Memoriu tehnic

- Rezervor cilindric modular vertical pentru apa de incendiu –
- RCV 600 mc-

SC CriberNET SRL

Piatra Neamt

0233 / 240 566

prima opțiune în domeniul epurării și al rezervoarelor

BORDEROU PIESE DESENATE

Anexa 1 - Executia fundatiei pentru rezervorul modular;

Anexa 1.2 – Vedere de ansamblu rezervor cilindric modular 600 mc

Anexa 2 - Panou prefabricat rezervor modular;

Anexa 5 – Detaliu capac rezervor modular;

Anexa 8 – Detaliu scara pentru acces cu elemente de fixare pe rezervor;

1criber prima opțiune în domeniul epurării și al rezervoarelor

I. **Memoriu tehnic general**

A. **Date generale**

a. Beneficiar: SC ..... SRL

b. Furnizor: SC Criber NET SRL J27/334/1998, str.Maratei, bl.M4, ap. 2 Piatra Neamt jud. Neamt

c. Denumirea obiectivului

B. Amplasare – Localitatea..... judetul .....

C. **Date specific obiectivului:**

a. Oportunitatea investitiei:

In cadrul proiectului este necesara realizarea unei rezerve de apa pentru incendiu cu un volum de cca 600 mc

Rezervorului modular 600 mc din incinta va realiza indeplinirea urmatoarelor aspecte:

- asigurarea rezervei intangibile de apa pentru incendiu

b. Descrierea lucrarilor

1. Structura constructiva

a. Rezervorul este o constructie de forma circulara in plan, avand un diametru de 13 m si o inaltime de 4.50 m, cu o inaltime totala la atic de 7.00 m

b. Avnd in vedere dimensiunile, rezervorul va fi executat modular din 34 panouri din poliesteri armati cu fibra de sticla. Dimensiunile unui panou sunt:

i. Latime =1.20 m

ii. Lungime =4.50 m

Imbinarea dintre panouri se va face cu elemnte de asamblare.

Rezervorul va fi montat pe o platforma din beton armat proiectata si executata de catre beneficiar sa sustina o greutate de 610 tone pe o suprafata totala de 140 mp in conditiile geotehnice de la locul instalarii.

Platforma va fi executata la -1 m fata de cota 0 a terenului amenajat iar rezervorul fundul rezervorului se executa din poliesteri armat cu fibra de sticla prin turnare directa (lipire) pe platforma de beton in doua faze:

Faza 1 – turnarea primului strat ce constituie radierul rezervorului

Faza 2- polimerizarea primului strat

Faza 3 – turnarea efectiva a fundului de rezervor

Faza 4 – polimerizarea stratului al doilea

Suplimentar, anasamblu corp rezervor + fund va fi fixat de platforma de beton prin elemnete de asamblare.

Acoperisul va fi executat din elemente prefabricate din poliesteri armati cu fibra de sticla 34 piese care deasemenea vor fi montate la fata locului cu elemente de asamblare. Ansamblu acoperis se fixeaza de partea cilindrica prin suruburi.

Racordurile vor fi de tip flansa executate din poliesteri armati cu fibra de sticla. Dimensiunea si pozitionarea acestora vor fi specificate de beneficiar si avizate de catre proiectant.

Rezervorul este prevazut cu gura de vizitare si scara de acces din OL .

D. Date generale rezervor:

a. suprafata in plan 135 mp;
b. inaltime parte cilindrica 4.50 m
c. diametru interior 13 m
d. diametru exterior 13.2 m
e. inaltime totala 7.50 m
f. greutate totala rezervor 8 tone

In executie se vor respecta normele de protectie a muncii specifice fiecarei categorii de lucrari.

Orice modificare a actualului proiect se va face cu acordul proiectantului initial.

Modificarile aduse fara consultarea proiectantului in absolva pe acesta de orice responsabilitate.

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II. BREVIAR DE CALCUL

Tema de proiectare: Rezervor cilindric vertical H=4.50 m D=13 m supus la sarcini hidrostatice hmax=4.5 m.

Se vor lua in calcul actiunile suplimentare:

- actiune vantului
- actiunea zapezii

In cadrul temei de proiectare se vor stabili formele constructive ale panourilor cilindrice, forma constructiva a elementelor de acoperis, tehnologia de executie si montaj.

1. Materiale utilizate

a. Poliesteri armati cu fibra de sticla (stratimat si rasina)

i. Caracteristici conform bazei de date : http://www.matweb.com/

Proprietati mecanice	Poliesteri armati cu fibra de sticla (fibra 60 % rsina 40%)
Hardness, Shore D	50
Tensile Strength, Ultimate	260 MPa
Elongation at Break	0,016
Tensile Modulus	15.5 GPa
Flexural Modulus	15.5 GPa
Flexural Yield Strength	320 MPa
Compressive Strength	190 MPa
Izod Impact, Notched	18.0 J/cm

Date confirmate de catre laboratorul Universitatii de constructii din Iasi prin teste realizate pe mostre de Poliesteri armati cu fibra de sticla.

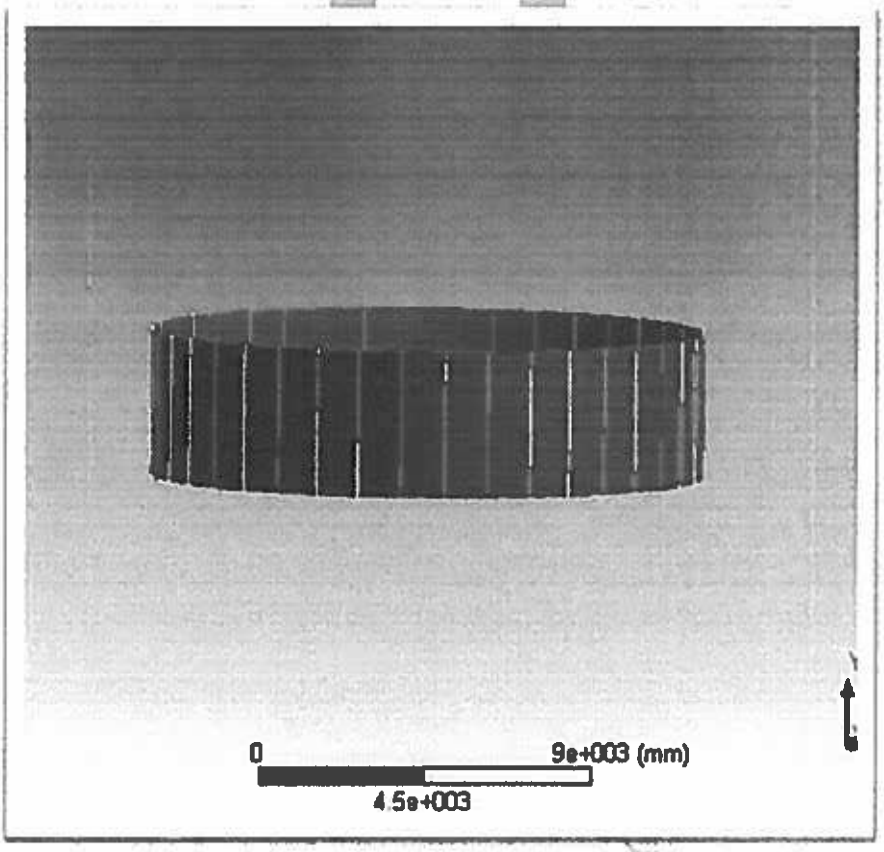
Pentru proiectarea-verificarea partii cilindrice s-a creat un model CAD tip membrana cu o grosime de 7.5 mm, la dimensiunile reale ale rezervorului. Au fost atasate la acesta elementele tip flansa de o grosime de 7 mm. In softul de analiza FEA, acest model a fost supus la urmatoarele sarcini:

- Presiunea hidrostatica H = 4.5 m pentru partea interioara a peretelui cilindric.

2. Raport FEA- Virola cilindrica "Rezervro modular 600 mc"

Project

First Saved	Monday, October 21, 2013
Last Saved	Monday, October 21, 2013
Product Version	13.0 Release



Contents

- Units
- Model (A4)
  - Geometry
    - rcm 600 mc test
  - Coordinate Systems
  - Connections
  - Mesh
  - Static Structural (A5)
    - Analysis Settings
    - Loads
    - Solution (A6)
      - Solution Information
      - Results
- Material Data
  - Fibra de sticla Criber NET 2

Units

TABLE 1

Unit System	Metric (mm, t, N, s, mV, mA) Degrees rad/s Celsius
Angle	Degrees
Rotational Velocity	rad/s
Temperature	Celsius

Model (A4)

Geometry

TABLE 2
Model (A4) > Geometry

Object Name	*Geometry*
State	Fully Defined
Definition	
Source	D:\schite si desene solid works\RCM 600 mc DN 13 m x 4.50 m\rcm 600 mc test.SLDPRT

Type	SolidWorks
Length Unit	Meters
Element Control	Program Controlled
Display Style	Part Color
Bounding Box	
Length X	13016 mm
Length Y	4500. mm
Length Z	13016 mm
Properties	
Volume	1.7327e+009 mm³
Mass	3.3788 t
Scale Factor Value	1.
Statistics	
Bodies	1
Active Bodies	1
Nodes	303160
Elements	42900
Mesh Metric	None
Preferences	
Import Solid Bodies	Yes
Import Surface Bodies	Yes
Import Line Bodies	No
Parameter Processing	Yes

Personal Parameter Key	DS
CAD Attribute Transfer	No
Named Selection Processing	No
Material Properties Transfer	No
CAD Associativity	Yes
Import Coordinate Systems	No
Reader Save Part File	No
Import Using Instances	Yes
Do Smart Update	No
Attach File Via Temp File	Yes
Temporary Directory	C:\Users\NICU\AppData\Local\Temp
Analysis Type	3-D
Mixed Import Resolution	None
Enclosure and Symmetry Processing	Yes

TABLE 3
Model (A4) > Geometry > Parts

Object Name	*rcm 600 mc test*
State	Meshed
Graphics Properties	
Visible	Yes
Transparency	1
Definition	
Suppressed	No

Stiffness Behavior	Flexible
Coordinate System	Default Coordinate System
Reference Temperature	By Environment
Material	
Assignment	Fibra de sticla Criber NET 2
Nonlinear Effects	Yes
Thermal Strain Effects	Yes
Bounding Box	
Length X	13016 mm
Length Y	4500. mm
Length Z	13016 mm
Properties	
Volume	1.7327e+009 mm³
Mass	3.3788 t
Centroid X	-5.3098e-011 mm
Centroid Y	2650. mm
Centroid Z	8.2216e-012 mm
Moment of Inertia Ip1	7.9007e+007 t·mm²
Moment of Inertia Ip2	1.4223e+008 t·mm²
Moment of Inertia Ip3	7.9007e+007 t·mm²
Statistics	
Nodes	303160
Elements	42900

Mesh Metric	None

Coordinate Systems

TABLE 4
Model (A4) > Coordinate Systems > Coordinate System

Object Name	*Global Coordinate System*
State	Fully Defined
Definition	
Type	Cartesian
Coordinate System ID	0.
Origin	
Origin X	0. mm
Origin Y	0. mm
Origin Z	0. mm
Directional Vectors	
X Axis Data	[1. 0. 0.]
Y Axis Data	[0. 1. 0.]
Z Axis Data	[0. 0. 1.]

Connections

TABLE 5
Model (A4) > Connections

Object Name	*Connections*
State	Fully Defined
Auto Detection	
Generate Automatic Connection On Refresh	Yes

Transparency	
Enabled	Yes

Mesh

TABLE 6
Model (A4) > Mesh

Object Name	*Mesh*
State	Solved
Defaults	
Physics Preference	Mechanical
Relevance	0
Sizing	
Use Advanced Size Function	Off
Relevance Center	Coarse
Element Size	Default
Initial Size Seed	Active Assembly
Smoothing	Medium
Transition	Fast
Span Angle Center	Coarse
Minimum Edge Length	40841 mm
Inflation	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	5

Growth Rate	1.2
Inflation Algorithm	Pre
View Advanced Options	No
Advanced	
Shape Checking	Standard Mechanical
Element Midside Nodes	Program Controlled
Straight Sided Elements	No
Number of Retries	Default (4)
Extra Retries For Assembly	Yes
Rigid Body Behavior	Dimensionally Reduced
Mesh Morphing	Disabled
Defeaturing	
Pinch Tolerance	Please Define
Generate Pinch on Refresh	No
Automatic Mesh Based Defeaturing	On
Defeaturing Tolerance	Default
Statistics	
Nodes	303160
Elements	42900
Mesh Metric	None

Static Structural (A5)

TABLE 7
Model (A4) > Analysis

Object Name	*Static Structural (A5)*
State	License Conflict
Definition	
Physics Type	Structural
Analysis Type	Static Structural
Solver Target	Mechanical APDL
Options	
Environment Temperature	22. °C
Generate Input Only	No

TABLE 8
Model (A4) > Static Structural (A5) > Analysis Settings

Object Name	*Analysis Settings*
State	Fully Defined
Step Controls	
Number Of Steps	1.
Current Step Number	1.
Step End Time	1. s
Auto Time Stepping	Program Controlled
Solver Controls	

Solver Type	Program Controlled
Weak Springs	Program Controlled
Inertia Relief	Off
Restart Controls	
Generate Restart Points	Program Controlled
Retain Files After Full Solve	No
Nonlinear Controls	
Force Convergence	Program Controlled
Moment Convergence	Program Controlled
Displacement Convergence	Program Controlled
Rotation Convergence	Program Controlled
Line Search	Program Controlled
Output Controls	
Calculate Stress	Yes
Calculate Strain	Yes
Calculate Contact	No
Calculate Results At	All Time Points
Analysis Data Management	
Solver Files Directory	D:\schite si desene solid works\RCM 600 mc DN 13 m x 4.5 m\test 600 mc_files\dp0\SYS\MECH\
Future Analysis	None
Scratch Solver Files Directory	

Save MAPDL db	No
Delete Unneeded Files	Yes
Nonlinear Solution	No
Solver Units	Active System
Solver Unit System	nmm

TABLE 9
Model (A4) > Static Structural (A5) > Loads

Object Name	*Fixed Support 2*	*Hydrostatic Pressure*
State	Fully Defined	
Scope		
Scoping Method	Geometry Selection	
Geometry	1 Face	
Definition		
Type	Fixed Support	Hydrostatic Pressure
Suppressed	No	
Coordinate System		Global Coordinate System
Fluid Density		1.2e-009 t/mm³
Hydrostatic Acceleration		
Define By		Components
X Component		0. mm/s²
Y Component		9810. mm/s²
Z Component		0. mm/s²
Free Surface Location		
X Coordinate		0. mm

Y Coordinate		5300. mm
Z Coordinate		1.8413e-012 mm
Location		Defined

Solution (A6)

TABLE 10
Model (A4) > Static Structural (A5) > Solution

Object Name	*Solution (A6)*
State	Solved
Adaptive Mesh Refinement	
Max Refinement Loops	1.
Refinement Depth	2.
Information	
Status	Done

TABLE 11
Model (A4) > Static Structural (A5) > Solution (A6) > Solution Information

Object Name	*Solution Information*
State	Solved
Solution Information	
Solution Output	Solver Output
Newton-Raphson Residuals	0
Update Interval	2.5 s
Display Points	All

TABLE 12
Model (A4) > Static Structural (A5) > Solution (A6) > Results

Object Name	Total Deformation	Maximum Principal Elastic Strain	Maximum Principal Stress
State	Solved		
Scope			
Scoping Method	Geometry Selection		
Geometry	All Bodies		
Definition			
Type	Total Deformation	Maximum Principal Elastic Strain	Maximum Principal Stress
By	Time		
Display Time	Last		
Calculate Time History	Yes		
Identifier			
Results			
Minimum	0. mm	3.6e-014 mm/mm	-38.698 MPa
Maximum	12.783 mm	2.7714e-003 mm/mm	90.408 MPa
Information			
Time	1. s		
Load Step	1		
Substep	1		
Iteration Number	1		
Integration Point Results			
Display Option		Averaged	

Material Data

Fibra de sticla Criber NET 2

TABLE 13
Fibra de sticla Criber NET 2 > Constants

Density	1.95e-009 tonne mm^-3
Coefficient of Thermal Expansion	3.6e-005 C^-1
Specific Heat	0 mJ tonne^-1 C^-1
Thermal Conductivity	0 W mm^-1 C^-1
Resistivity	0 ohm mm

TABLE 14
Fibra de sticla Criber NET 2 > Isotropic Secant Coefficient of Thermal Expansion

Reference Temperature C
22

TABLE 15
Fibra de sticla Criber NET 2 > Tensile Ultimate Strength

Tensile Ultimate Strength MPa
100

TABLE 16
Fibra de sticla Criber NET 2 > Isotropic Elasticity

Temperature C	Young's Modulus MPa	Poisson's Ratio	Bulk Modulus MPa	Shear Modulus MPa
	24330	0.3	20275	9357.7

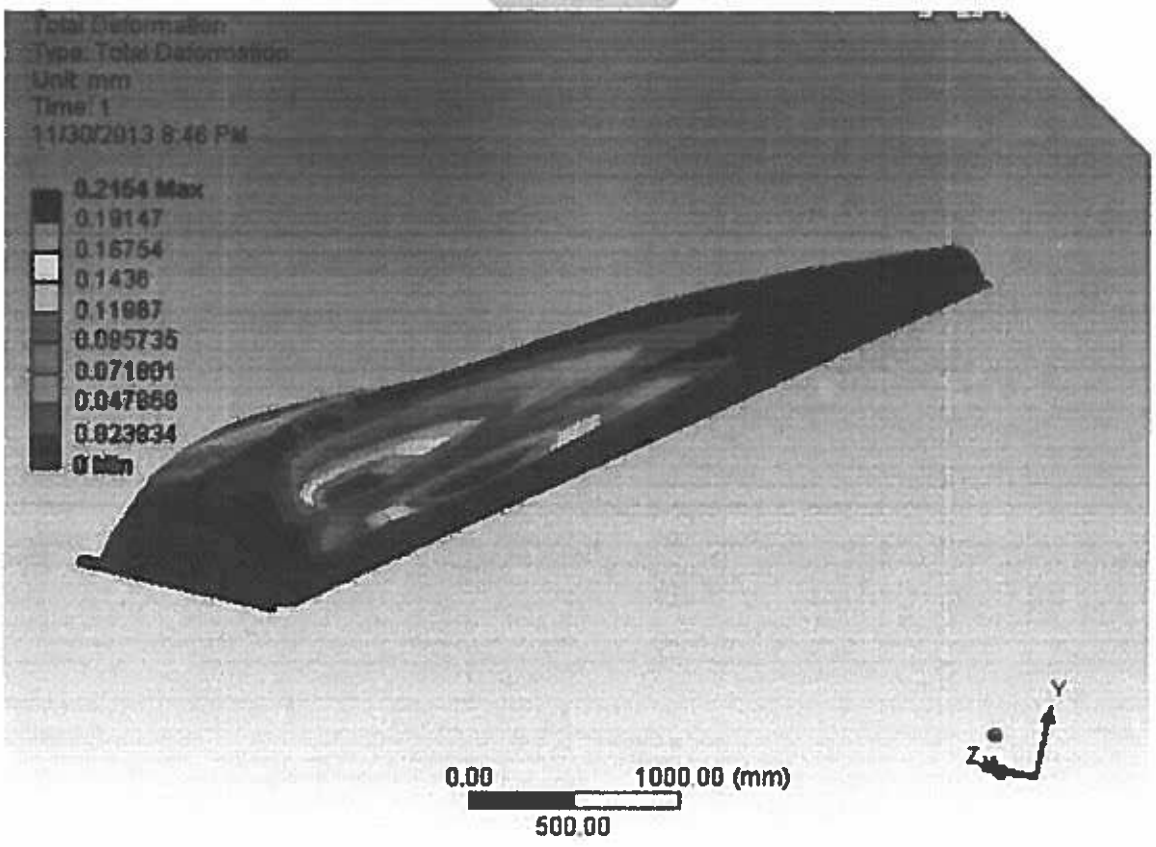
TABLE 17

prima dată în domeniul epurării și prelevării

3. Raport FEA - Capac "Rezervo modular 600 mc"

Project

First Saved	Saturday, November 30, 2014
Last Saved	Saturday, November 30, 2014
Product Version	13.0 Release



prima opi

Contents

- Units
- Model (A4)
  - Geometry
    - capac RCM 700 mc DN 13 m H5300 pt test@Fillet15
  - Coordinate Systems
  - Mesh
  - Static Structural (A5)
    - Analysis Settings
    - Loads
    - Solution (A6)
      - Solution Information
      - Results
- Material Data
  - Fibra de sticla Criber NET

Units

TABLE 1

Unit System	Metric (mm, t, N, s, mV, mA) Degrees rad/s Celsius
Angle	Degrees
Rotational Velocity	rad/s
Temperature	Celsius

Model (A4)

Geometry

TABLE 2
Model (A4) > Geometry

Object Name	*Geometry*
State	Fully Defined
Definition	
Source	D:\schite si desene solid works\RCM 600 mc DN 13 m x 4.5 m\capac RCM 600 mc DN 13 m H4500 pt test.SLDPRT

Type	SolidWorks
Length Unit	Meters
Element Control	Program Controlled
Display Style	Part Color
Bounding Box	
Length X	5658.1 mm
Length Y	2188.3 mm
Length Z	1209.4 mm
Properties	
Volume	3.9457e+007 mm³
Mass	7.6941e-002 t
Surface Area(approx.)	7.8914e+006 mm²
Scale Factor Value	1.
Statistics	
Bodies	1
Active Bodies	1
Nodes	3198
Elements	3064
Mesh Metric	None
Preferences	
Import Solid Bodies	Yes
Import Surface Bodies	Yes
Import Line Bodies	No

Parameter Processing	Yes
Personal Parameter Key	DS
CAD Attribute Transfer	No
Named Selection Processing	No
Material Properties Transfer	No
CAD Associativity	Yes
Import Coordinate Systems	No
Reader Save Part File	No
Import Using Instances	Yes
Do Smart Update	No
Attach File Via Temp File	Yes
Temporary Directory	C:\Users\NICU\AppData\Local\Temp
Analysis Type	3-D
Mixed Import Resolution	None
Enclosure and Symmetry Processing	Yes

TABLE 3
Model (A4) > Geometry > Parts

Object Name	*capac RCM 600 mc DN 13 m H4500 pt test@Fillet15*
State	Meshed
Graphics Properties	
Visible	Yes
Transparency	1

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Definition	
Suppressed	No
Stiffness Behavior	Flexible
Coordinate System	Default Coordinate System
Reference Temperature	By Environment
Thickness	5. mm
Thickness Mode	Manual
Offset Type	Middle(Membrane)
Material	
Assignment	Fibra de sticla Criber NET
Nonlinear Effects	Yes
Thermal Strain Effects	Yes
Bounding Box	
Length X	5658.1 mm
Length Y	2188.3 mm
Length Z	1209.4 mm
Properties	
Volume	3.9457e+007 mm³
Mass	7.6941e-002 t
Centroid X	4392. mm
Centroid Y	1044.2 mm
Centroid Z	-15.055 mm
Moment of Inertia Ip1	8372. t·mm²

Moment of Inertia Ip2	2.0721e+005 t·mm²
Moment of Inertia Ip3	2.0309e+005 t·mm²
Surface Area(approx.)	7.8914e+006 mm²
Statistics	
Nodes	3198
Elements	3064
Mesh Metric	None

Coordinate Systems

TABLE 4
Model (A4) > Coordinate Systems > Coordinate System

Object Name	*Global Coordinate System*
State	Fully Defined
Definition	
Type	Cartesian
Coordinate System ID	0.
Origin	
Origin X	0. mm
Origin Y	0. mm
Origin Z	0. mm
Directional Vectors	
X Axis Data	[1. 0. 0.]
Y Axis Data	[0. 1. 0.]
Z Axis Data	[0. 0. 1.]

Mesh

TABLE 5
Model (A4) > Mesh

Object Name	*Mesh*
State	Solved
Defaults	
Physics Preference	Mechanical
Relevance	0
Sizing	
Use Advanced Size Function	On: Curvature
Relevance Center	Coarse
Initial Size Seed	Active Assembly
Smoothing	Medium
Span Angle Center	Coarse
Curvature Normal Angle	Default (30.0 °)
Min Size	Default (13.0290 mm)
Max Face Size	Default (65.1460 mm)
Growth Rate	Default
Minimum Edge Length	0.220210 mm
Inflation	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	2

Growth Rate	1.2
Inflation Algorithm	Pre
View Advanced Options	No
Advanced	
Shape Checking	Standard Mechanical
Element Midside Nodes	Program Controlled
Number of Retries	Default (4)
Extra Retries For Assembly	Yes
Rigid Body Behavior	Dimensionally Reduced
Mesh Morphing	Disabled
Defeaturing	
Use Sheet Thickness for Pinch	No
Pinch Tolerance	Default (11.7260 mm)
Generate Pinch on Refresh	No
Sheet Loop Removal	No
Automatic Mesh Based Defeaturing	On
Defeaturing Tolerance	Default (9.77190 mm)
Statistics	
Nodes	3198
Elements	3064
Mesh Metric	None

Static Structural (A5)

TABLE 6
Model (A4) > Analysis

Object Name	*Static Structural (A5)*
State	Solved
Definition	
Physics Type	Structural
Analysis Type	Static Structural
Solver Target	Mechanical APDL
Options	
Environment Temperature	22. °C
Generate Input Only	No

TABLE 7
Model (A4) > Static Structural (A5) > Analysis Settings

Object Name	*Analysis Settings*
State	Fully Defined
Step Controls	
Number Of Steps	1.
Current Step Number	1.
Step End Time	1. s
Auto Time Stepping	Program Controlled
Solver Controls	
Solver Type	Program Controlled
Weak Springs	Program Controlled

Large Deflection	Off
Inertia Relief	Off
Restart Controls	
Generate Restart Points	Program Controlled
Retain Files After Full Solve	No
Nonlinear Controls	
Force Convergence	Program Controlled
Moment Convergence	Program Controlled
Displacement Convergence	Program Controlled
Rotation Convergence	Program Controlled
Line Search	Program Controlled
Stabilization	Off
Output Controls	
Calculate Stress	Yes
Calculate Strain	Yes
Calculate Contact	No
Calculate Results At	All Time Points
Analysis Data Management	
Solver Files Directory	C:\Users\NICU\AppData\Local\Temp\WB_NICU-PC_8148_4\unsaved_project_files\dp0\SYS\MECH\
Future Analysis	None
Scratch Solver Files Directory	

printare cu rezerva

Save MAPDL db	No
Delete Unneeded Files	Yes
Nonlinear Solution	No
Solver Units	Active System
Solver Unit System	nmm

TABLE 8
Model (A4) > Static Structural (A5) > Loads

Object Name	*Force*	*Fixed Support*	*Fixed Support 2*
State	Fully Defined		
Scope			
Scoping Method	Geometry Selection		
Geometry	2 Faces	3 Faces	
Definition			
Type	Force	Fixed Support	
Define By	Components		
Coordinate System	Global Coordinate System		
X Component	0. N (ramped)		
Y Component	-20000 N (ramped)		
Z Component	0. N (ramped)		
Suppressed	No		

FIGURE 1
Model (A4) > Static Structural (A5) > Force



Solution (A6)

TABLE 9
Model (A4) > Static Structural (A5) > Solution

Object Name	*Solution (A6)*
State	Solved
Adaptive Mesh Refinement	
Max Refinement Loops	1.
Refinement Depth	2.
Information	

criber epurării și al rezervoarelor pentru domeniu

Status	Done

TABLE 10
Model (A4) > Static Structural (A5) > Solution (A6) > Solution Information

Object Name	*Solution Information*
State	Solved
Solution Information	
Solution Output	Solver Output
Newton-Raphson Residuals	0
Update Interval	2.5 s
Display Points	All

TABLE 11
Model (A4) > Static Structural (A5) > Solution (A6) > Results

Object Name	*Directional Deformation*	*Total Deformation*	*Equivalent Stress*	*Maximum Principal Elastic Strain*
State	Solved			
Scope				
Scoping Method	Geometry Selection			
Geometry	All Bodies			
Shell			Top/Bottom	
Definition				
Type	Directional Deformation	Total Deformation	Equivalent (von-Mises) Stress	Maximum Principal Elastic Strain
Orientation	X Axis			
By	Time			
Display Time	Last			

Coordinate System	Global Coordinate System			
Calculate Time History	Yes			
Identifier				
Results				
Minimum	-5.9632e-002 mm	0. mm	0. MPa	0. mm/mm
Maximum	5.246e-002 mm	0.2154 mm	1.6653 MPa	4.7147e-005 mm/mm
Information				
Time	1. s			
Load Step	1			
Substep	1			
Iteration Number	1			
Integration Point Results				
Display Option			Averaged	

Material Data

Fibra de sticla Criber NET

TABLE 12
Fibra de sticla Criber NET > Constants

Density	1.95e-009 tonne mm^-3
Coefficient of Thermal Expansion	3.6e-005 C^-1
Specific Heat	0 mJ tonne^-1 C^-1
Thermal Conductivity	0 W mm^-1 C^-1
Resistivity	0 ohm mm

TABLE 13
Fibra de sticla Criber NET > Isotropic Secant Coefficient of Thermal Expansion

Reference Temperature C
22

TABLE 14
Fibra de sticla Criber NET > Tensile Ultimate Strength

Tensile Ultimate Strength MPa
100

TABLE 15
Fibra de sticla Criber NET > Isotropic Elasticity

Temperature C	Young's Modulus MPa	Poisson's Ratio	Bulk Modulus MPa	Shear Modulus MPa
	24330	0.3	20275	9357.7

TABLE 16
Fibra de sticla Criber NET > Isotropic Relative Permeability

Relative Permeability
0

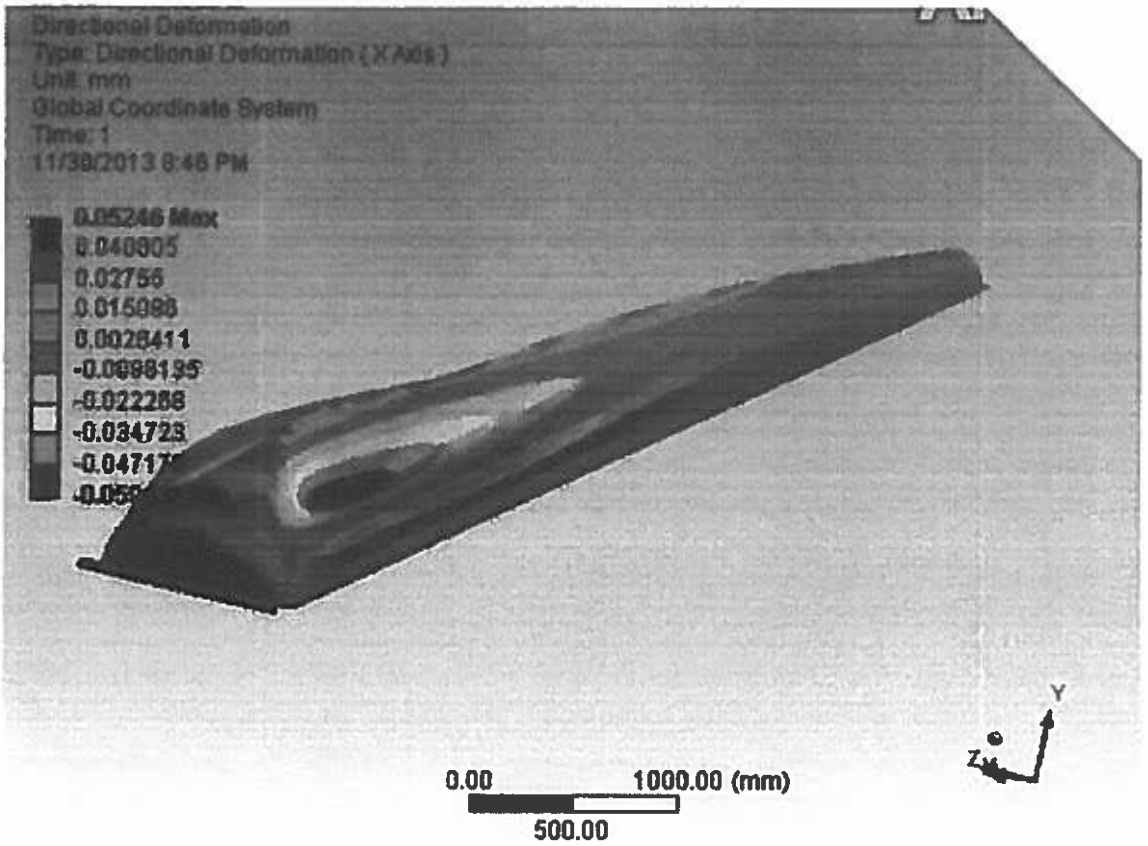
Directional Deformation

Subject:

Date Saturday, November 30, 2014

Comments:

prima opțiune în domeniul epurării apei rezervoarelor



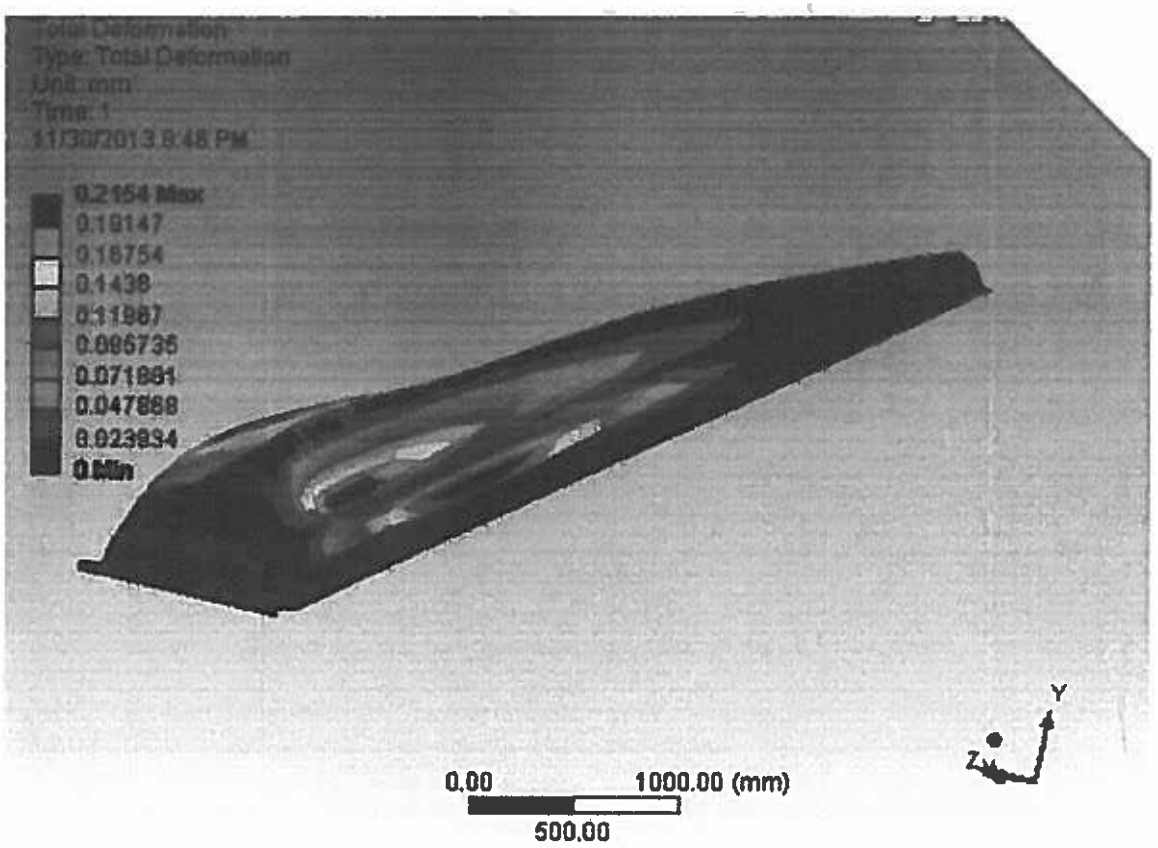
prima optiune in domeniu

Total Deformation

Subject:

Date Saturday, **November 30, 2014**

Comments:



III. Tehnologia de montaj

a. Turnarea fundului de rezervor
b. Imbinarea virolei rezervorului
c. Montajul capacului
d. Finisaje

a. Turnarea fundului de rezervor

- Turnarea fundului se face in doua etape.
  1. In prima etapa se va turna direct pe sapa de beton un strat de PAFS cu diametrul exterior de 13.9 m si o grosime de 1.5 mm.

  2. In a doua etapa se va turna direct pe sapa de beton pe toata suprafata interioara a fundului un strat de PAFS cu o grosime de 3 mm care se va continua pe virola rezervorului 30 cm.

b. Imbinarea virolei rezervorului

- dupa polimerizarea radierului turnat in etapa anterioara se va trece la urmatoarea operatie si anume montarea virolei rezervorului.

- virola este alcatuita din 3 panouri prefabricate cu urmatoarele dimensiuni L=1181 mm, l=100 mm, H=5300 mm, g= 9 mm, cf. Anexei-2 Panou prefabricat.

- mai intai acestea vor fi imbinate intre ele prin intermediul a:

- 53 X 36 suruburi (conforme cu Norma DIN933, Material otel gr. 10.9, Dimensiuni M10 x 45)

- 53 x 36 saibe pentru caroserii (Material otel, Acoperire zincat, Dimensiuni 10,5 x 25)

- 53 x 36 piulite (conforme cu Norma DIN934, Material otel gr. 10.9, Dimensiuni M10, cf. cu ISO 4032);

- dupa prinderea elementelor prefabricate in cele 1908 suruburi/ piulite si 3816 saibe se va asigura rezervorul impotriva rafalelor de vant care sunt frecvente in zona de montaj;

- ancorarea se va realiza prin legarea celor 36 panouri, cu 10 sufe de ancorare, de 10 piloni metalici pozitionati pe o distanta de 11.5 m fata de centrul rezervorului;

b.1. Prinderea virolei cilindrice de fundatie;

- panourile sunt prevazute la partea inferioara cu o flansa (L= 1176 mm l=100 mm g=9 mm) care se va fixa de fundatia rezervorului prin intermediul a 90 conexpanduri (10 x 140) (cf. Anexei 3 –Fixarea virolei rezervorului cu conexpanduri);

b.2. Etansarea interioara a virolei cilindrice si turnarea fundului rezervoului;

- pe muchiile de imbinare dintre elementele virolei cilindrice se va aplica un strat de fibra de sticla (L=4300 mm l =400mm) care va asigura etansarea virolei cilindrice si consolidarea acesteia de radierul turnat la punctul 'a' prezentat mai sus.

- dupa polimerizarea stratului aplicat anterior se va mai aplica un strat (L= 47100 mm l=600 mm) care va face legatura intre baza virolei cilindrice si inelul de pe fundatie turnat anterior.

- dupa polimerizarea stratului aplicat anterior se va curata din nou fundatia rezervorului de eventualele impuritati si se va aplica un strat gros, pe toata suprafata betonata, care se prelungeste pe virola cilindrica cca 300 mm, dupa polimerizare acesta va constitui fundul rezervorului.

- dupa finalizarea operatiilor prezentate mai sus se va efectua o inspectie totala a zonelor turnate si se va aplica o pelicula de rasina poliesterica care va infunda asperitatile aparute in urma turnarii;

c. Montajul capacului

- capacul este confectionat din 36 panouri prefabricate (L=6419 mm l= 1180mm, H= 700 mm) prinse intre ele prin intermediul a unor suruburi M10x40 piulite M10 si saibe 10.5x30;

- imbinarea elementelor prefabricate se va realiza pe o platforma pregatita din apropierea rezervorului si dupa aceea se va ridica pe virola cilindrica cu ajutorul unei macarale;

- imbinarea capacului cu virola cilindrica se va face cu ajutorul unor suruburi M10x40, piulite M10 si saibe 10.5x30;

- pe mijlocul capacului va ramane un gol care va fi acoperit cu ajutorul altui capac cu diametrul de 2500 mm fixat de capac printr-o imbinare mecanica cu suruburi M5 x 50

- dupa prinderea capacului de rezervor se va asigura etansrea imbinarilor dintre elementele capacului prin turnarea unei pelicule de rasina poliesterica.

d. Montarea racordurilor de intrare / iesire

- impreuna cu beneficiarul se va stabili pozitia , dimensiunea si tipul de racord dorit.

e. Protejarea elementelor metalice impotriva coroziunii

- rezervorul are in componenta sa elemente metalice care ar putea fi corodate in timp si de aceea se va aplicarea unui strat de rasina poliesterica tip topcoat care va proteja impotriva coroziunii elementele metalice (suruburi , piulite, saibe, etc.);

- scara metalica va fi acoperita cu un strat de grund si unul de vopsea care va asigura protectia impotriva coroziunii:

IV. Recomandari pentru izolare

IV. 1. Executia unei biuta de pamant

- in jurul rezervorului se va crea o movila de pamant cf Anexei 4- Executie biuta pamant in jurul virolei cilindrice, care va asigura rezervorului un plus de rezistenta si o protectie pe terme lung impotriva actiunii vantului si a fiuctuatiilor termice.

- taluzarea se va face pe o inaltime de 4000 mm fata de baza virolei cilindrice si lata la baza de circa 4500-5500 mm iar la partea superioara de cca 500 – 1000 mm.

- aceasta va fi alcatuta din straturi (100 mm) succesive de pamant, compactate fiecare pana ce se atinge inaltimea de 3000 mm fata de baza virolei cilindrice.

2. Executia unei izolatii exterioare.

Izolarea cu spuma poliuretanica / vata minerala / vata bazaltica / polistiren cu o grosime de 50-100 mm. Aceasta se va calcula de catre un proiectant in functie de natura fluidului retinut in rezervor, conditiile climatice din locul de amplasare, utilajele din interiorul bazinului si alti factori care ar putea influenta punctul de inghet al lichidului stocat.

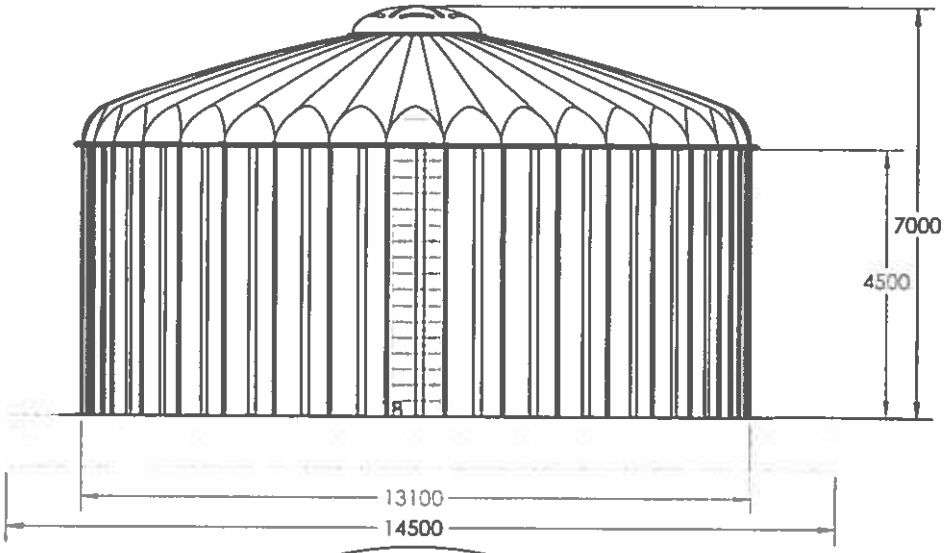
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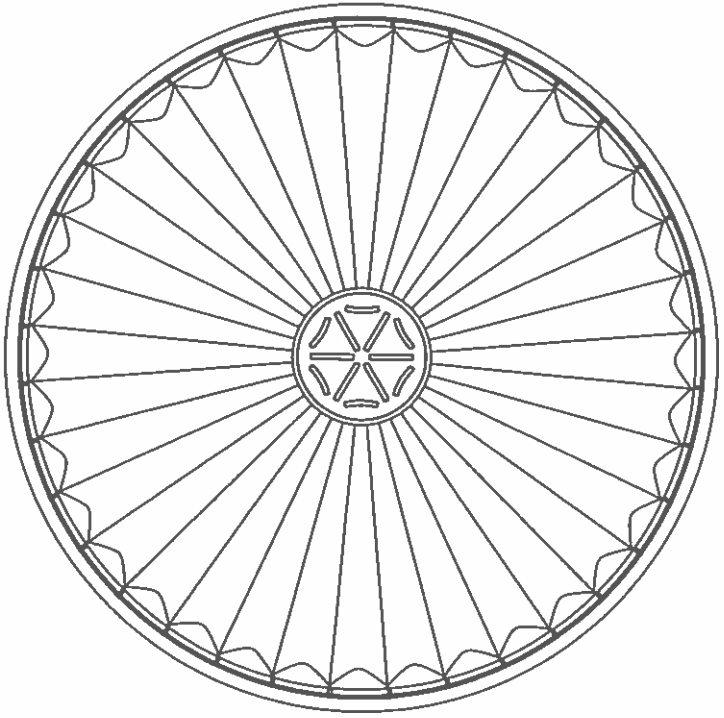
ing. Nicu Anitoaie

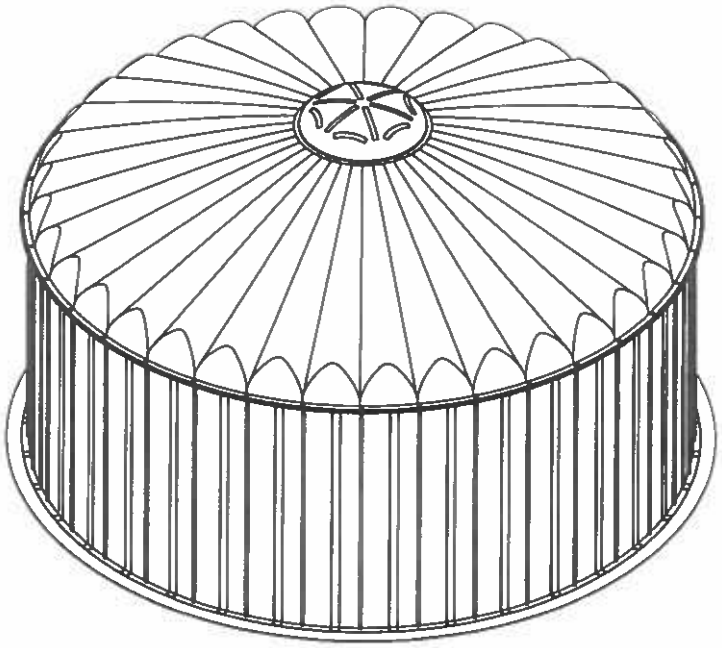
tel. 0742297008

prima opțiune în domeniul epurării apei și al nămolurilor

NOTA: Rezervorul va fi amplasat pe o platforma din beton armat , capabila sa sustina o greutate de cca 5 tone/mp







TOATE DIMENTIUNILE SUNT IN MILIMETRI;
TOLERANTA FIND DE 100mm;

	NUME	SEMNATURA	DATA
DESENAT	Nica Antonio		18.08.2015
VERIFICAT	Barbuca Cristian		18.08.2015

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MATERIAL
POLIESTERI ARMATI CU FIBRA DE STICLA P.A.F.S.

WEIGHT: 8000 kg

PRODUCATOR
S.C. Criber NET S.R.L.
Piatra Neamt
0233 240 566

TITLE
RCM 600 mc

VOLUM
Volum aprox = 600000 litri

A3

SCALE: 1:100

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