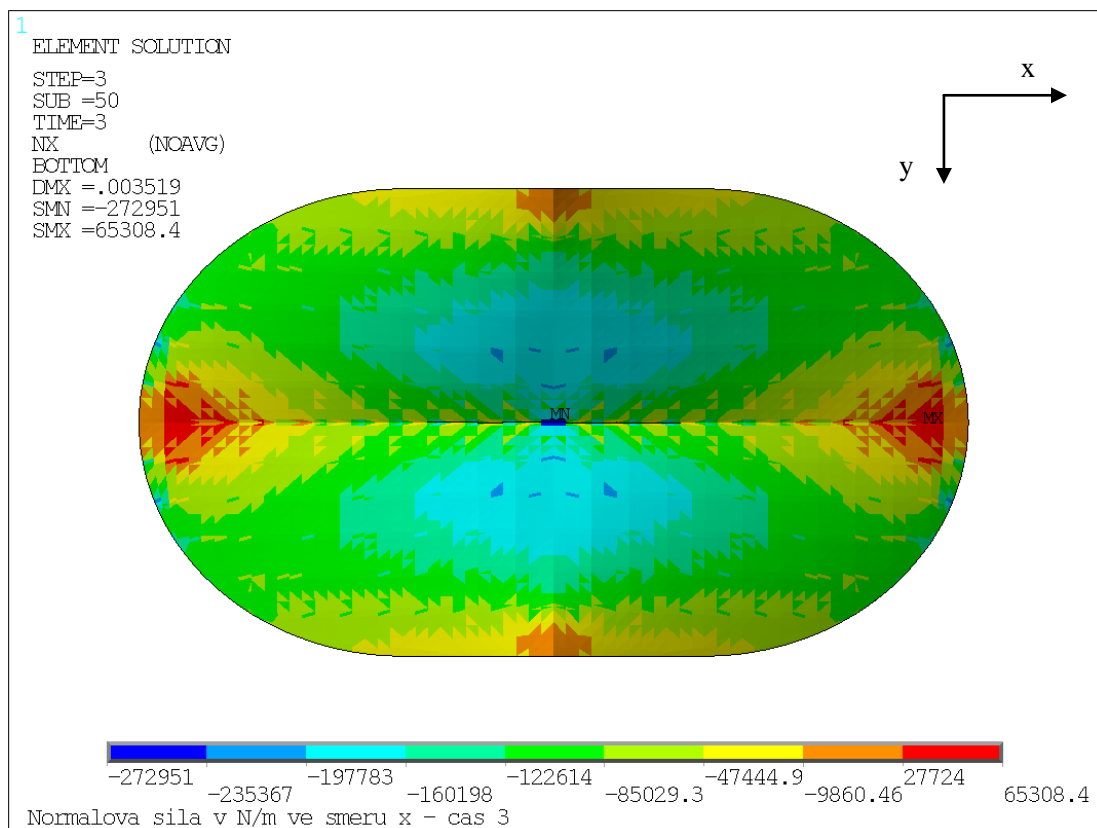
2.3 Čas 3 – Vnesení předpětí do skořepiny

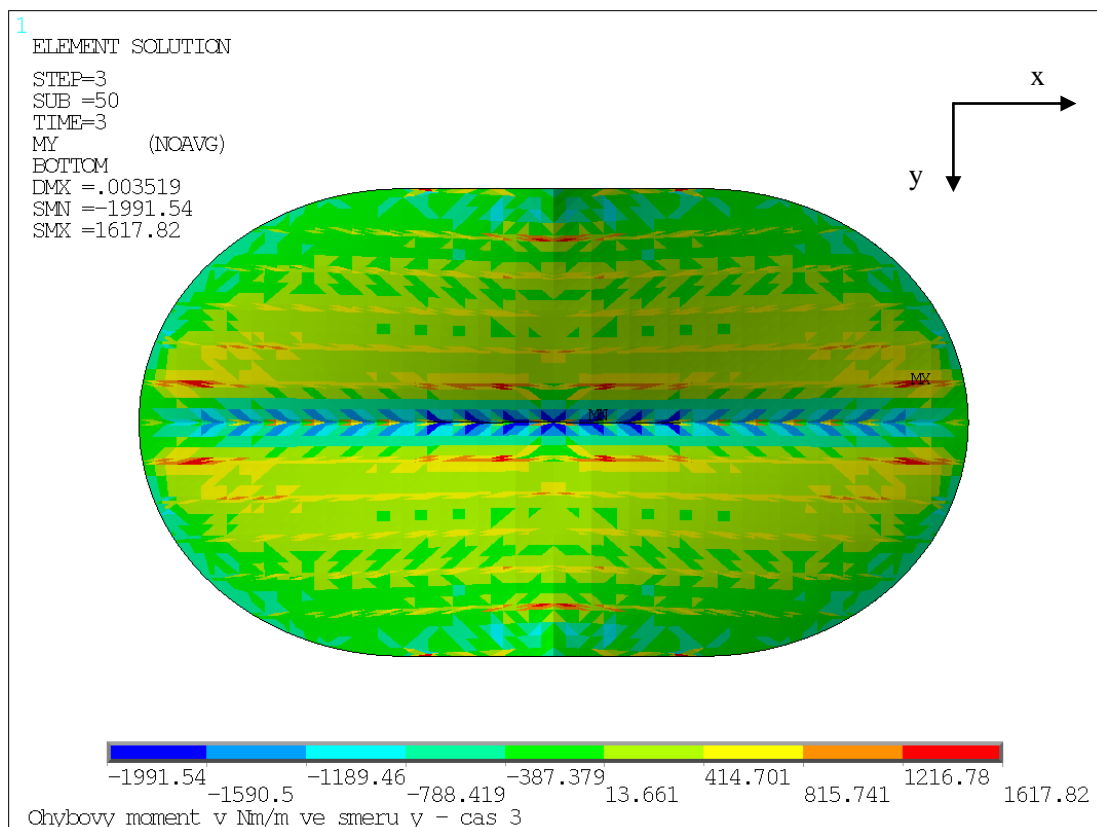
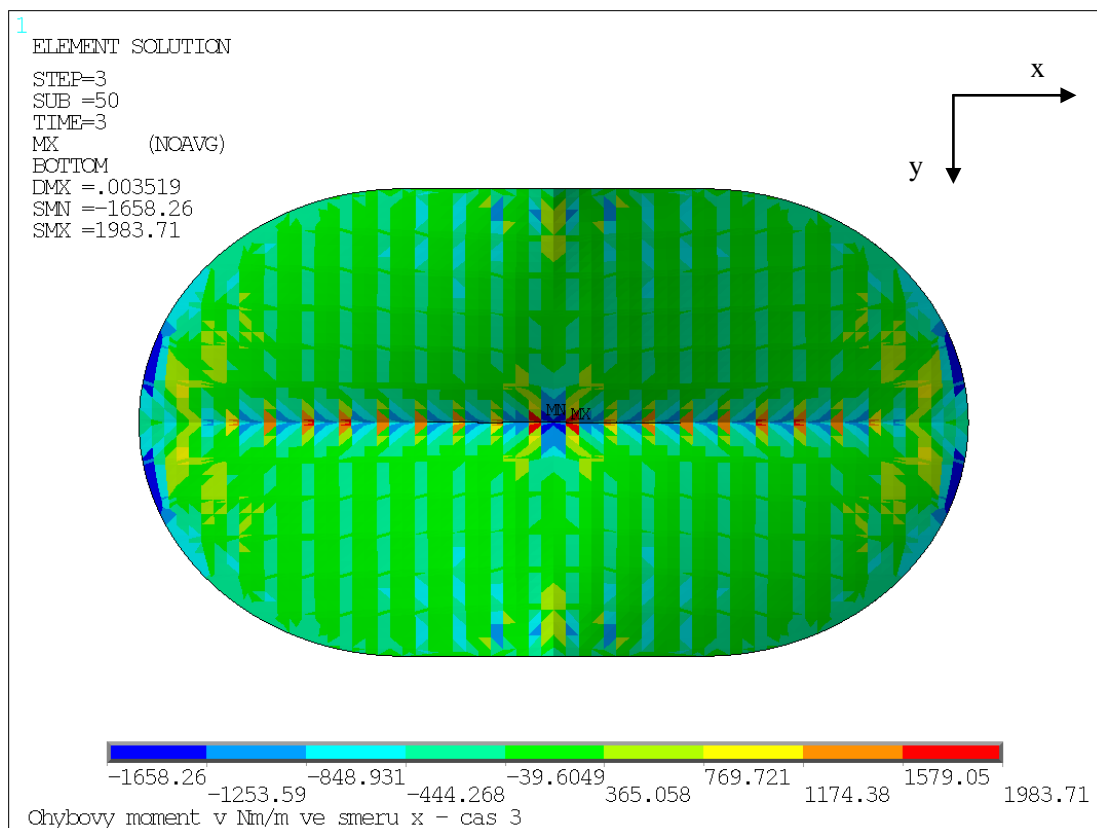


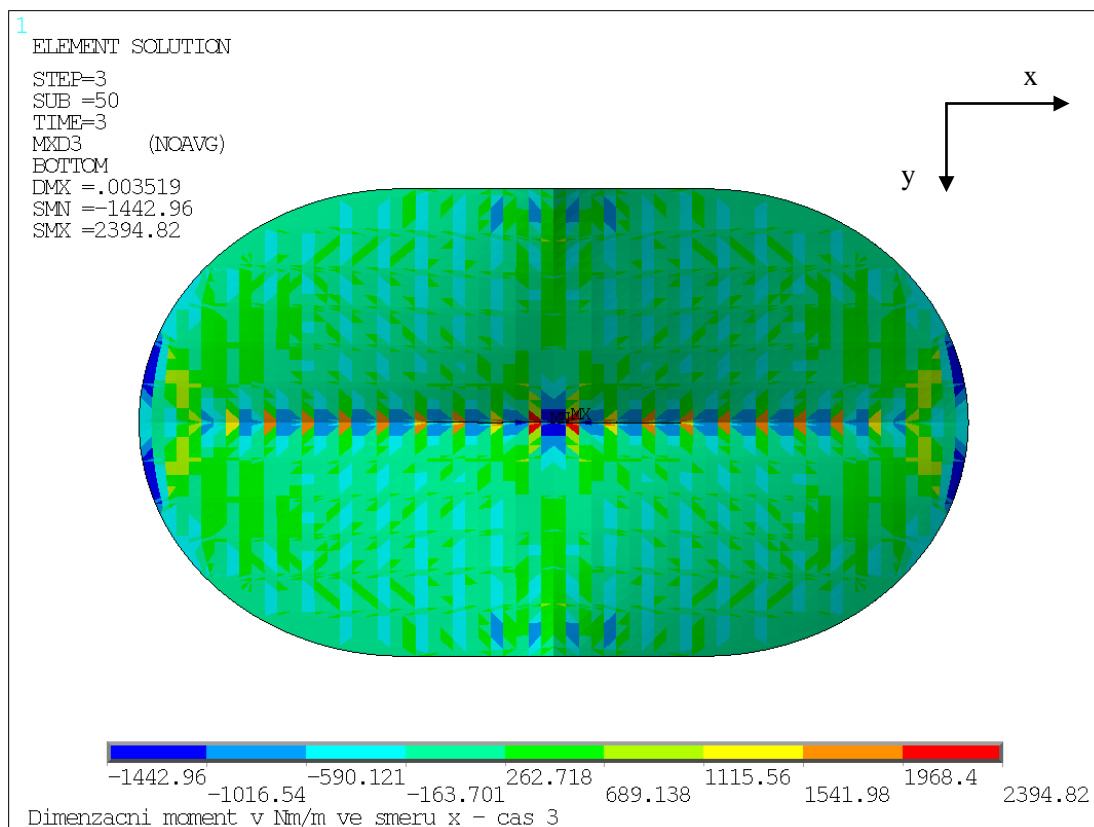
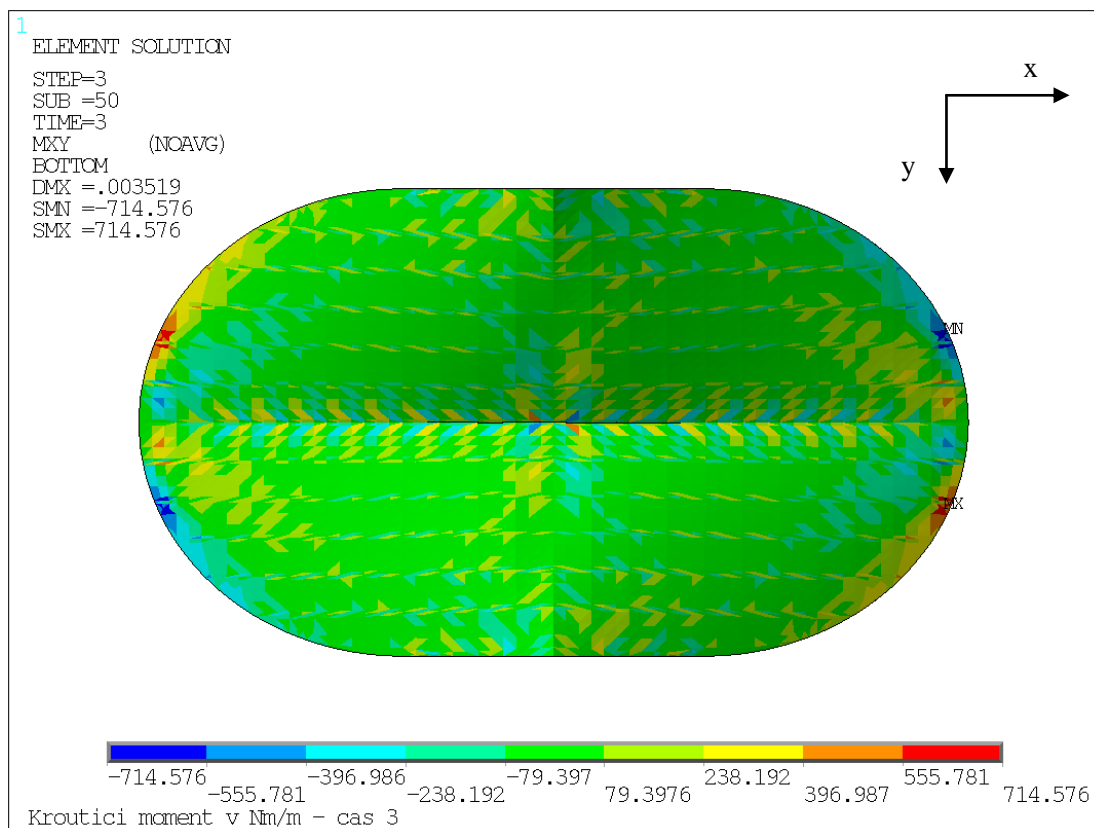


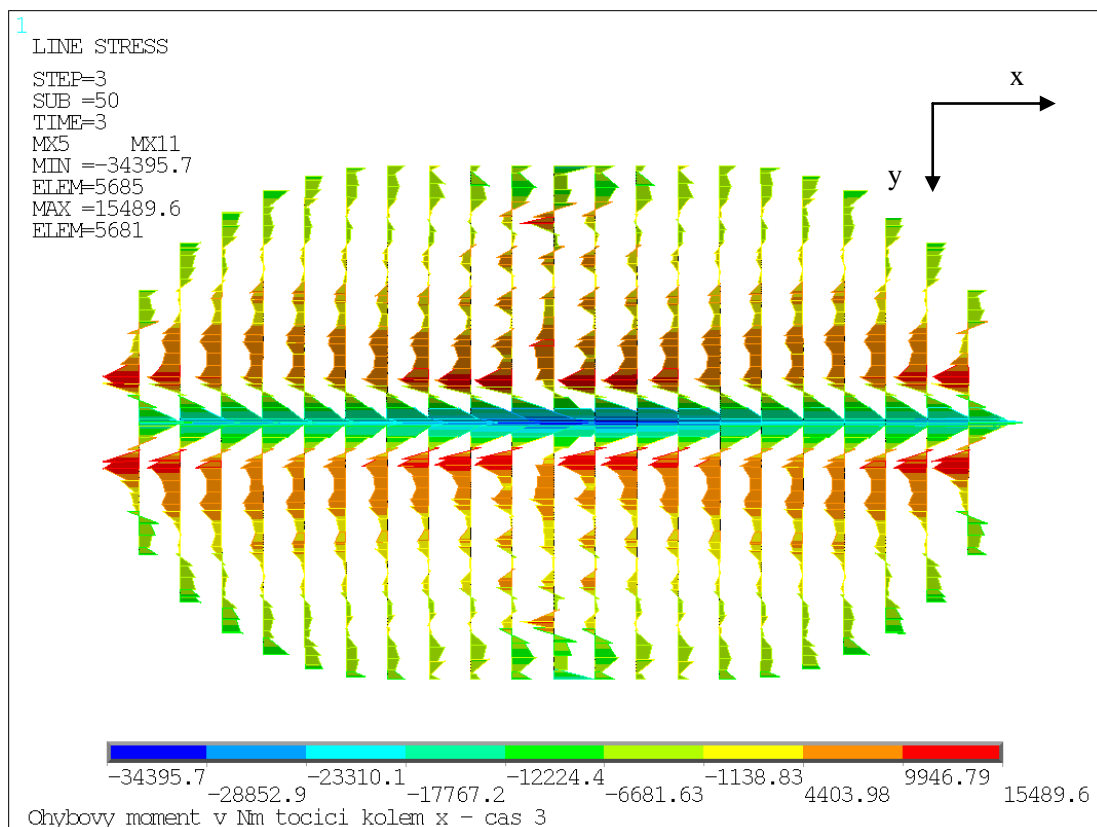
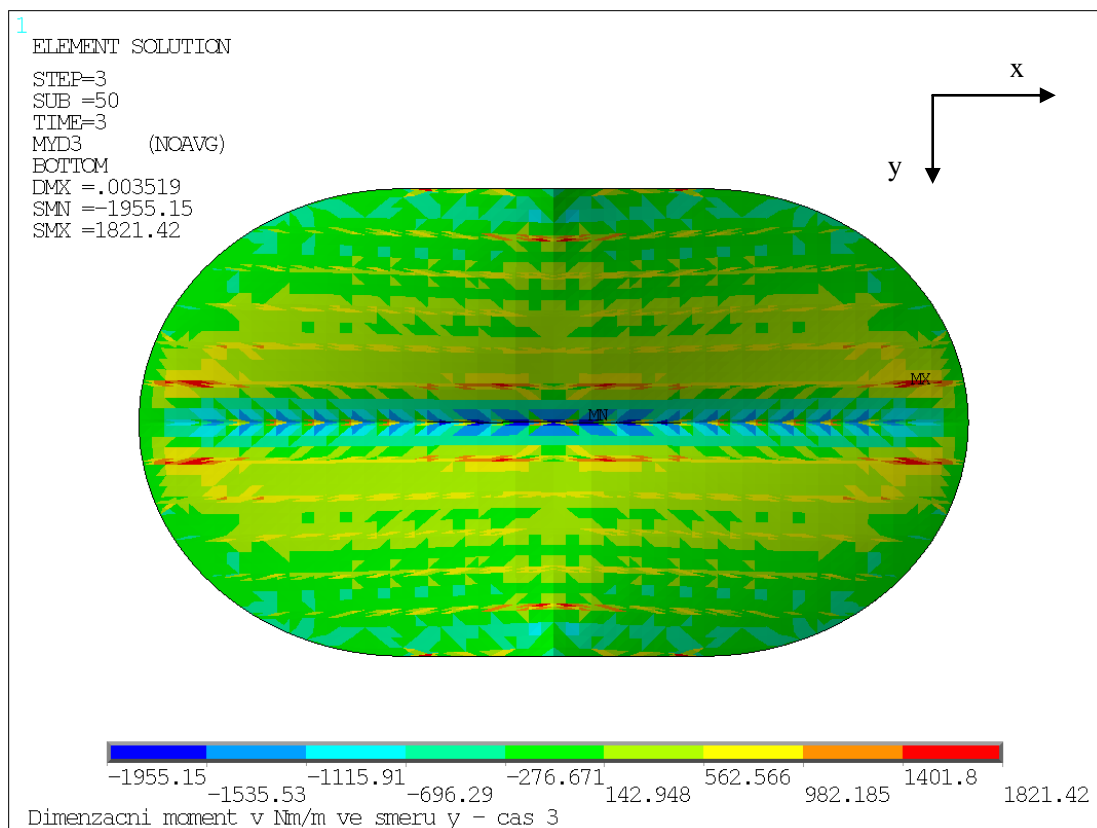


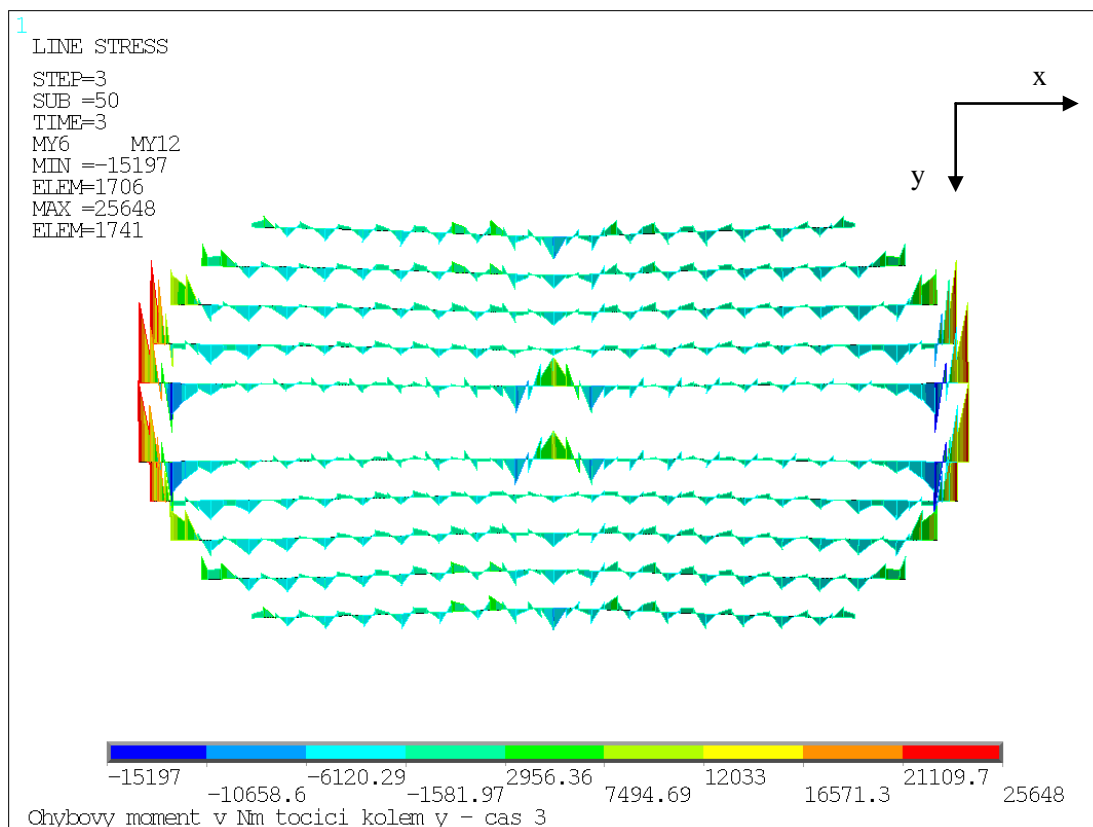
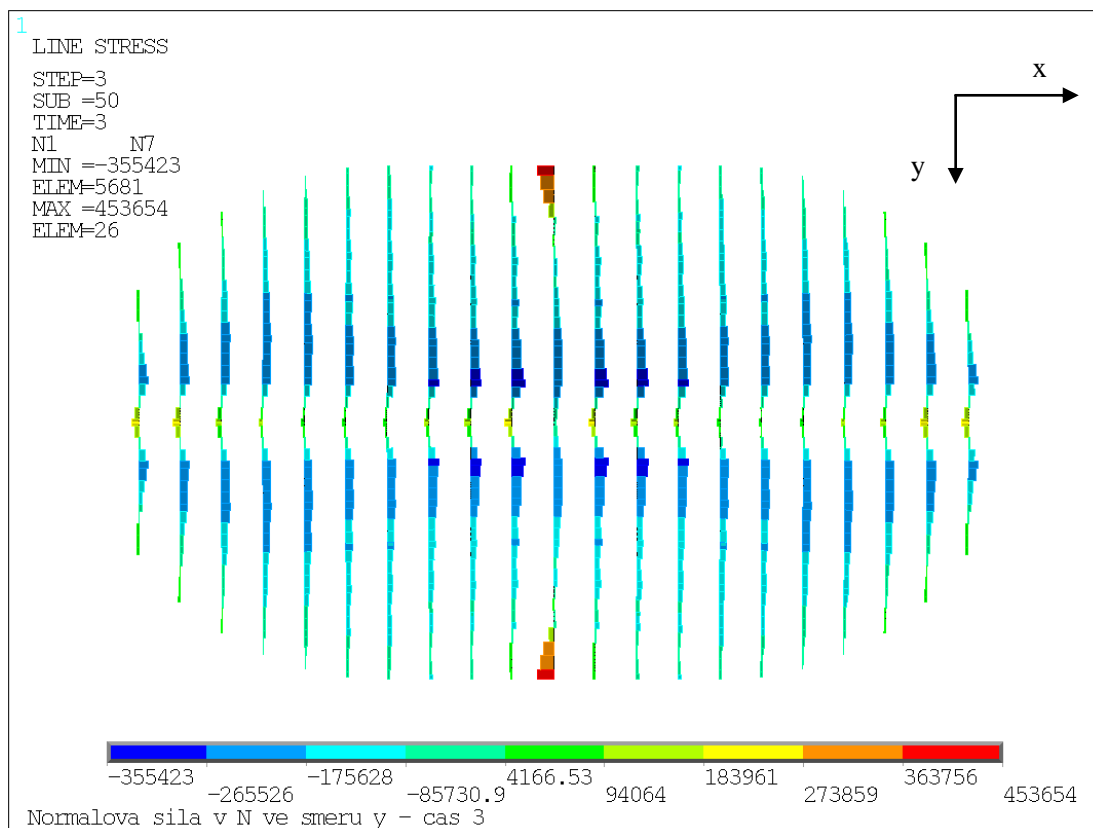


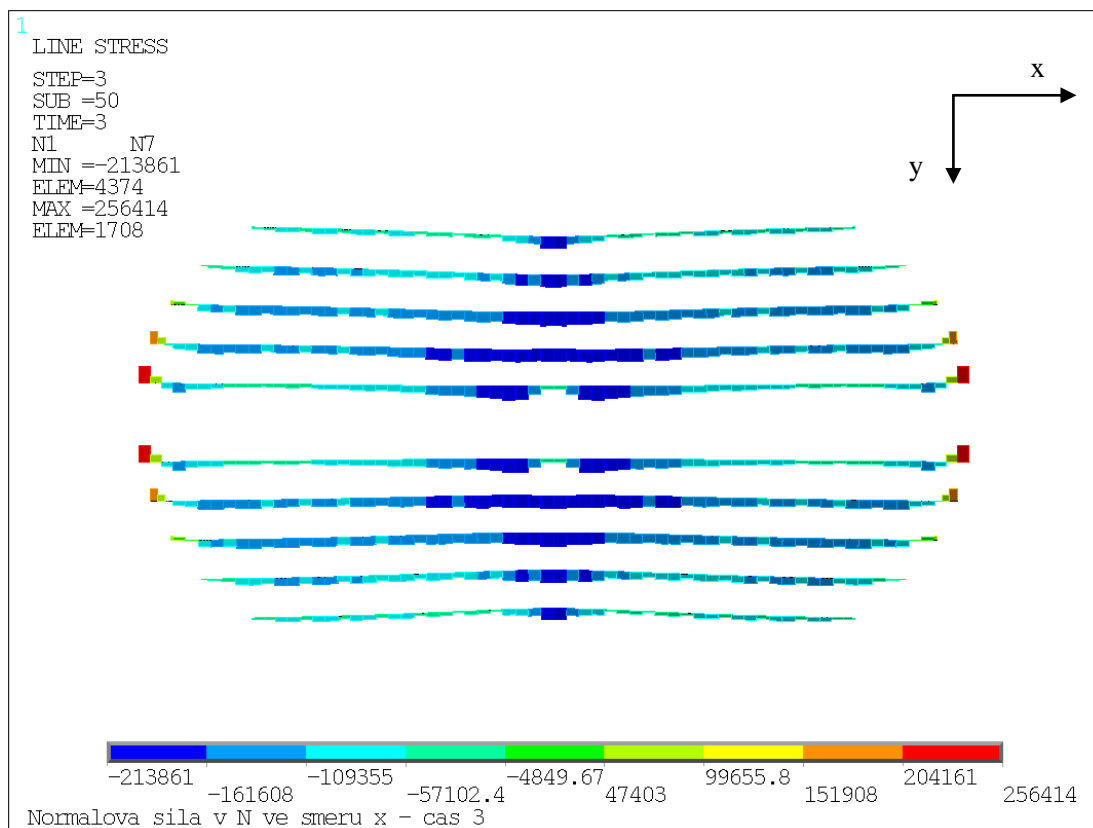




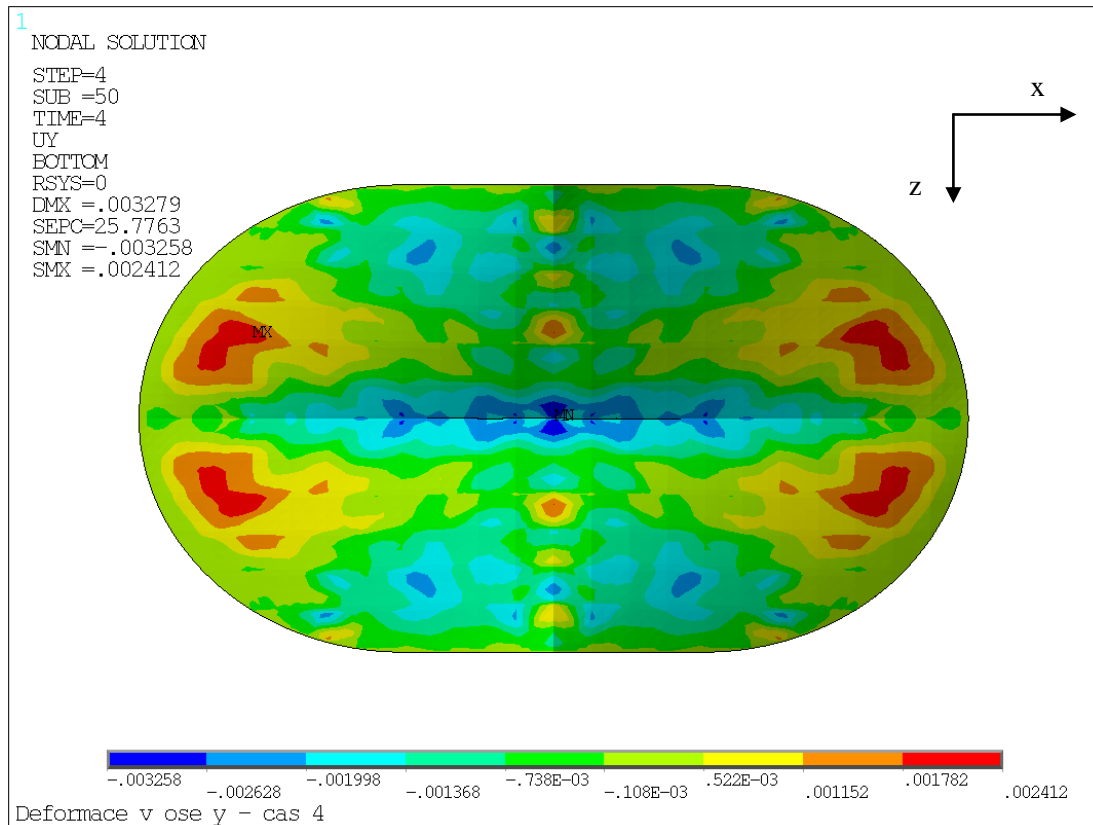


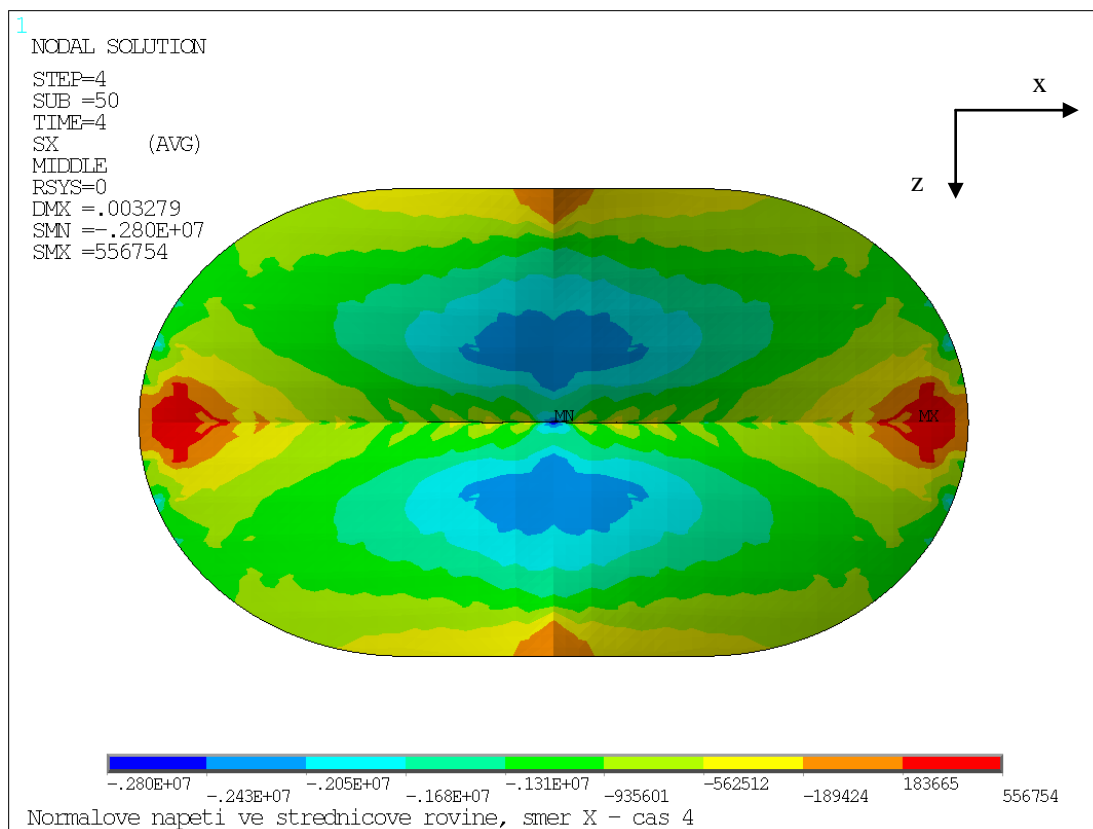
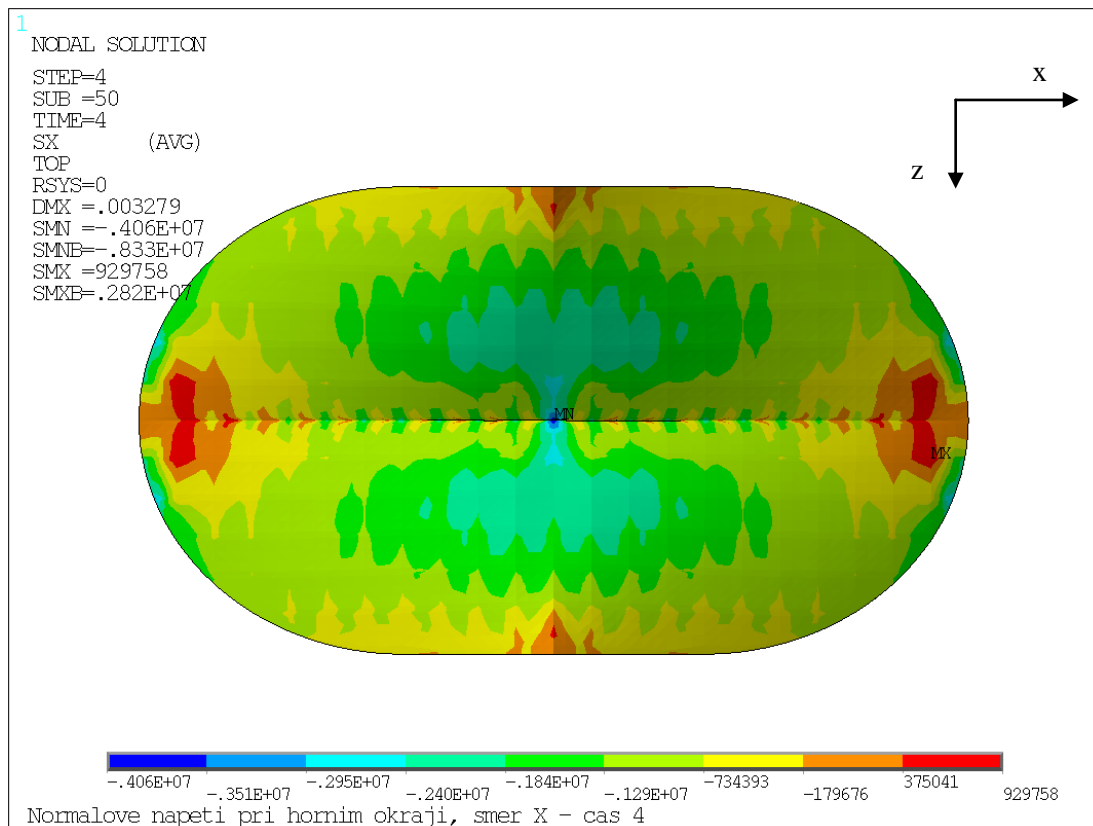


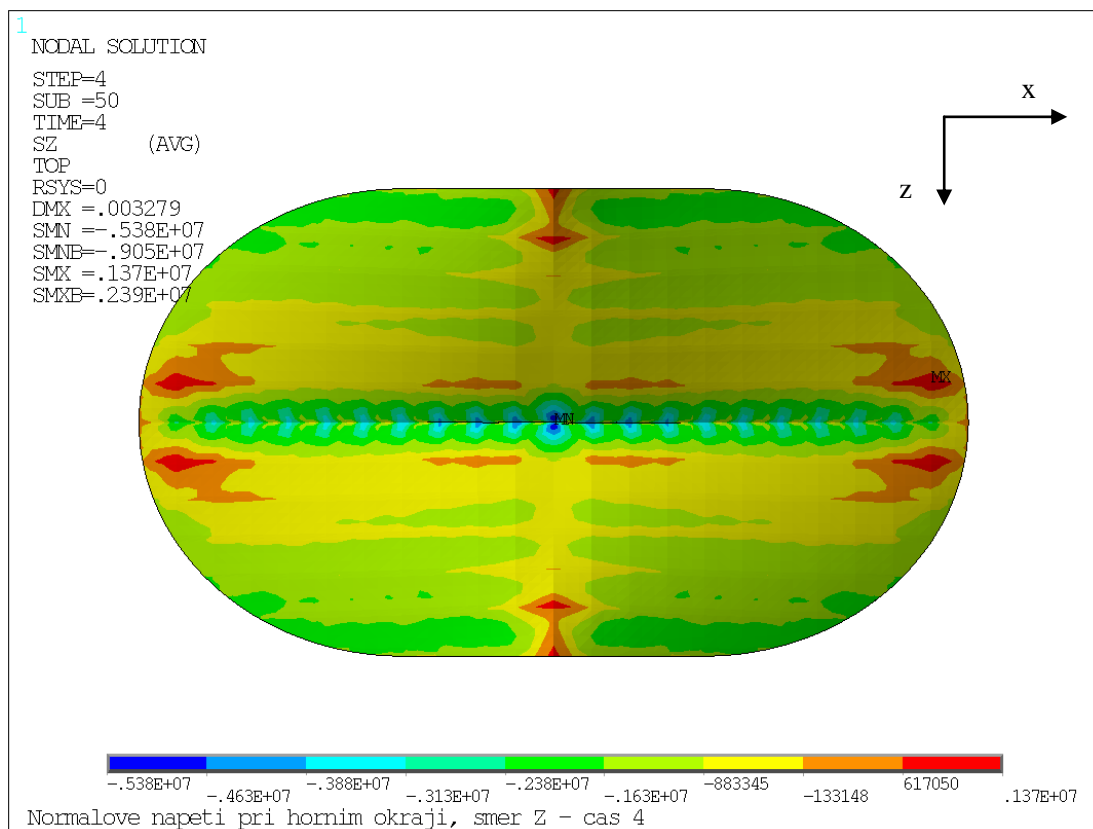
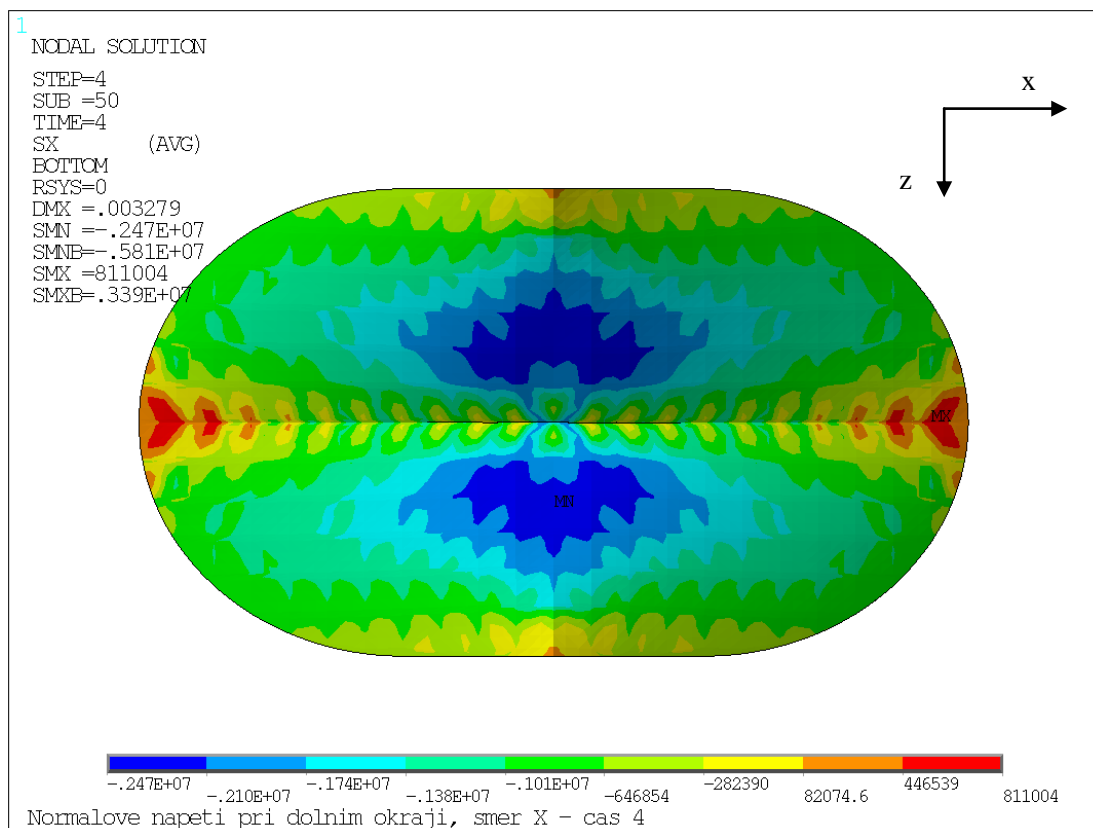


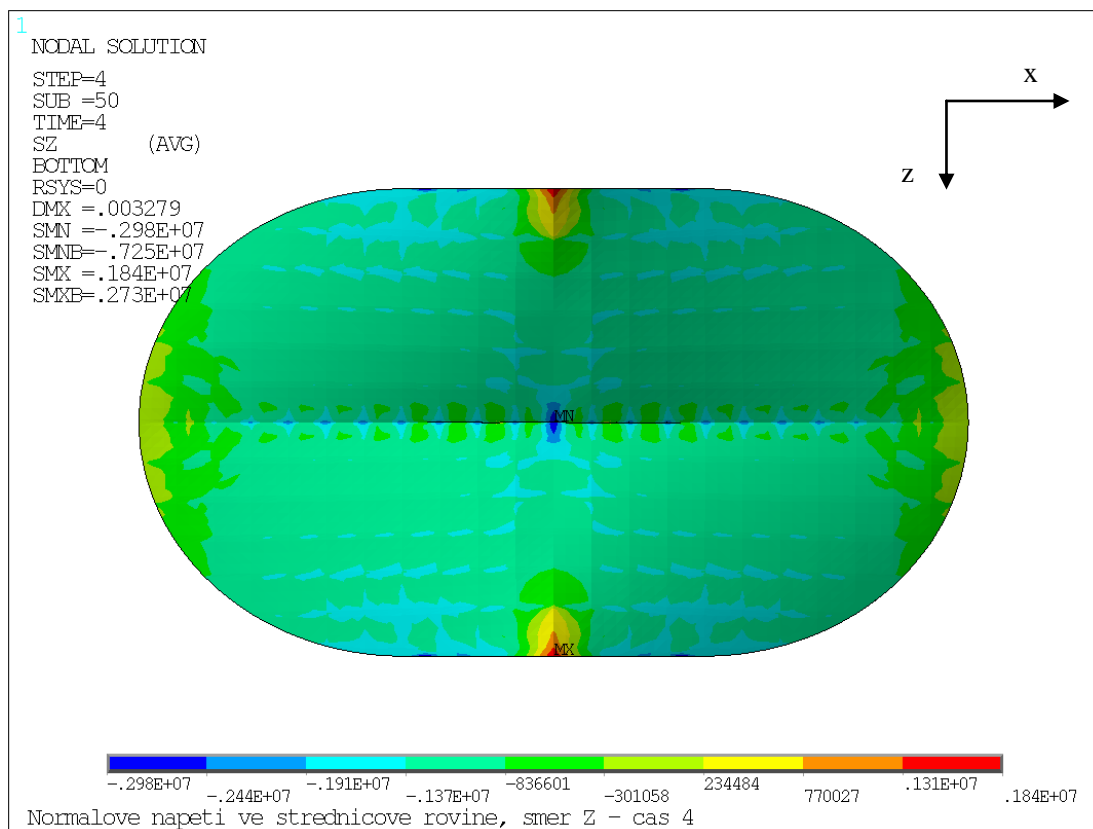
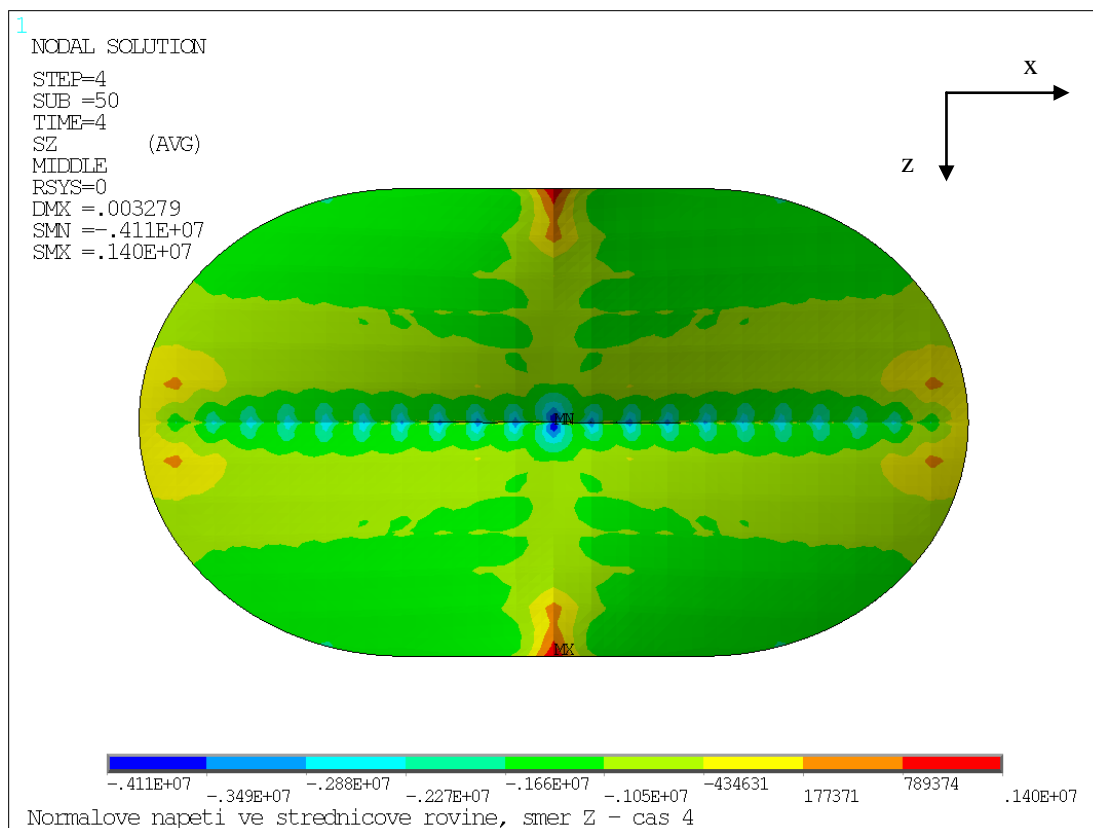


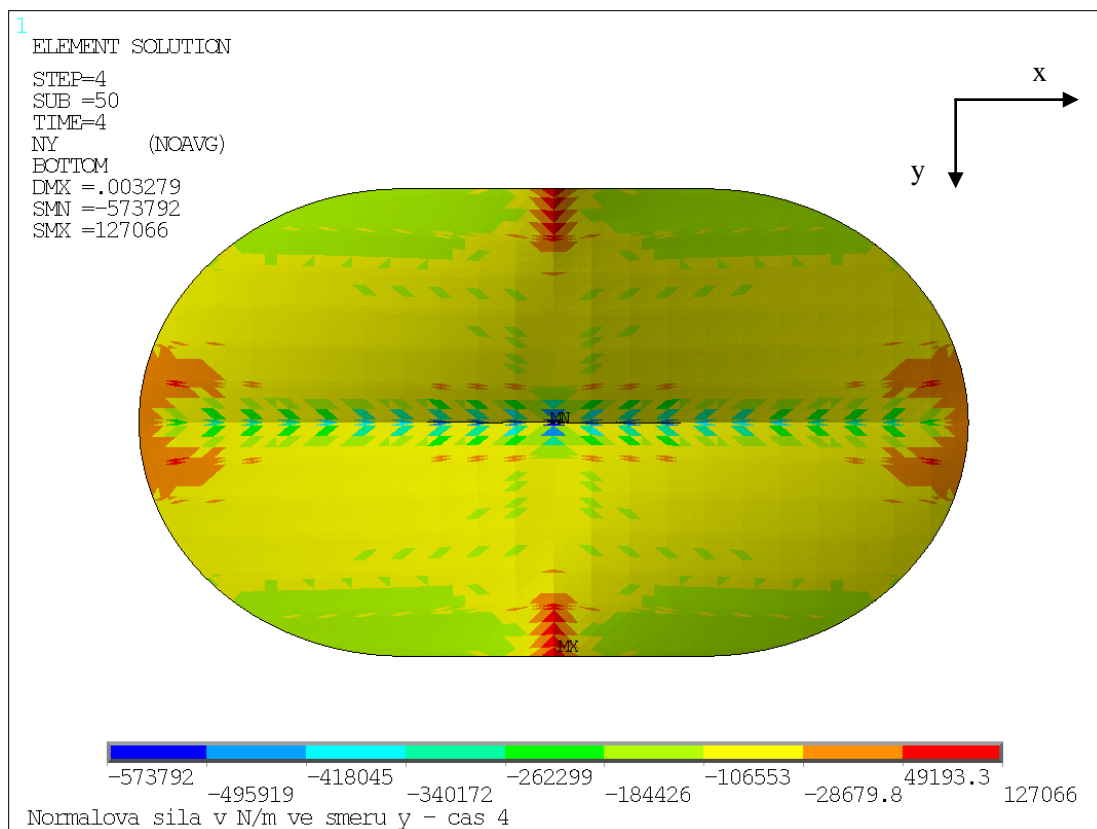
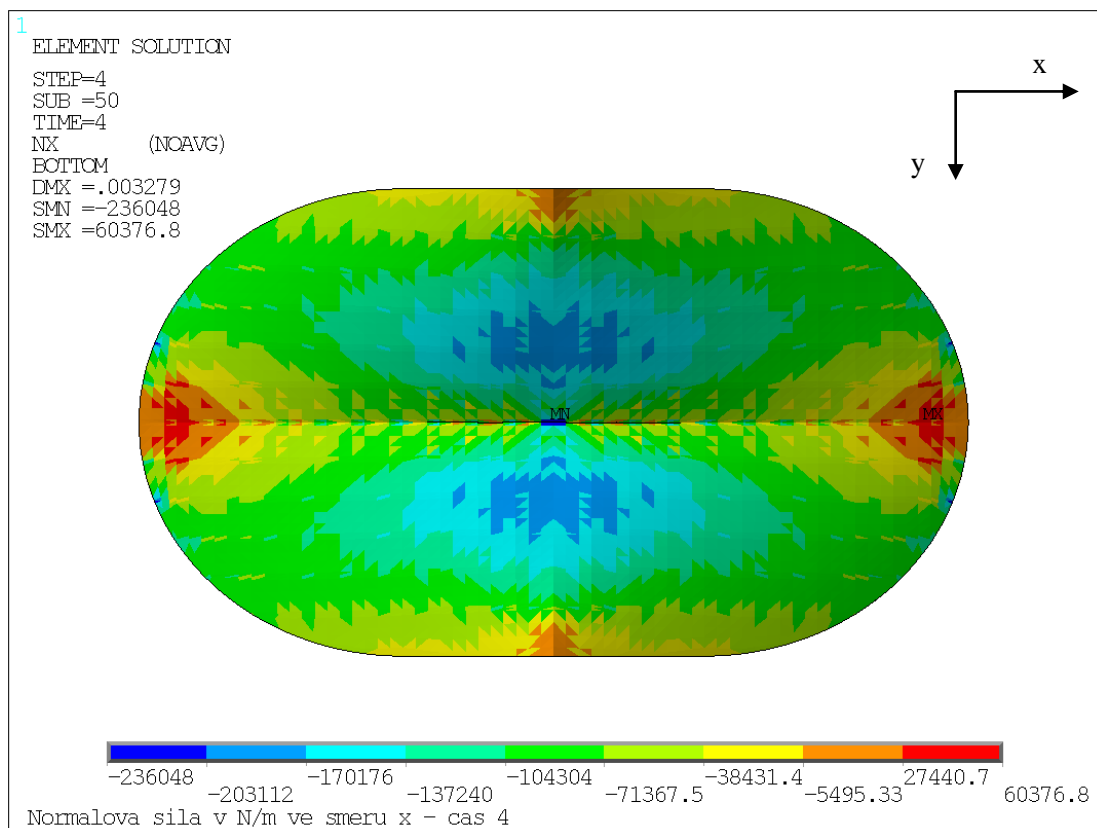
2.4 Čas 4 – Zatížení ostatním stálým zatížením (skladba střechy)

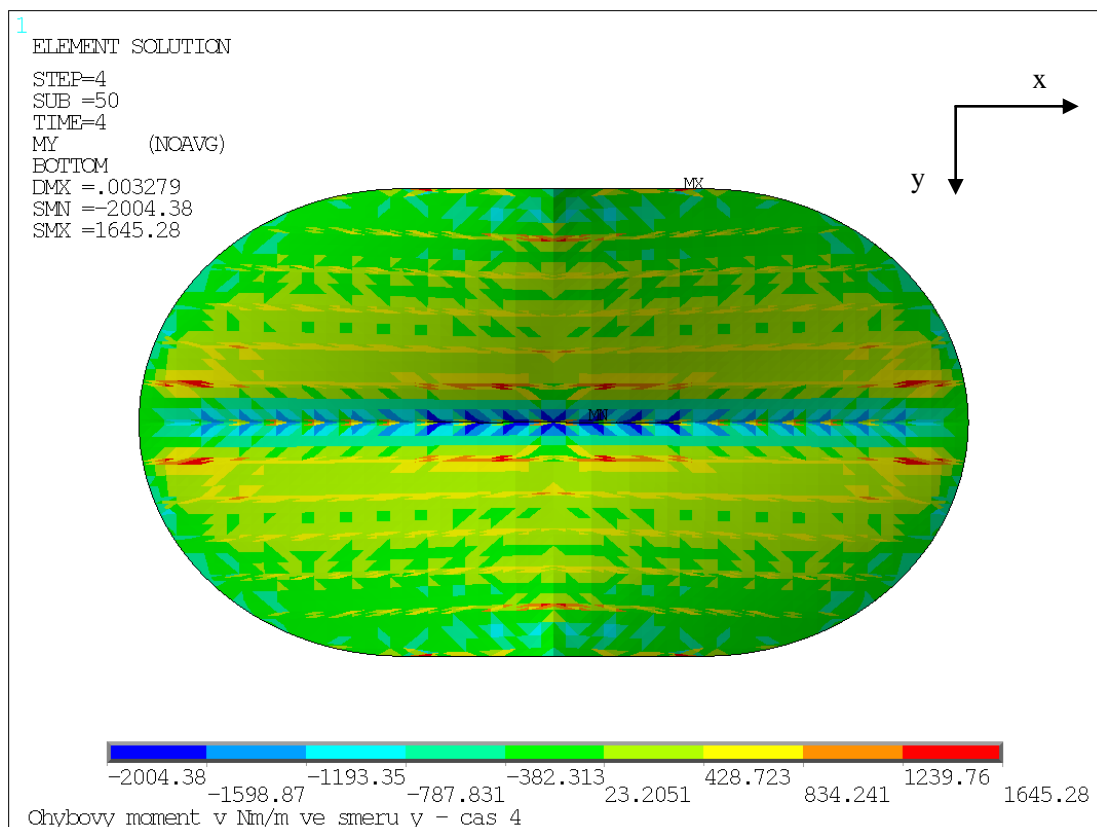
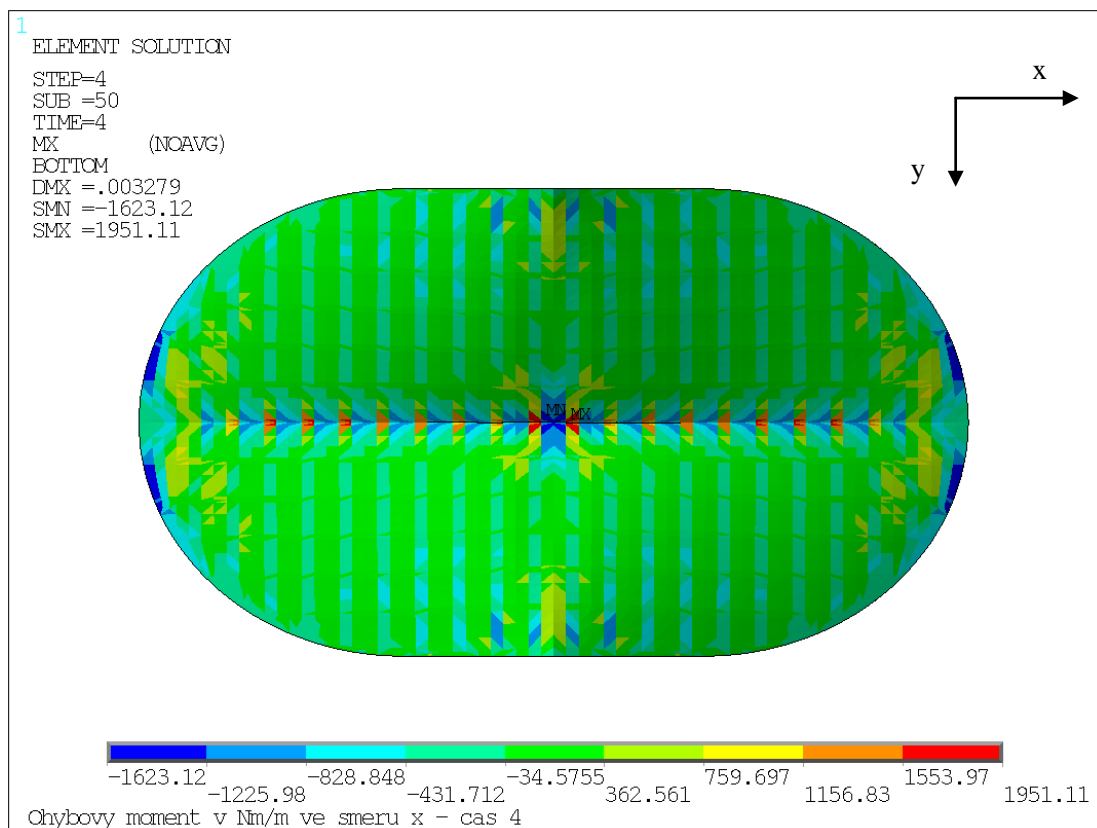


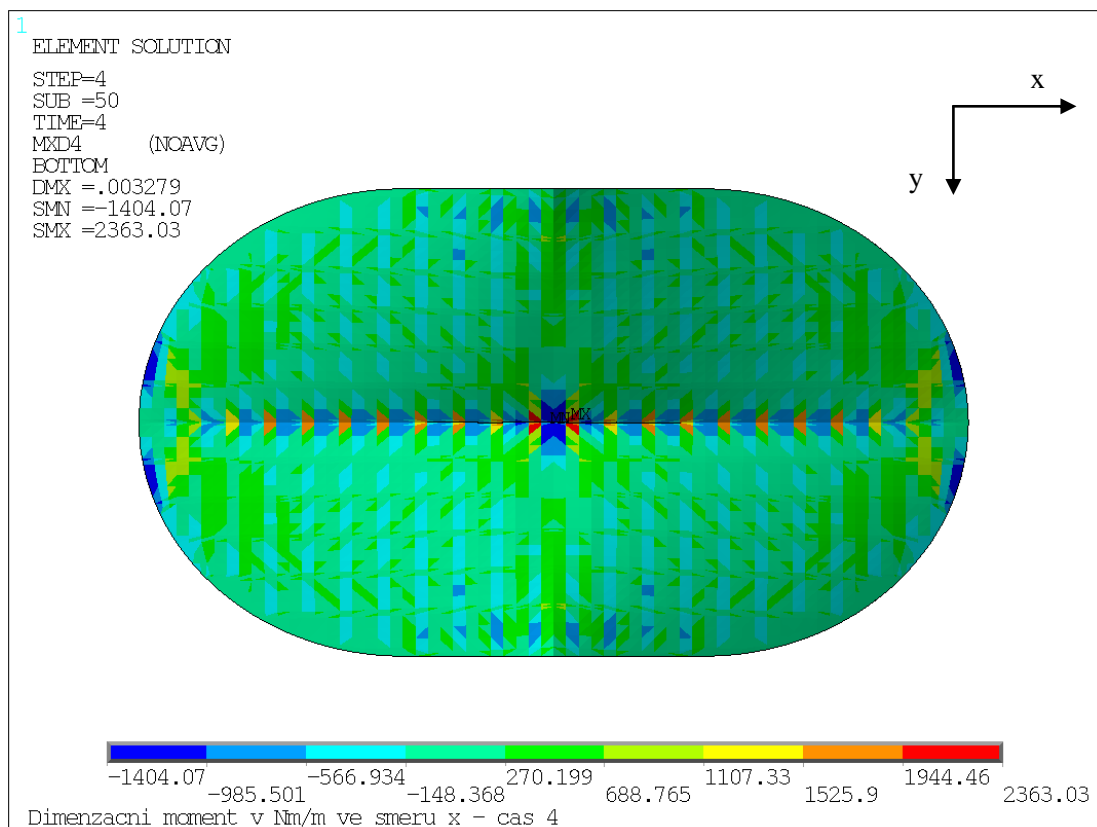
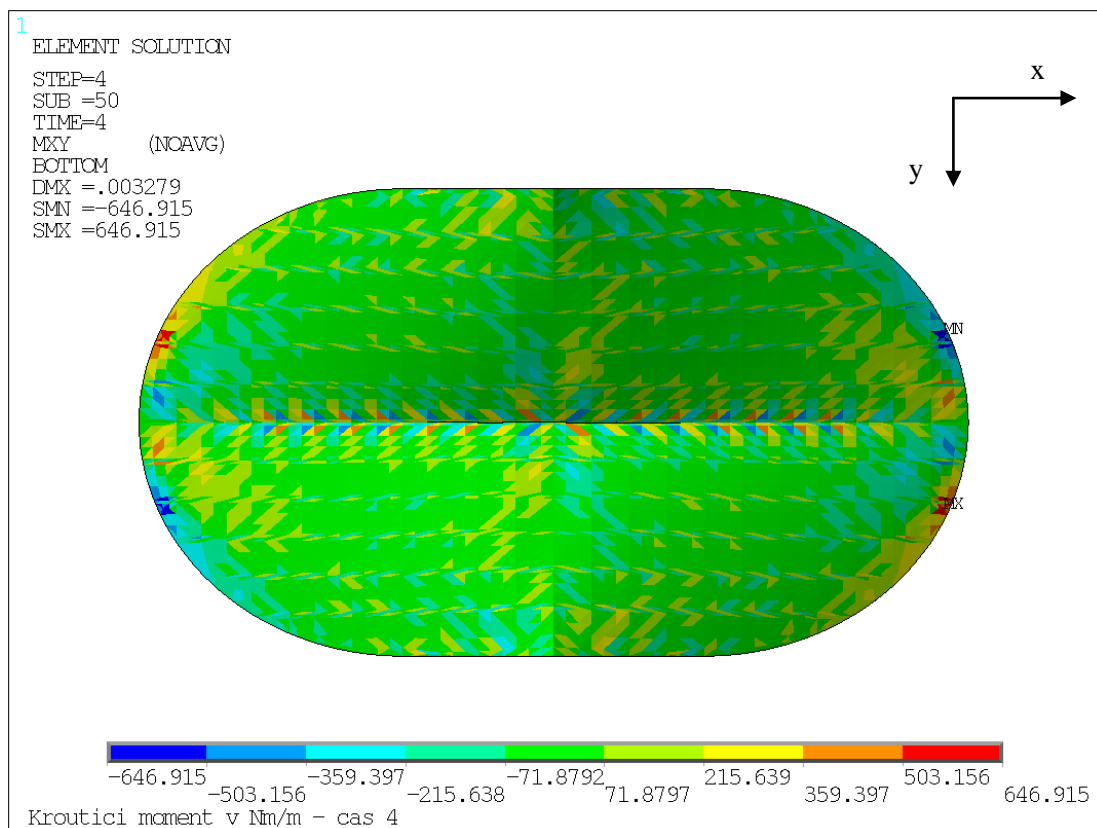


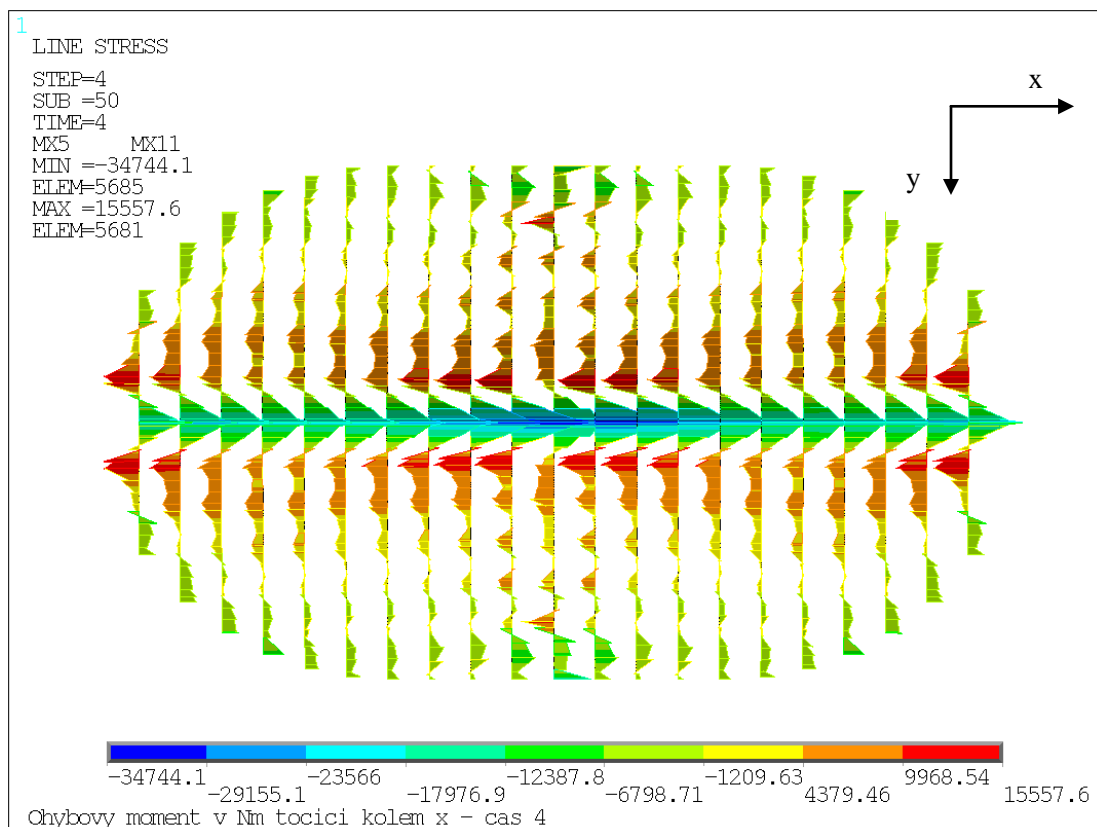
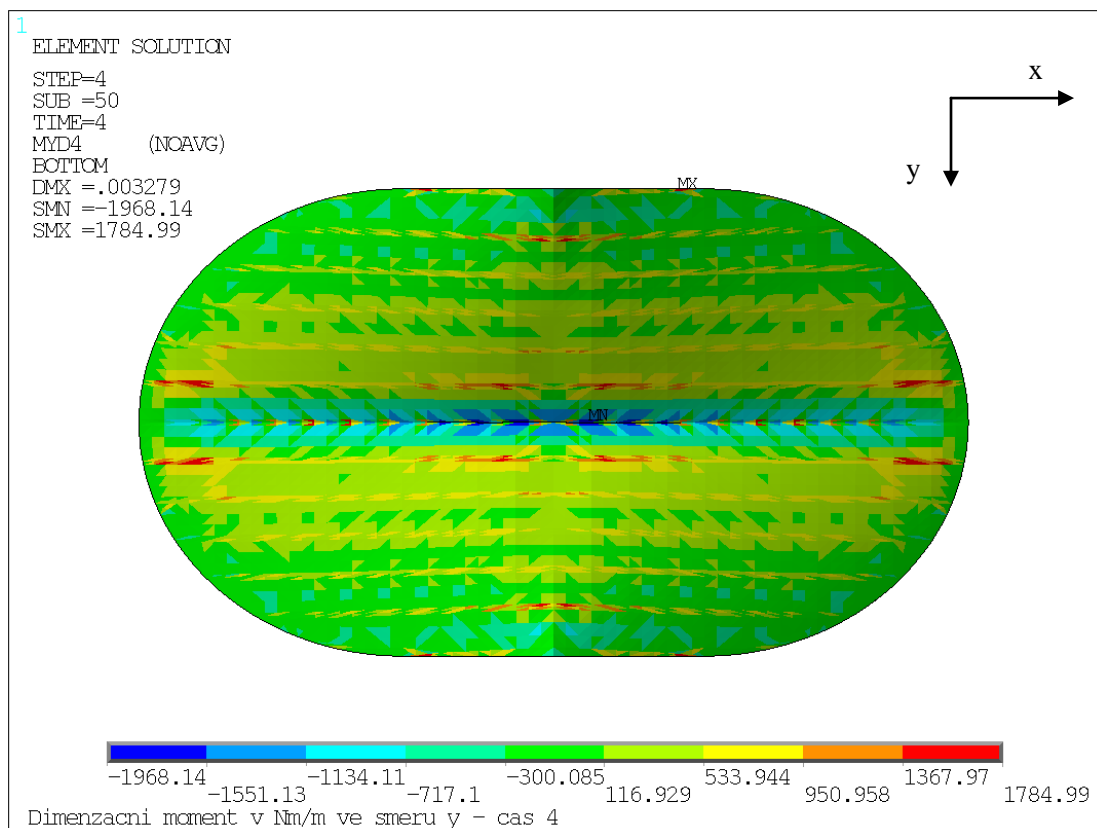


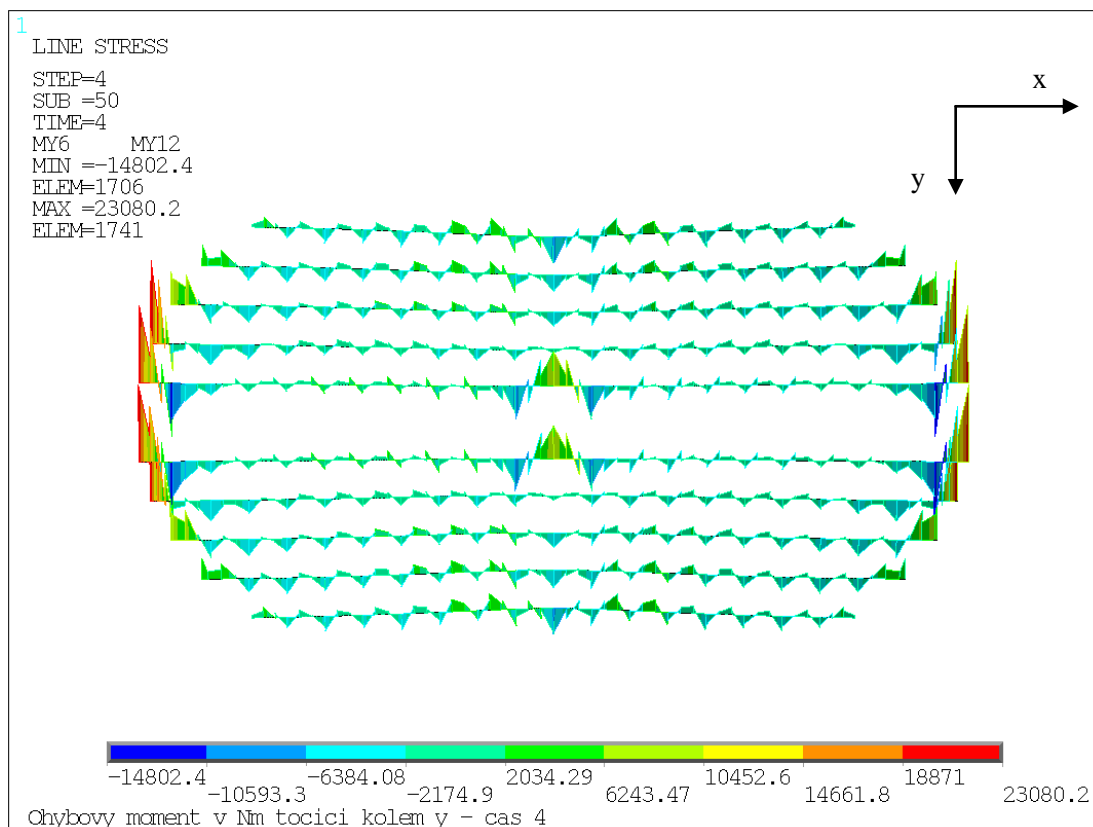
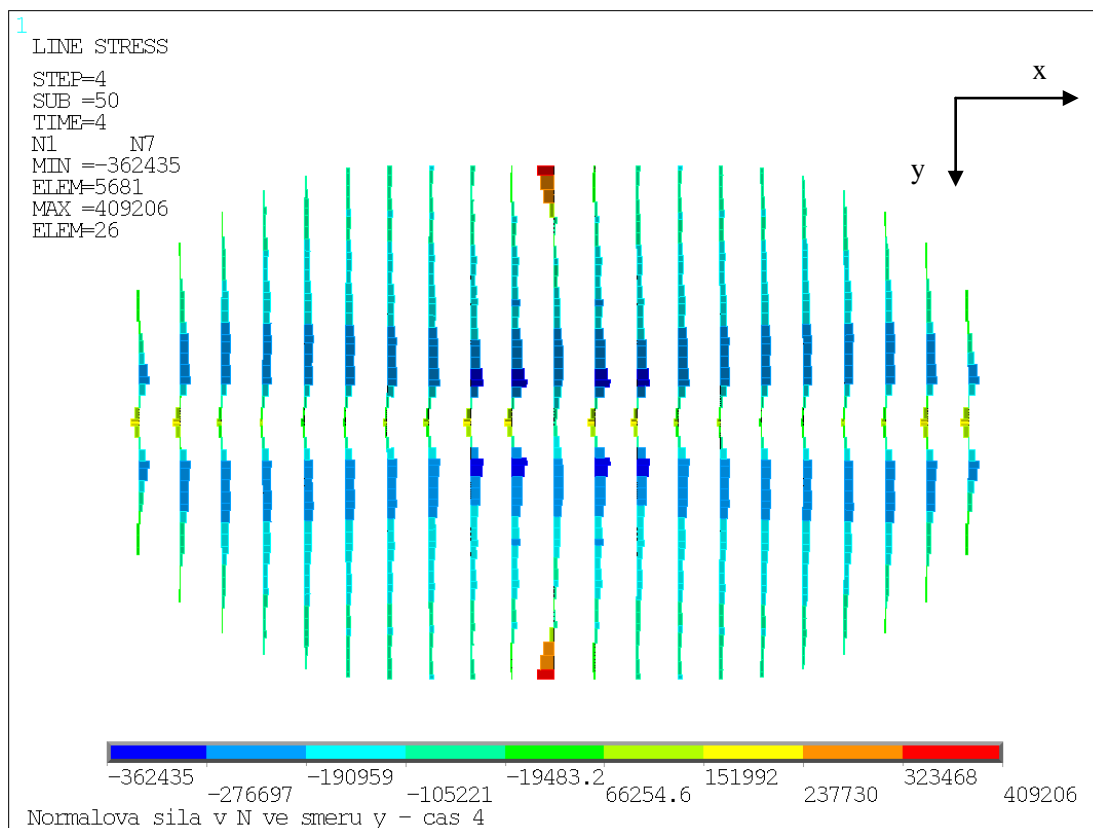


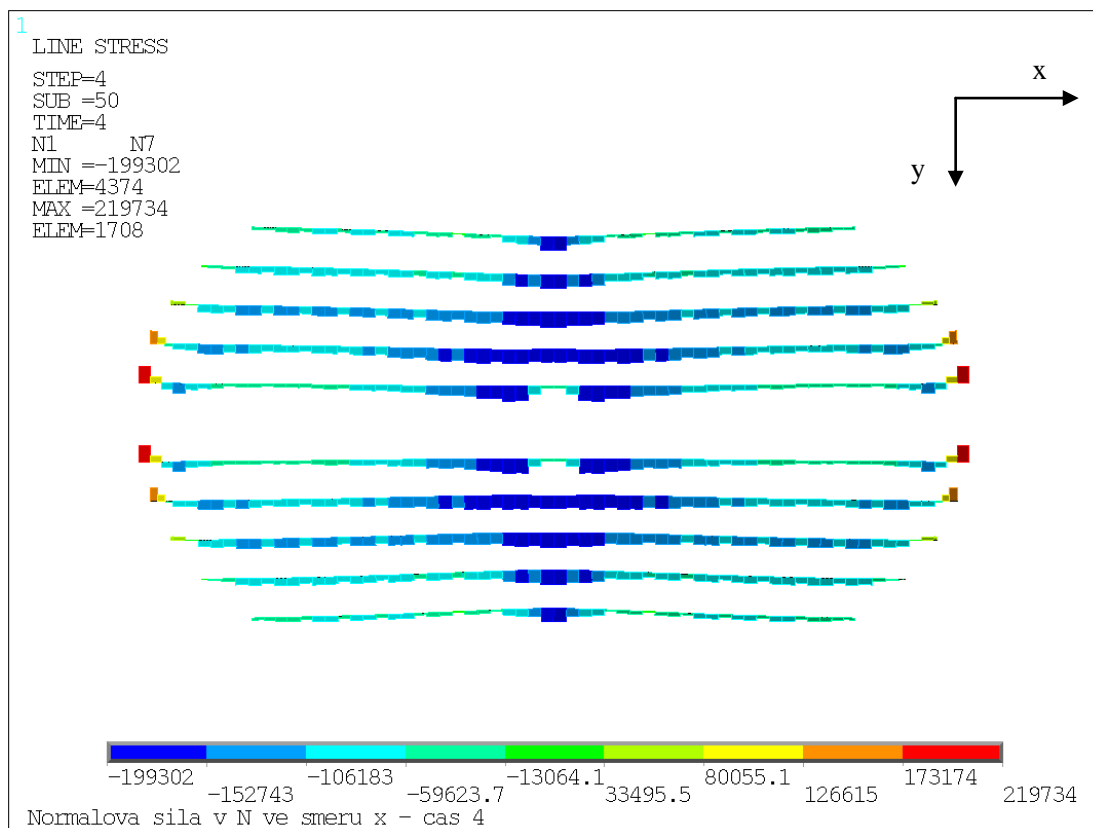




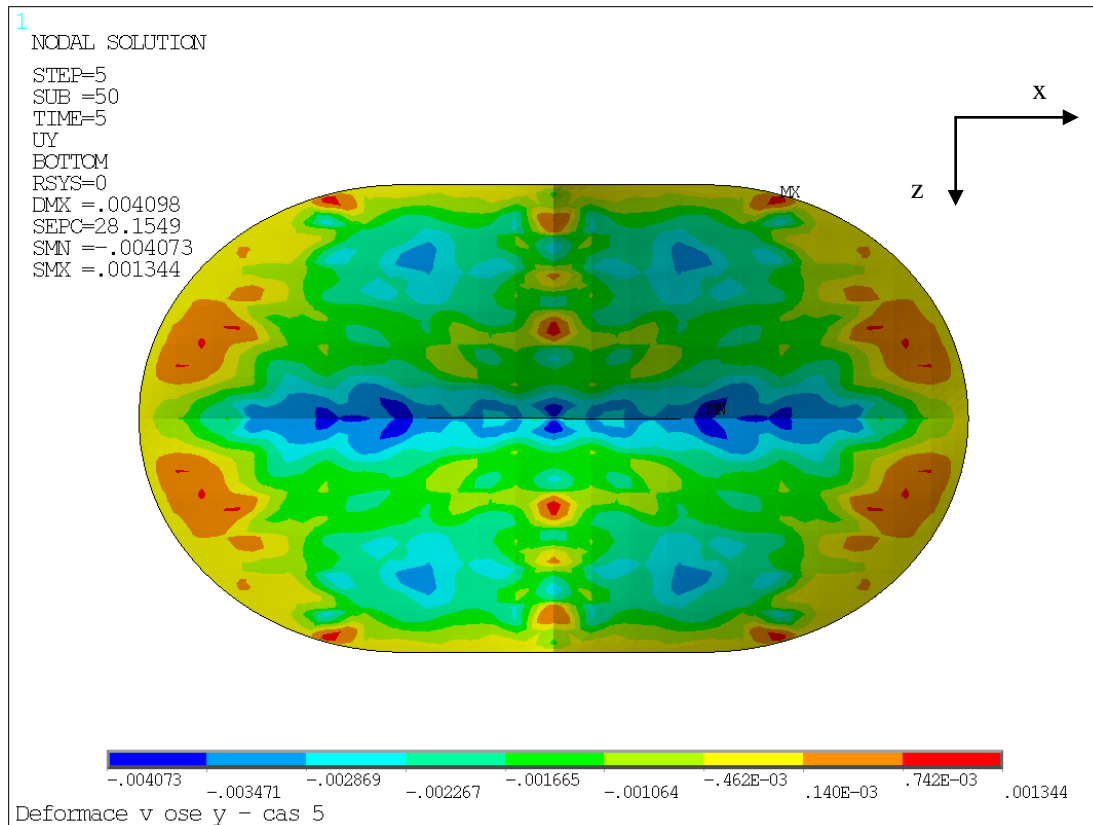


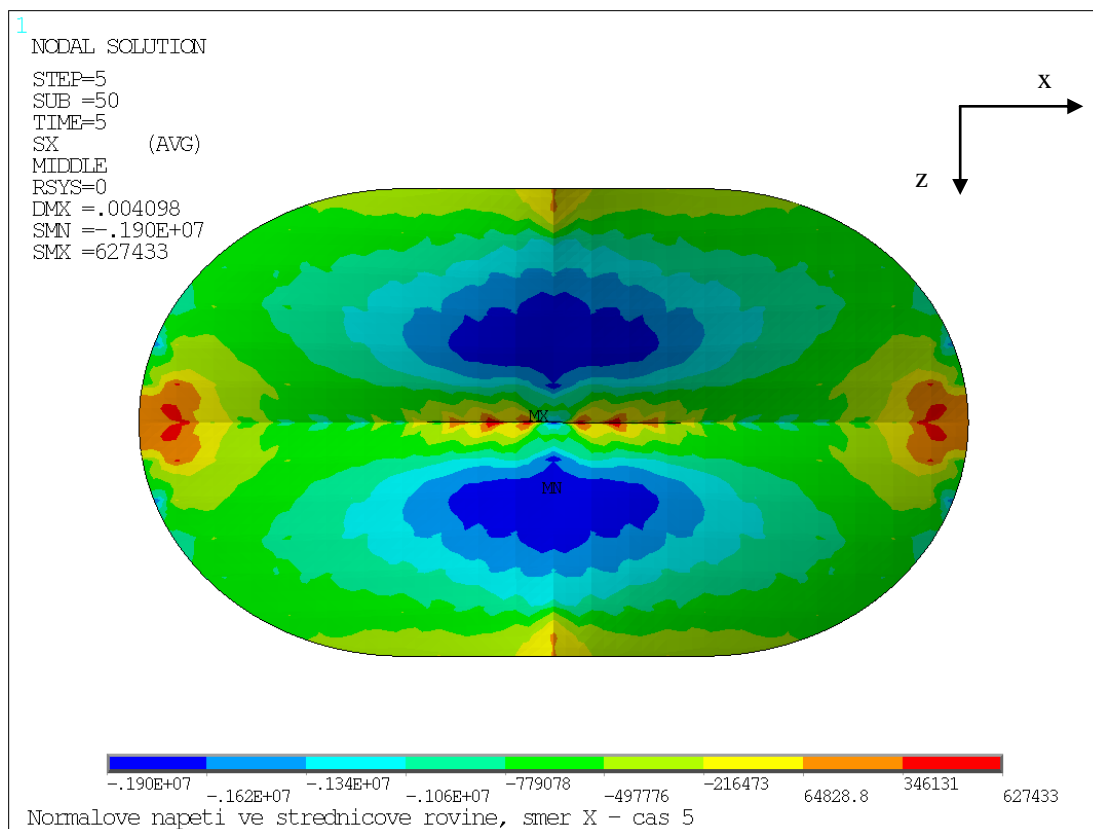
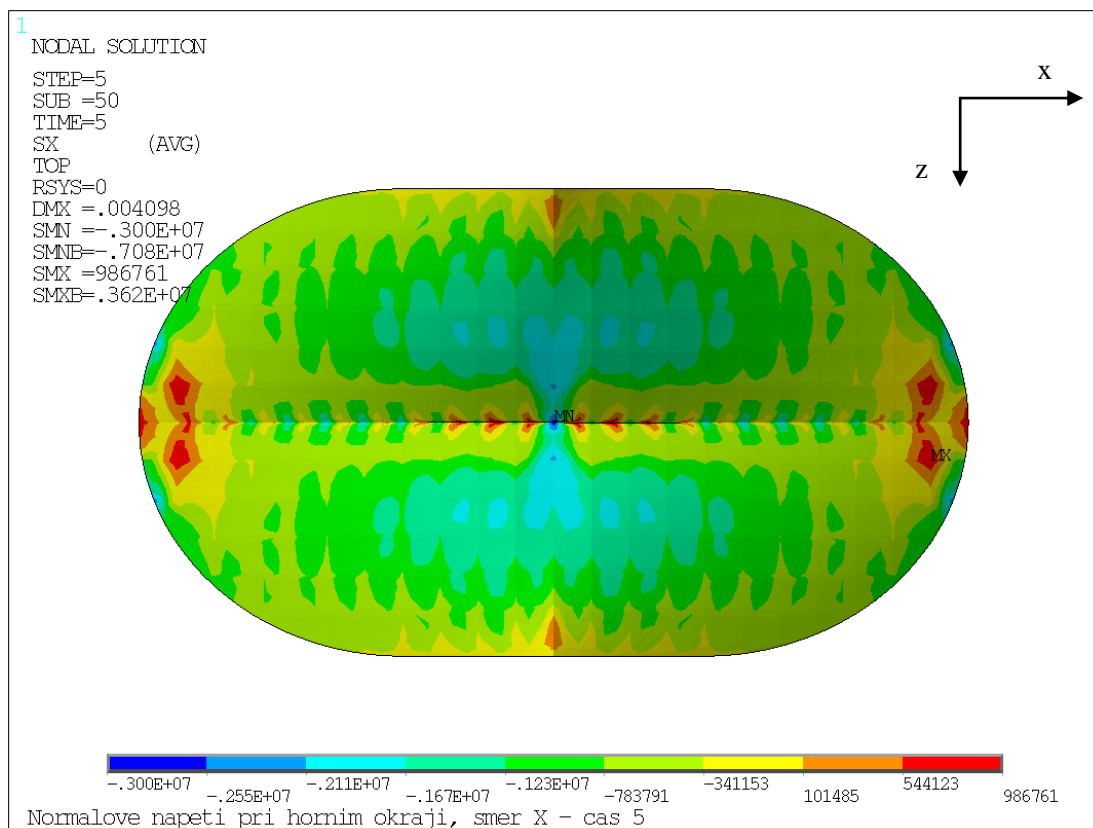


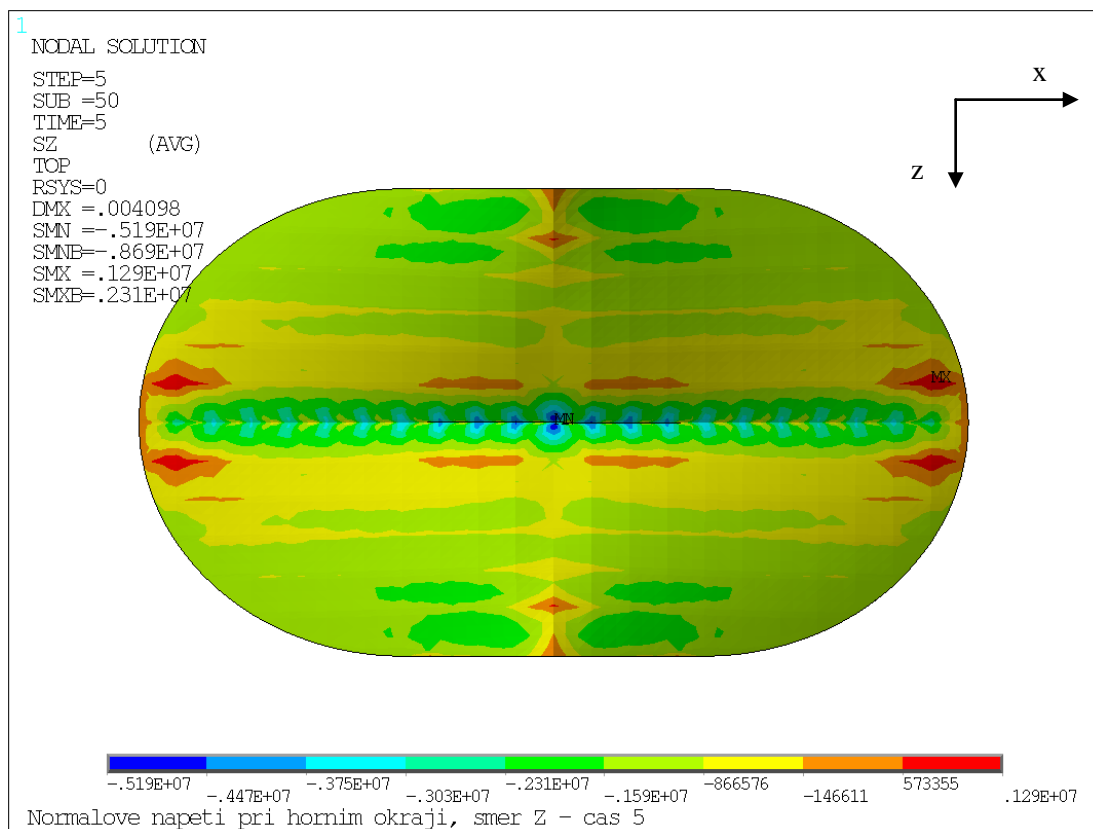
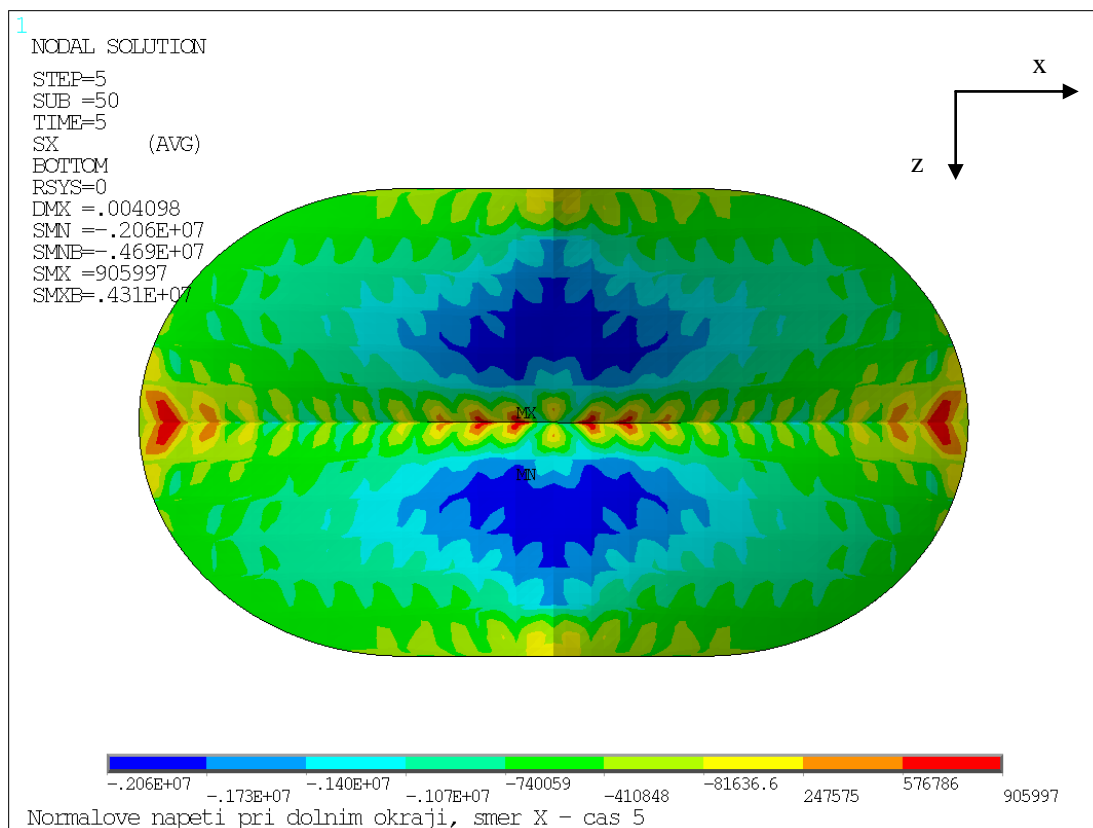


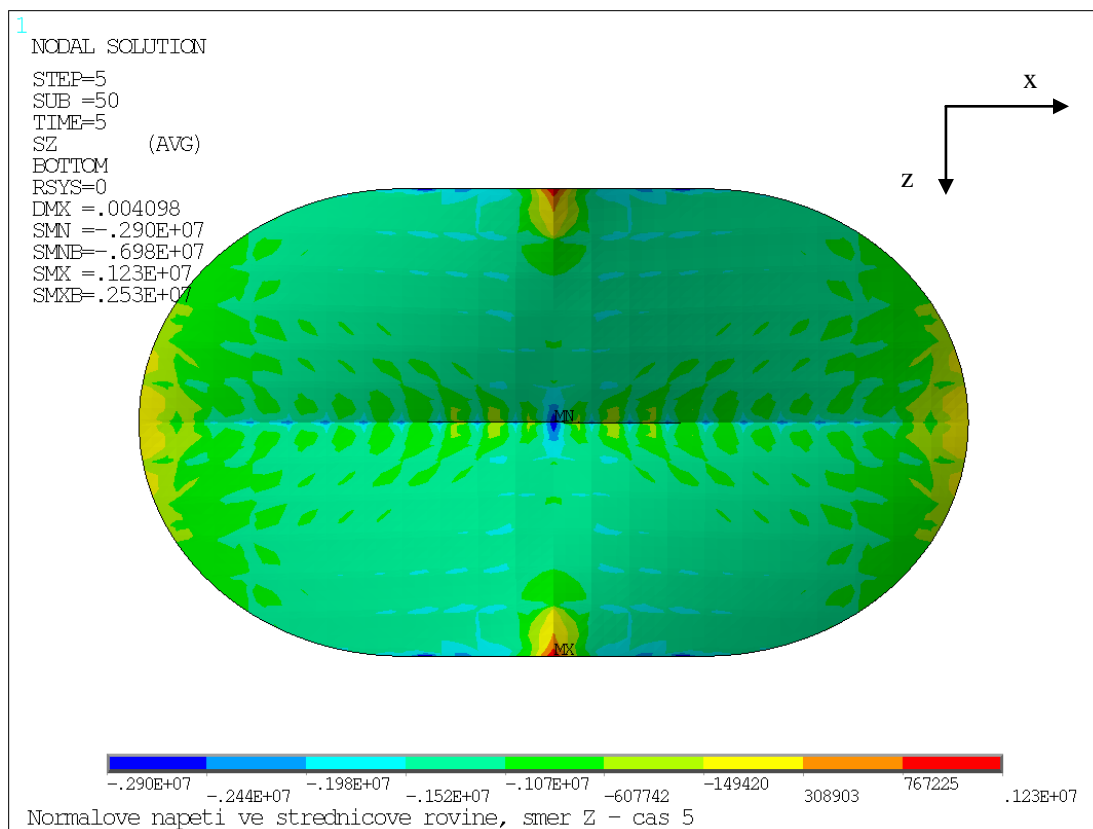
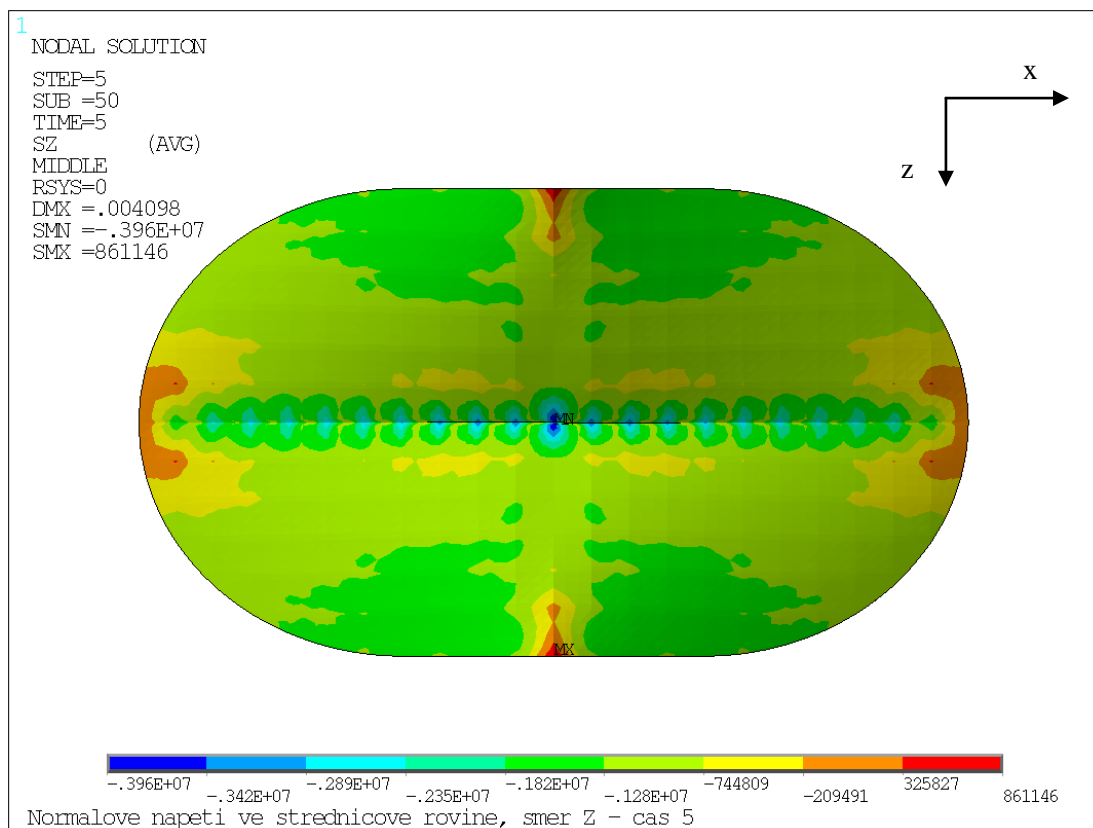


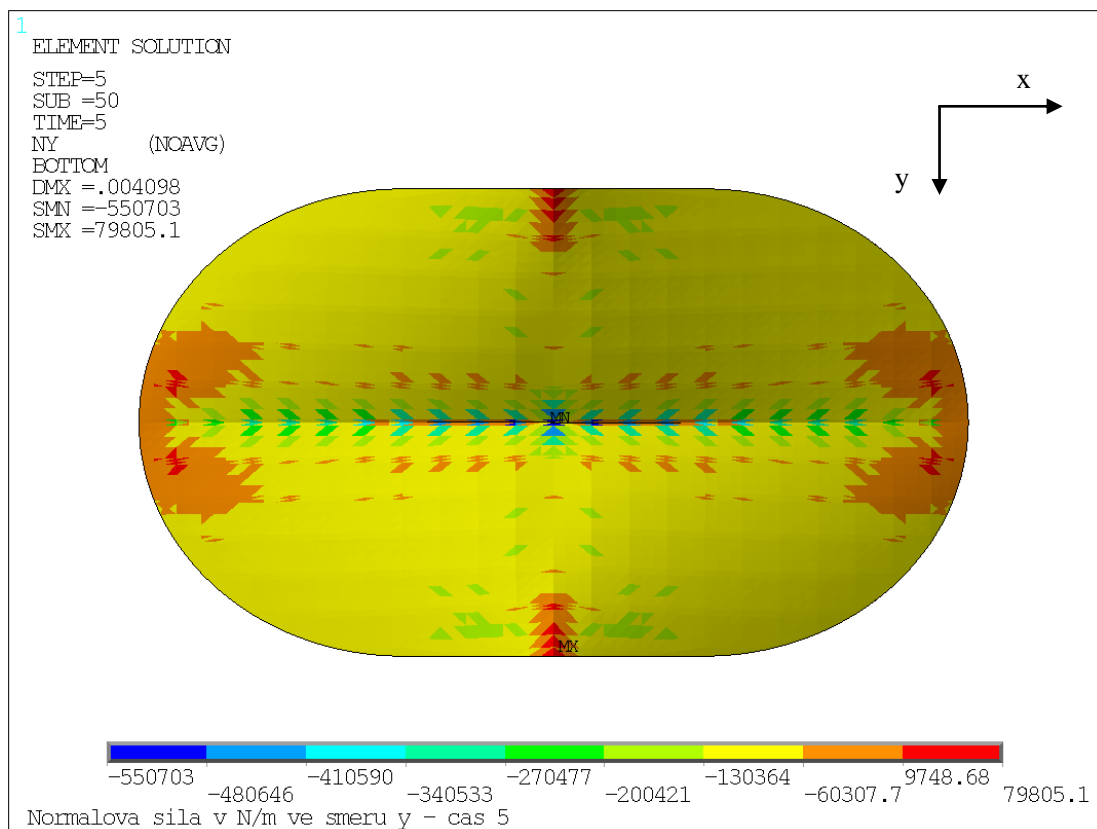
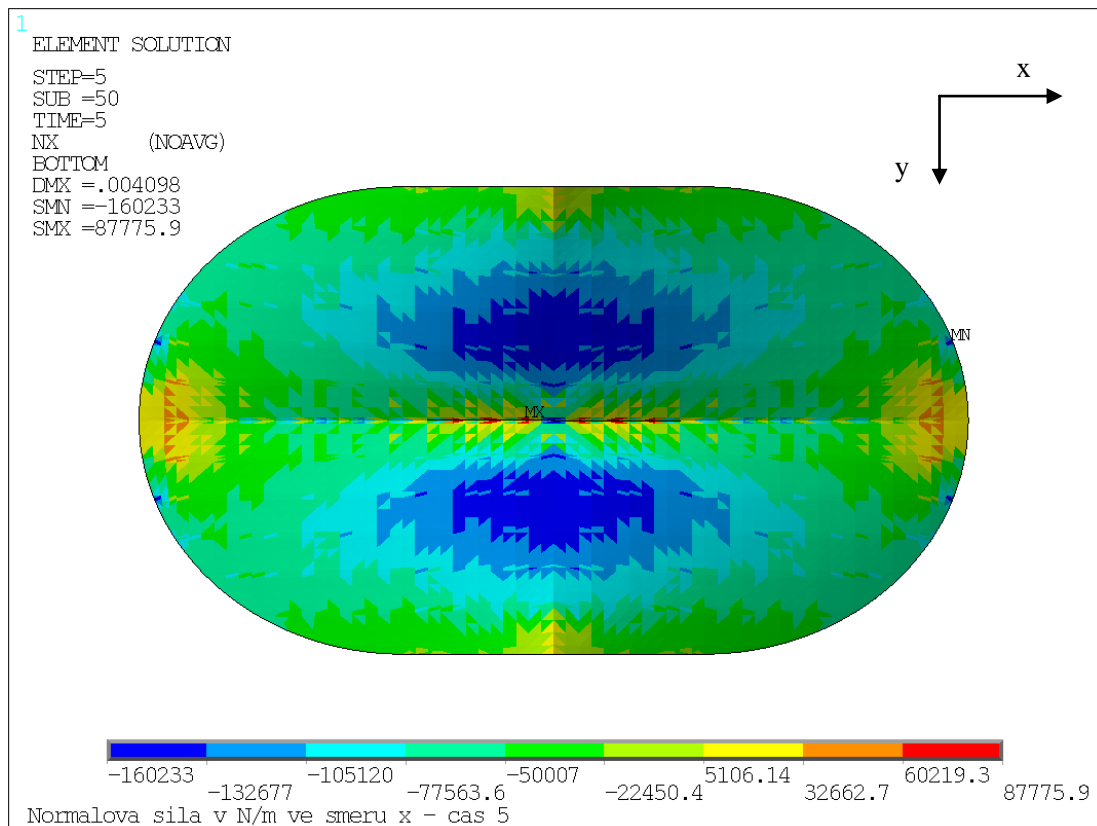
2.5 Čas 5 – Zatížení sněhem ŠACH 1 (kombinace K1)

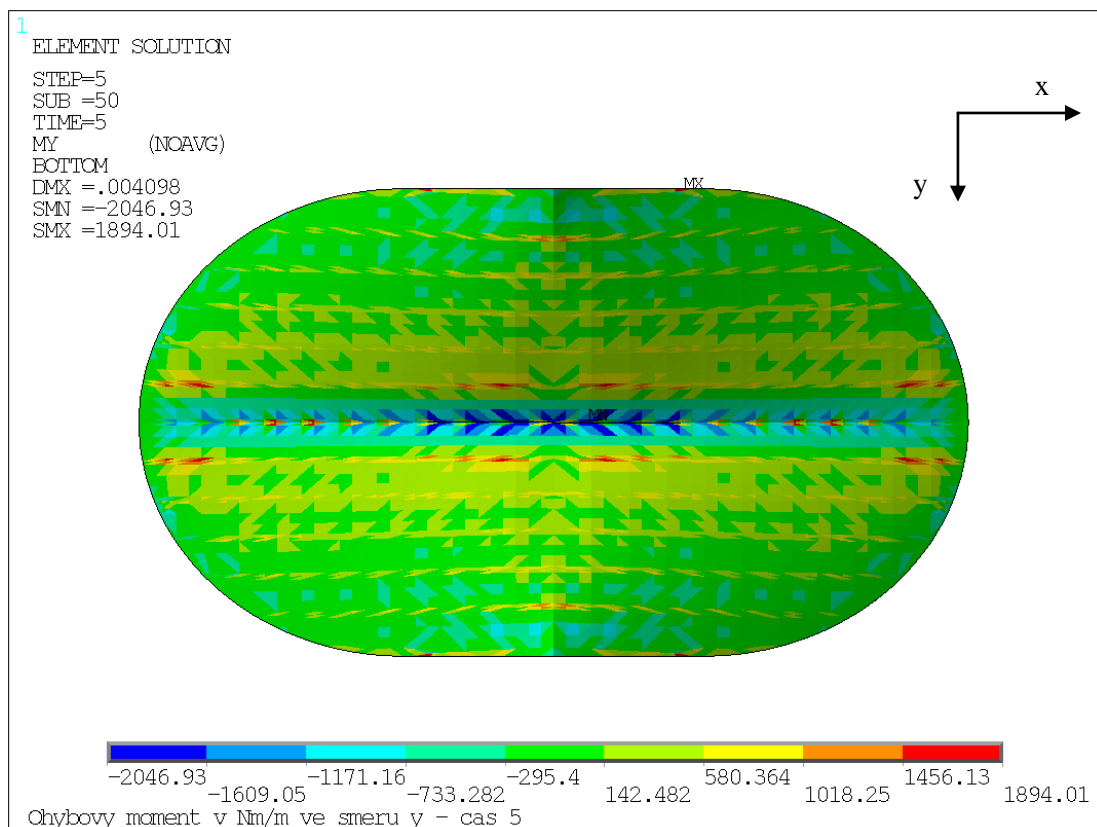
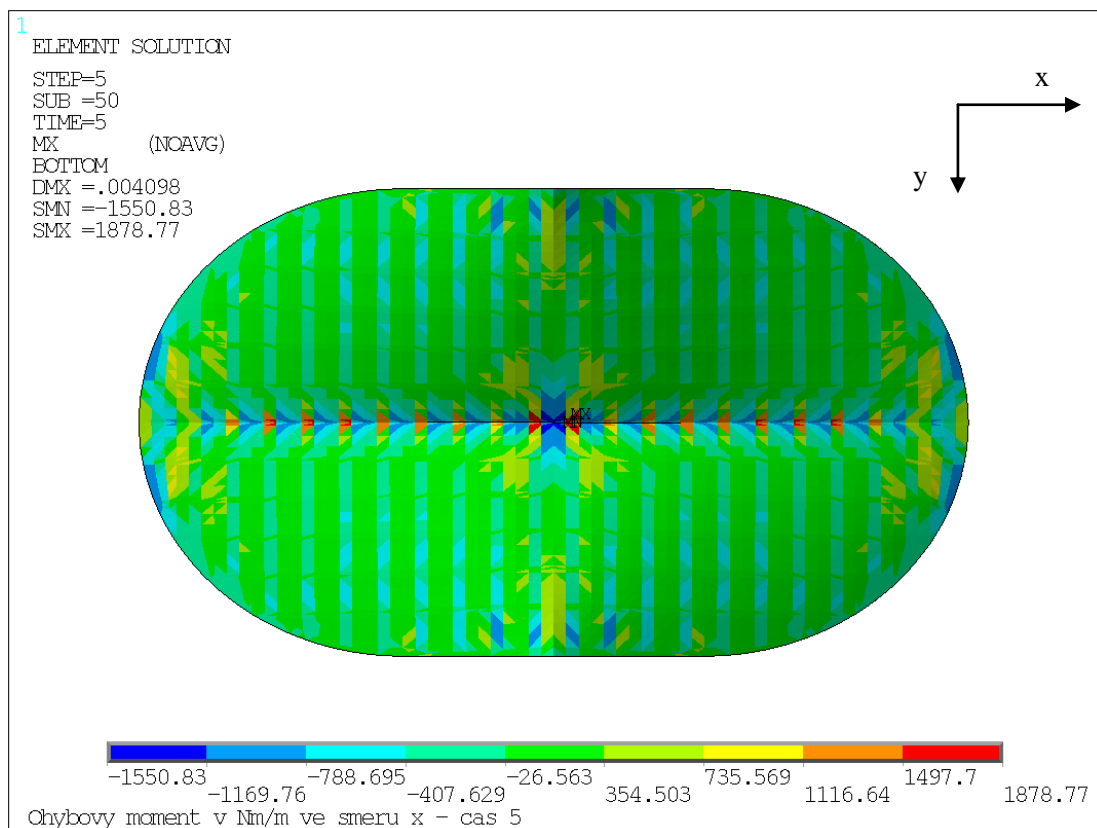


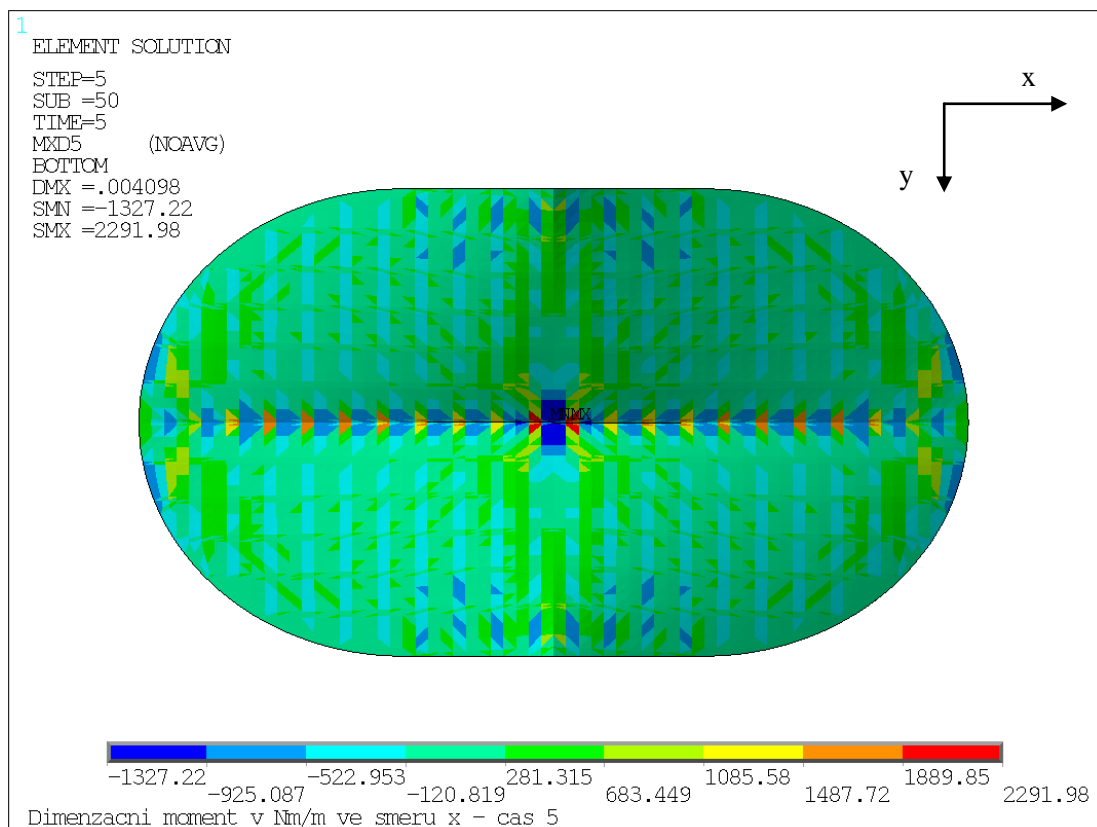
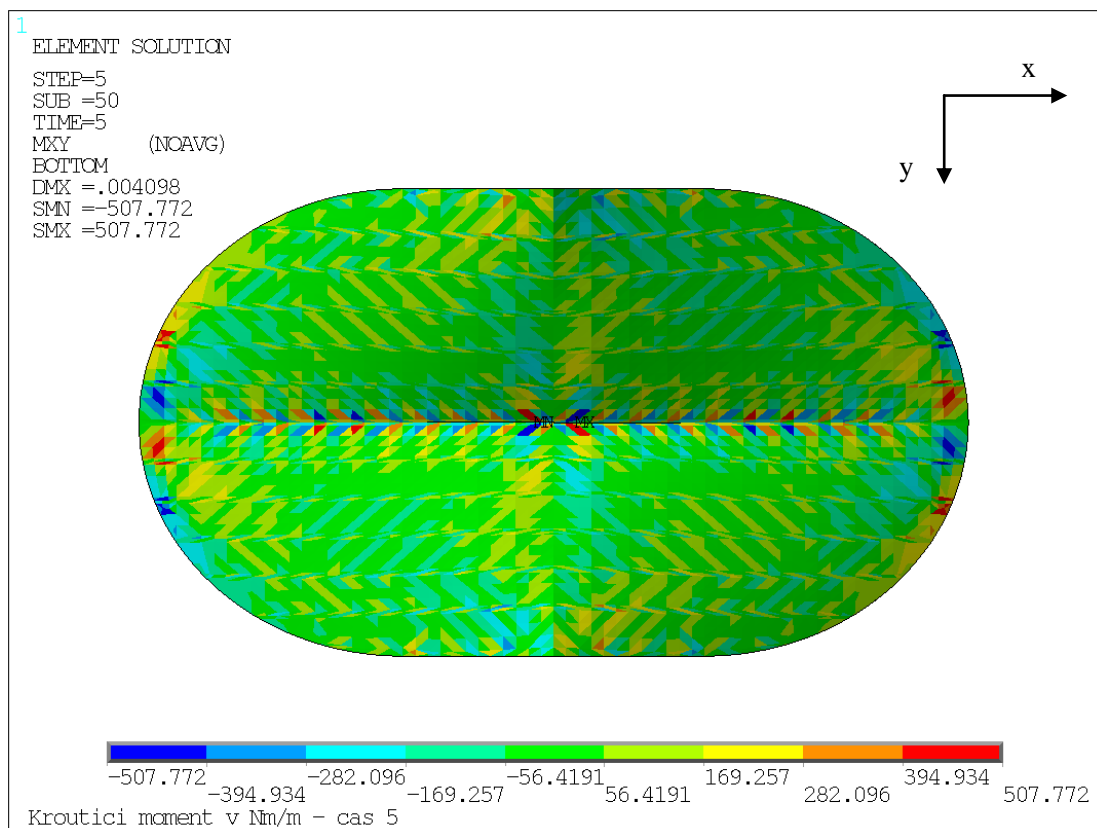


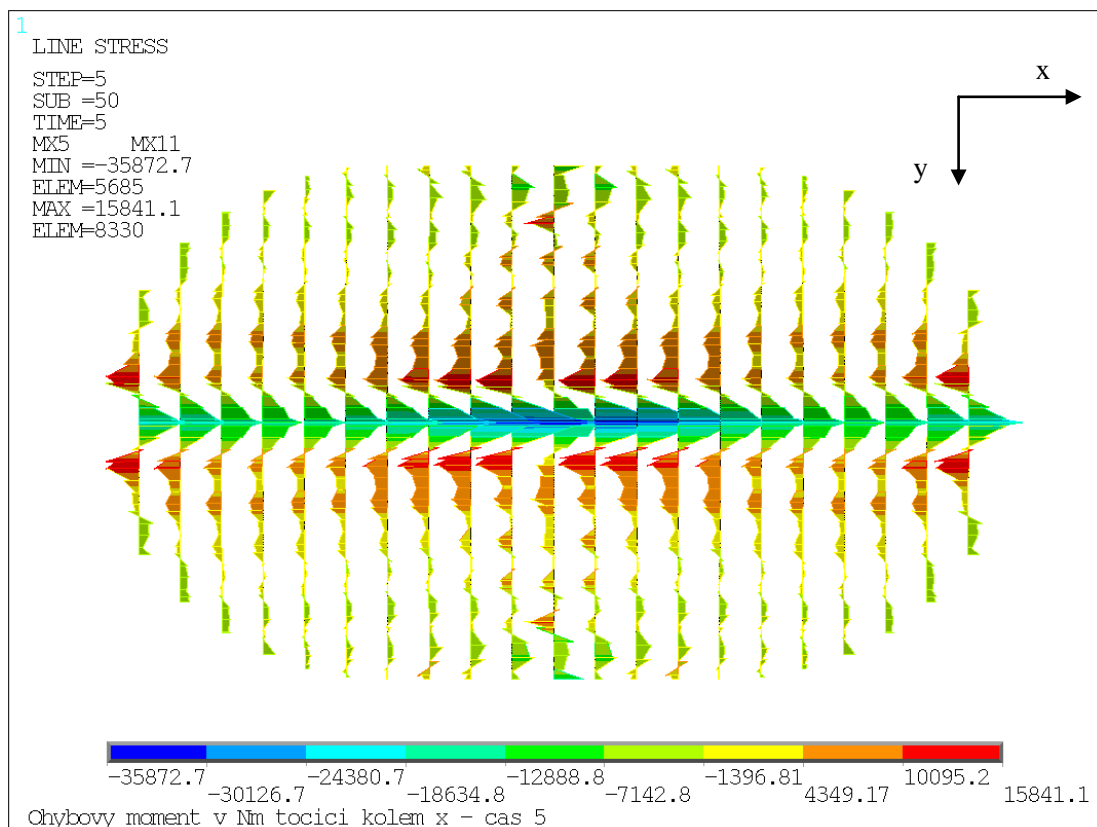
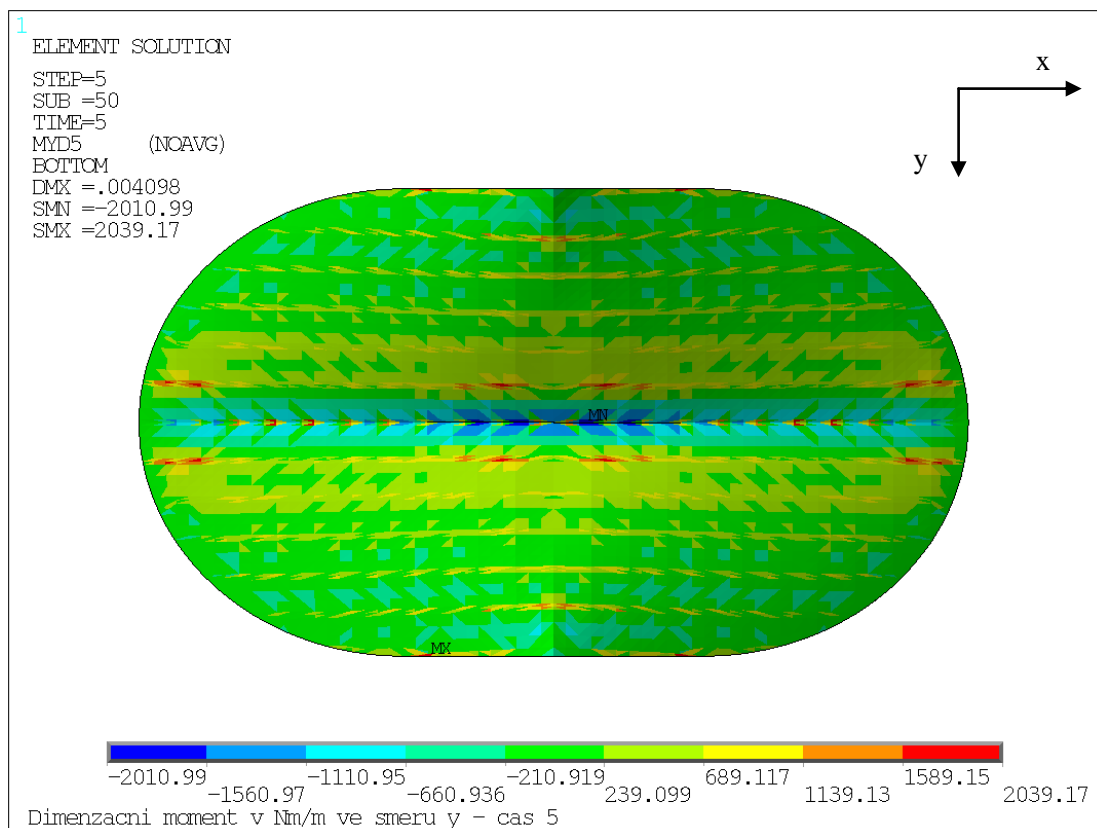


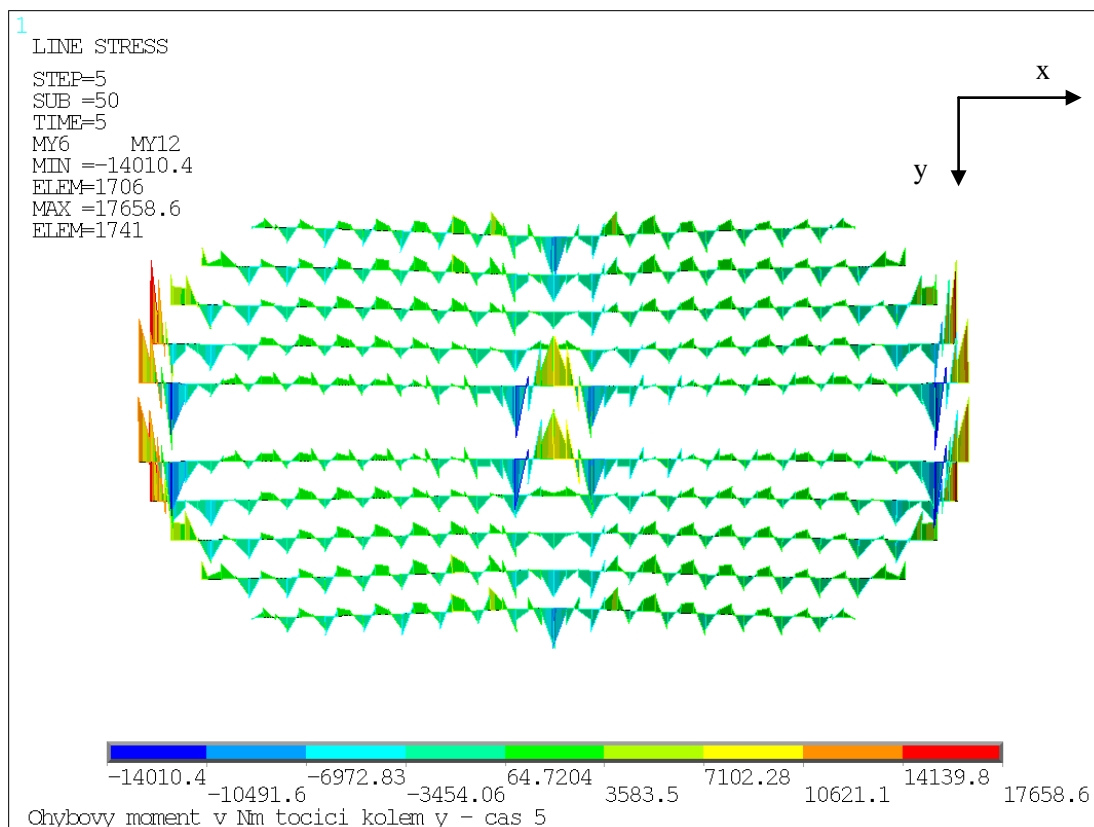
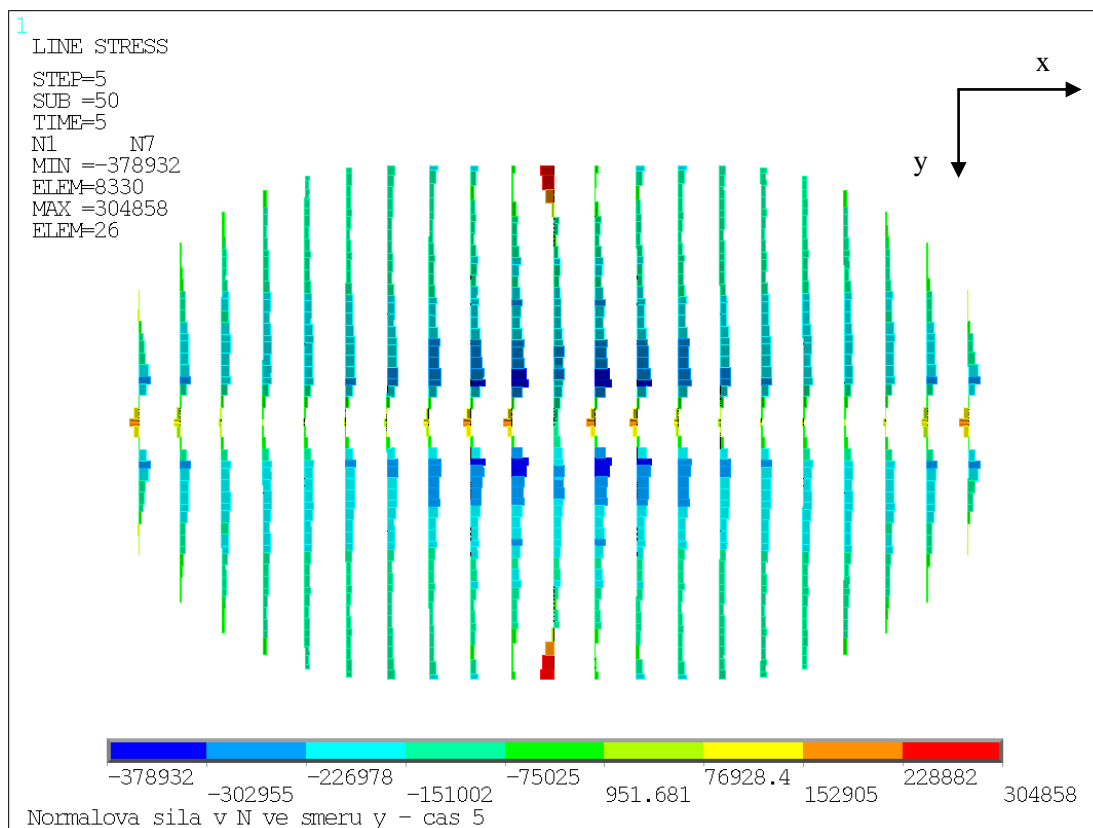


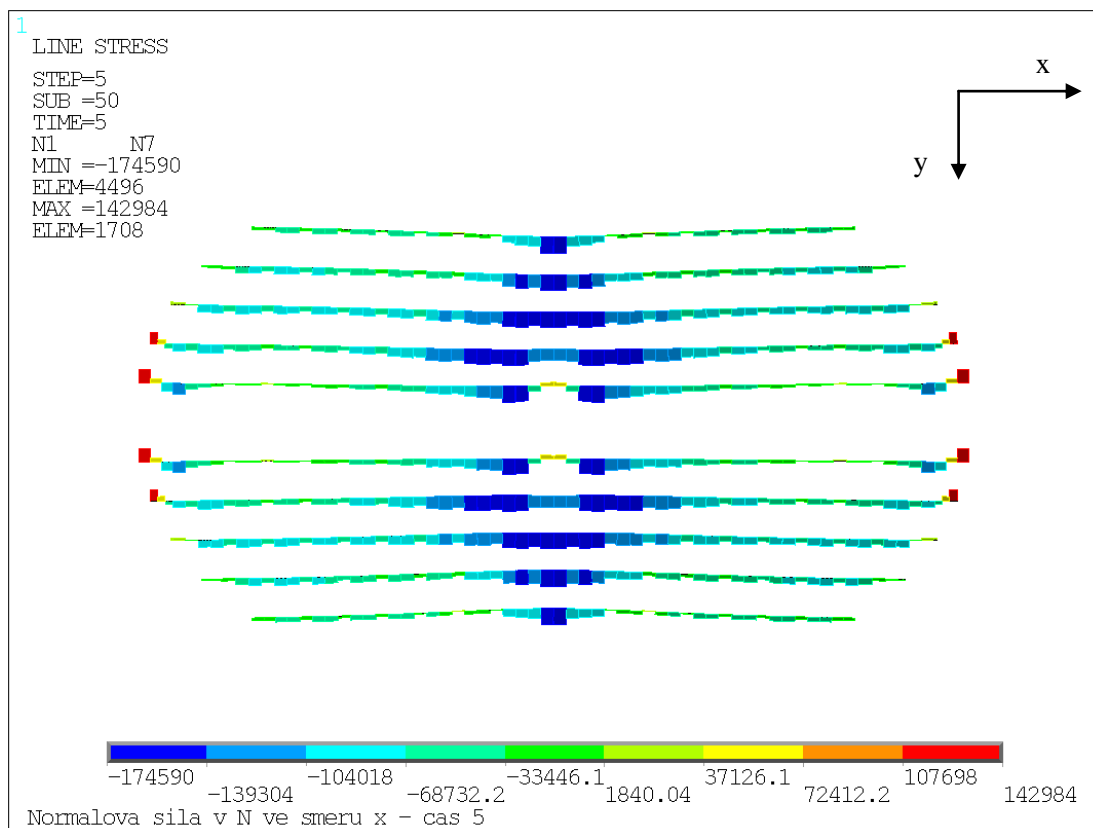




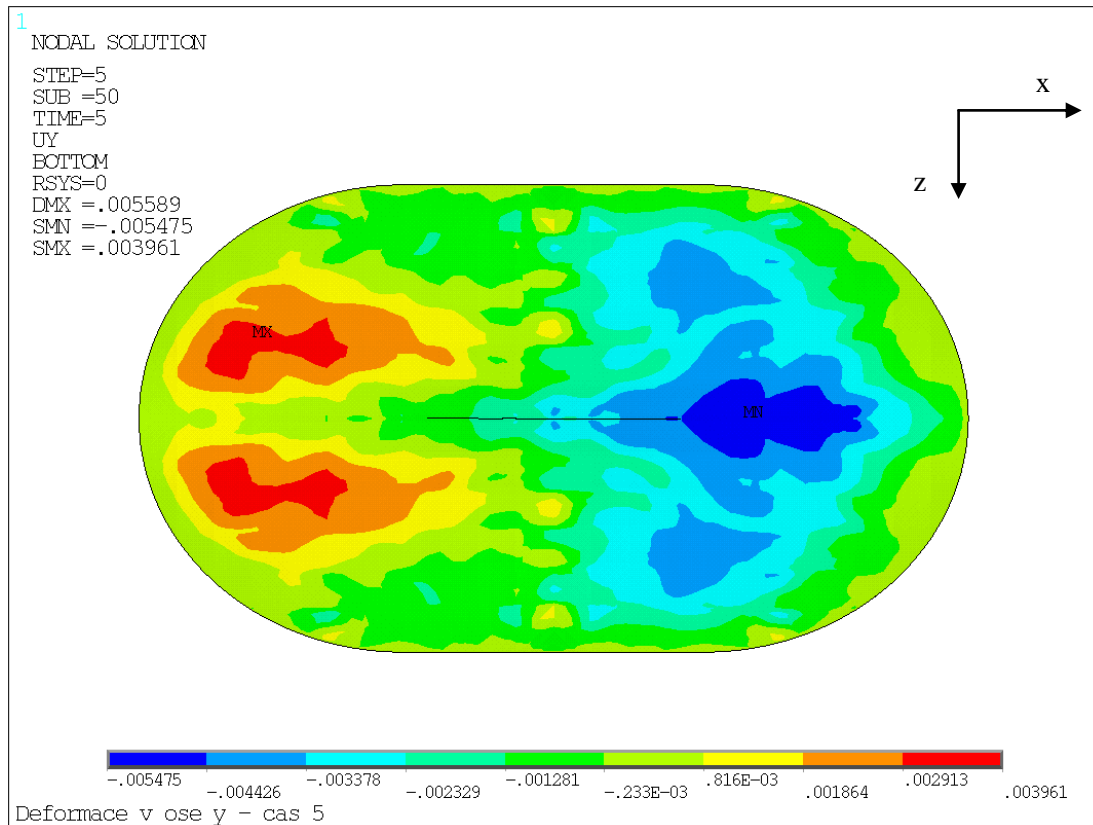


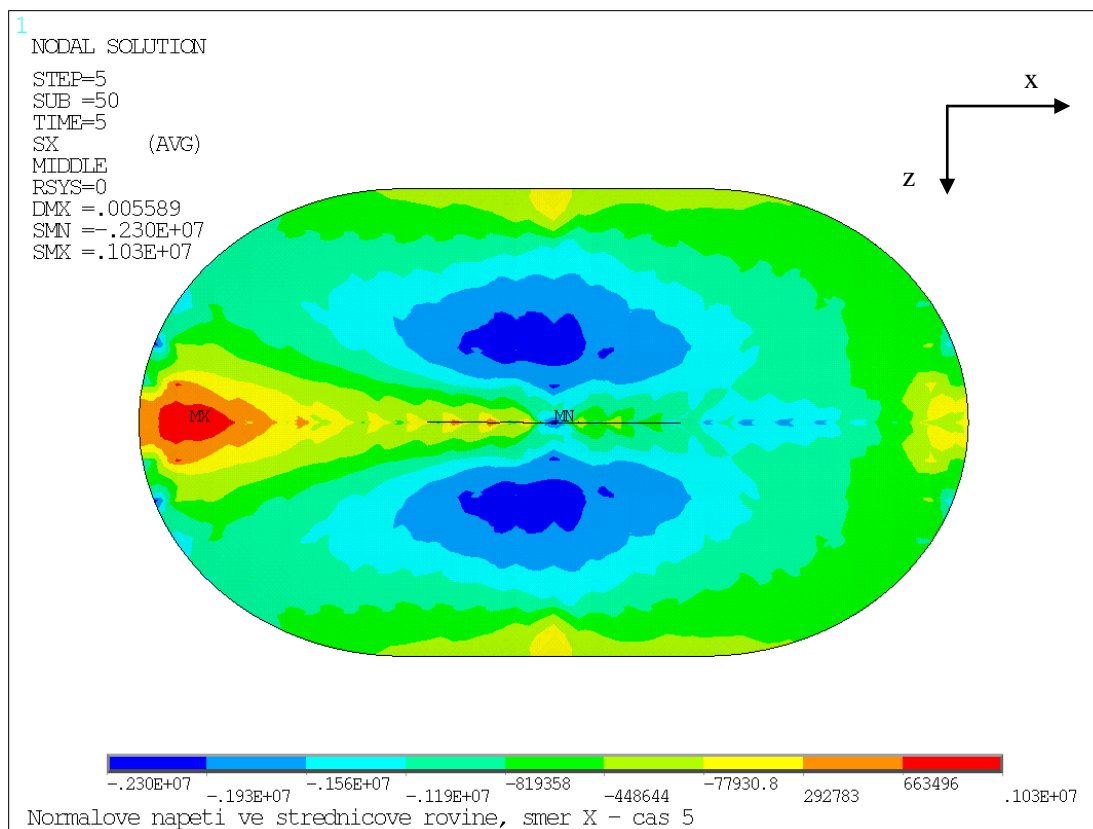
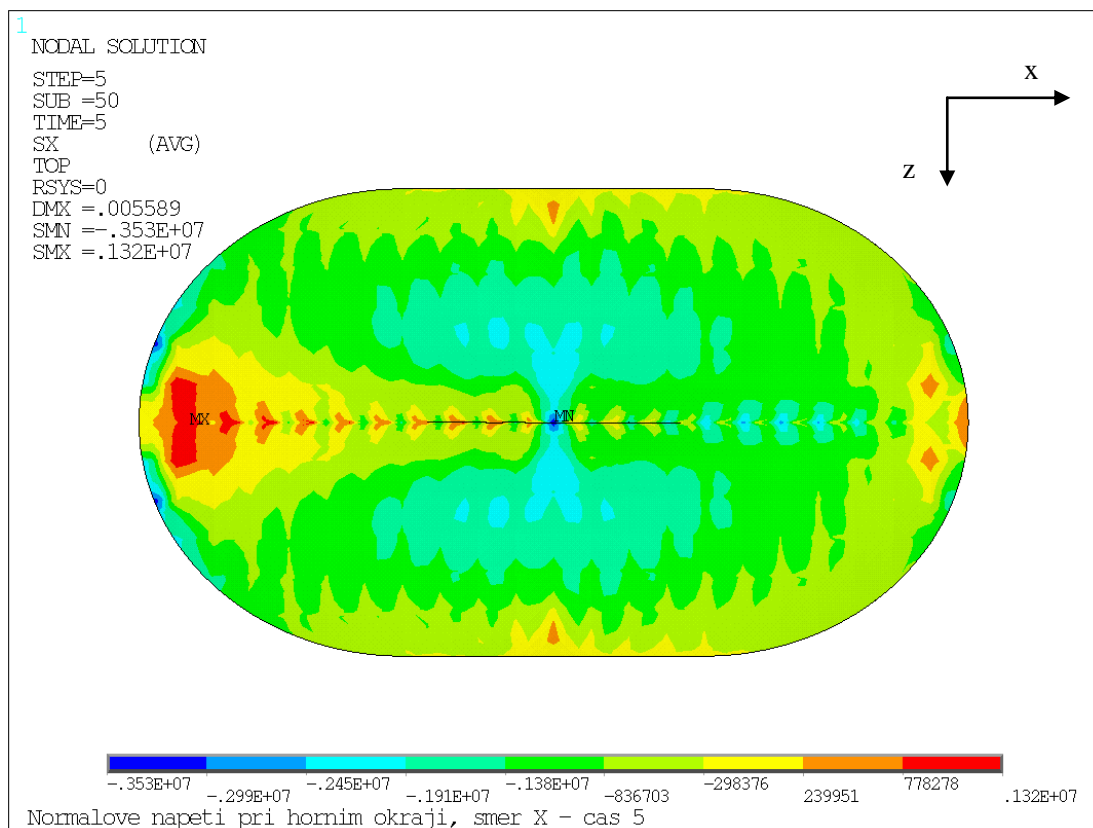


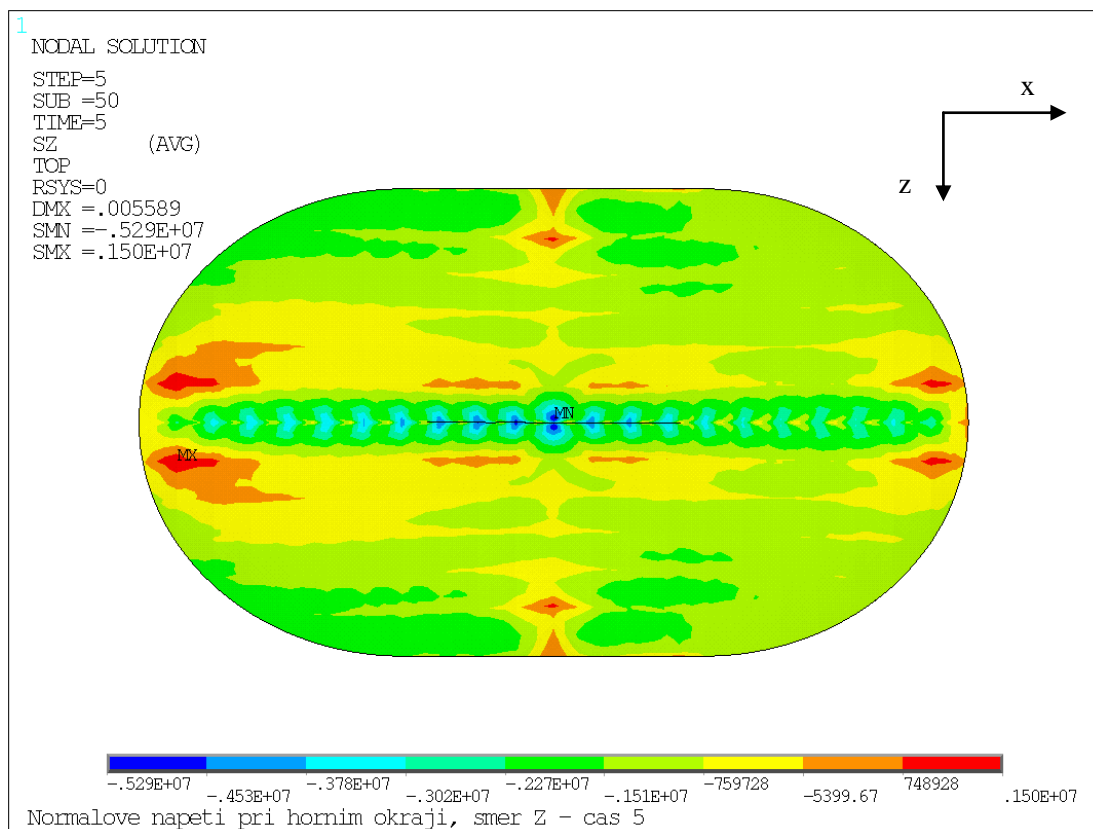
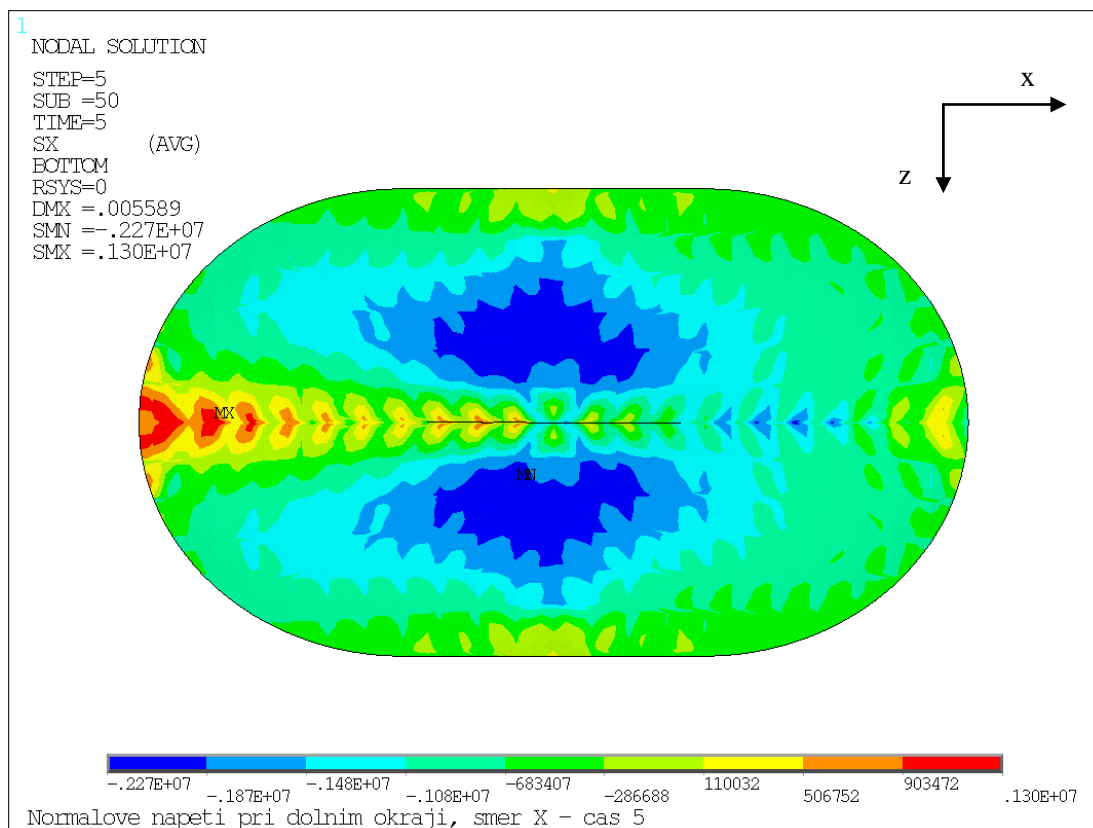


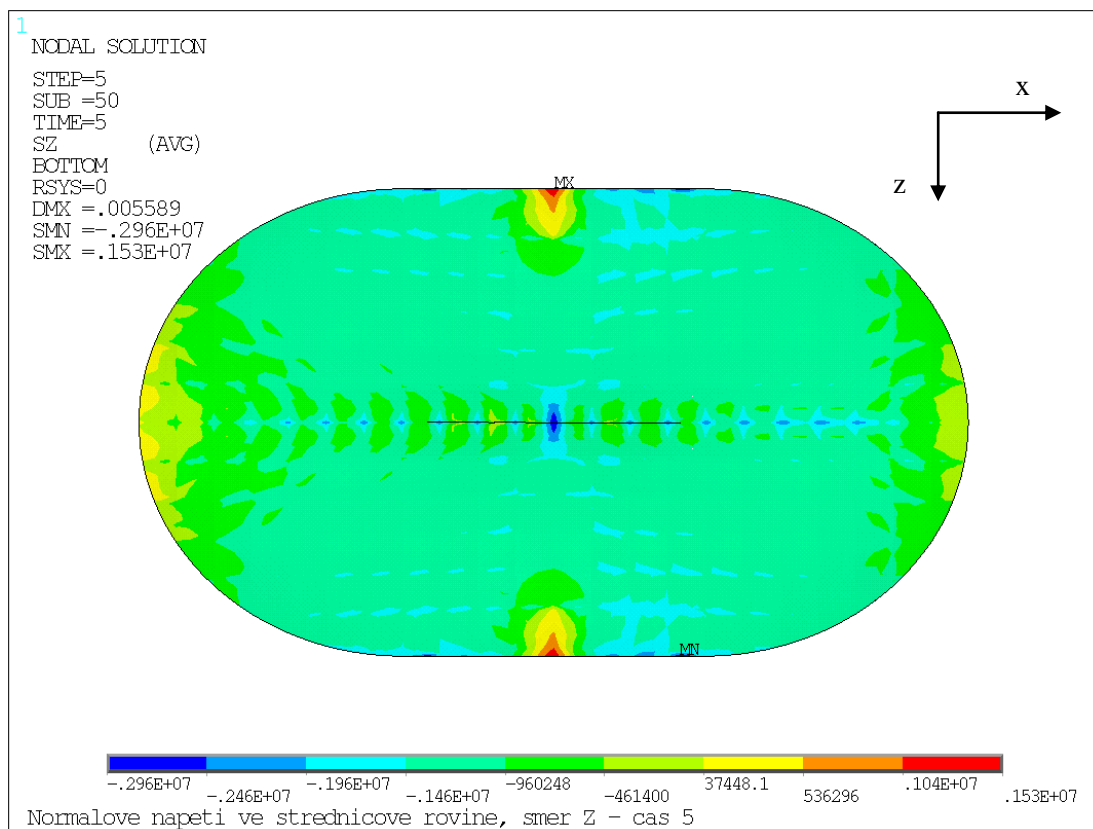
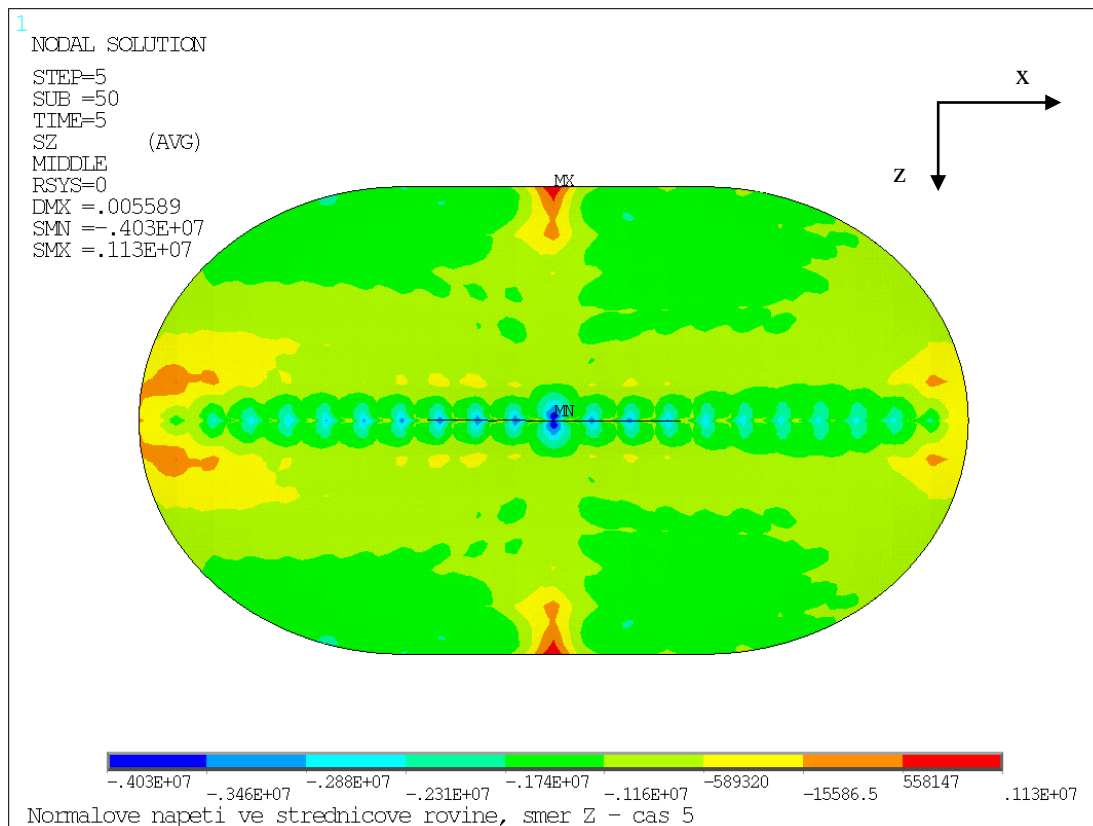


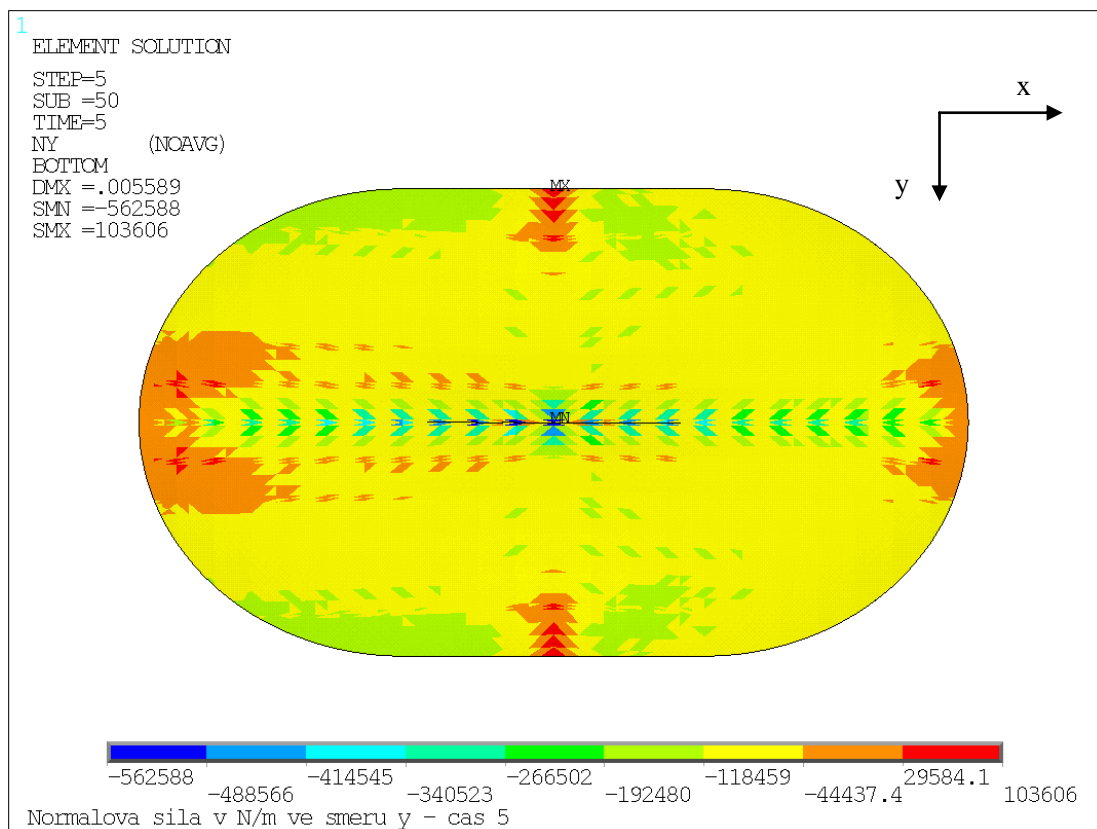
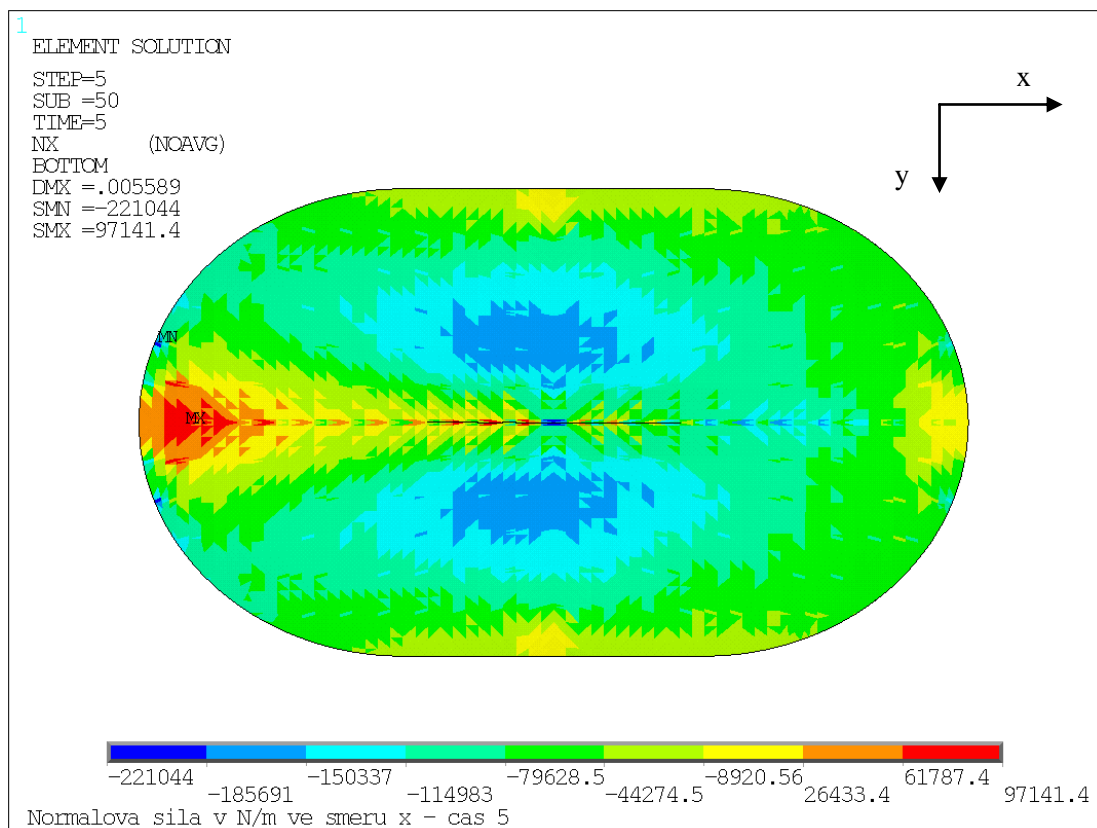
2.6 Čas 5 – Zatížení sněhem ŠACH 2 (kombinace K2)

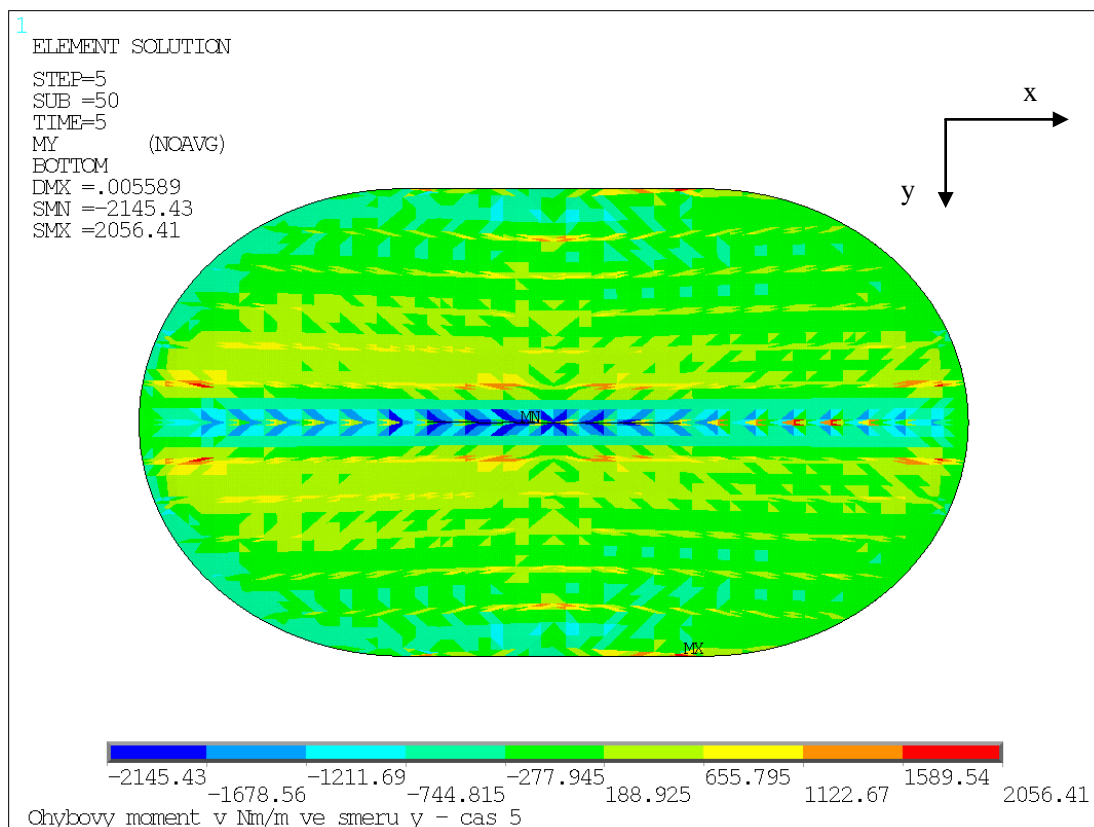
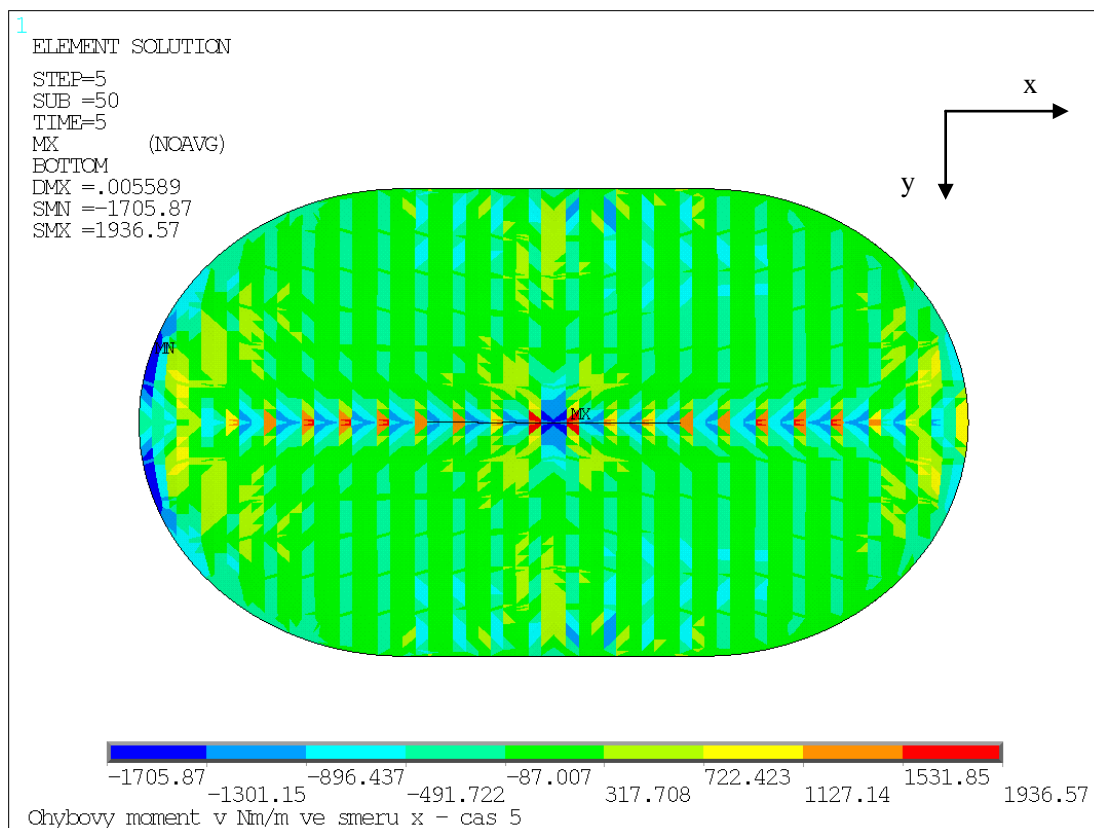


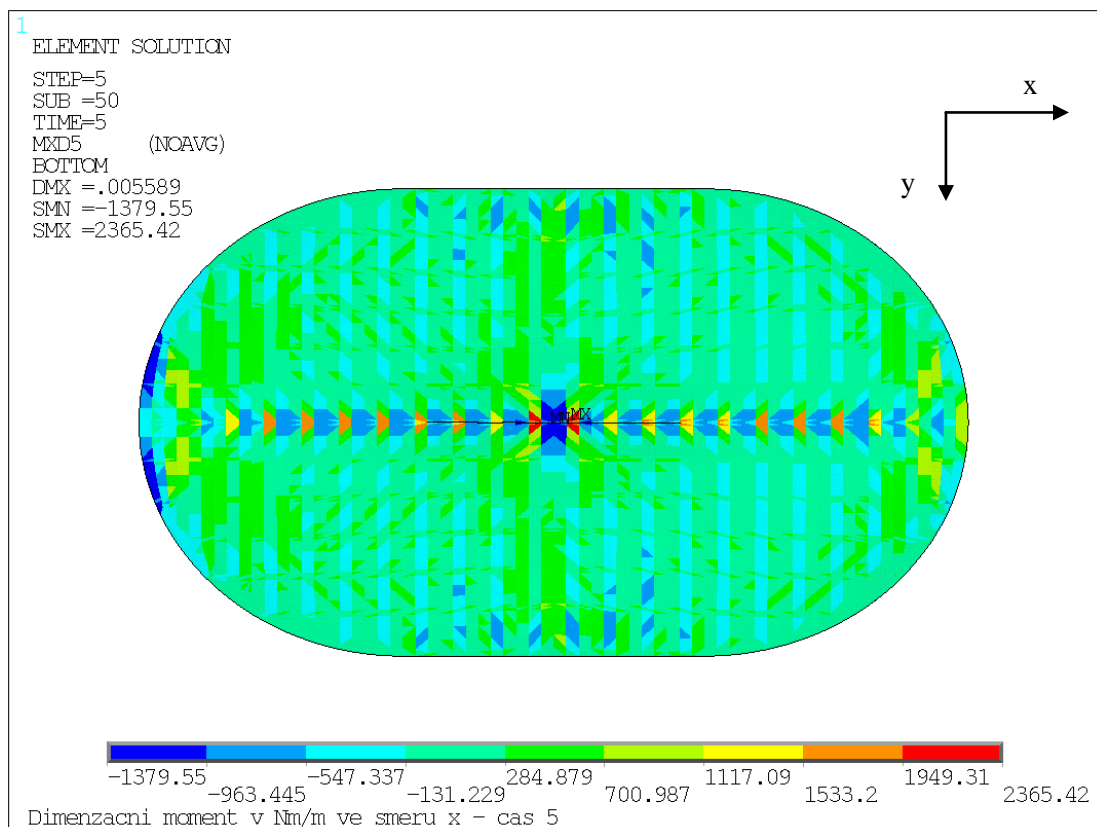
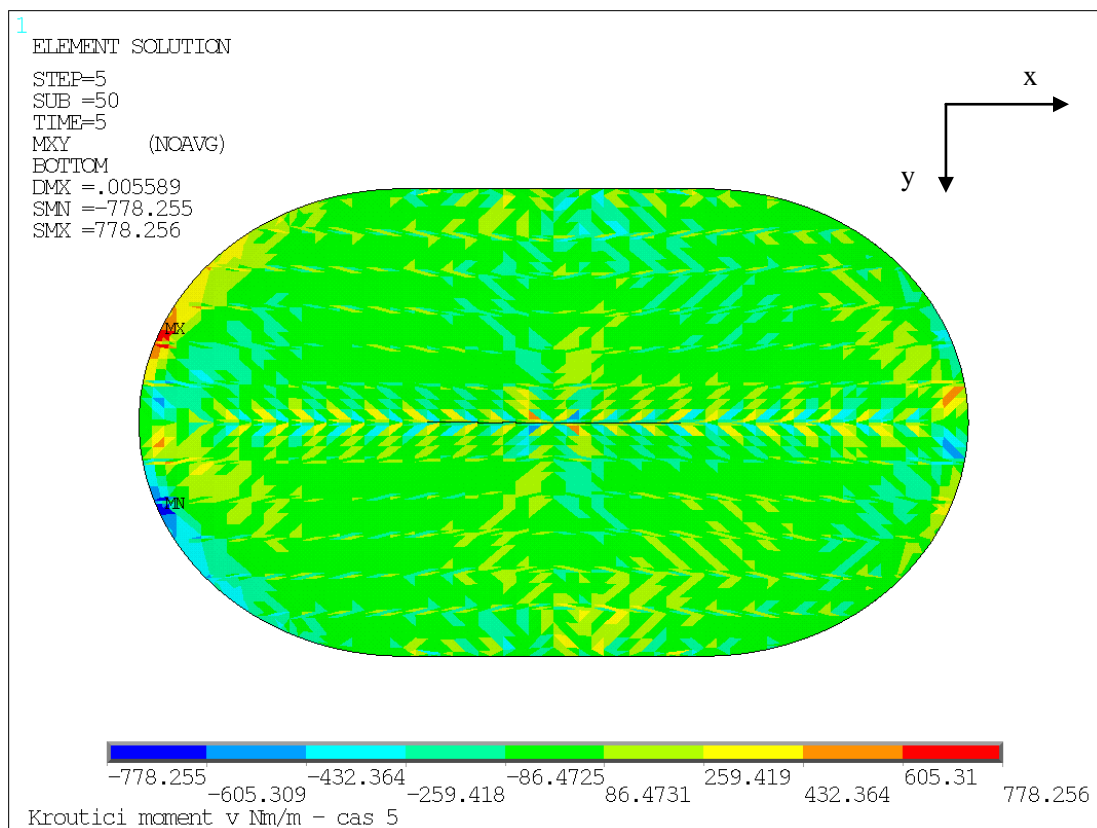


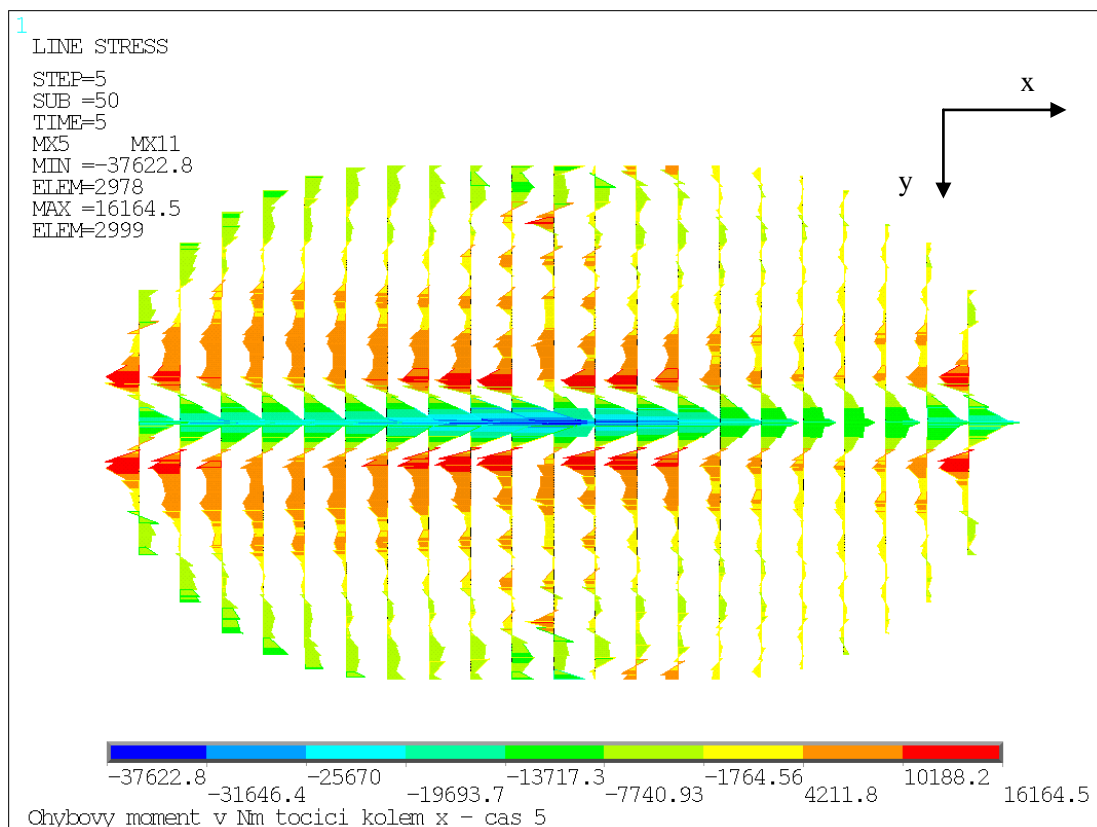
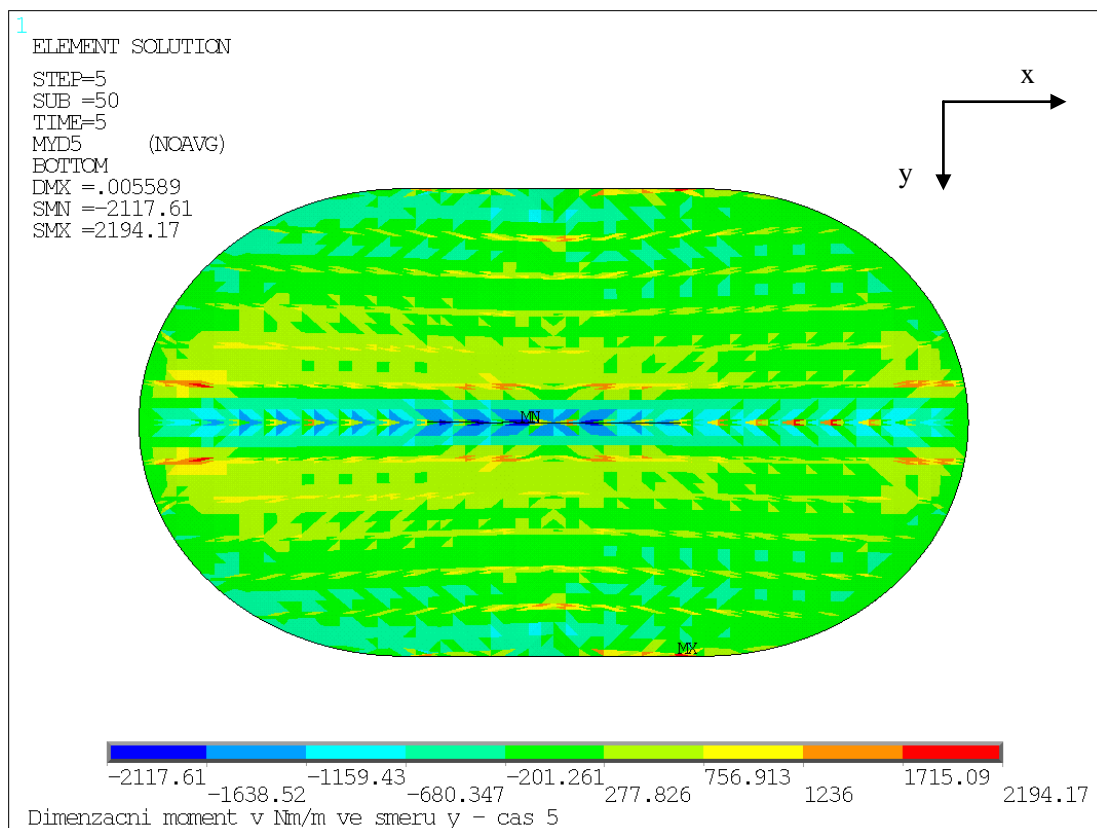


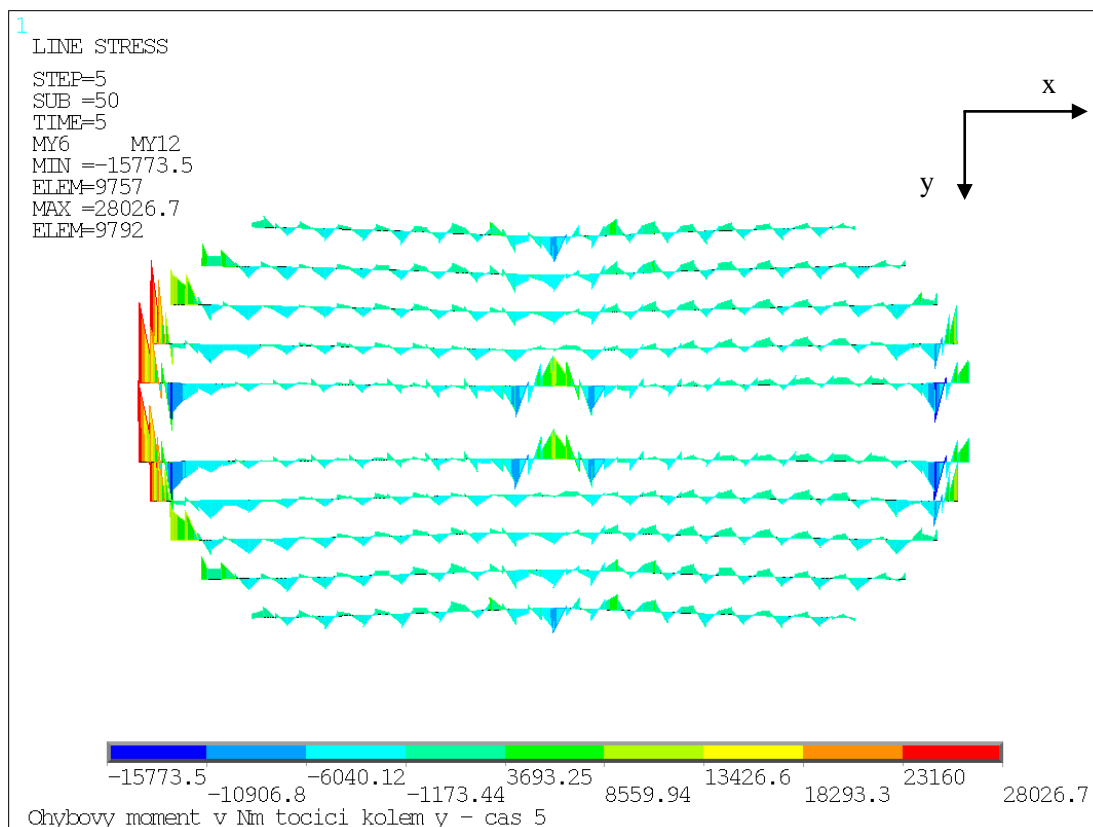
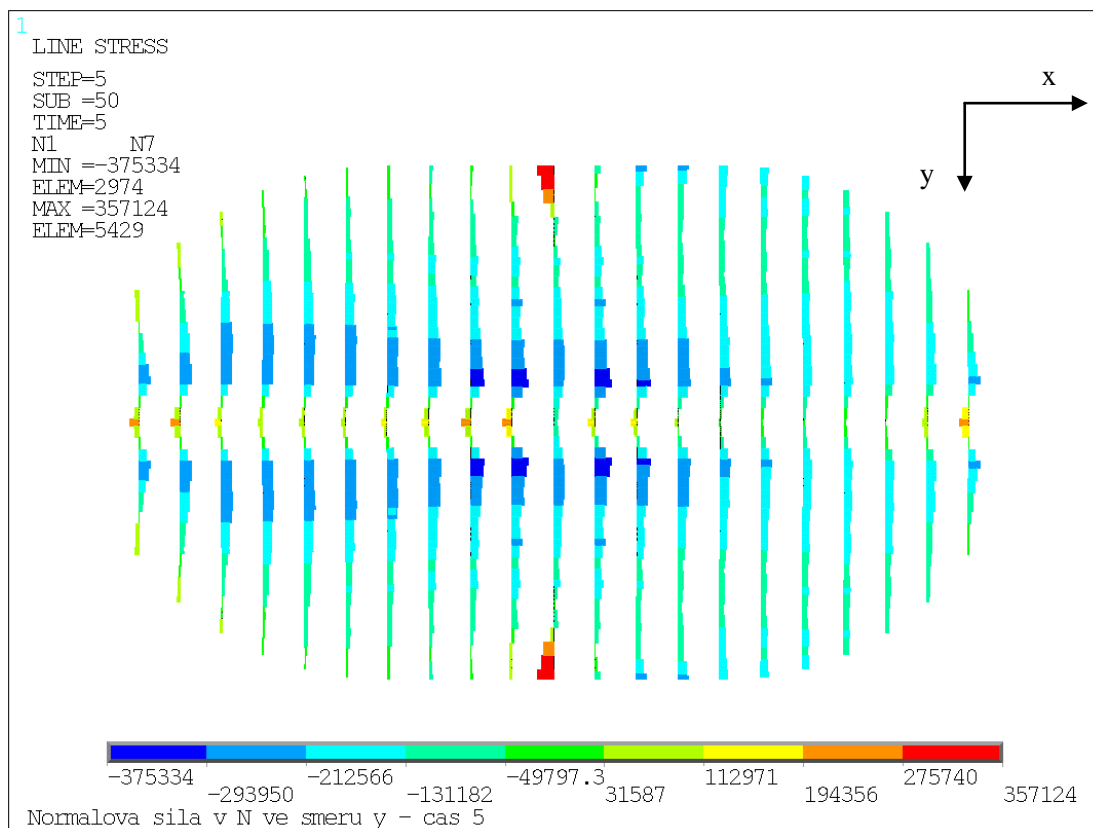


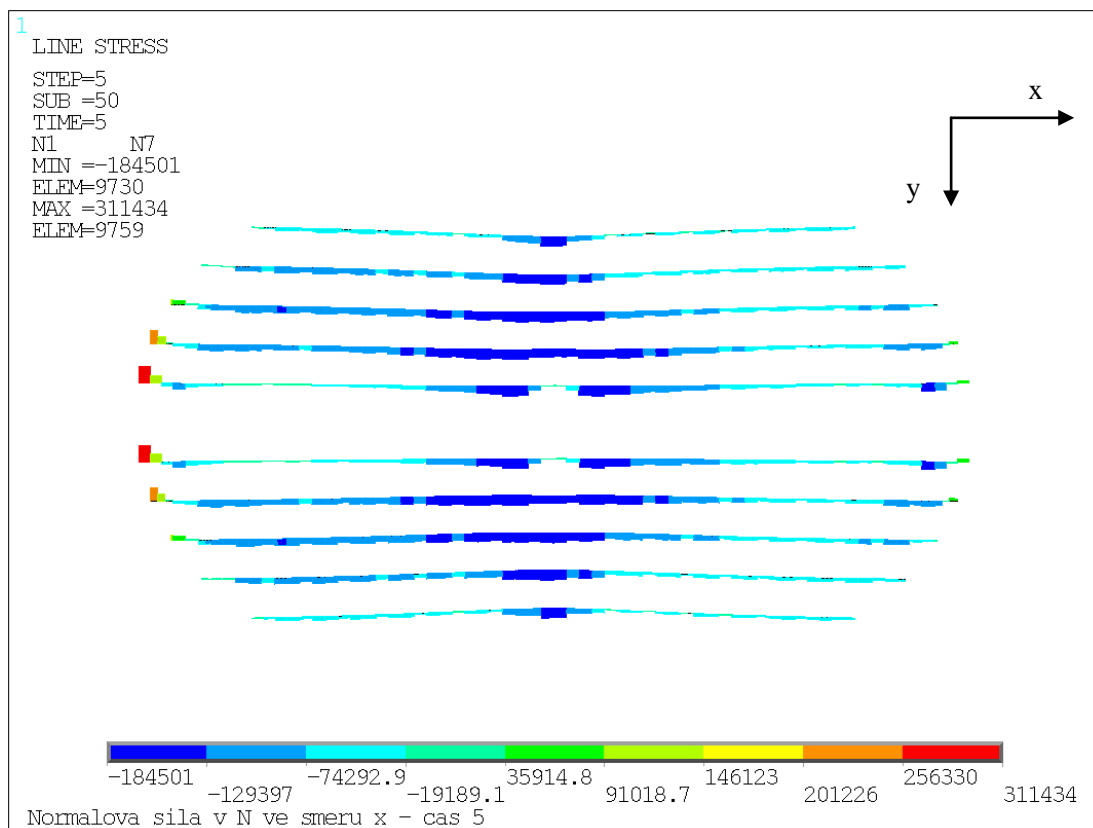




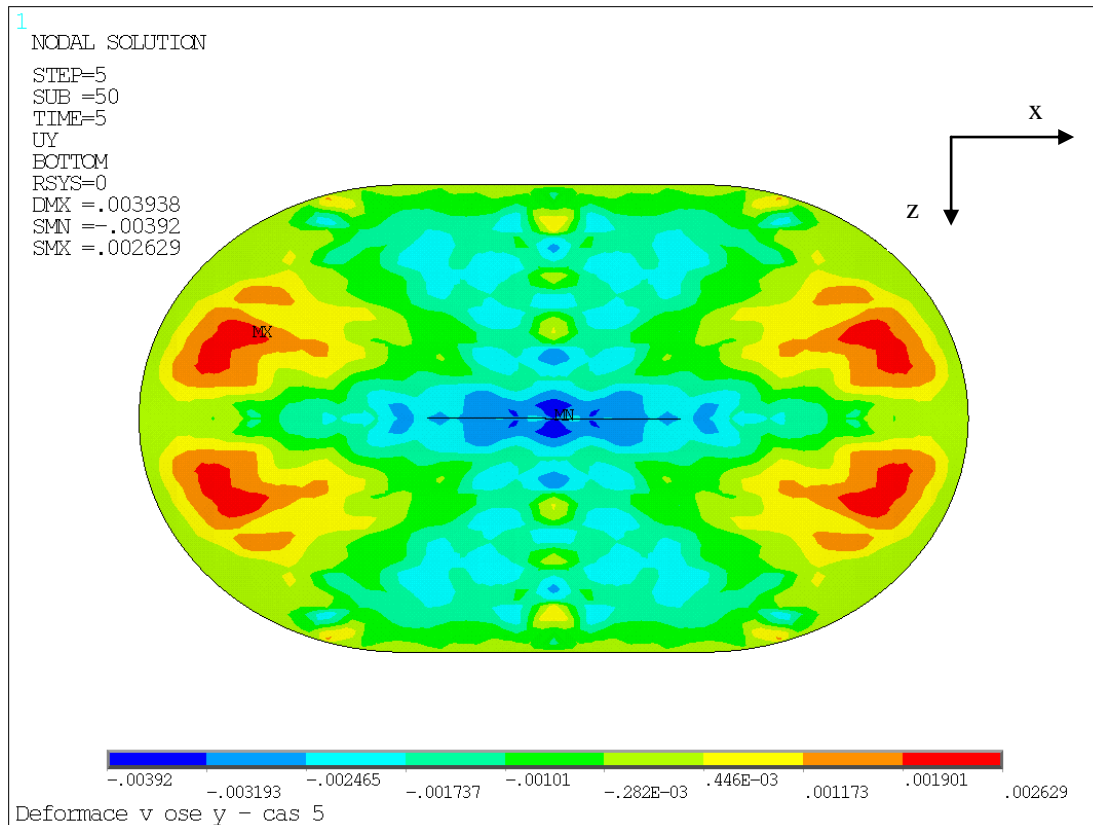


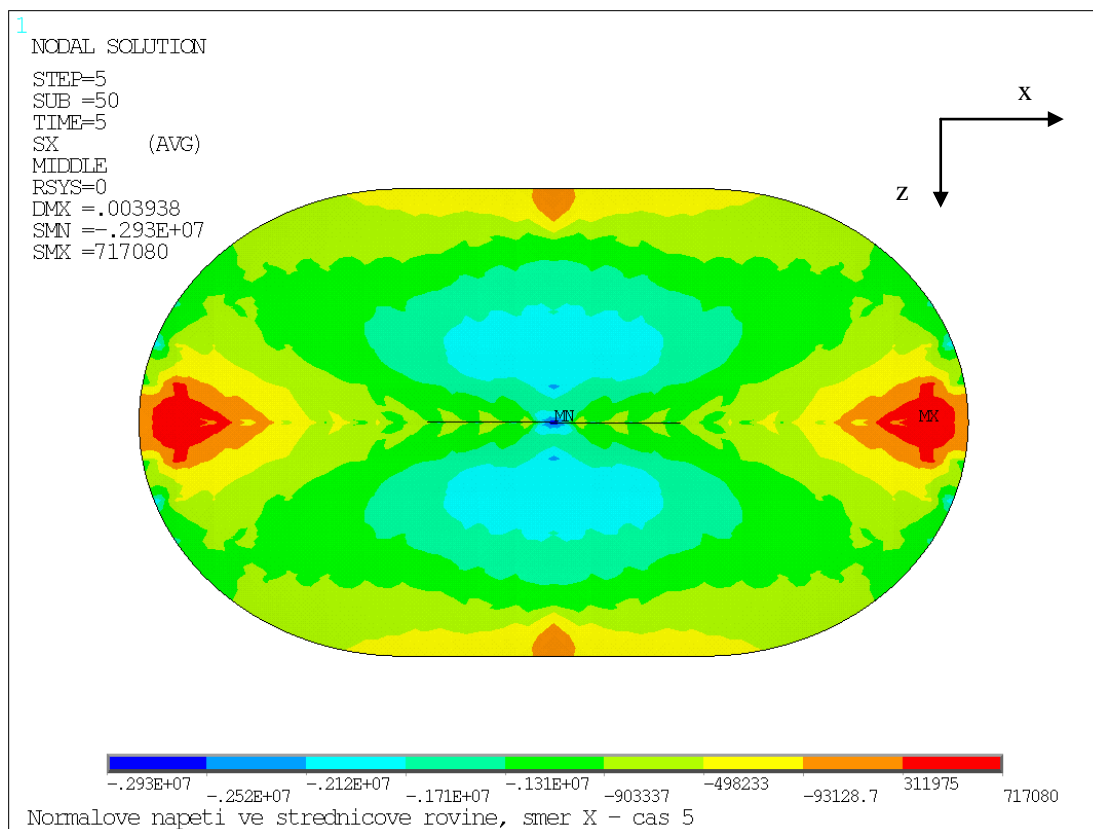
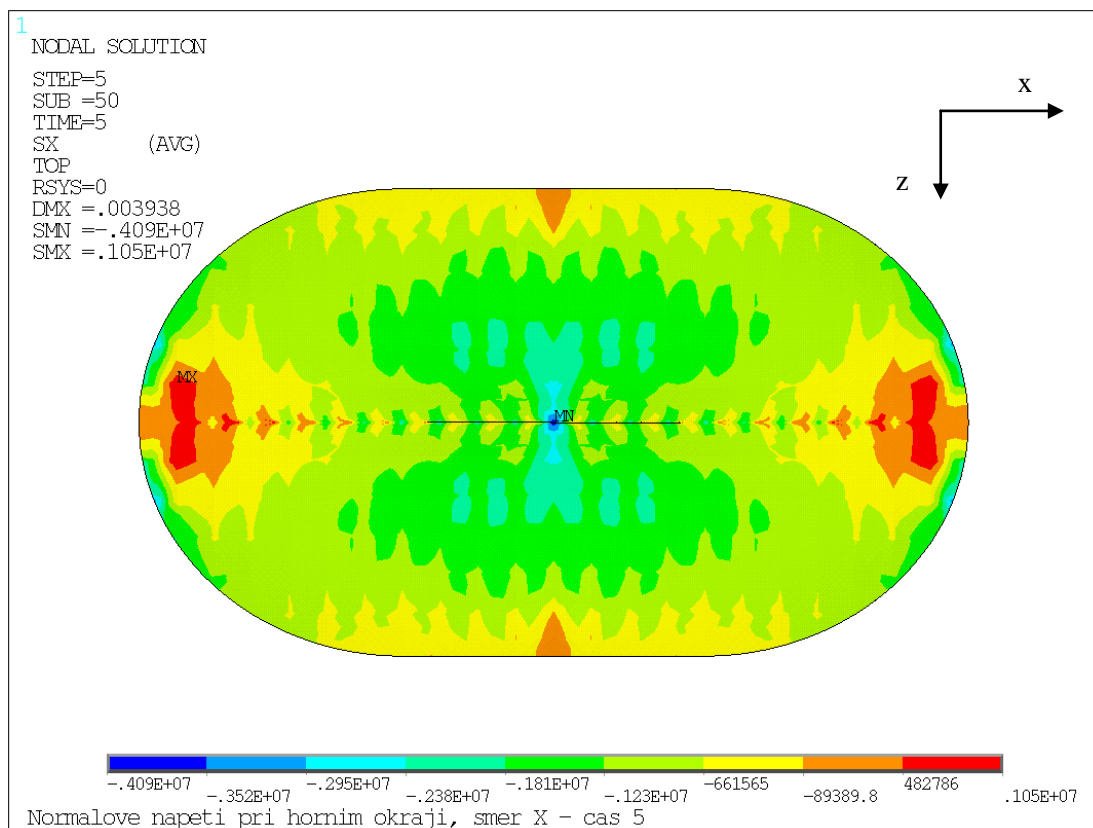


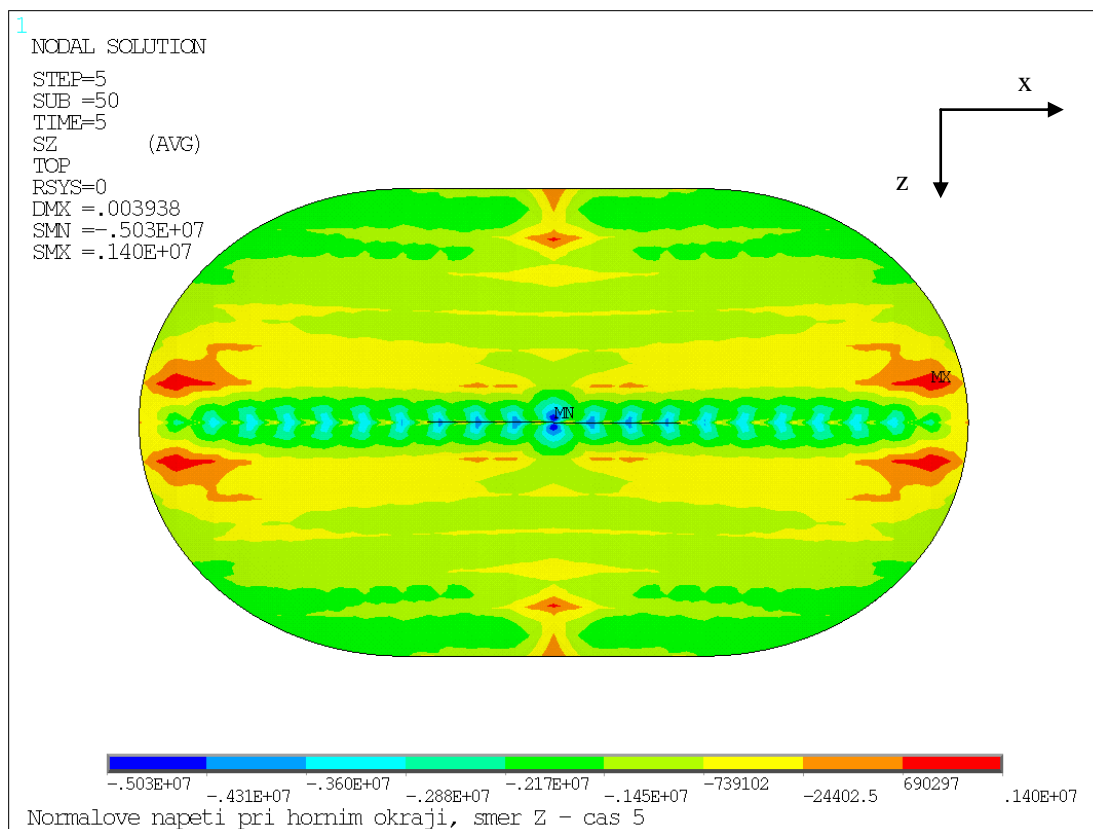
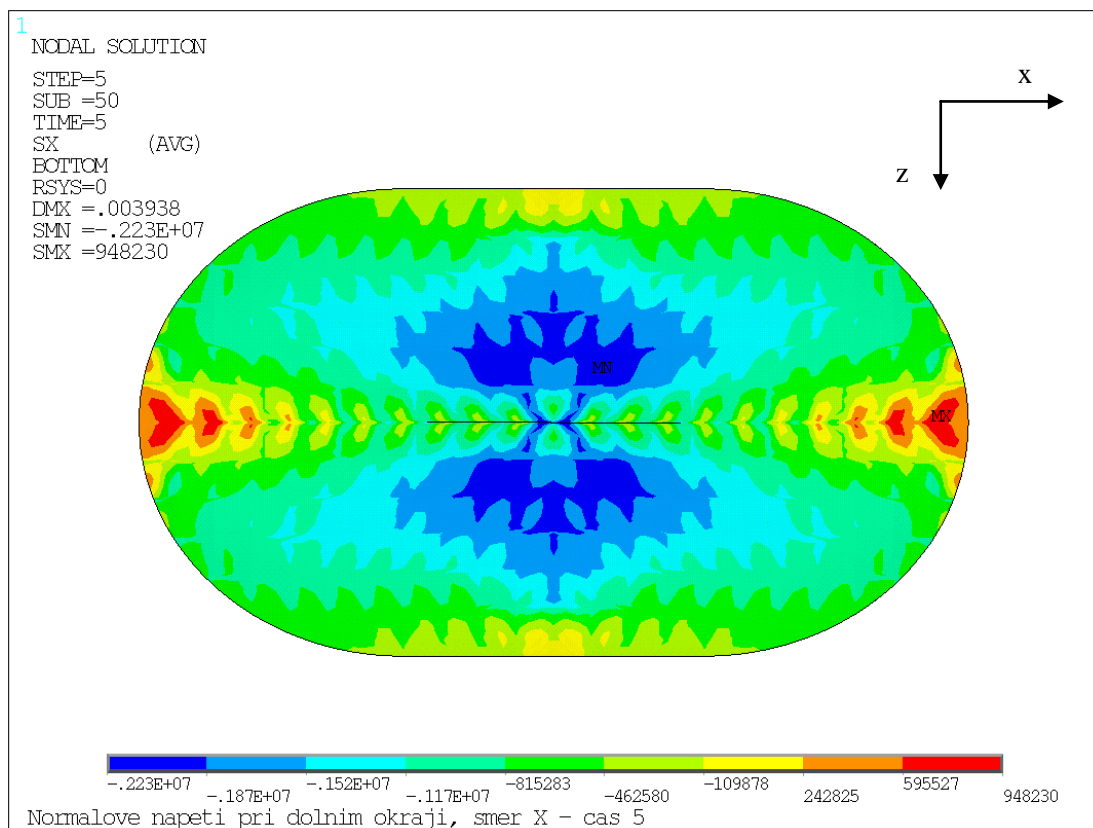


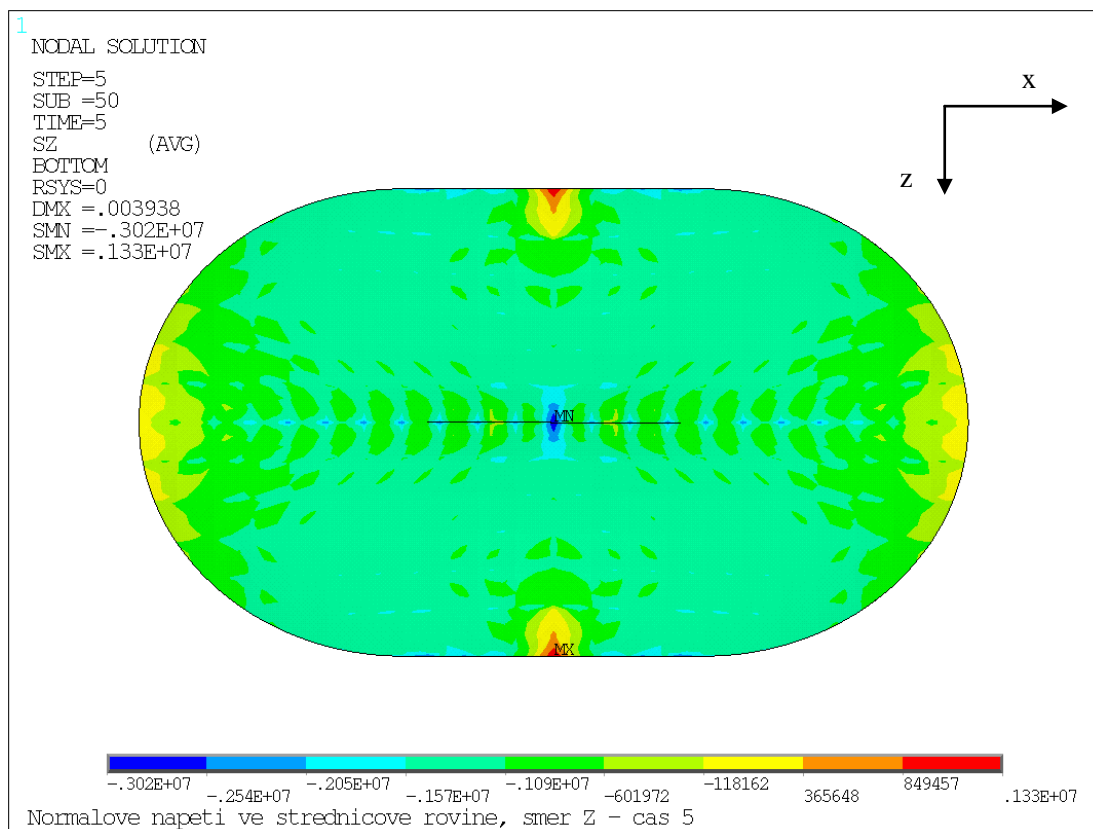
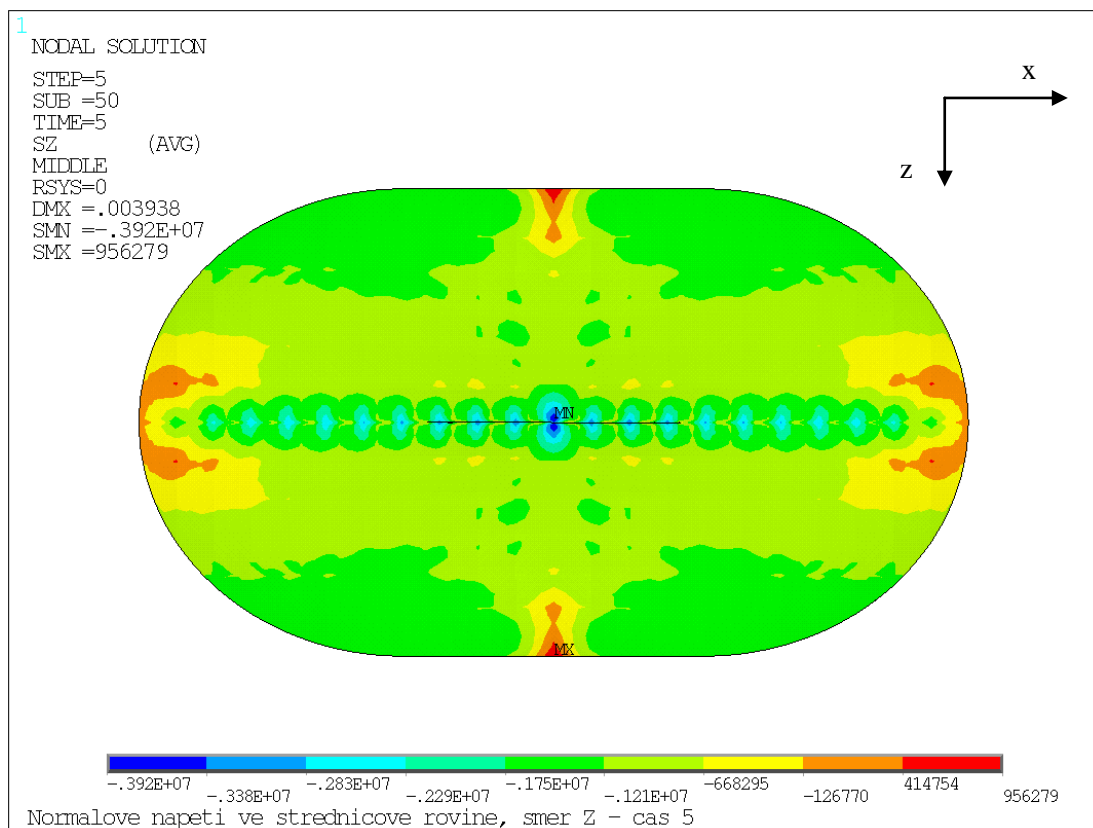


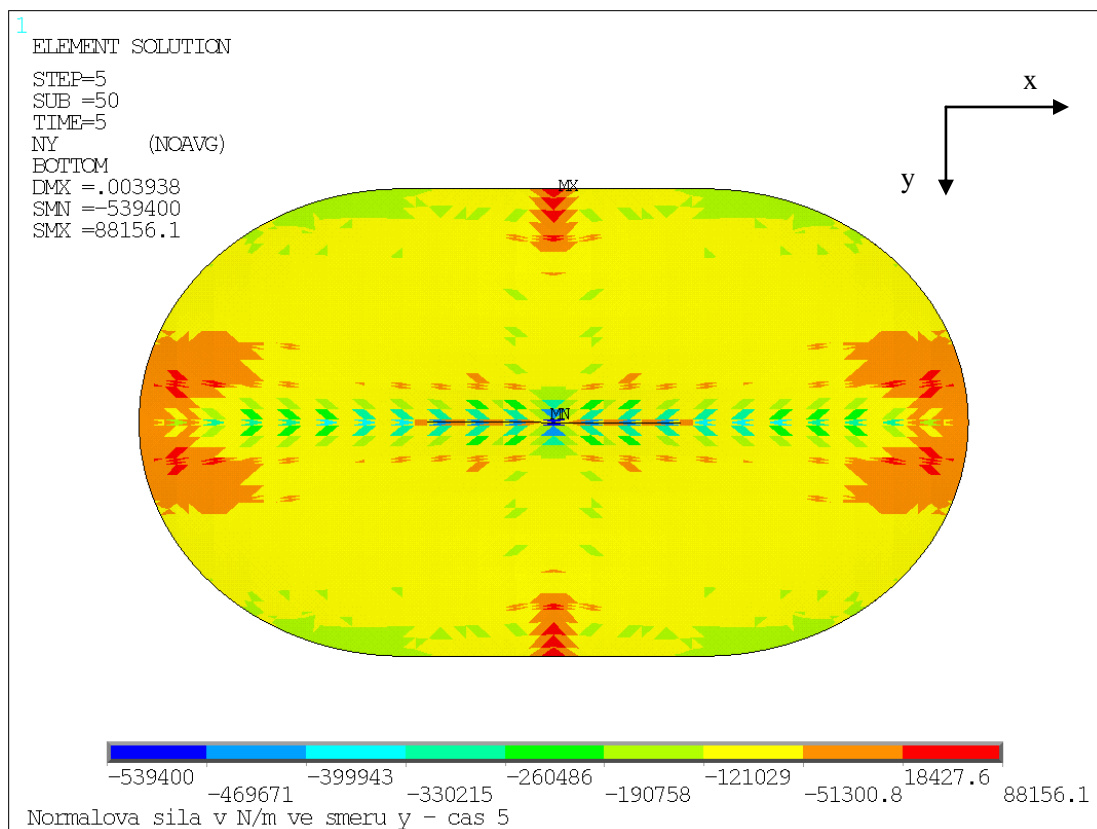
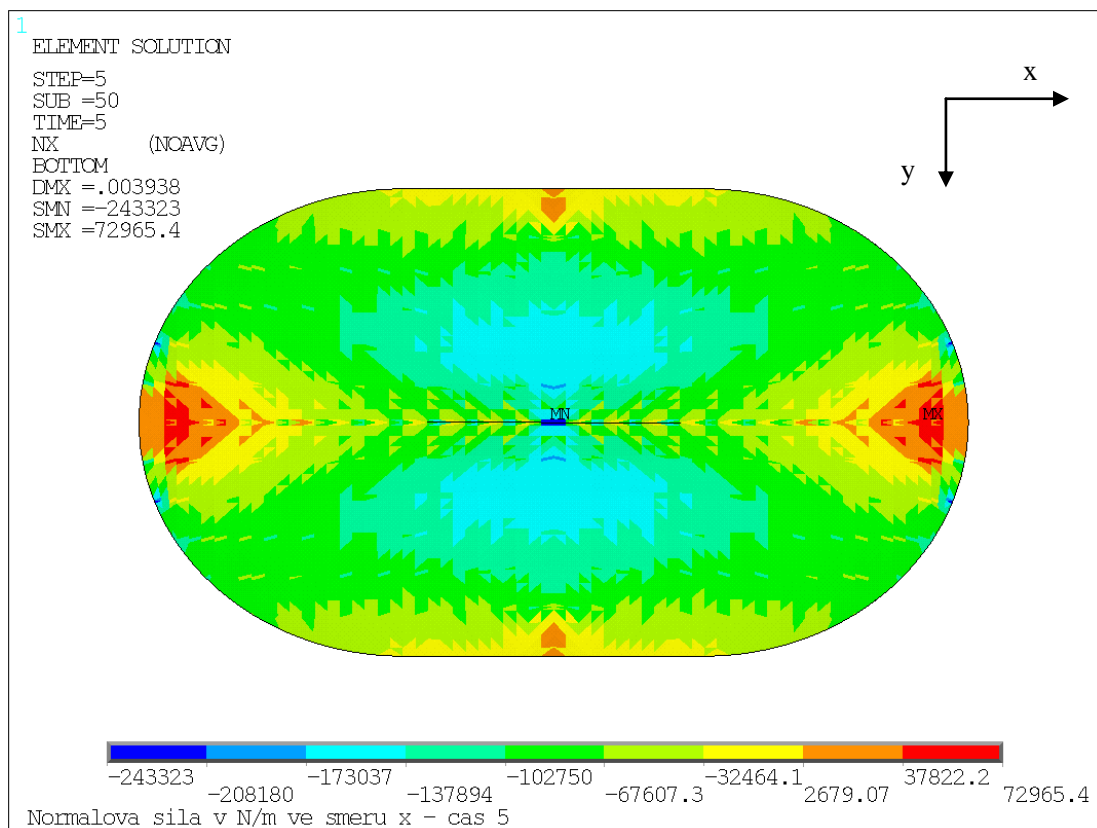
2.7 Čas 5 – Zatížení sněhem ŠACH 3 (kombinace K3)

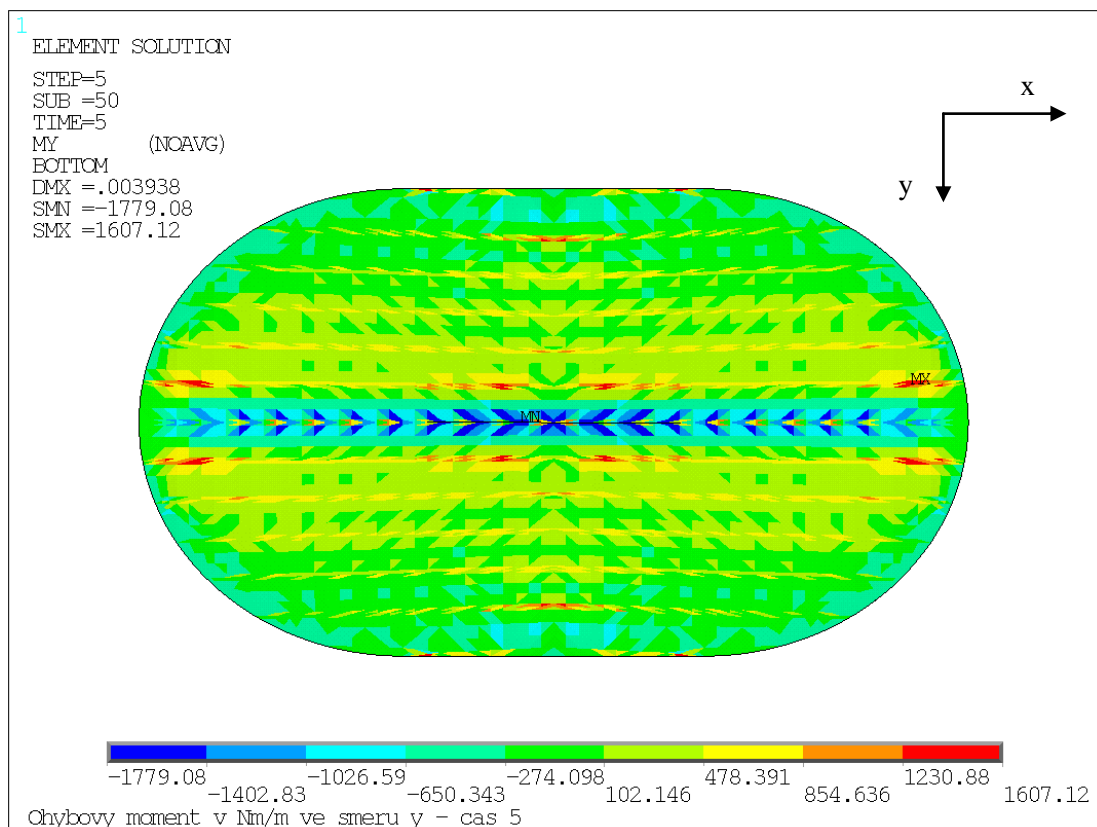
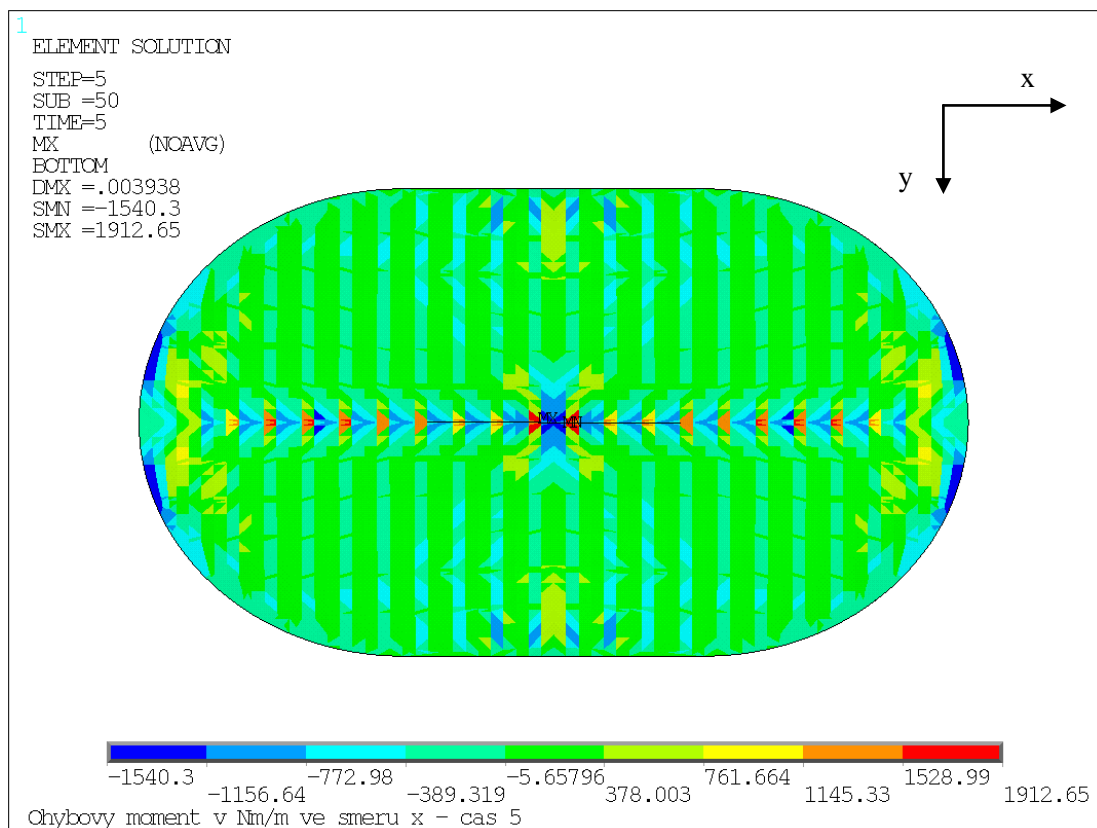


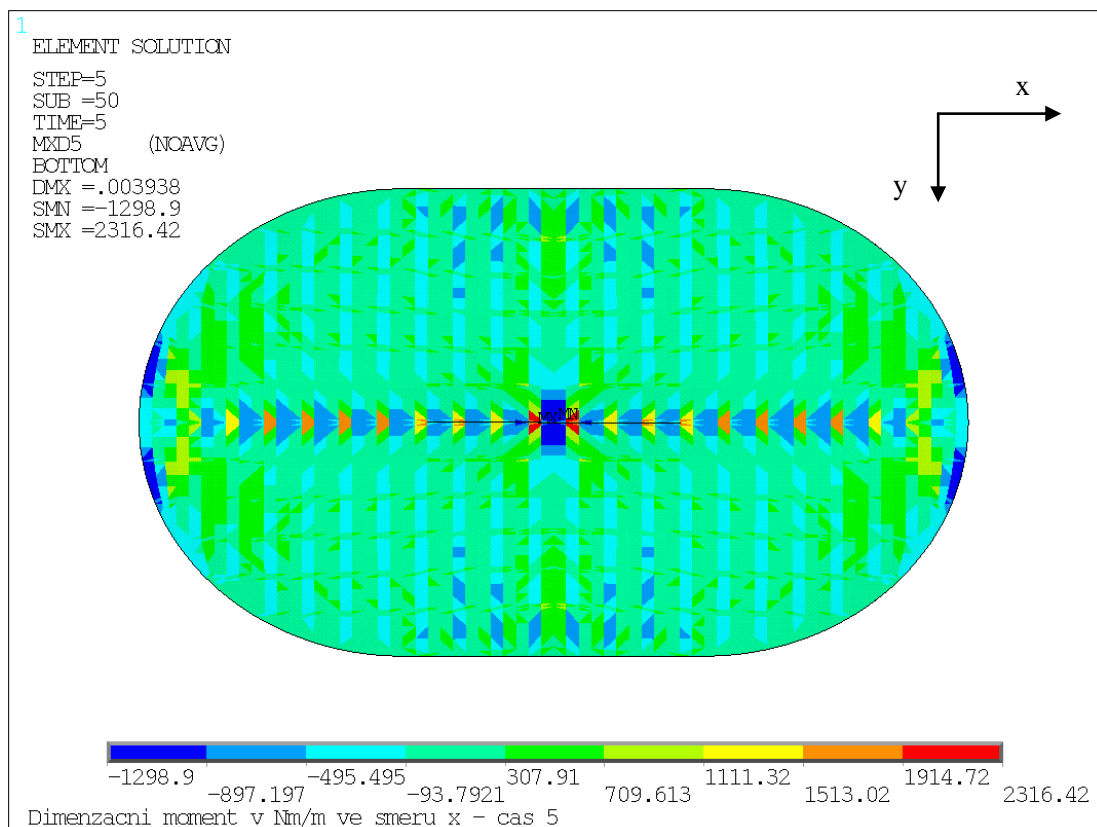
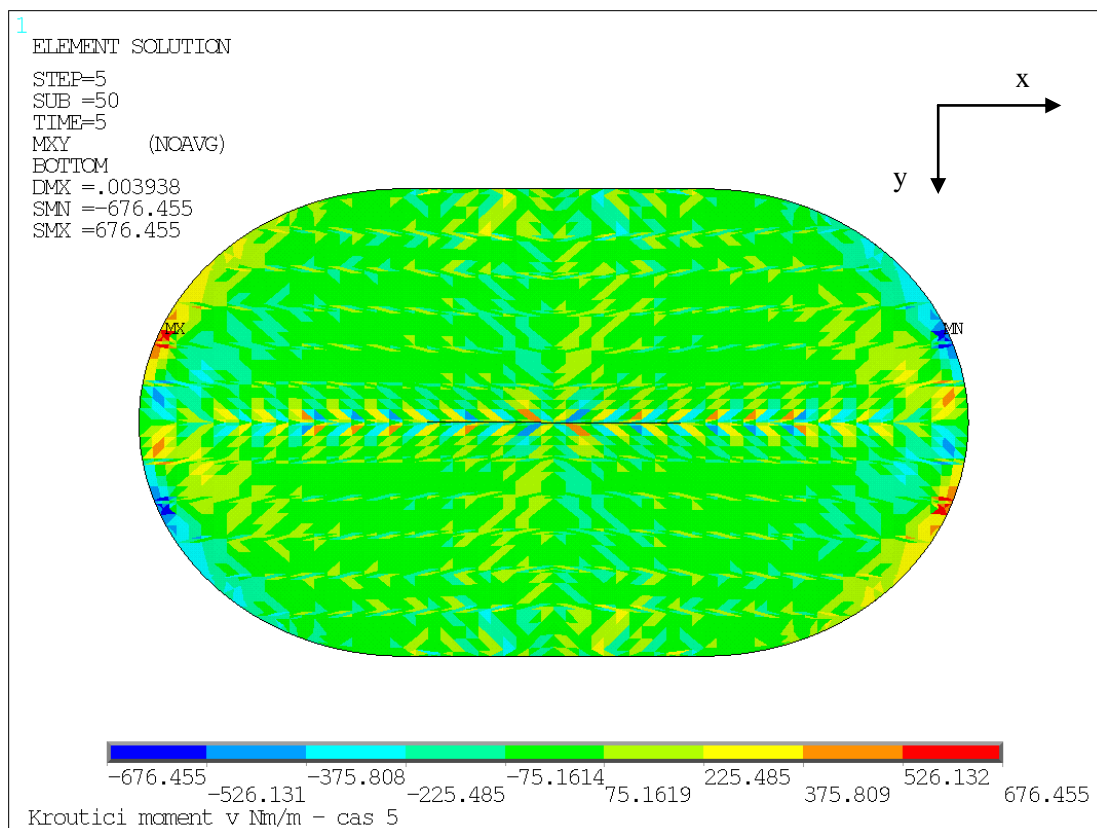


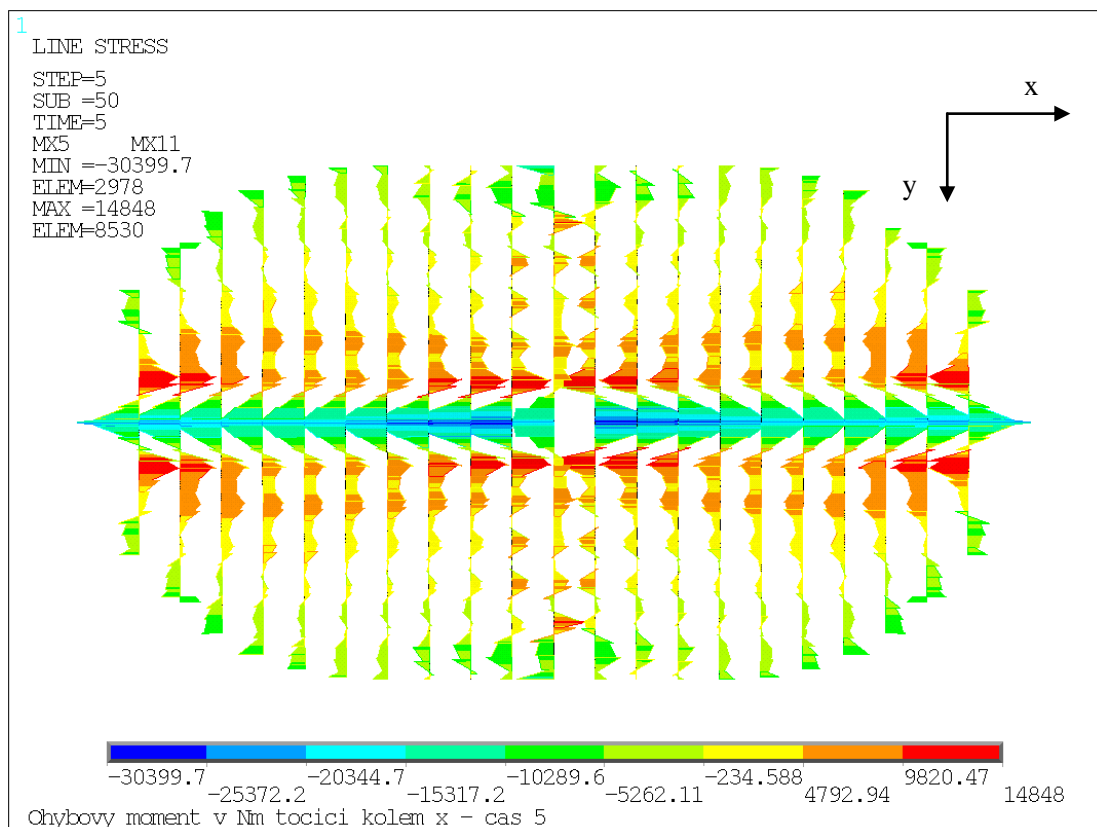
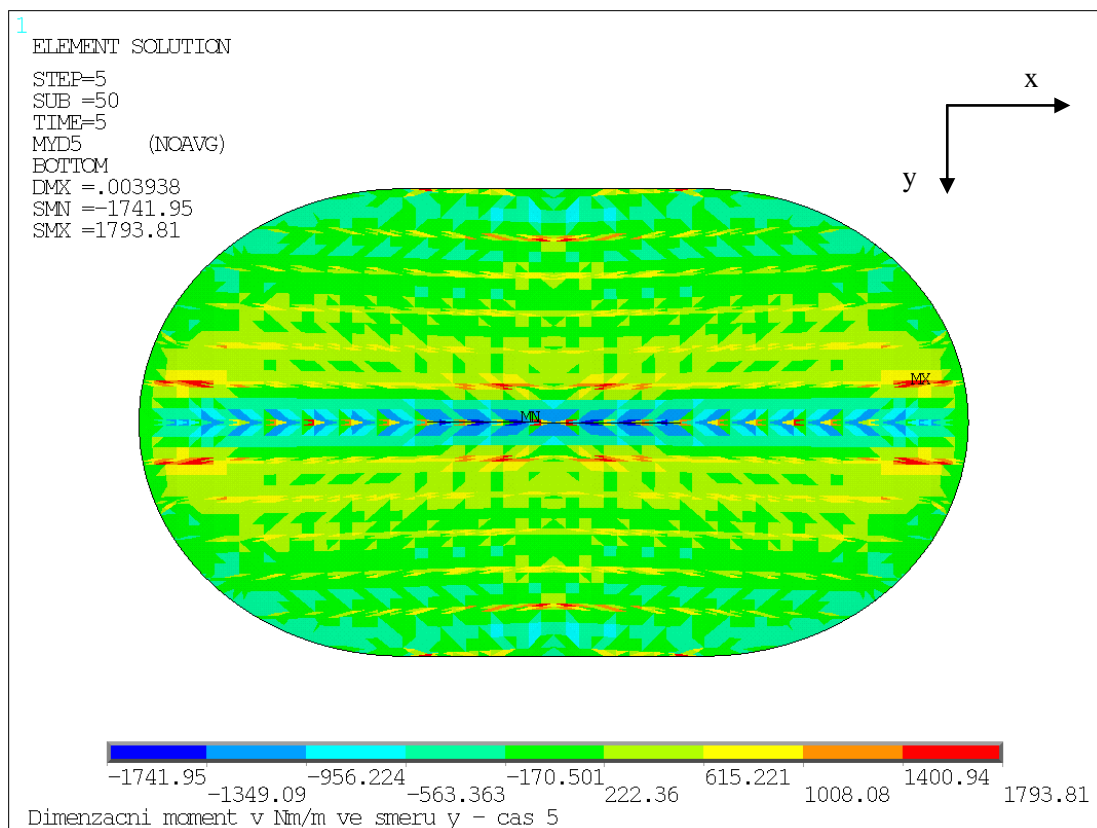


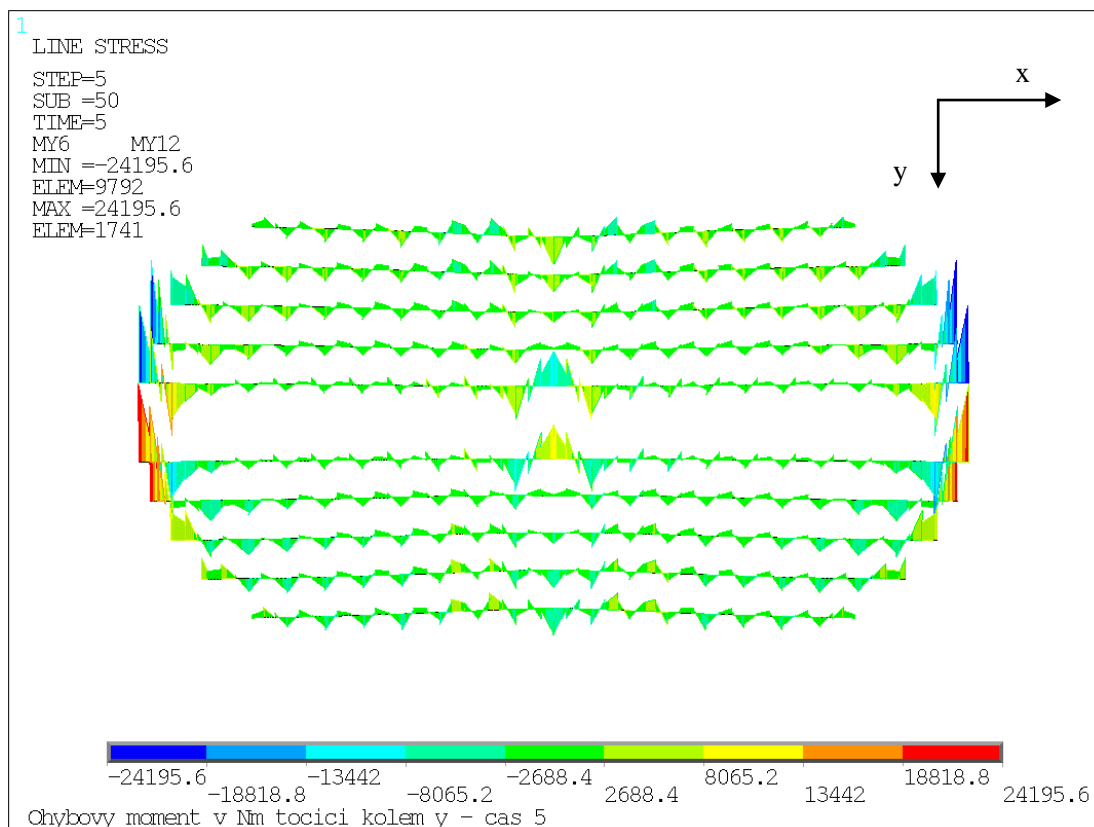
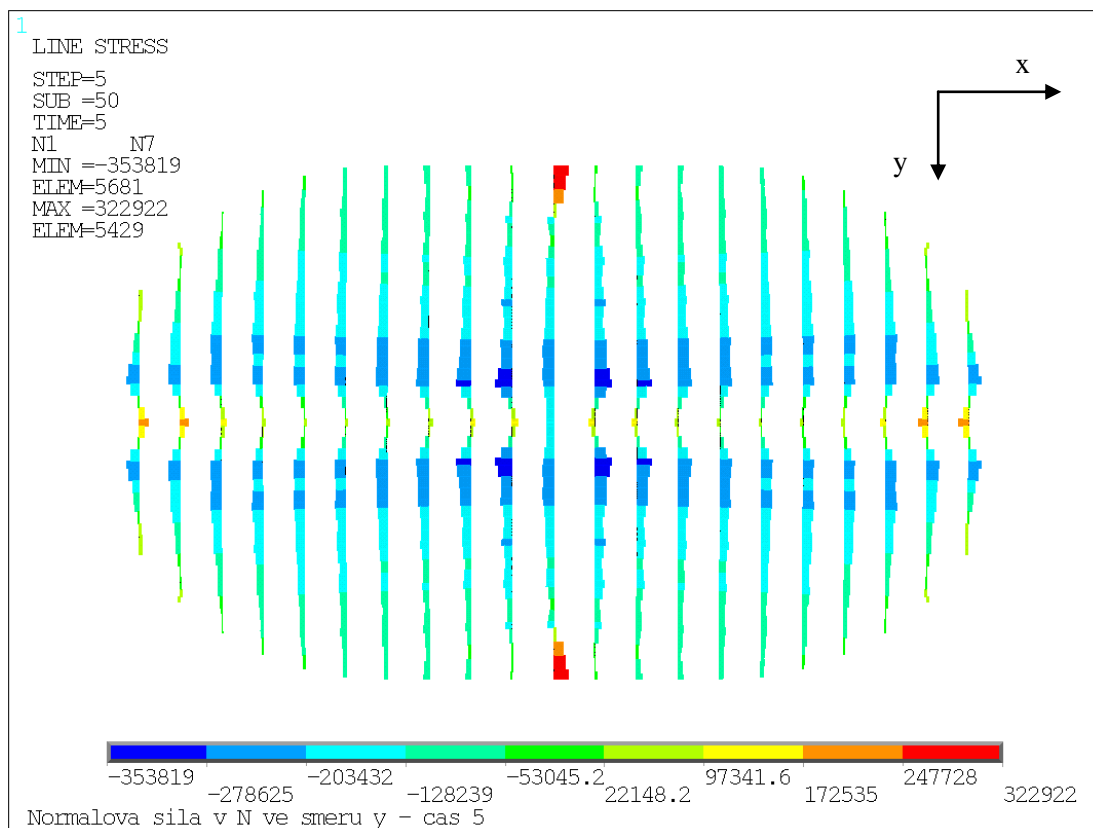


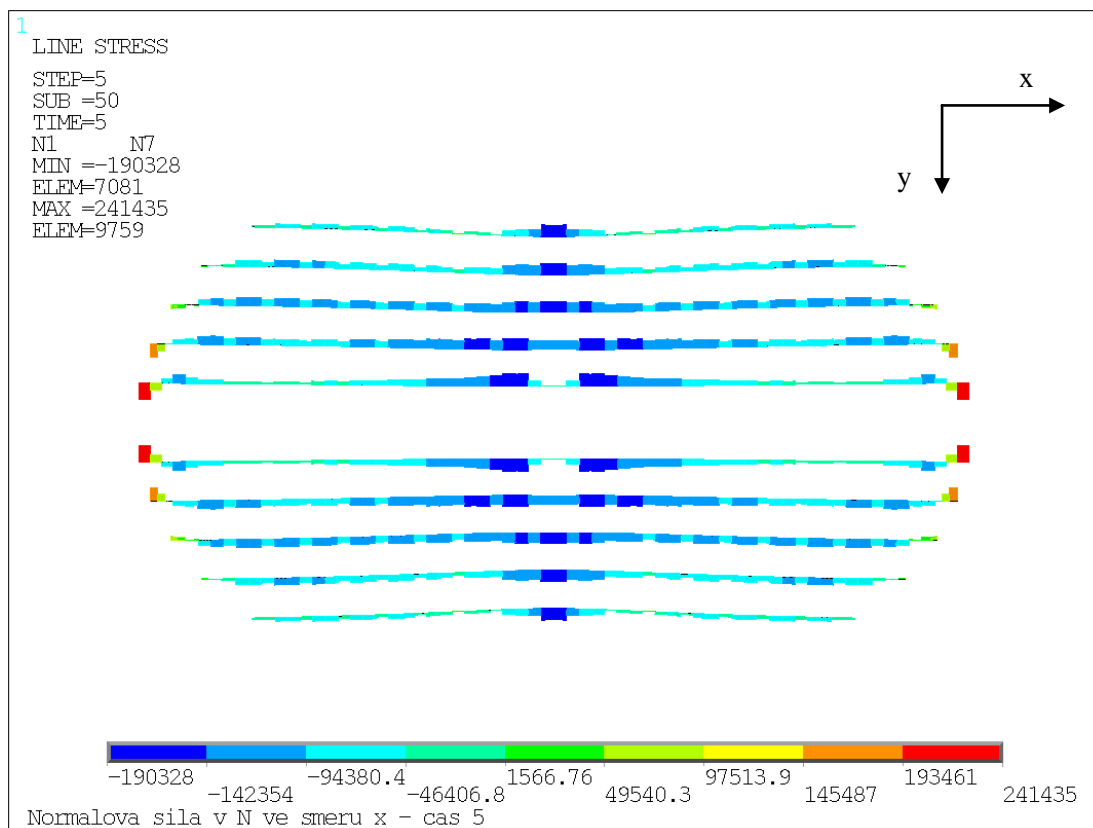




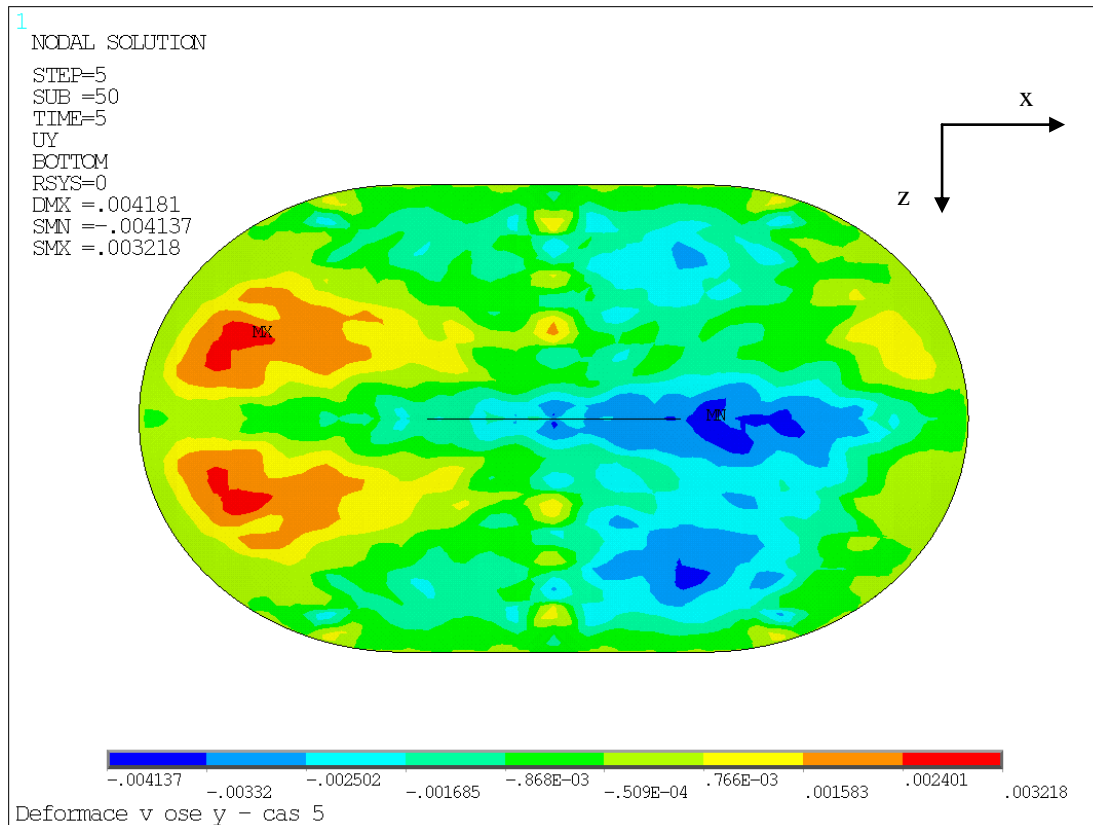


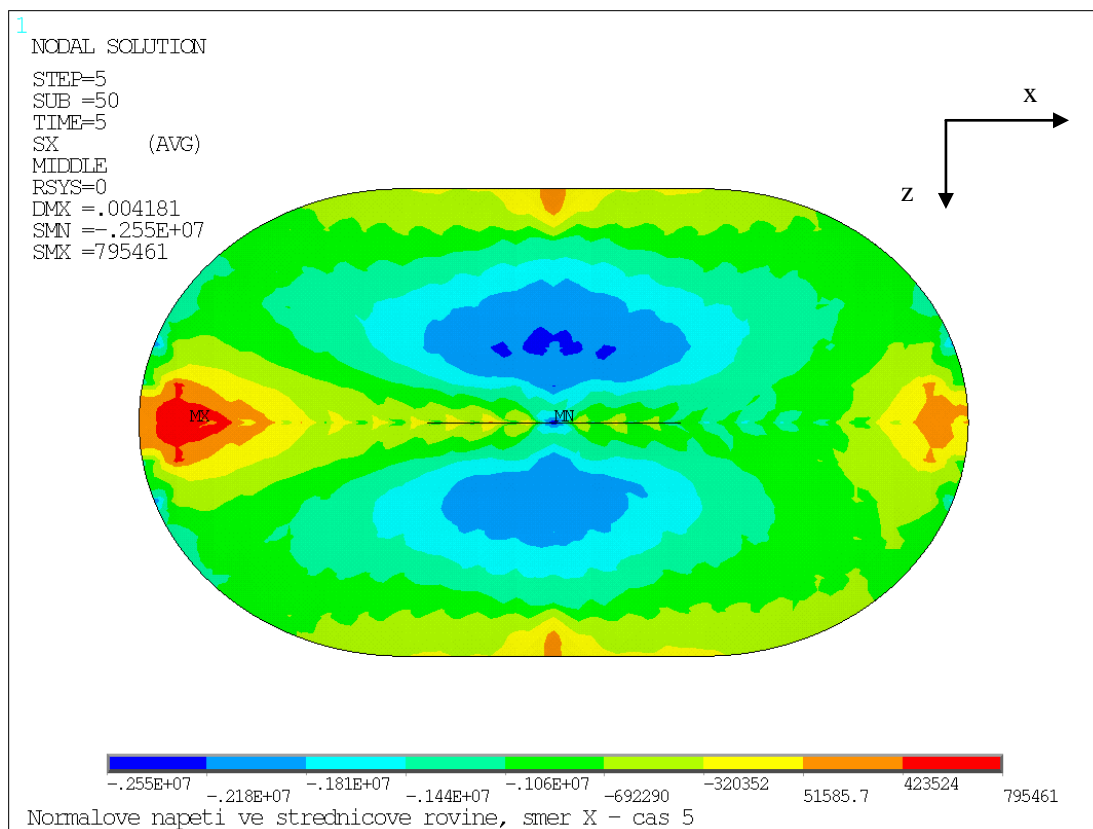
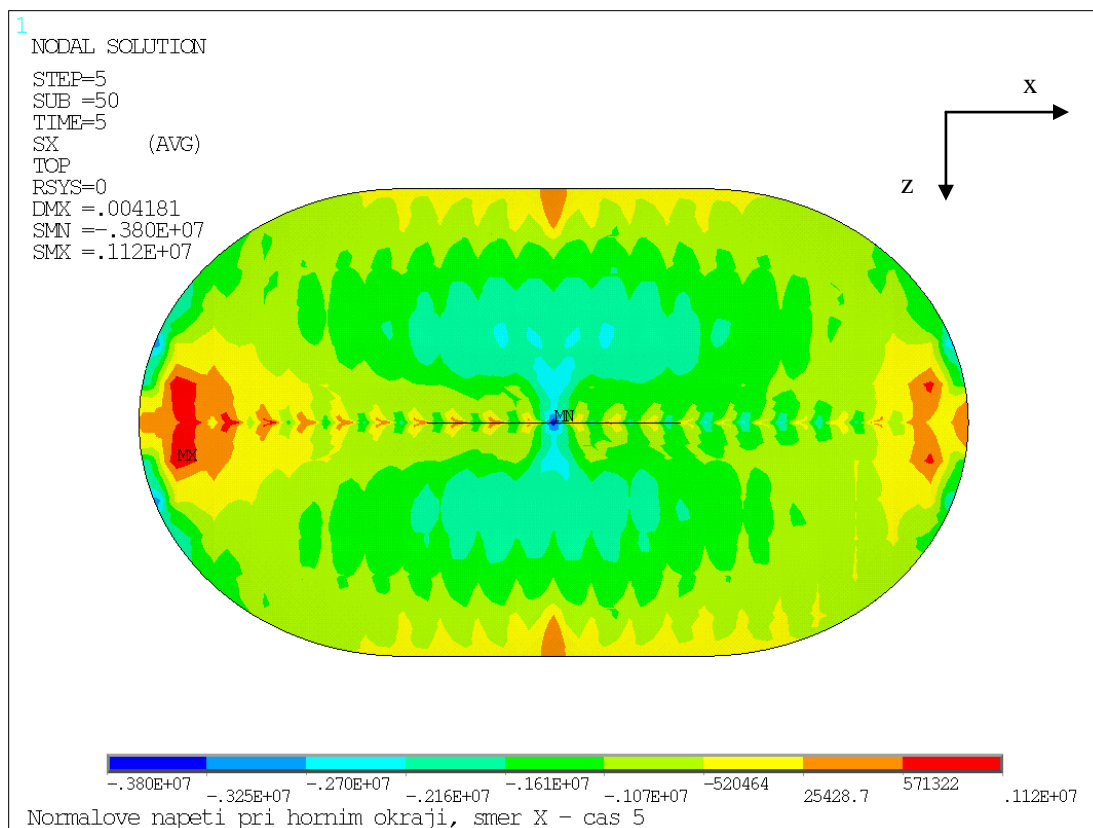


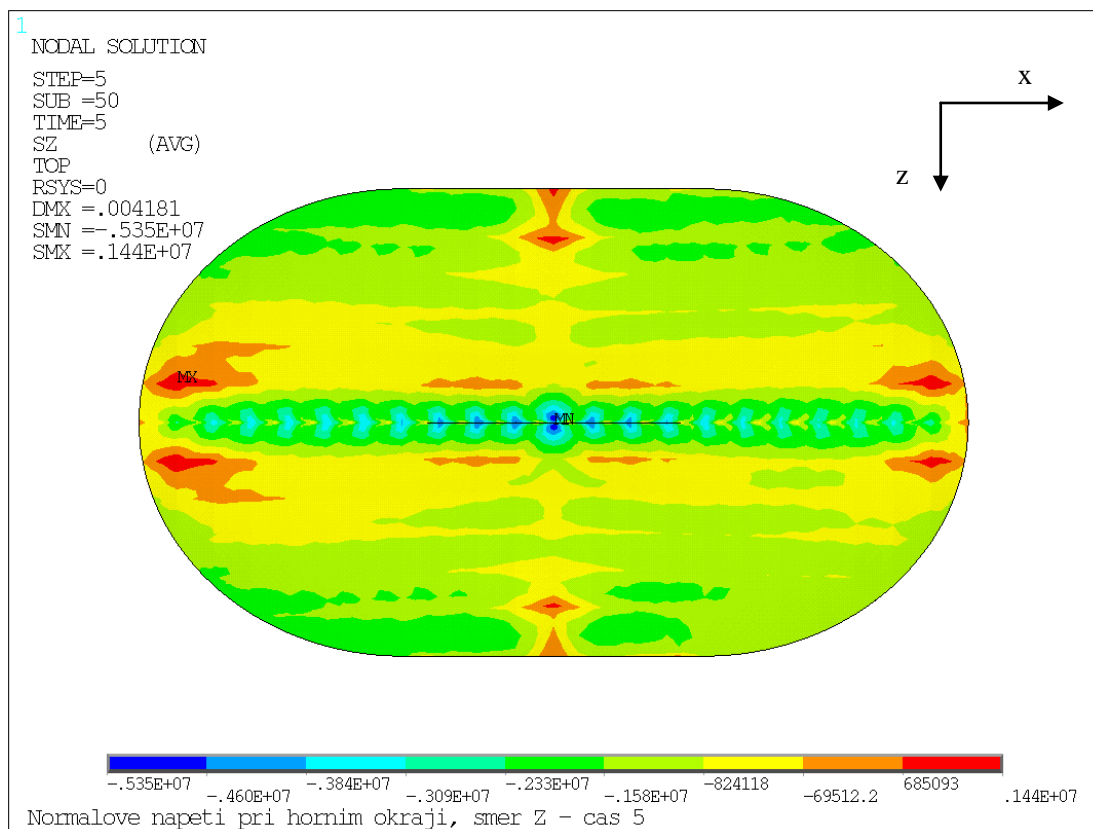
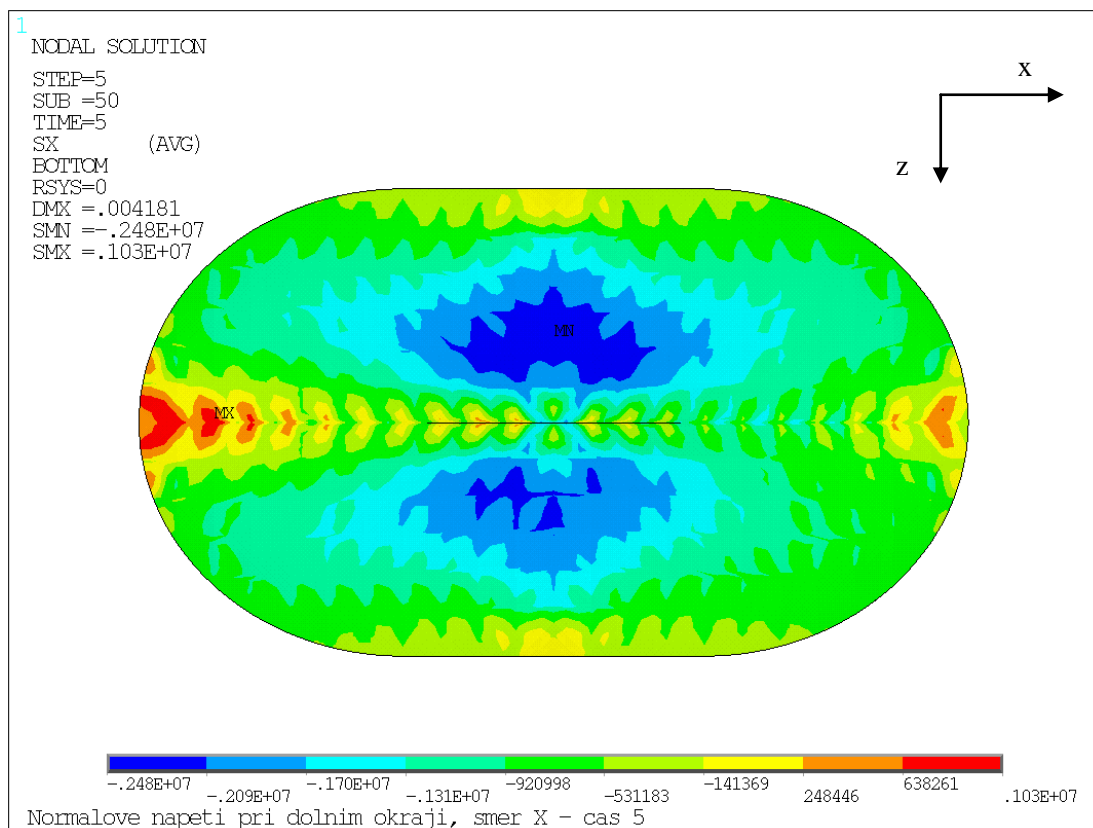


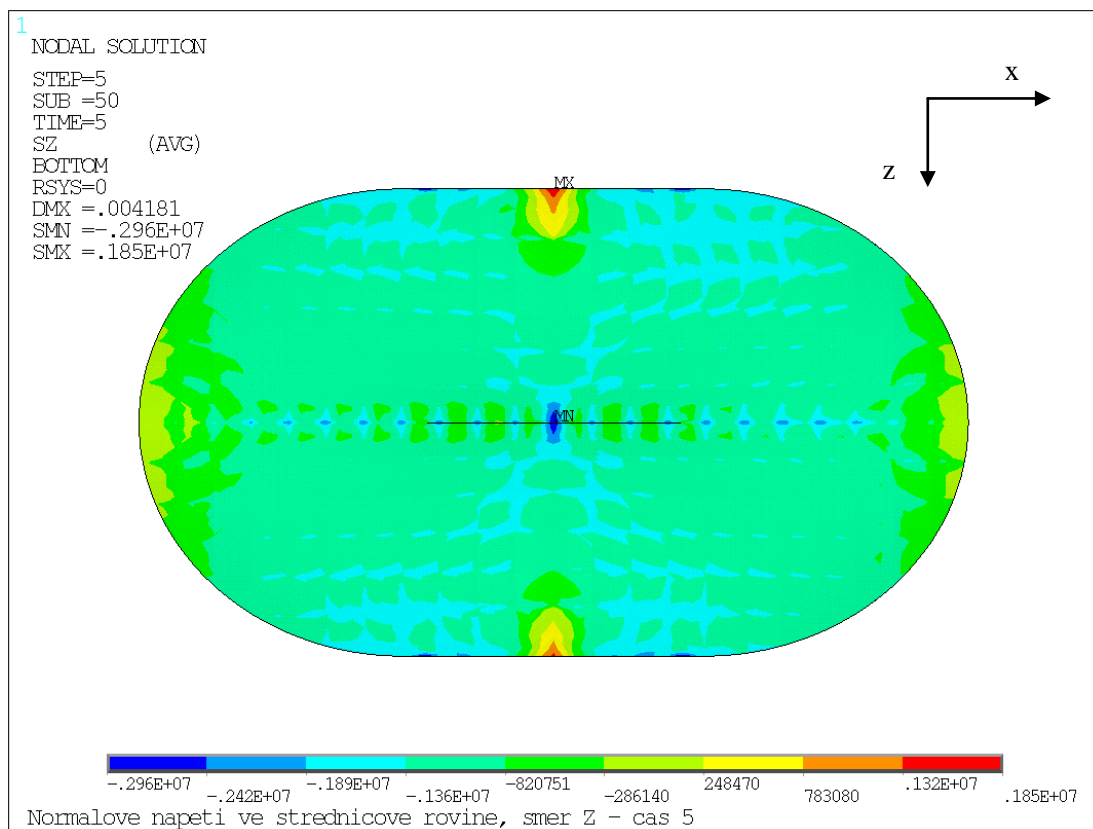
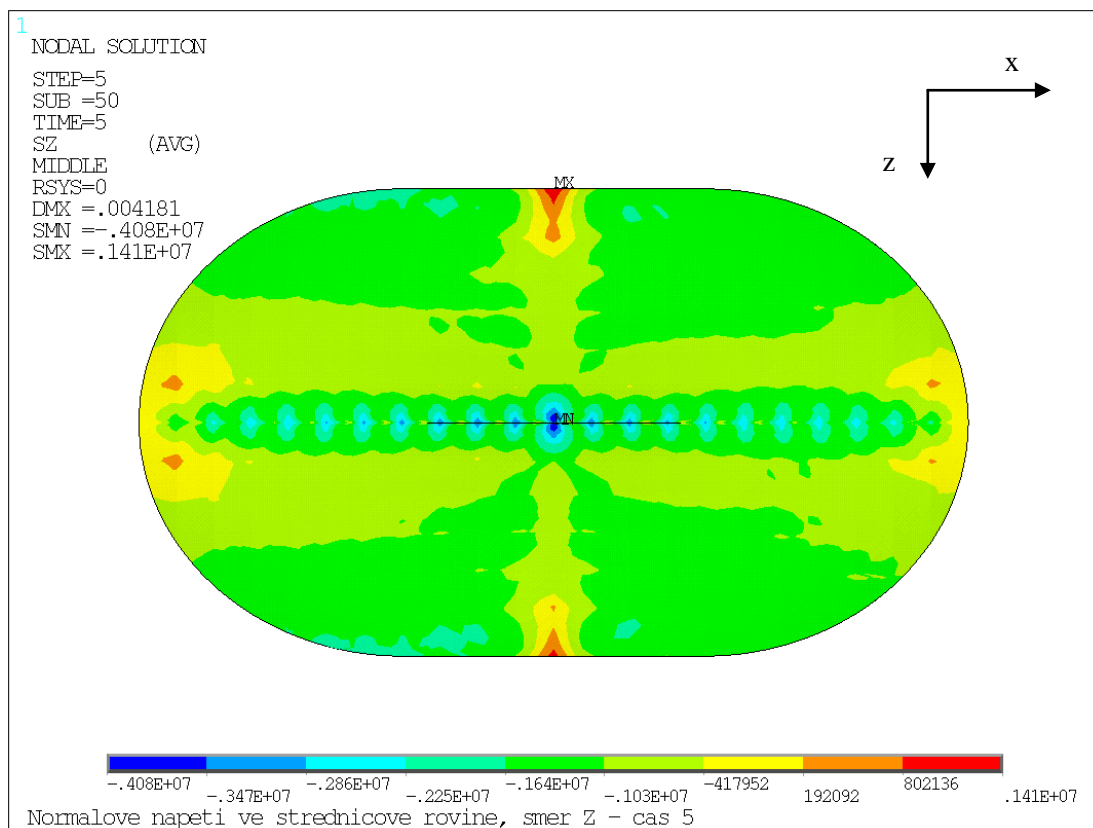


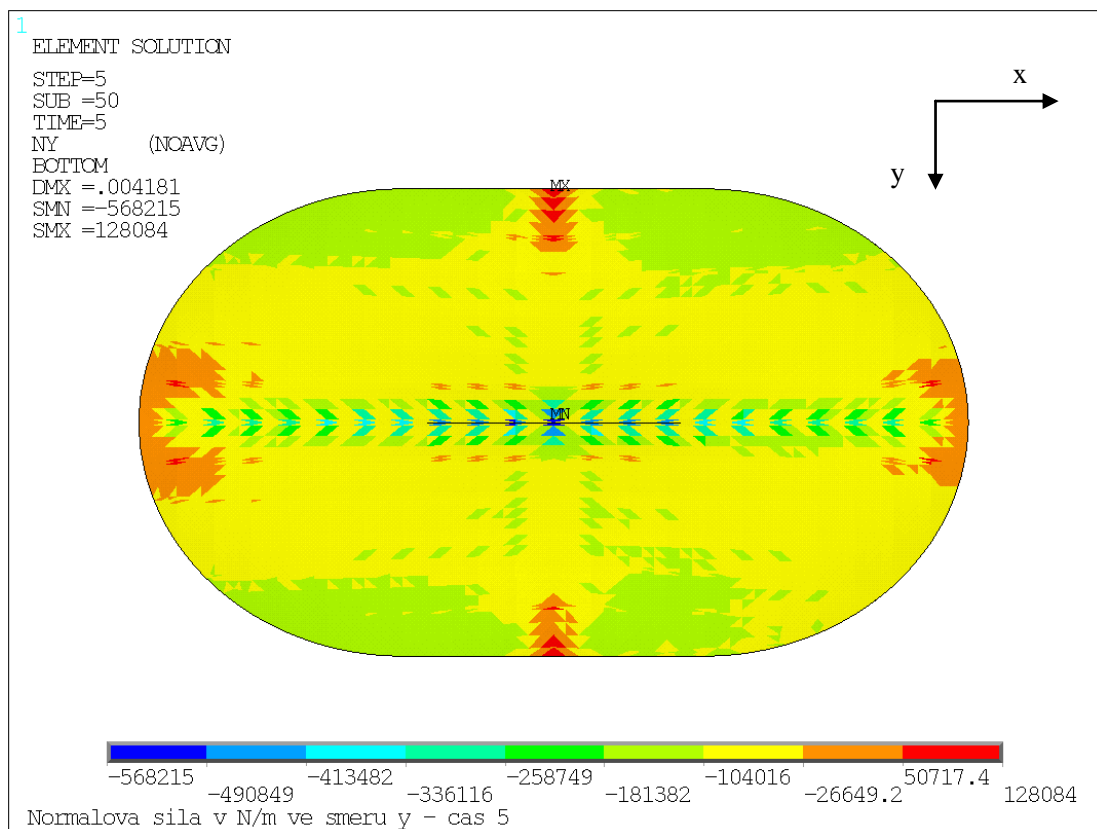
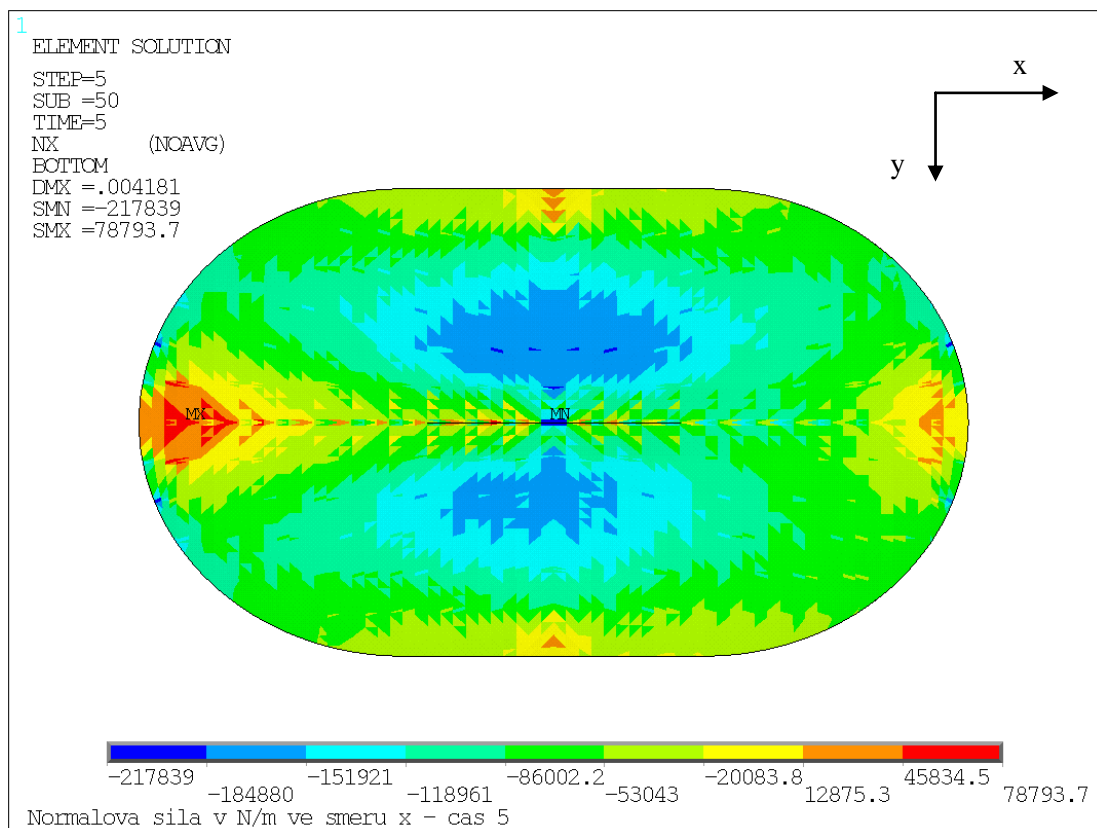
2.8 Čas 5 – Zatížení sněhem ŠACH 4 (kombinace K4)

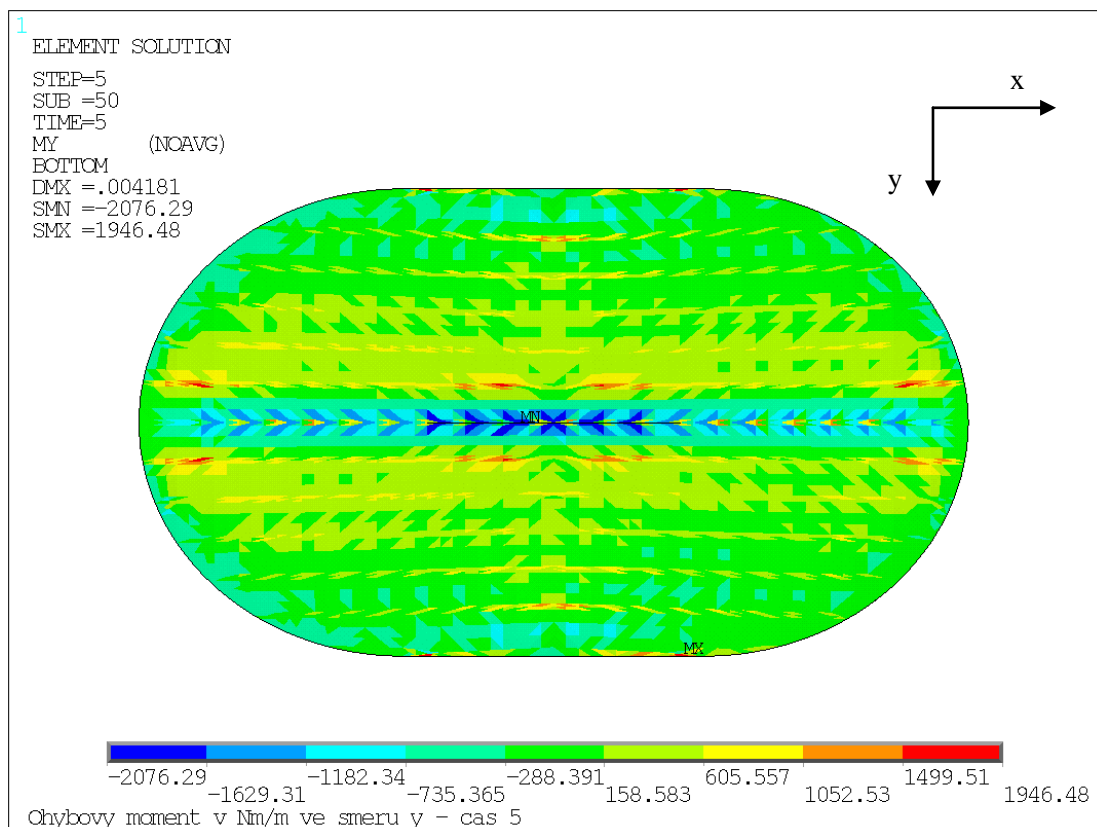
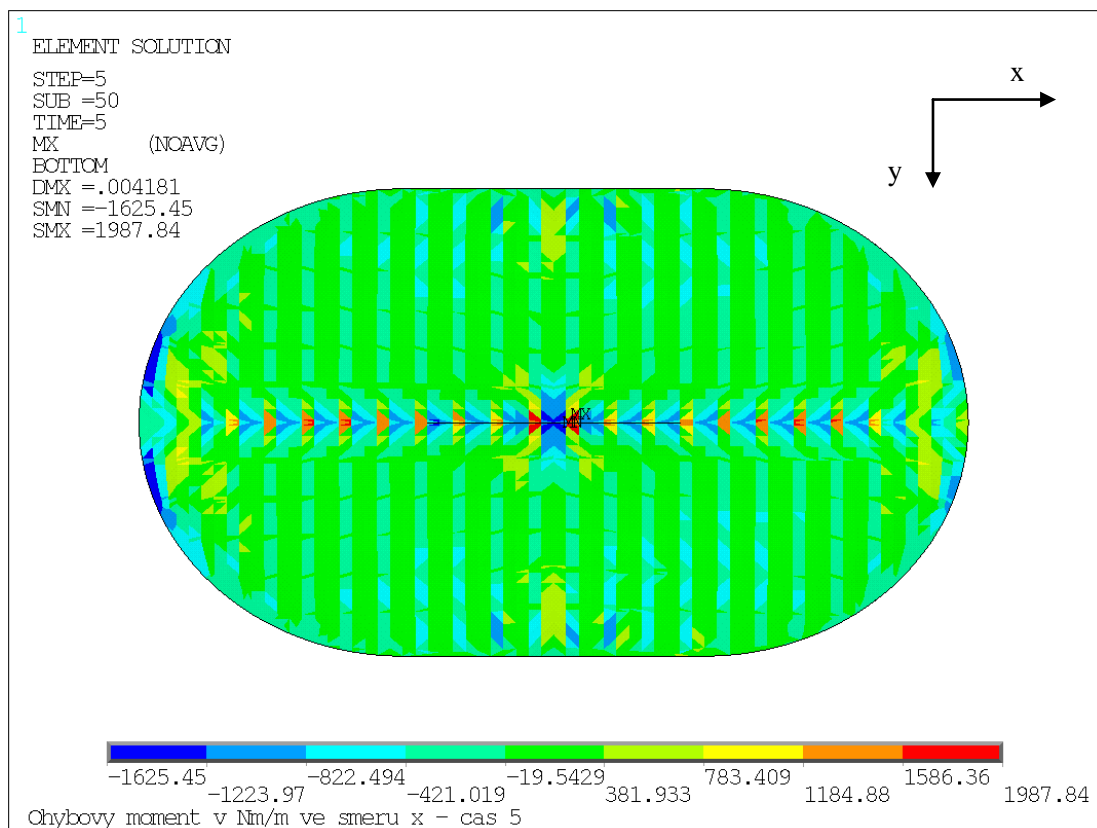


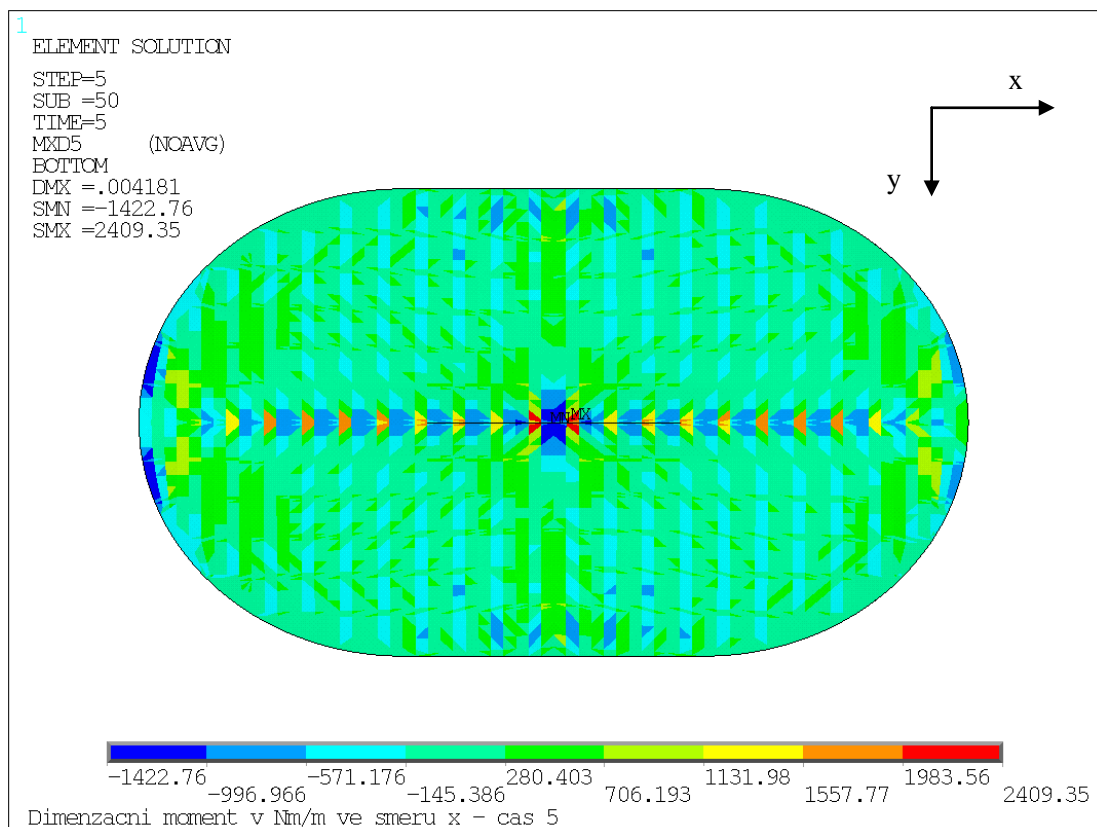
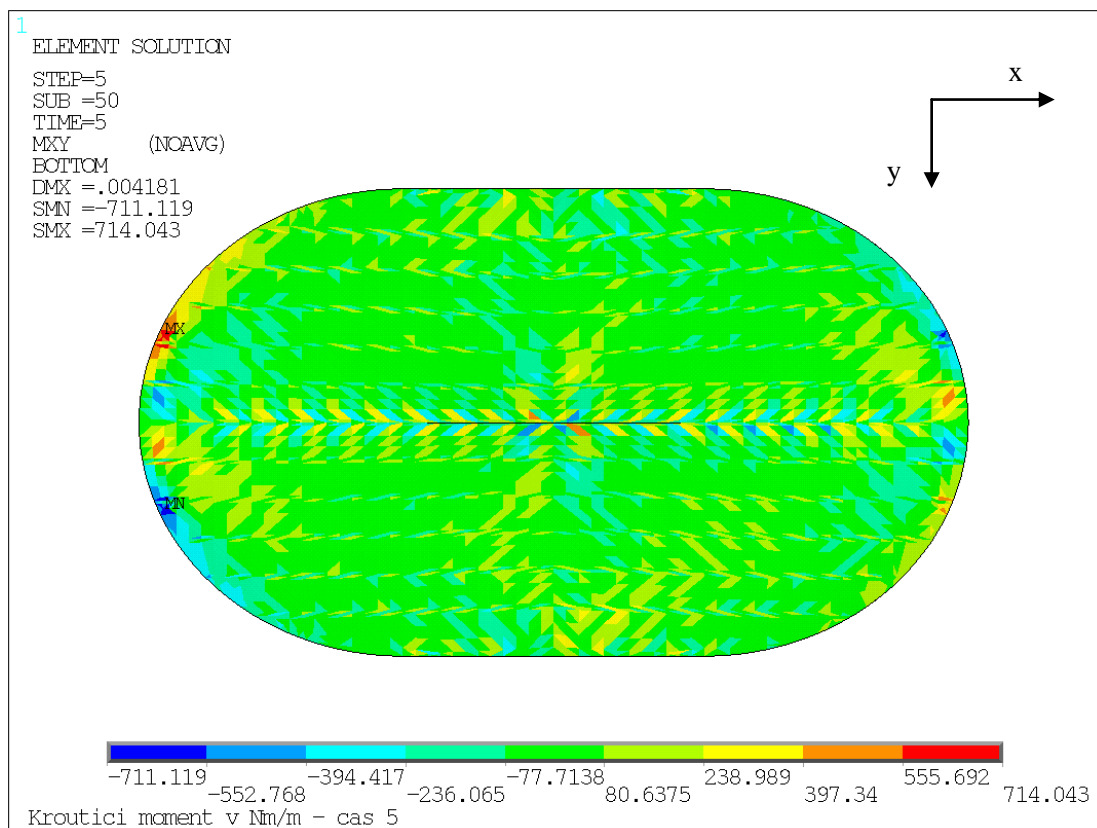


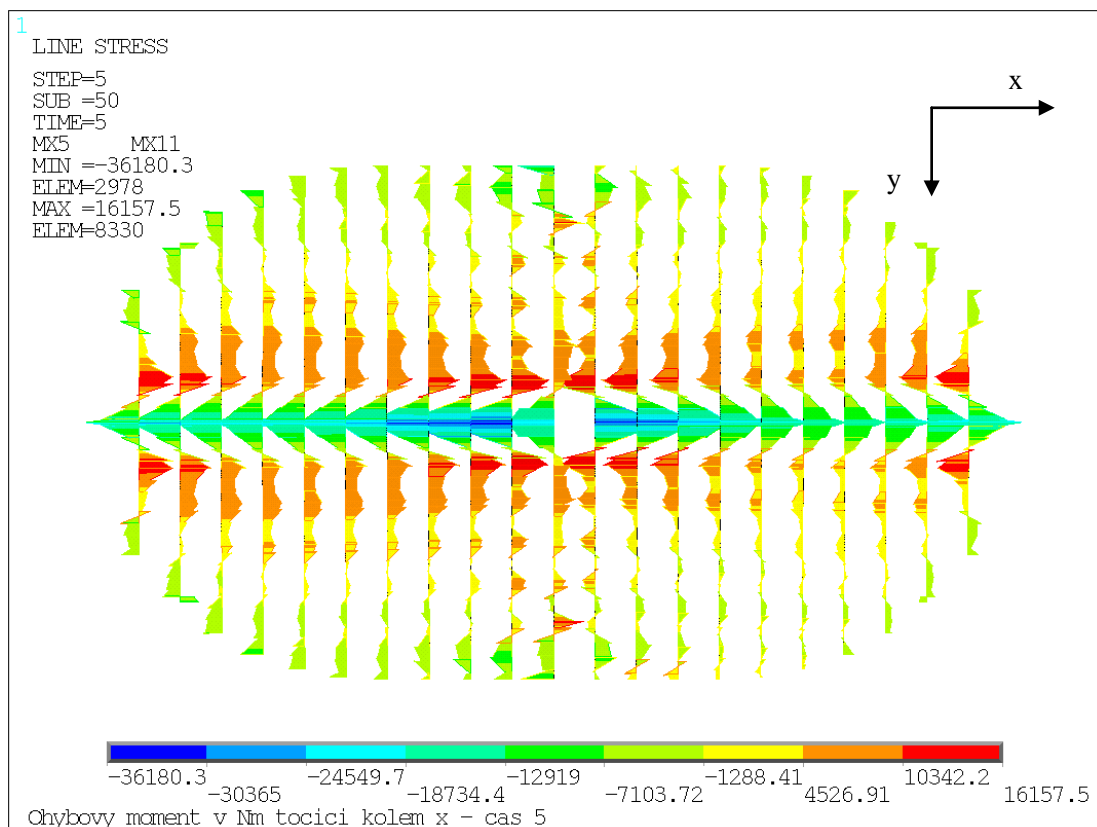
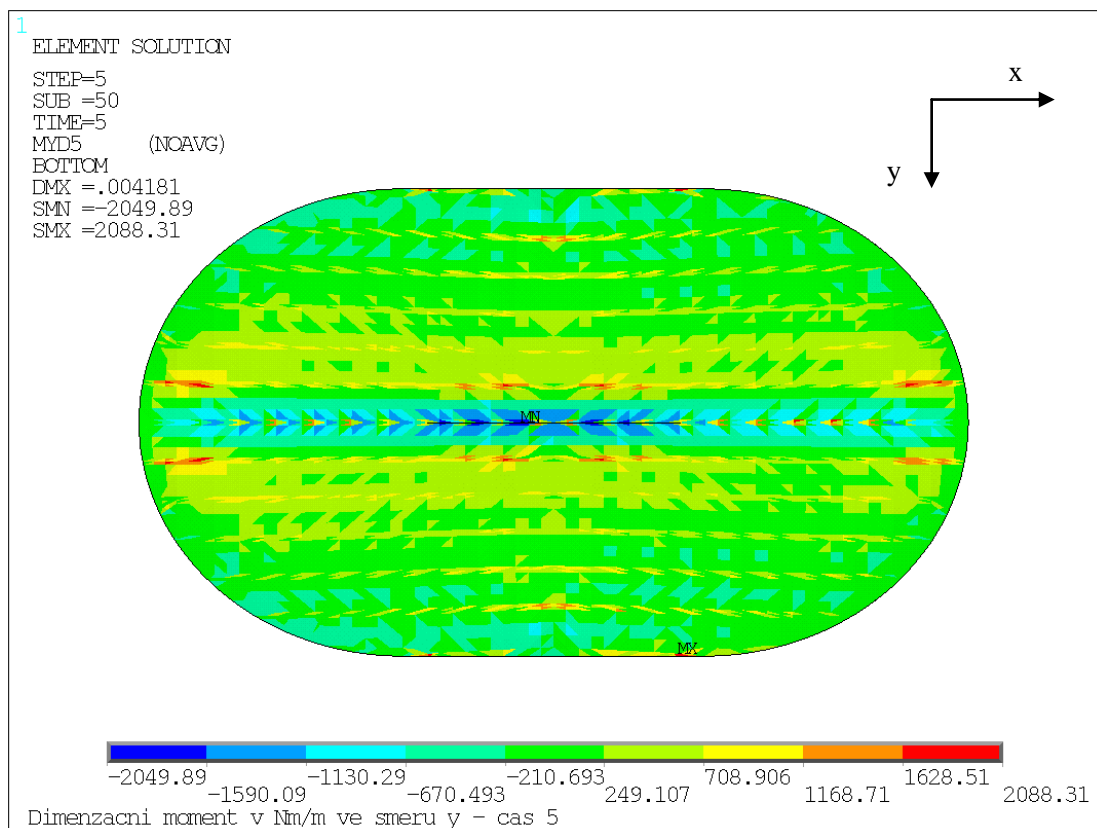


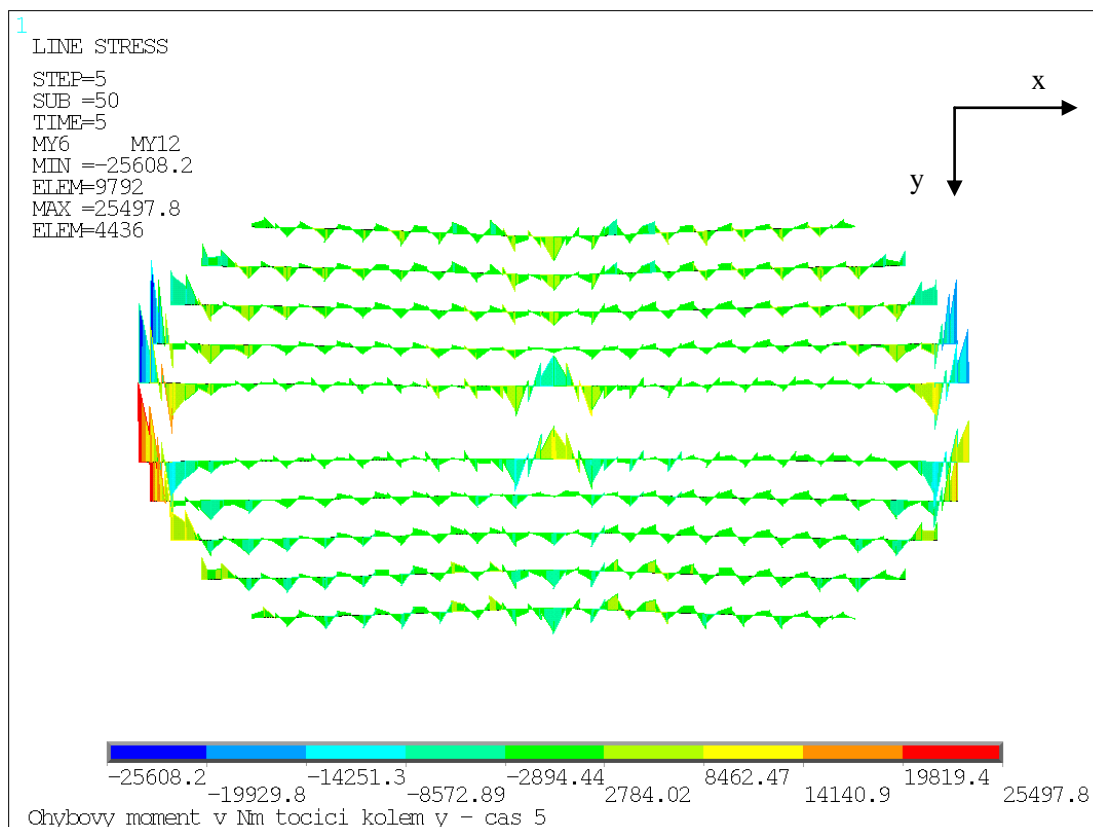
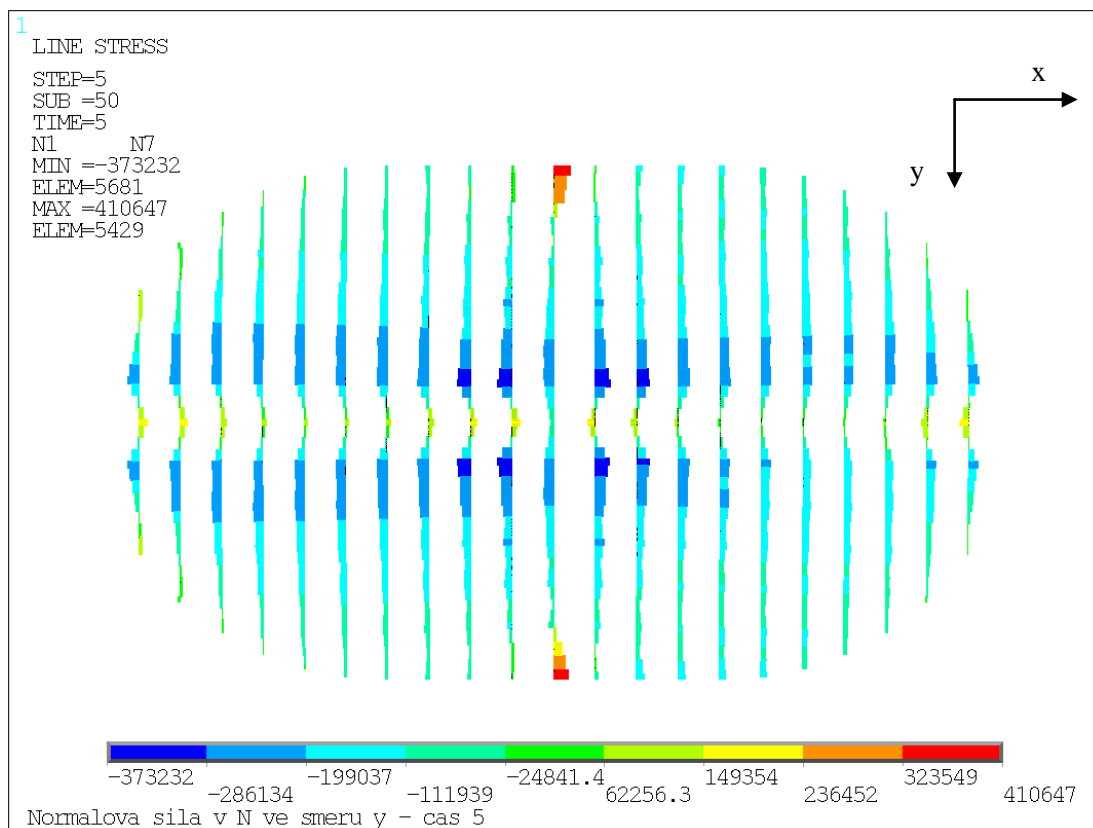


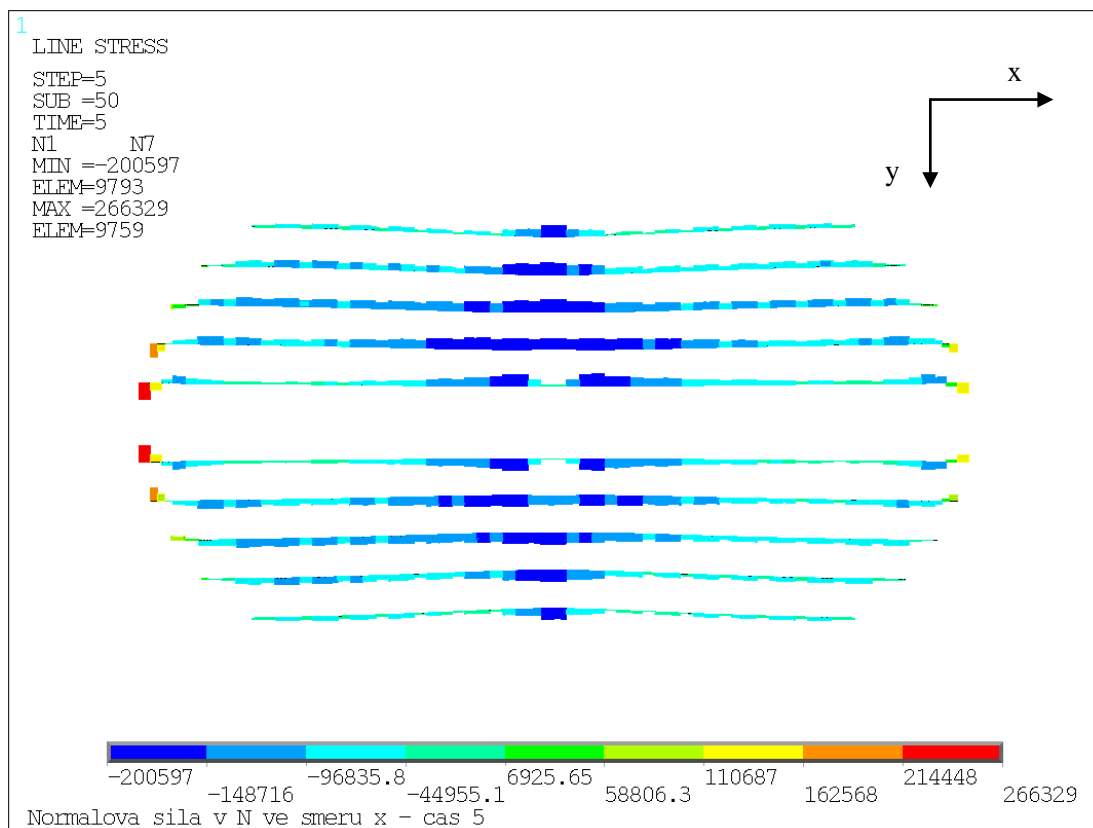












2.9 Čas 5 – Zatížení sněhem ŠACH 5 (kombinace K5)

