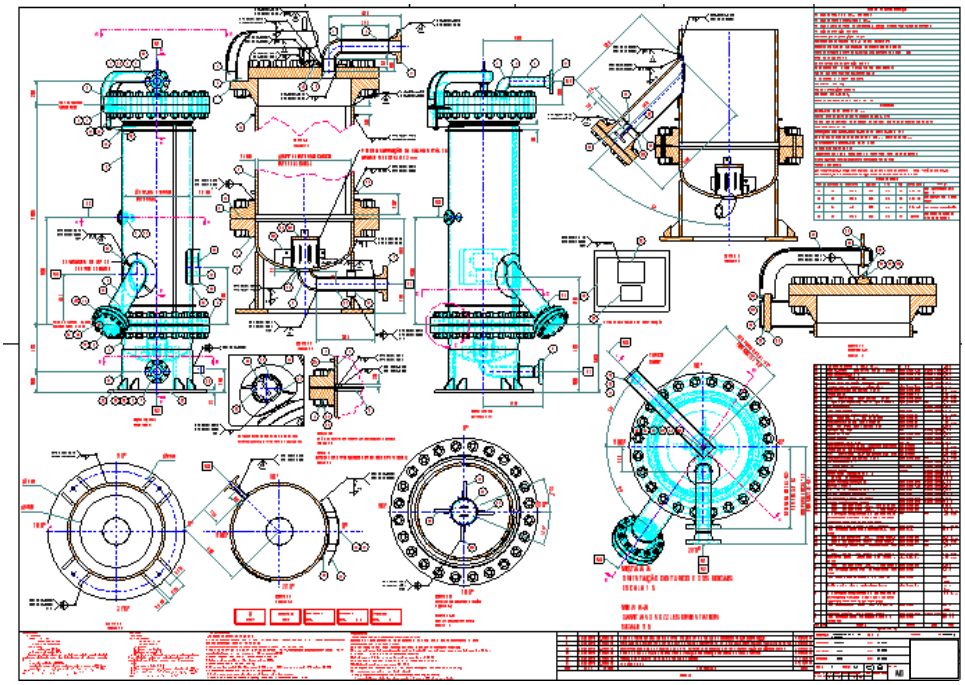
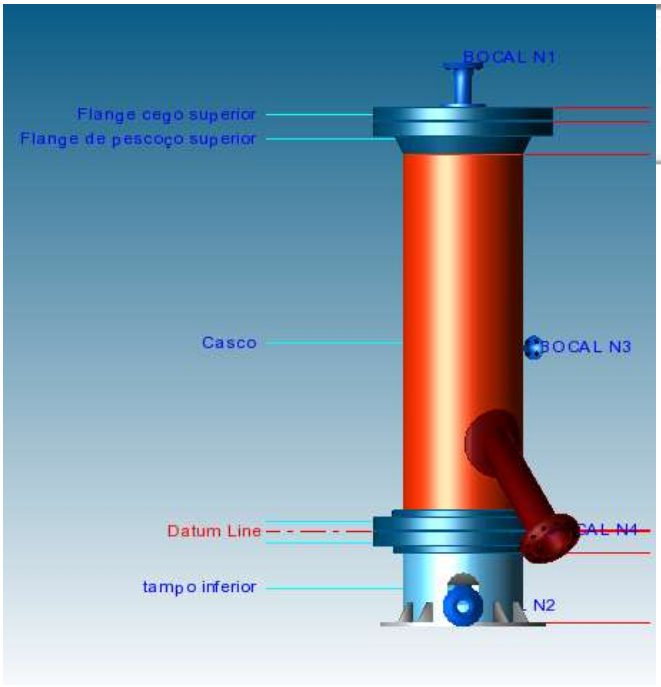

SYMBULUS
Engenharia & Projetos

A **Symbulus Soluções em Engenharia e Projetos** é uma empresa especializada em consultoria de engenharia, atuando em projetos de equipamentos para armazenamento de fluidos sob pressão ou à pressão atmosférica e sistema para transporte de fluidos, conforme normas e códigos de projeto de fabricação, projetos de estruturas metálicas, instalação e adequação de layout em plantas novas ou já existentes, reformas ou alteração de sistemas, equipamentos ou componentes, execução de atividades de inspeção, adequação e análises, atualização de documentação de projeto para atendimento às normas regulamentadoras atendendo aos requisitos de integridade física de equipamentos, sistemas e componentes , garantindo o funcionamento legal das instalações.

Seu portfólio cobre desde a infraestrutura básica até equipamentos de alta complexidade que exigem cálculos rigorosos. Abaixo, apresento alguns trabalhos executados:

- **PROJETO DE VASO DE PRESSÃO PARA ARMAZENAMENTO DE GÁS – CÁLCULO E DESENHO PARA FABRICAÇÃO, CONFORME NORMA ASME VIII div.1**

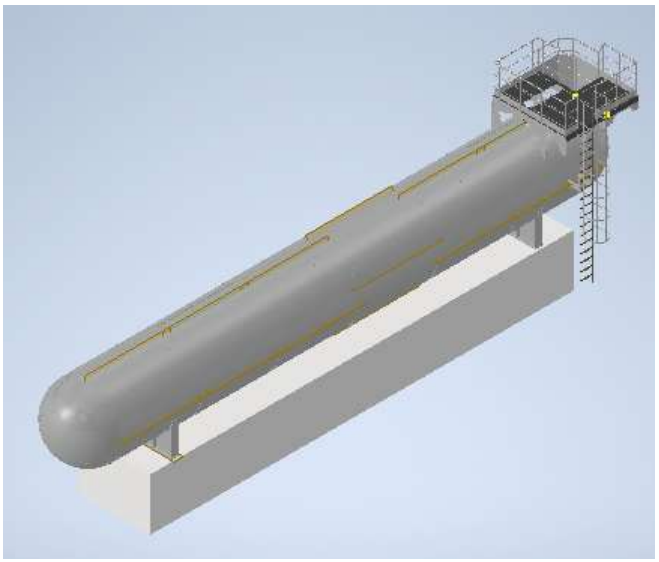


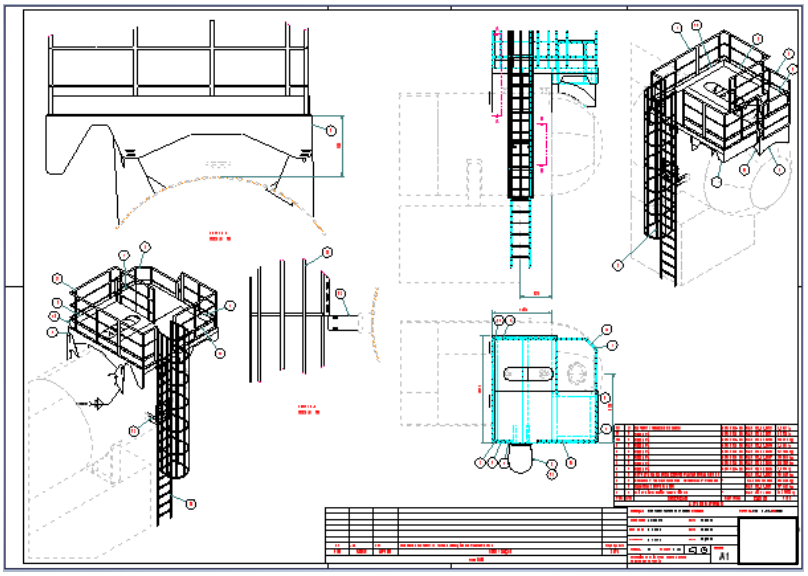


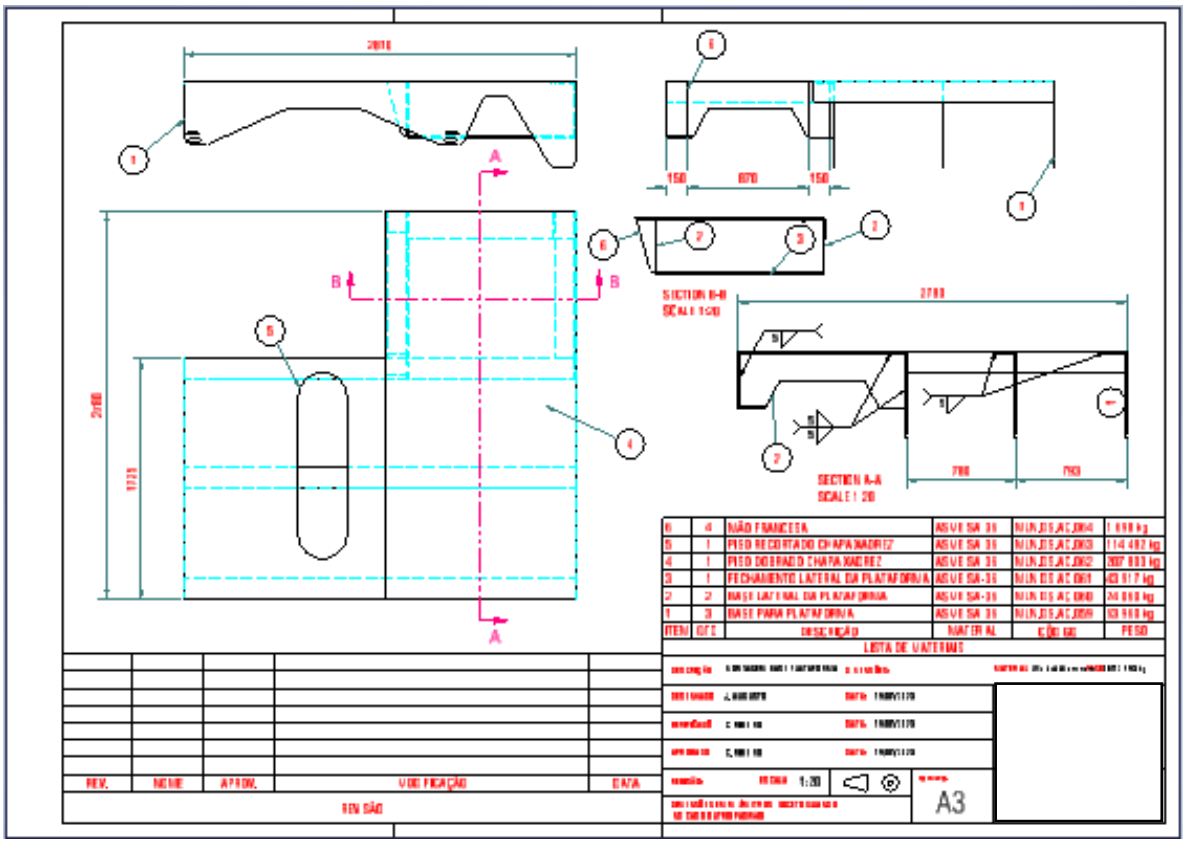
PV Elite 2019 Licensee: SPLM Licensed User
FileName : MC. V201 BD Page <>
Input Echo: Step: 1 9:22pm Jun 5,2024

Design Internal Pressure (for Hydrotest)	4.5603	MPa
Design Internal Temperature	260.0	°C
Type of Hydrotest	UG-99(b)	
Hydrotest Position	Horizontal	
Projection of Nozzle from Vessel Top	0	mm
Projection of Nozzle from Vessel Bottom	0	mm
Minimum Design Metal Temperature	-28.9	°C
Type of Construction	Welded	
Special Service	None	
Degree of Radiography	RT-1	
Use Higher Longitudinal Stresses (Flag)	Y	
Select t for Internal Pressure (Flag)	N	
Select t for External Pressure (Flag)	N	
Select t for Axial Stress (Flag)	N	
Select Location for Stiff. Rings (Flag)	N	
Consider Vortex Shedding	N	
Perform a Corroded Hydrotest	N	
Load Case 1	NP+EW+WI+FW+BW	
Load Case 2	NP+EW+EE+FS+BS	
Load Case 3	NP+OW+WI+FW+BW	
Load Case 4	NP+OW+EQ+FS+BS	

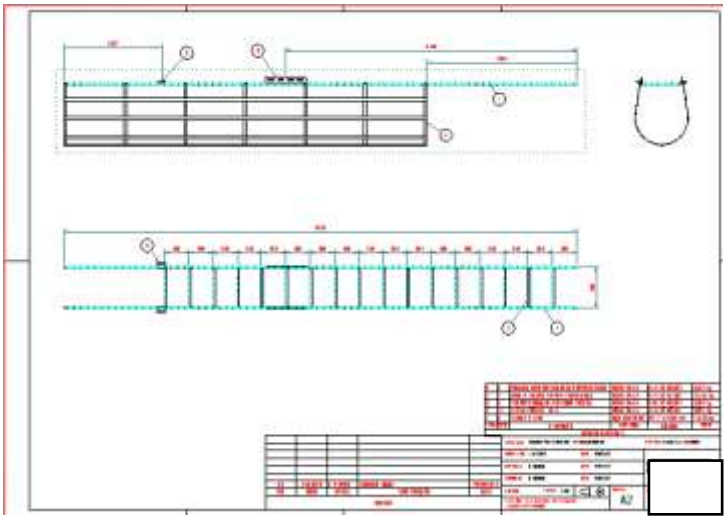
- **PROJETO DE ADEQUAÇÃO DE EQUIPAMENTO – INSTALAÇÃO DE PLATAFORMA**



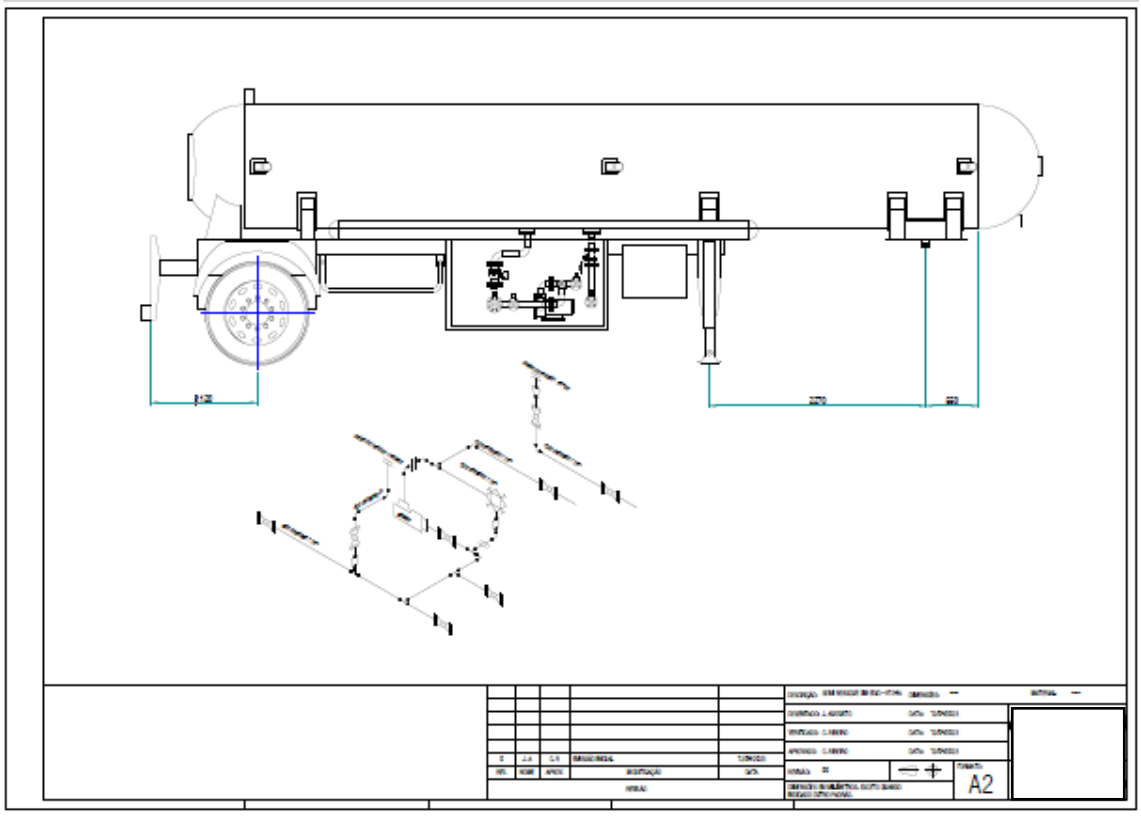


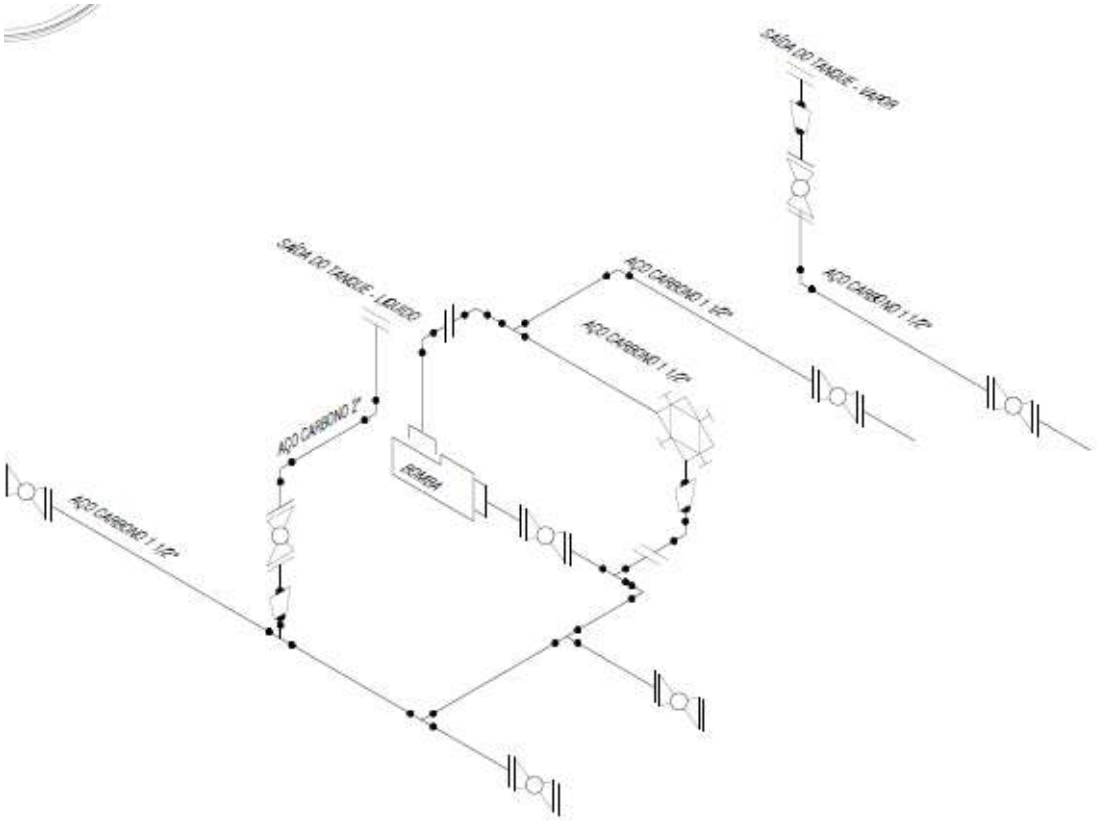


- **PROJETO ESCADA TIPO MARINHEIRO – CONFORME ESCOPO NR12**

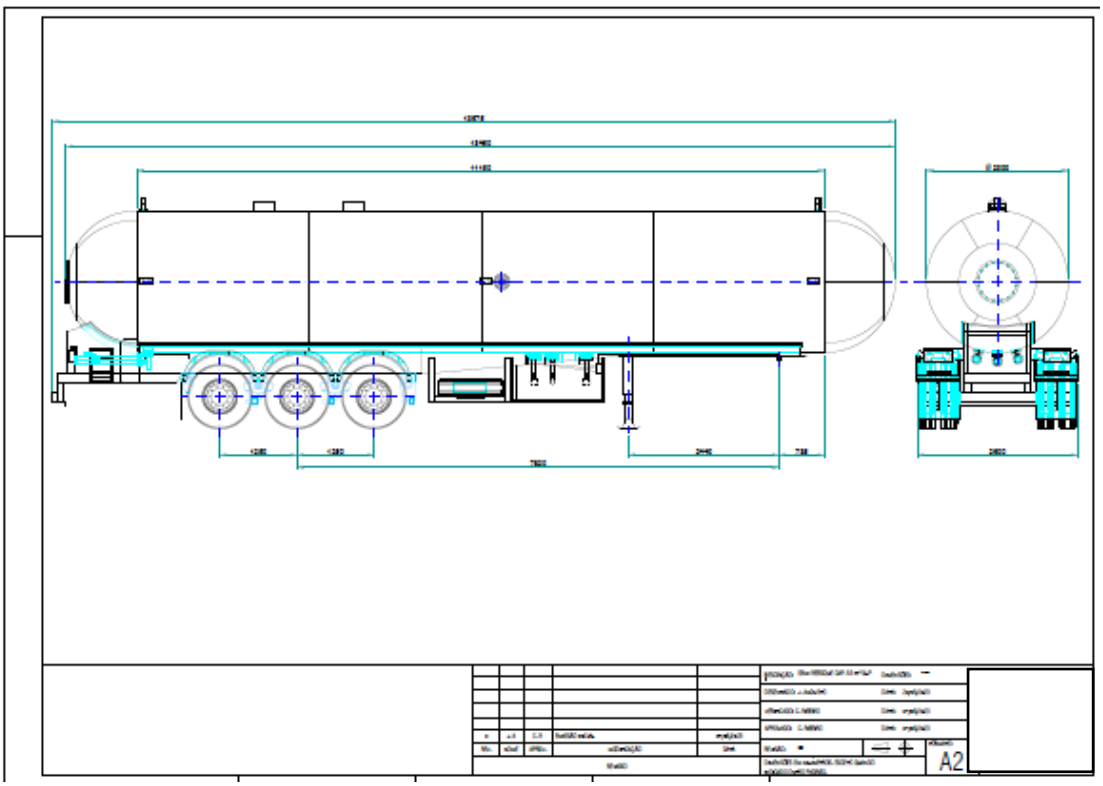


- **PROJETO DE ADEQUAÇÃO DE VASO DE PRESSÃO – INSTALAÇÃO DA TUBULAÇÃO DE DESCARGA CENTRAL E REFORMA DA PARTE RODANTE – PROJETOS ESPECIAIS**

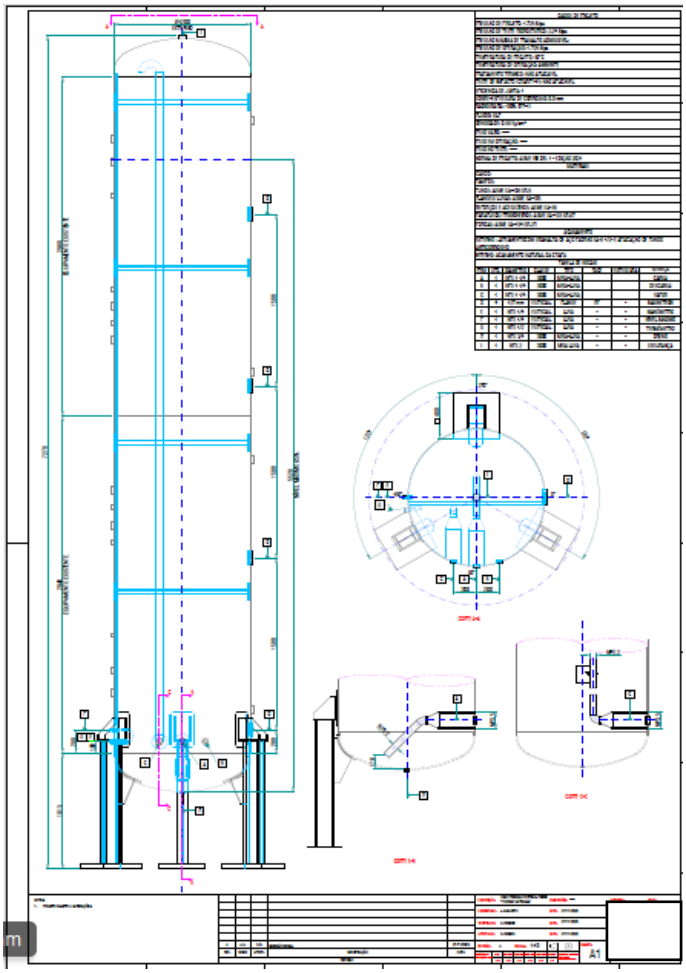


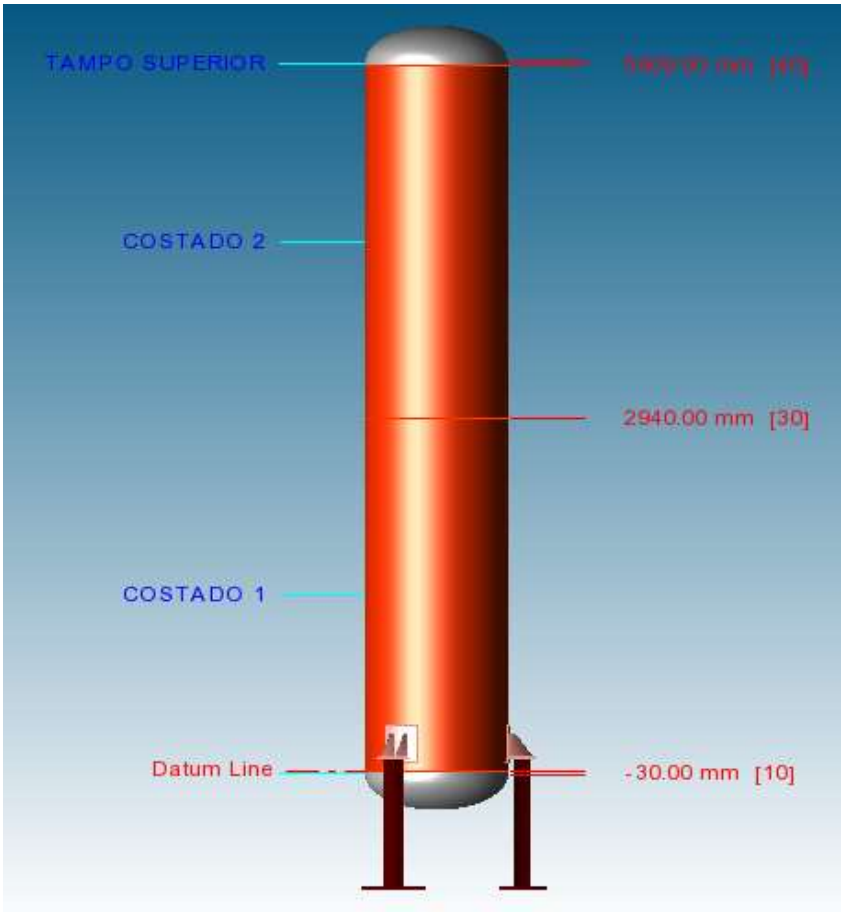


- **DESENHO PARA PROPOSTA COMERCIAL – SEMI REBOQUE PARA TRANSPORTES DE GASES E PRODUTOS QUIMICOS – PROJETOS ESPECIAIS**

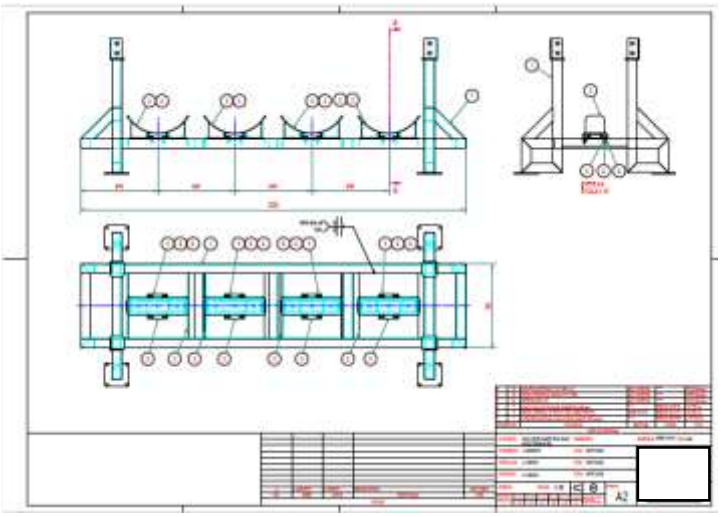


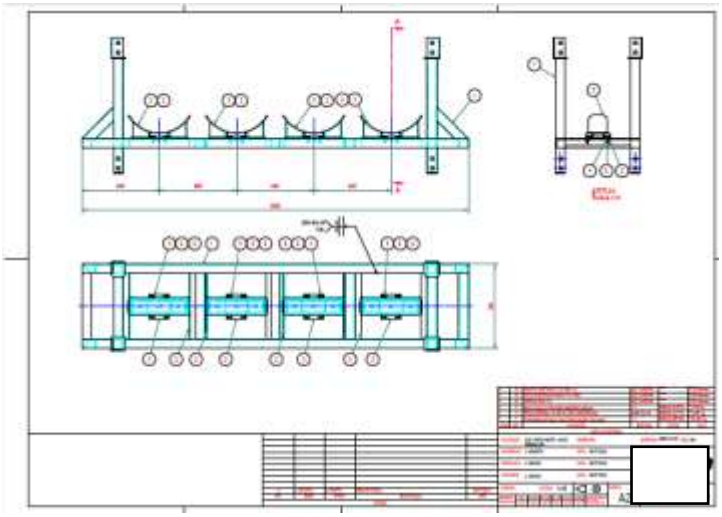
- **DESENHO E CÁLCULO PARA PROPOSTA COMERCIAL – VASO DE PRESSÃO VERTICAL**

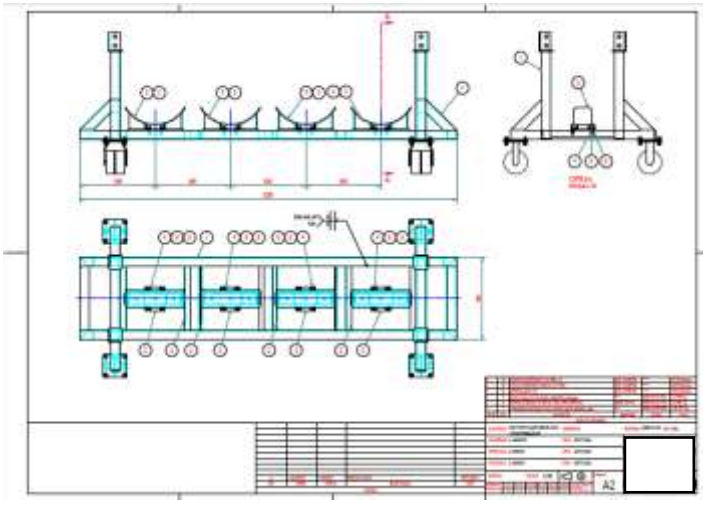


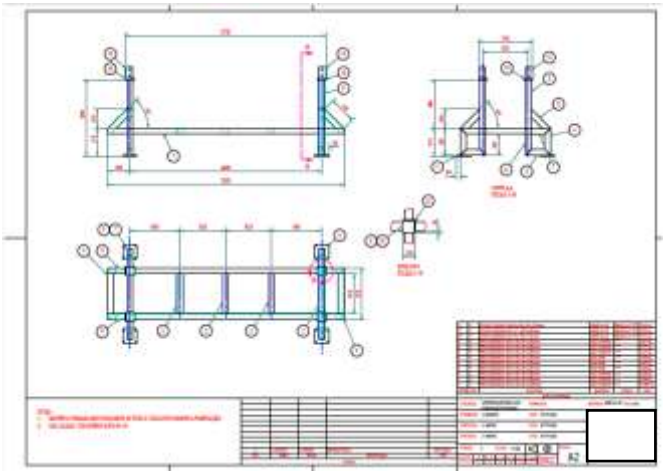


- **DISPOSITIVOS EM GERAL**

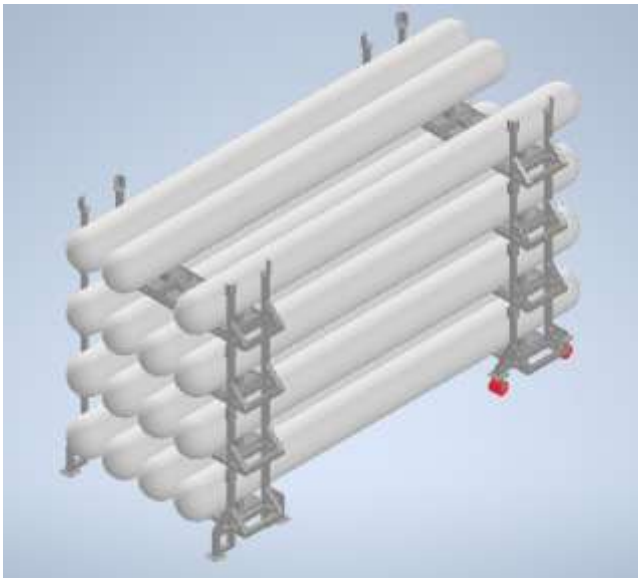


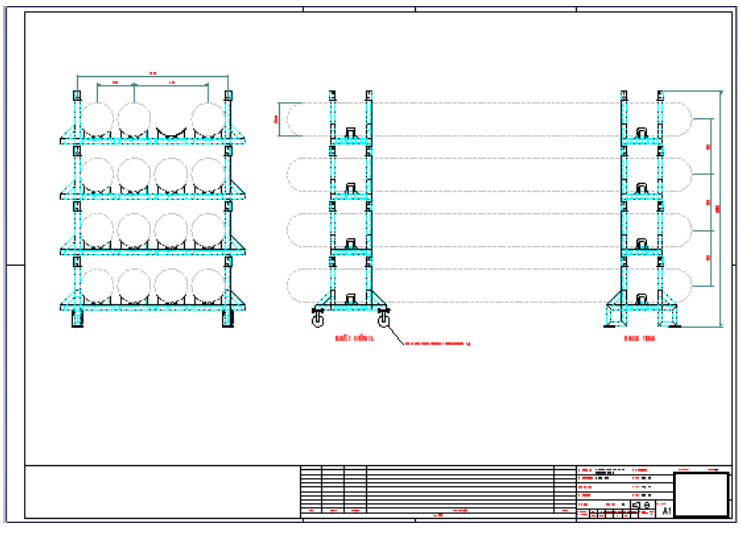




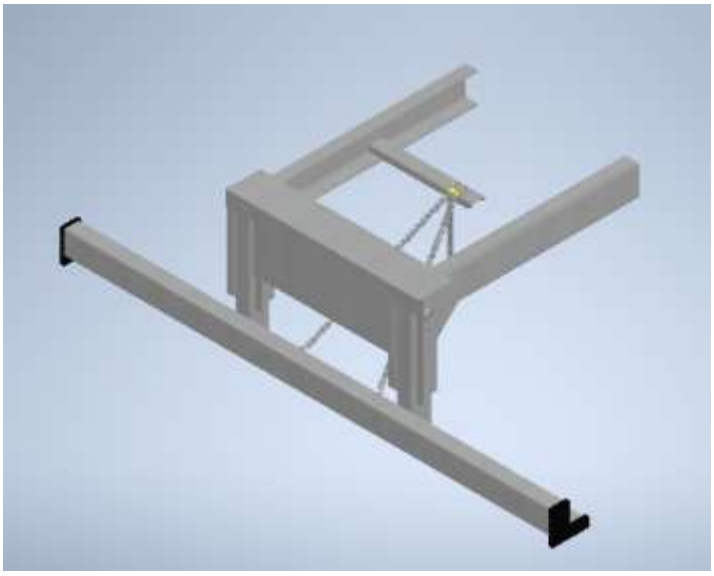


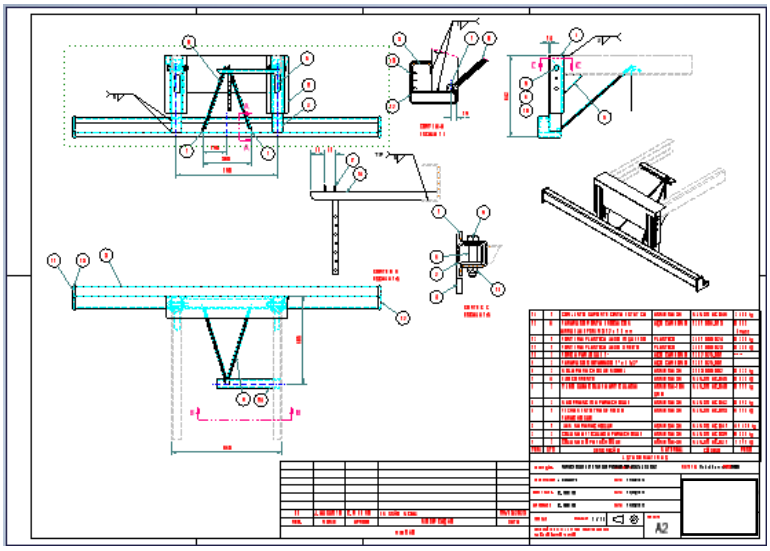
- **MONTAGEM DISPOSITIVO PARA ARMAZENAGEM DE CILINDROS DE GÁS**



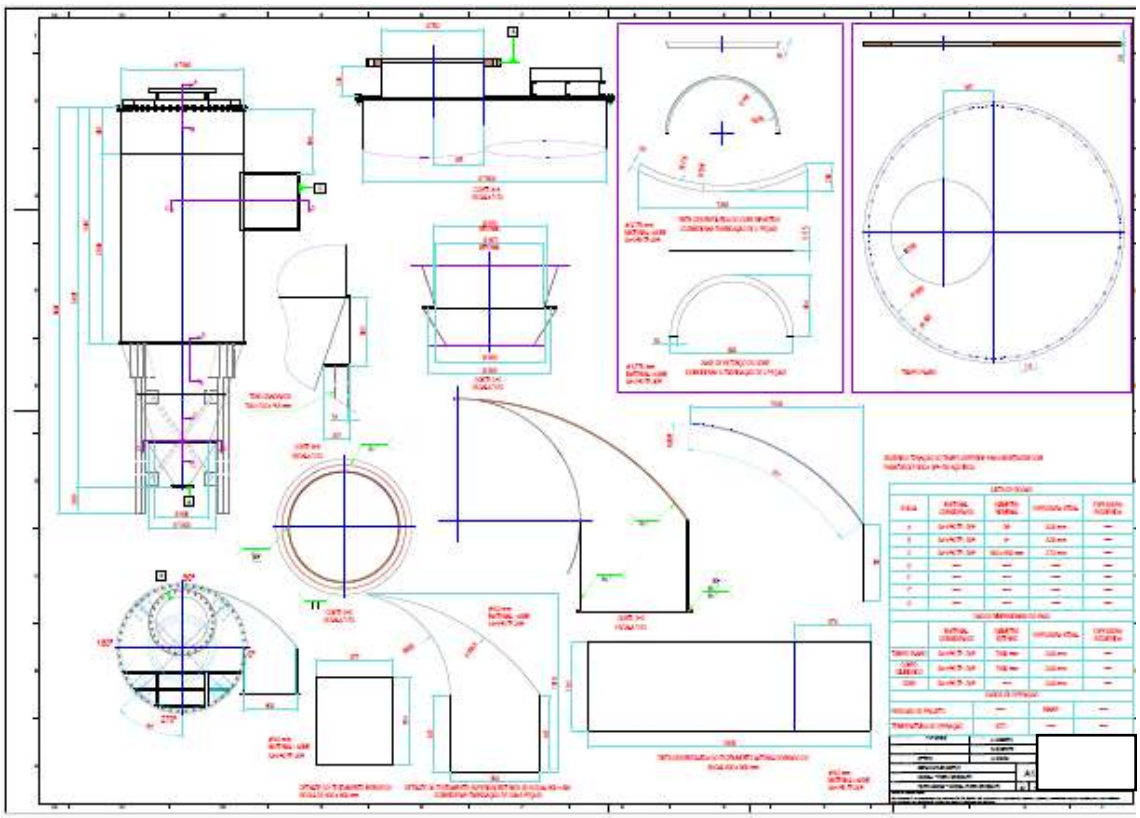


- **PARACHOQUE DE CAMINHÃO – PROJETO PARA HOMOLOGAÇÃO DE FABRICANTE**

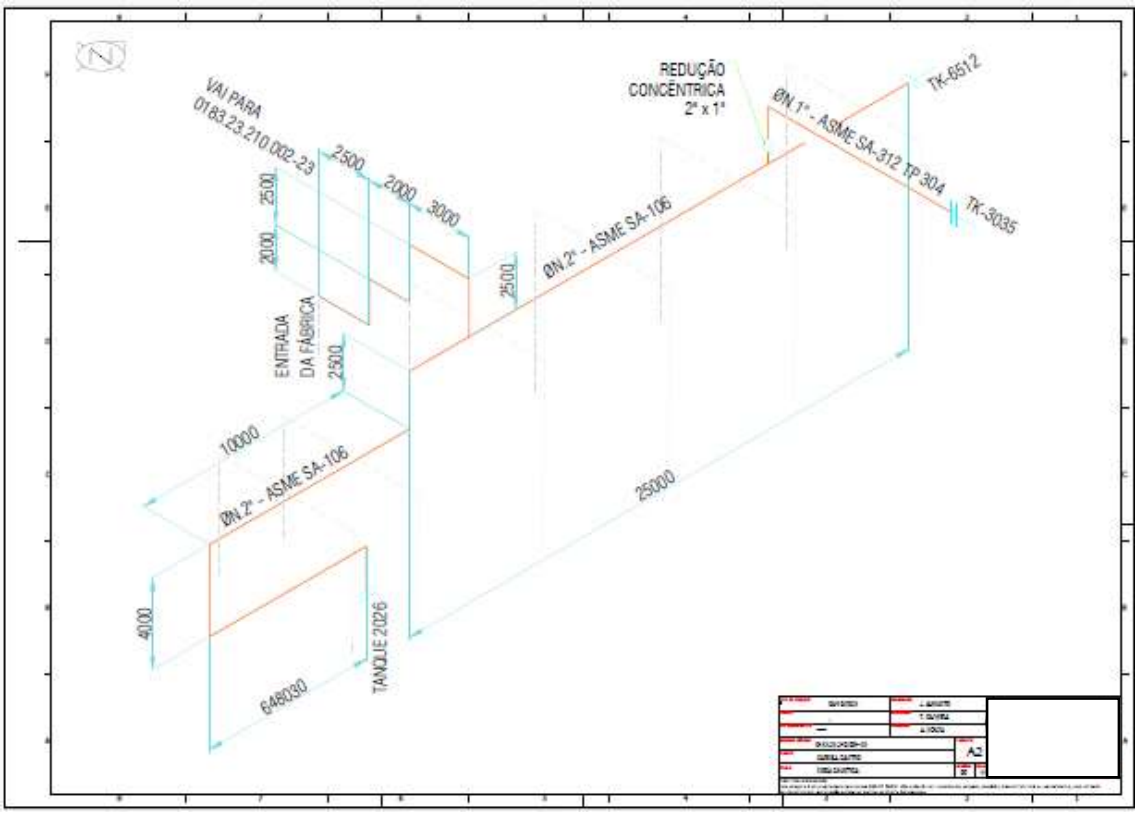




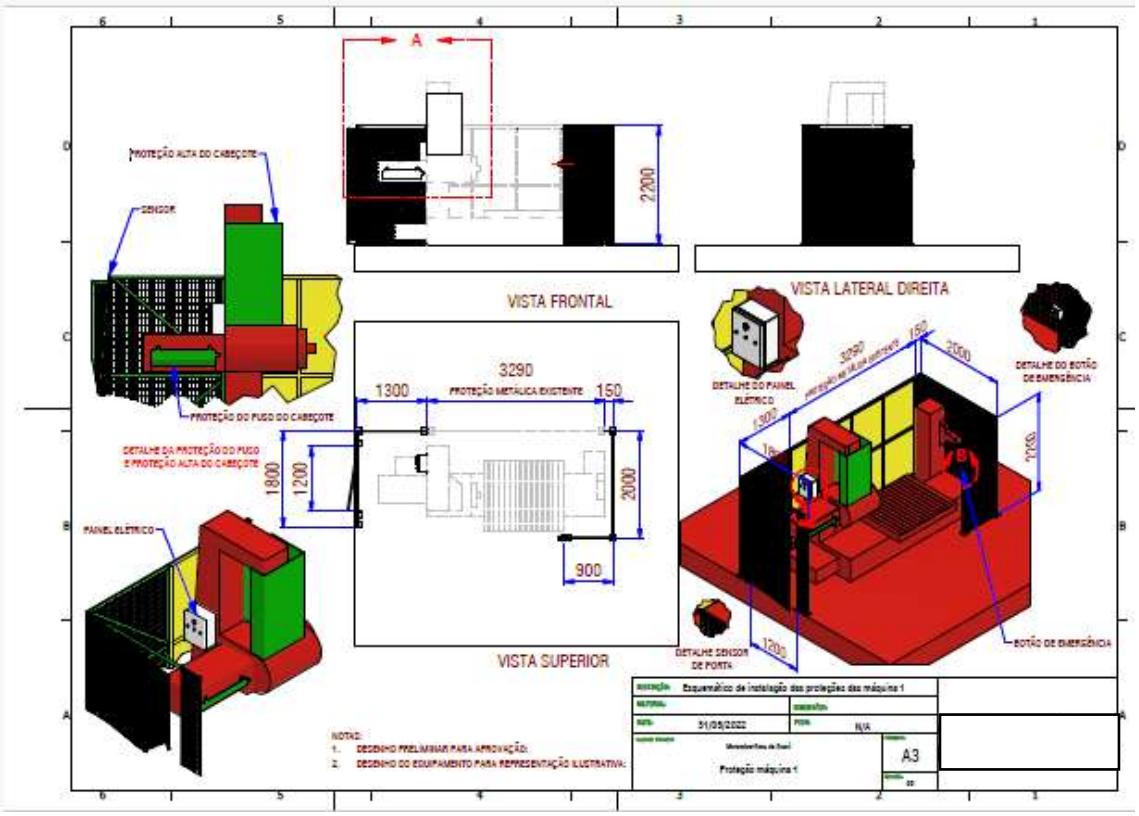
- **DESENHO DE REPARO DE TANQUE ATMOSFÉRICO PARA RECERTIFICAÇÃO NORMATIVA – ATENDIMENTO À NR-13**



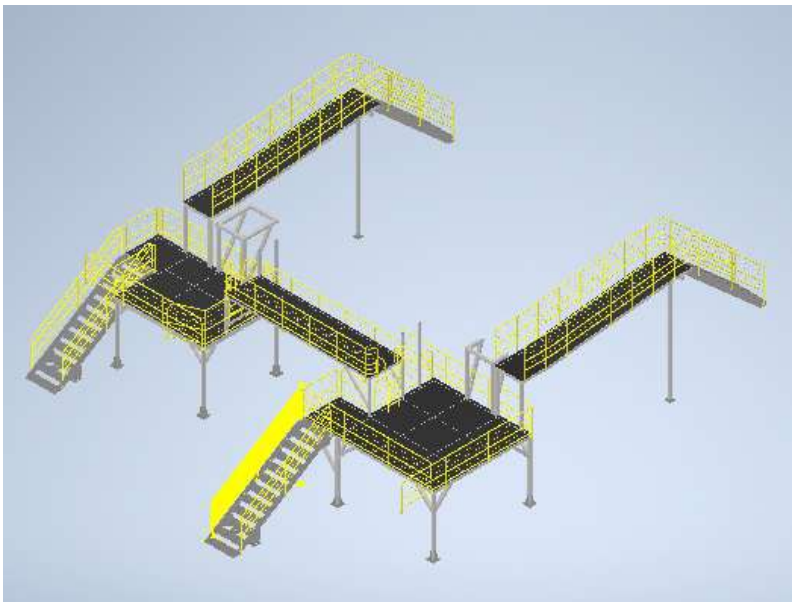
- **ISOMÉTRICO DE TUBULAÇÃO – DESENHO PARA INSPEÇÃO – ATENDIMENTO À NR-13**

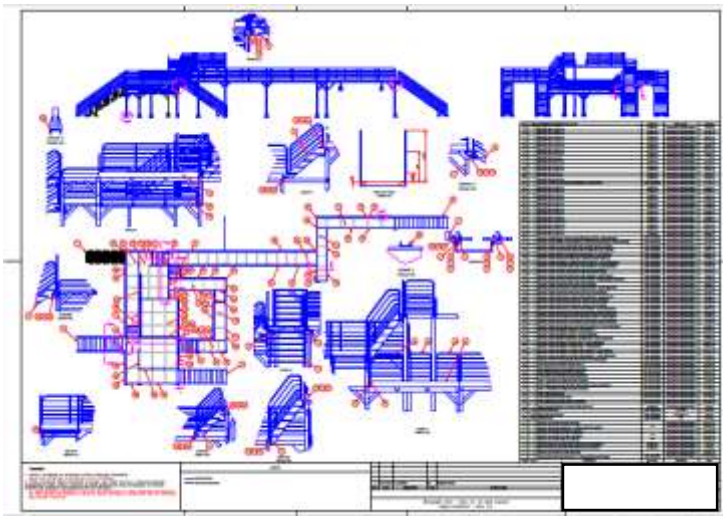


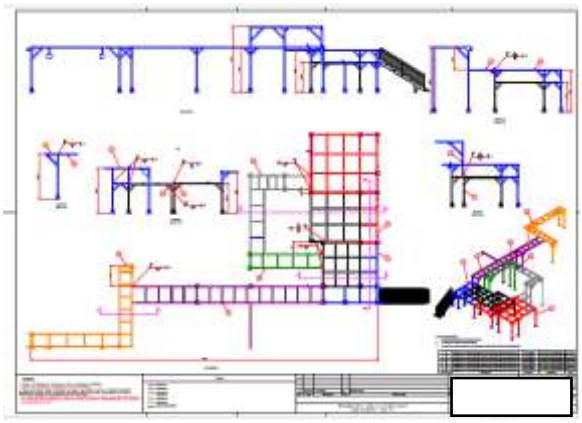
- **DESENHO PARA PROTEÇÃO DE MAQUINARIO – NR12**

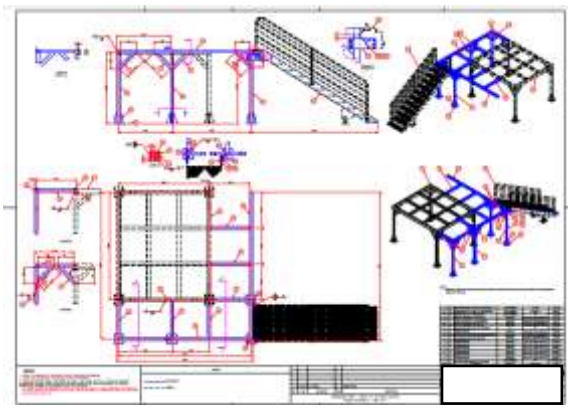


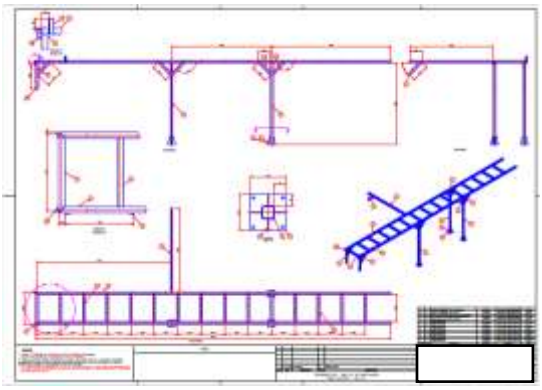
- **ESTRUTURA METÁLICA**

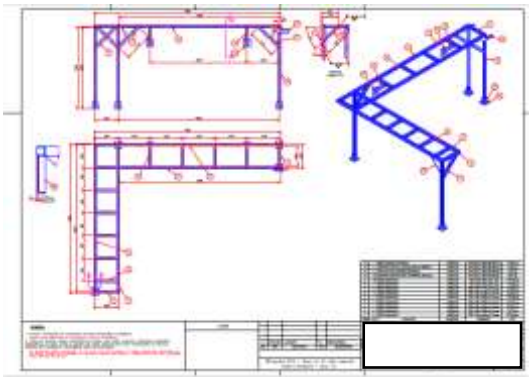


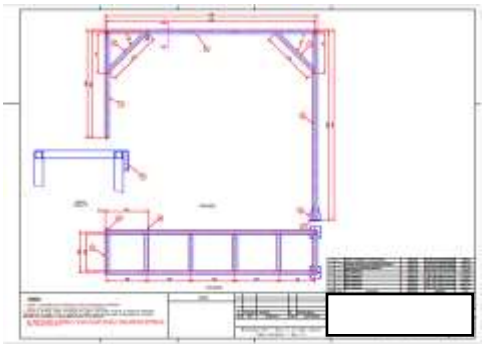


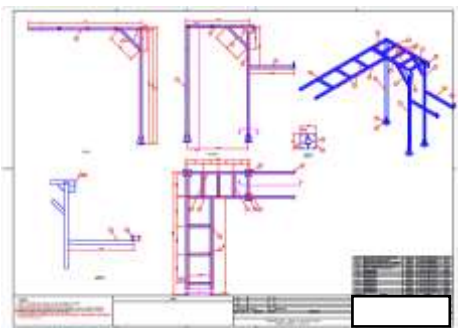




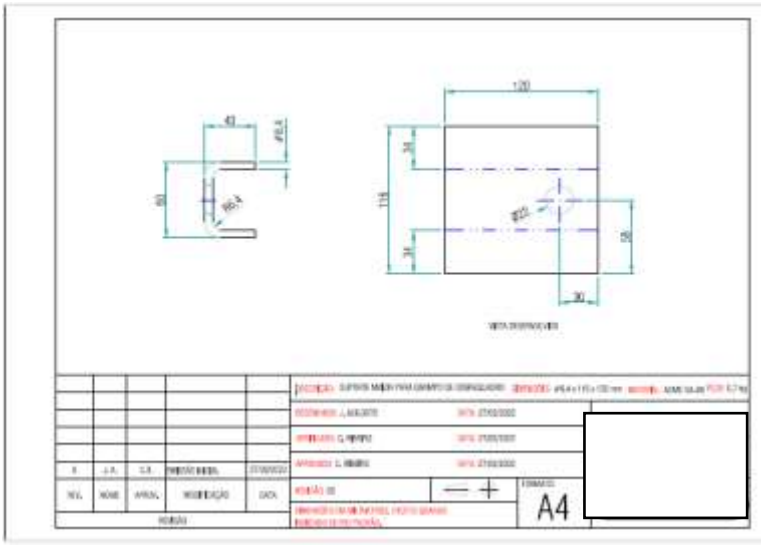


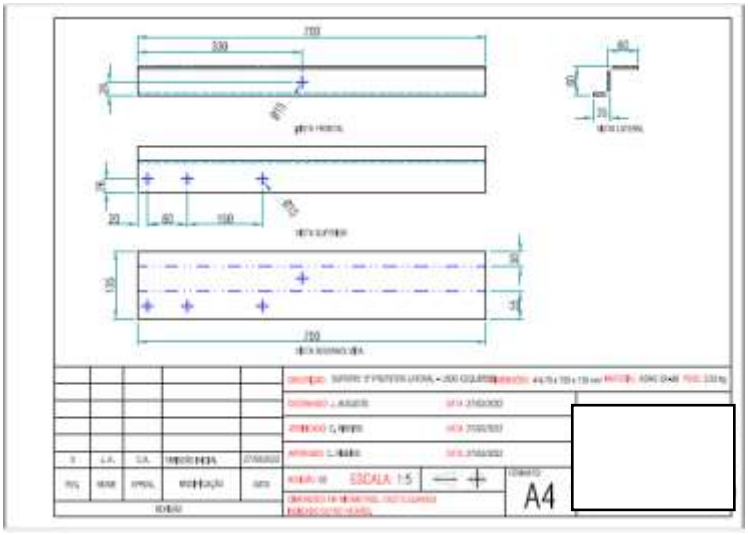


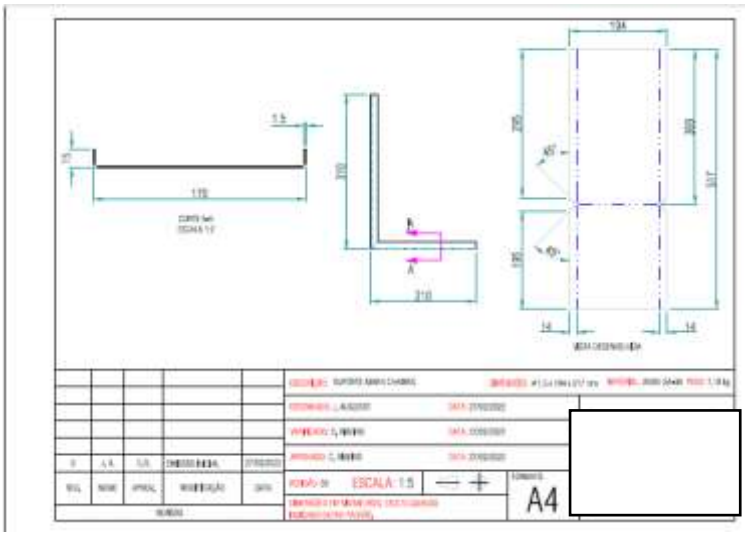


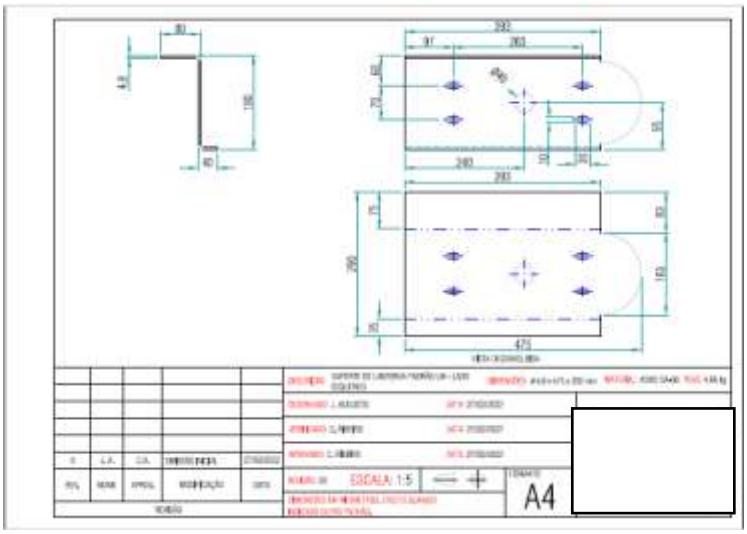


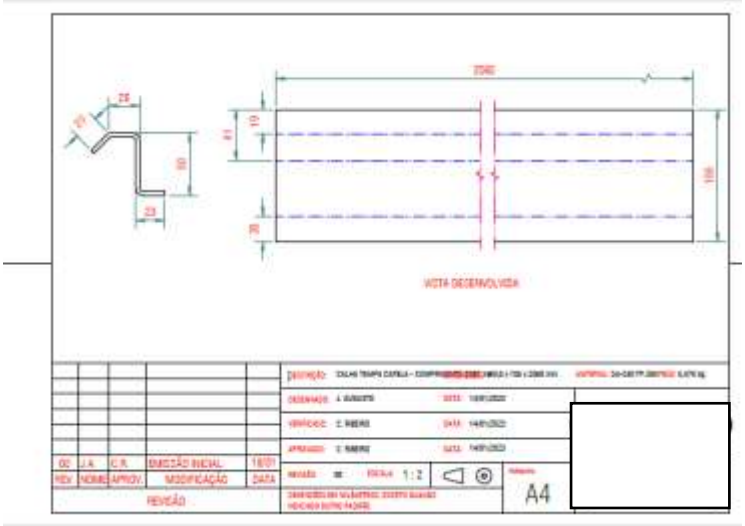
- **DESENHOS DE PEÇAS – USINAGEM, CALDEIRARIA E MONTAGEM**

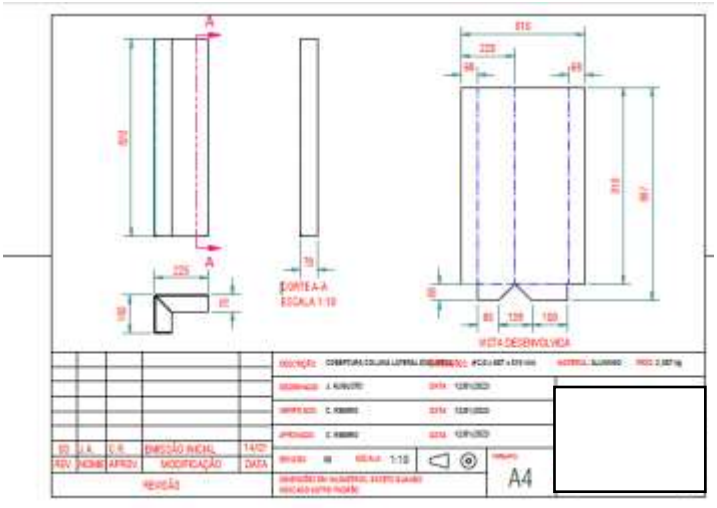


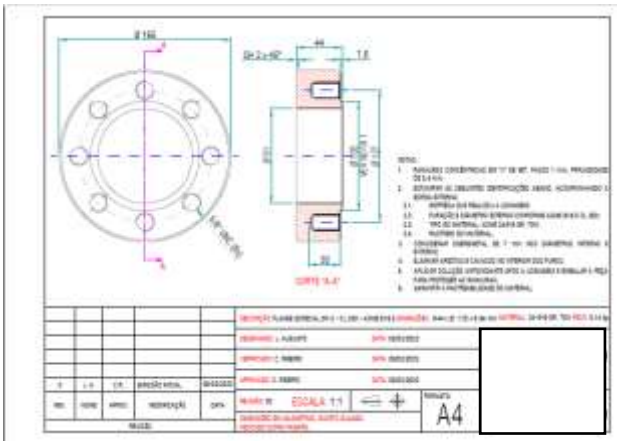


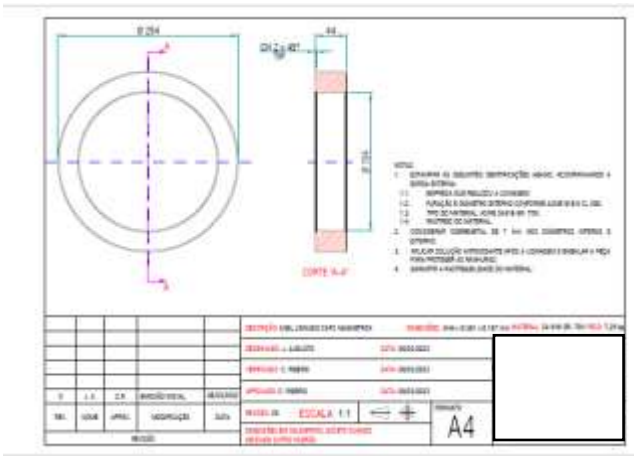


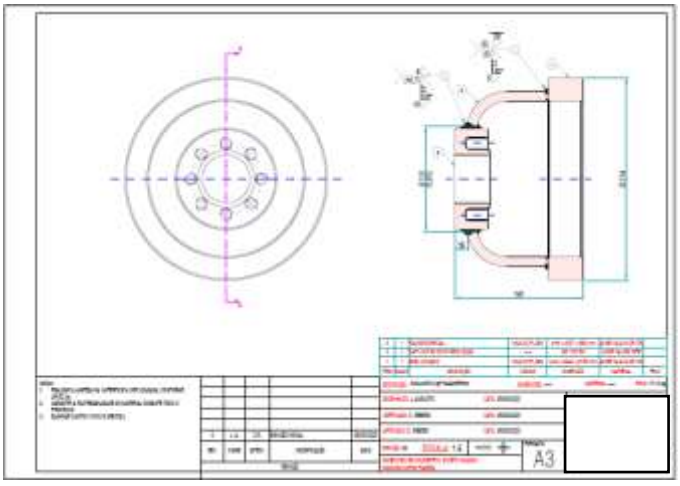


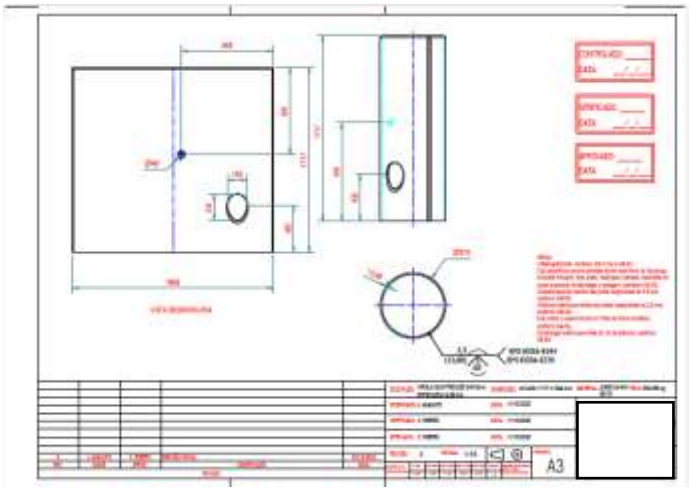


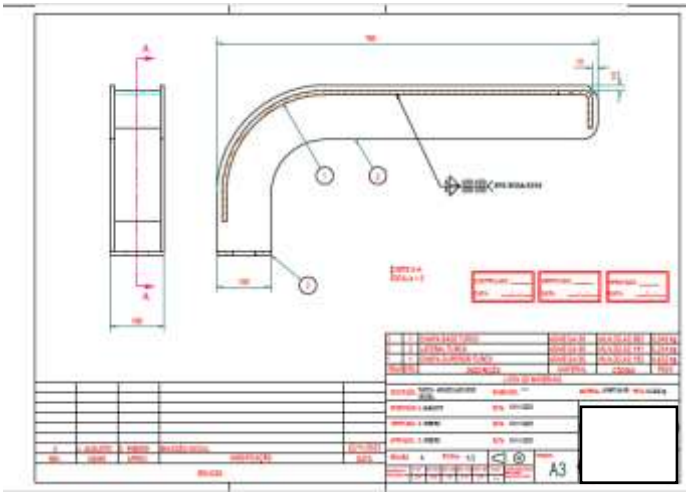


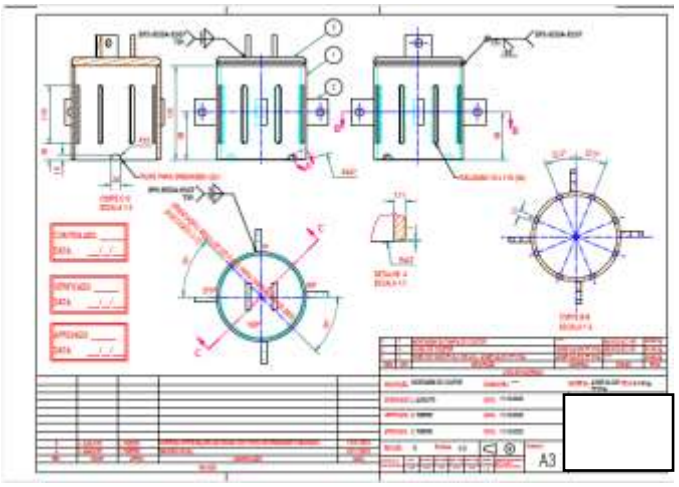




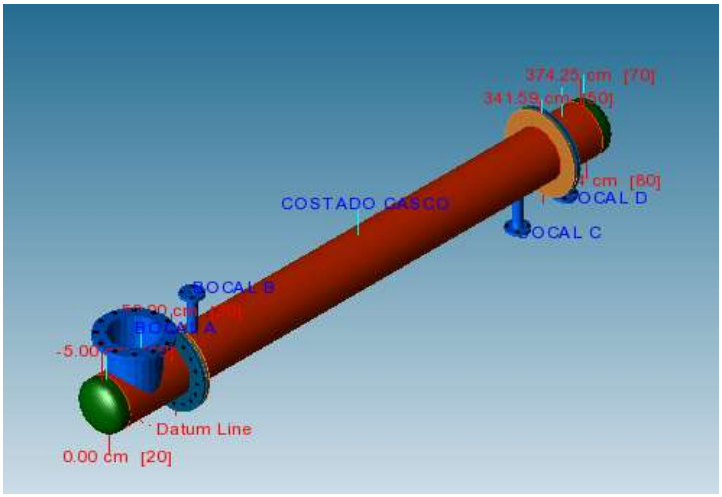








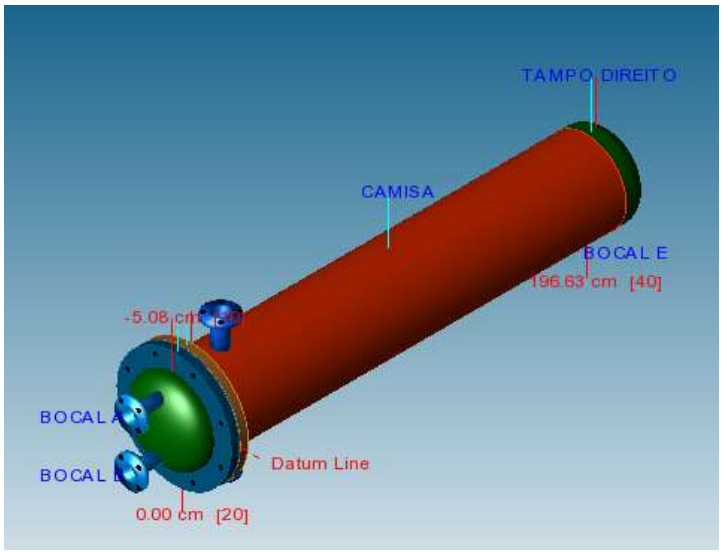
- **PROJETO DIMENSIONAL E ANALITICO DE TROCADOR DE CALOR TIPO CASCO/TUBO**



PV Elite Vessel Analysis Program: Input Data

Exchanger Design Pressures and Temperatures

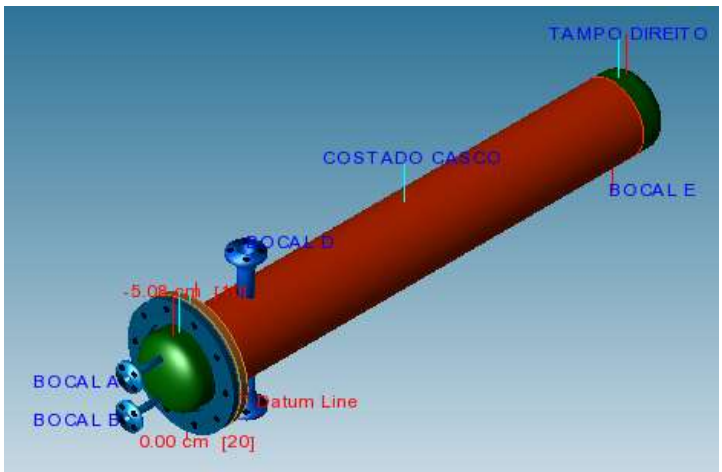
Shell Side Design Pressure	2	kgf/cm²
Channel Side Design Pressure	6	kgf/cm²
Shell Side Design Temperature	250.0	°C
Channel Side Design Temperature	200.0	°C
Radiography, Shell Side	RT-1	
Radiography, Channel Side	RT-1	
Service Type, Shell Side	Air/Water/Steam	
Service Type, Channel Side	Air/Water/Steam	
MDMT (CET), Shell Side	-196.0	°C
MDMT (CET), Tube Side	-196.0	°C
User defined MAWP, Shell Side	7	kgf/cm²
User defined MAWP, Channel Side	2	kgf/cm²
User defined MAPnc, Shell Side	0	kgf/cm²
User defined MAPnc, Channel Side	0	kgf/cm²
User defined Test Pres., Shell Side	9.0998	kgf/cm²
User defined Test Pres., Channel Side	2.6	kgf/cm²



PV Elite Vessel Analysis Program: Input Data

Exchanger Design Pressures and Temperatures

Shell Side Design Pressure	2.5	kgf/cm²
Channel Side Design Pressure	6	kgf/cm²
Shell Side Design Temperature	200.0	°C
Channel Side Design Temperature	200.0	°C
Radiography, Shell Side	RT-1	
Radiography, Channel Side	RT-1	
Service Type, Shell Side	Air/Water/Steam	
Service Type, Channel Side	Air/Water/Steam	
MDMT (CET), Shell Side	-196.0	°C
MDMT (CET), Tube Side	-196.0	°C
User defined MAWP, Shell Side	7	kgf/cm²
User defined MAWP, Channel Side	3.5	kgf/cm²
User defined MAPnc, Shell Side	0	kgf/cm²
User defined MAPnc, Channel Side	0	kgf/cm²
User defined Test Pres., Shell Side	9.0998	kgf/cm²
User defined Test Pres., Channel Side	4.55	kgf/cm²

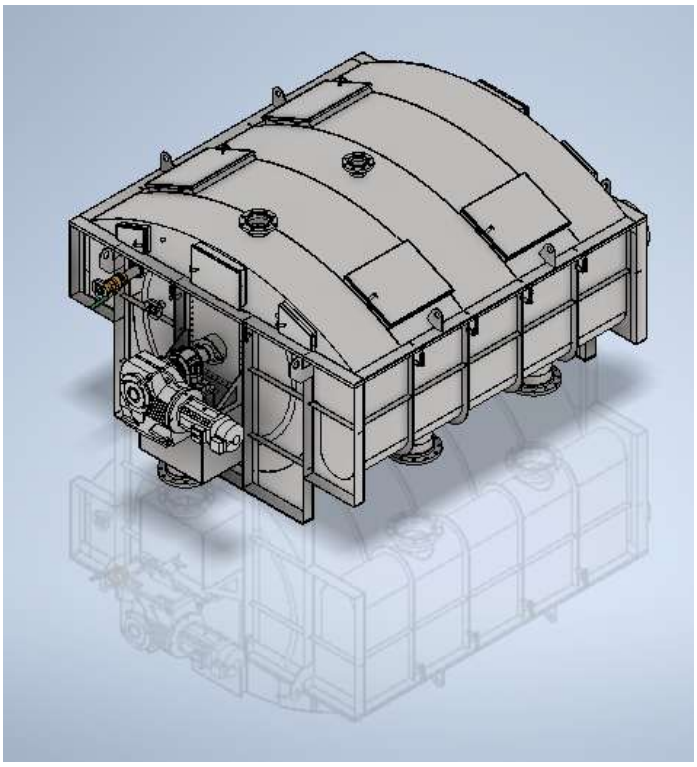


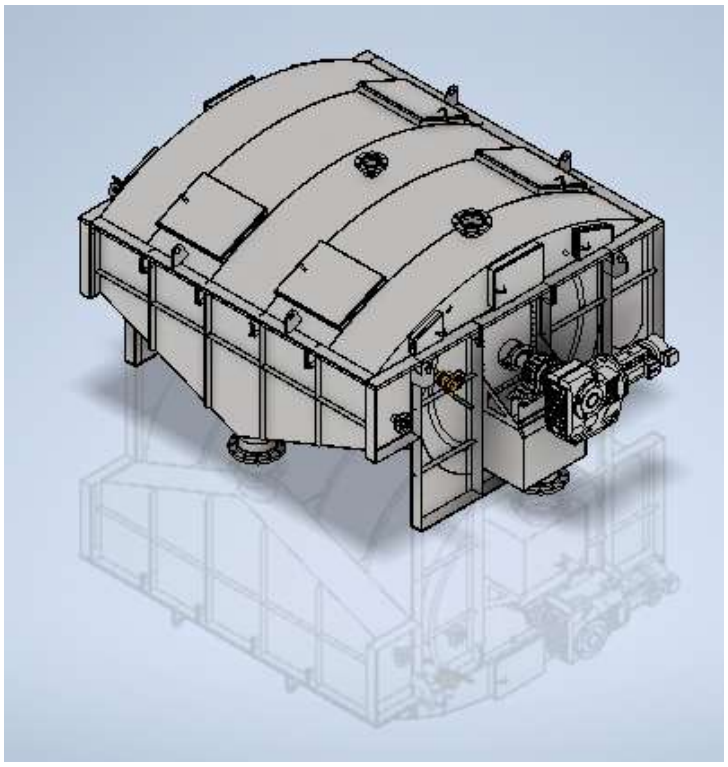
PV Elite Vessel Analysis Program: Input Data

Exchanger Design Pressures and Temperatures

Shell Side Design Pressure	11	kgf/cm²
Channel Side Design Pressure	2.5	kgf/cm²
Shell Side Design Temperature	200.0	°C
Channel Side Design Temperature	200.0	°C
Radiography, Shell Side	None	
Radiography, Channel Side	None	
Service Type, Shell Side	Air/Water/Steam	
Service Type, Channel Side	Air/Water/Steam	
MDMT (CET), Shell Side	-28.9	°C
MDMT (CET), Tube Side	-28.9	°C
User defined MAWP, Shell Side	12	kgf/cm²
User defined MAWP, Channel Side	3.5	kgf/cm²
User defined MAPnc, Shell Side	0	kgf/cm²
User defined MAPnc, Channel Side	0	kgf/cm²
User defined Test Pres., Shell Side	16.77	kgf/cm²
User defined Test Pres., Channel Side	4.55	kgf/cm²

- **PROJETO E DETALHAMENTO DE FILTRO ROTATIVO PARA A INDUSTRIA DE PAPEL E CELULOSE – PROJETOS ESPECIAIS**





- **PROJETO MULTIDISCPLINAR DE INSTALAÇÃO, ADEQUAÇÃO E ATUALIZAÇÃO DE LAYOUT**