





Plant <b>CA</b>	Client <b>PCC Rokita</b>	Code <b>Rokita VI</b>	Doc ID Code <b>PDEL-EQS-G000-EC-00004</b>				Project No. <b>05-1864</b>			
	<b>Cover Sheet</b> <b>Catholyte Drain Tank</b>						TON <b>31D003B</b>			
							Item			
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<b>TECHNICAL SPECIFICATION</b>										
Page	Description								Revision	
1	Cover Sheet									
2	Vessel Design Data Sheet									
3	Nozzle Sheet									
4	Detail									
5	Applicable Codes & Standards									
6	General Requirements									
7	Inspection Data, Class: GRP1									
8	Documentation									
00	IFI	Issue for Inquiry	04-Mar-24	Langner	19-Mar-24					
Rev.	Status	Description	Date	Prepared	Date	Checked	Date	Approved	AC	
									Category Code: AC	
Customer Document ID:										
						Shown on PID: 3111				


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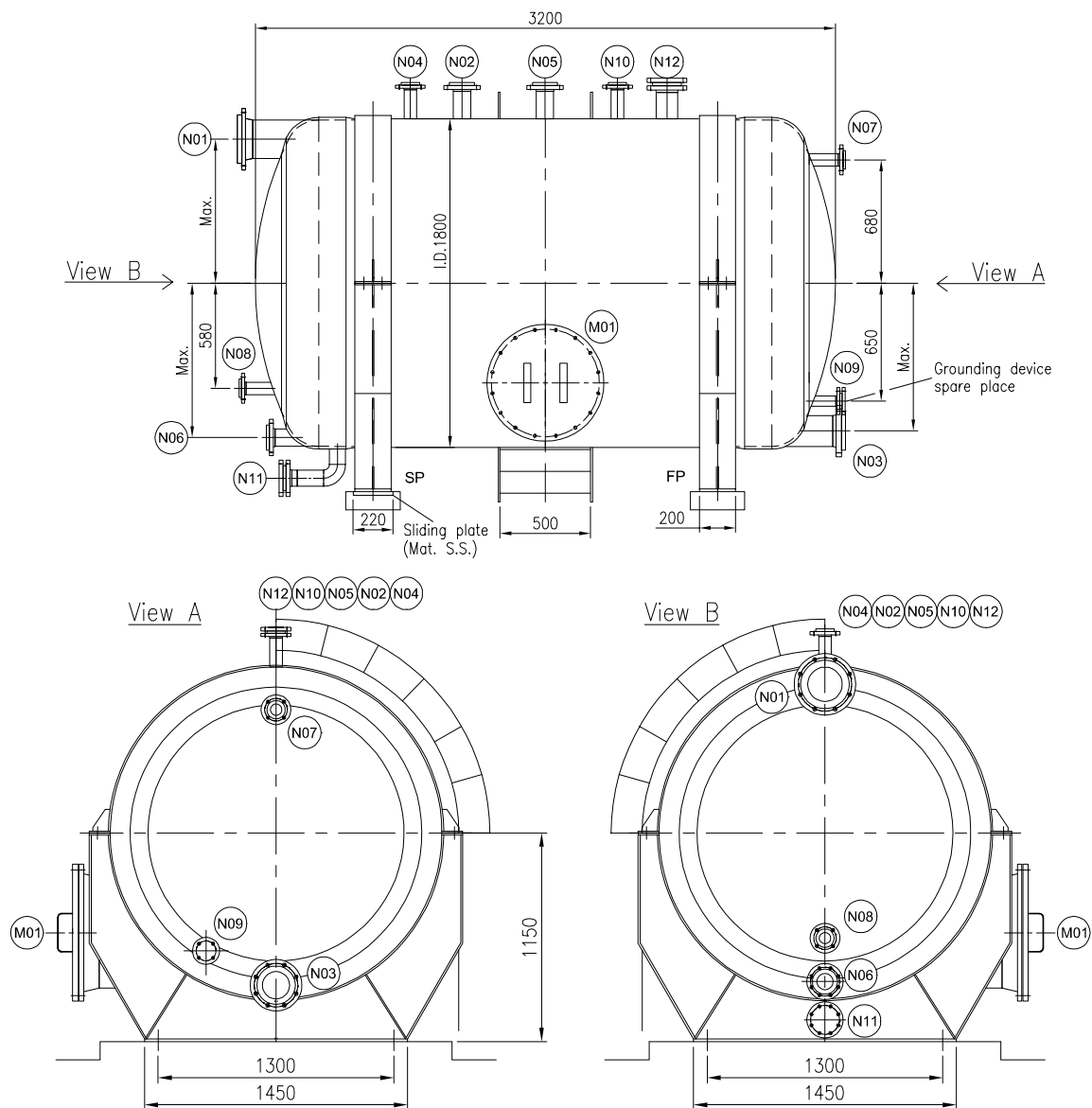
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	<b>Vessel Design Data Sheet</b> <b>Catholyte Drain Tank</b>			TON	<b>31D003B</b>	
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Line	Process Requirements I		IDX	Process Requirements II		IDX Rev.
2	Quantity Operat. / Stand-by	1 0		Nominal Volume	m³	6.3
3	Position (Horiz/Vertical)	Horizontal		Shell Diameter, Outside	mm	
4	Process Fluid	NaOH+/-32%, N2		Shell Diameter, Inside	mm	
5				Height (TL-TL) of Shell	mm	
6	Physical Condition	LG		Width	mm	
7	Class of Hazard	H314, H290		Max.Fill.Lev.In Oper.Cond. %/mm	90	
8	Density Solid/Bulk kg/m³			Material Process Side	RA130E-8427 (PP-R) / GFK	
9	Density Liquid kg/m³	1309		Surface Treatment/Coating	PP-R wit 4mm liner	
10	Density Vapour/Gas kg/m³			(Process Side)		
11	pH-Value	14		Insulation Type		
12	H2-Partial Press. In/Out bara			Internals		
13	Max Operating Temp. °C	90				
14	Max Operating Pressure barg	0.04		Heating / Cooling Device		
15	Operating Pressure bara	1.004		Overall length, Vessel mm	3200	
16	Operating Temperature °C	80		Shell Diameter, inside mm	1800	
17	Allowable Pressure barg	-0.01 0.4				
18	Allowable Temperature °C	3 95				
19						
20	Abbreviations for Physical Condition: (S)olid, (L)iquid, (G)as, (V)apour, (IDX) Index for Remarks					
21	Mechanical Requirements		IDX	MATERIAL		
22	Design Code	EN 13121-2016		Part	Materials	Remarks
23				Shell	PP-R / GFK	
24	Corros. Allow., for Calc. mm	0.0		Heads	PP-R / GFK	
25	Joint Efficiency			Shell Flange		
26	Seismic Loads			Supports	CS	
27	Wind Loads			Clips	SS / GFK	
28	Inspection by	Rokita		Nozzle Pipes	PP-R / GFK	
29	Test Pressure barg	Acc. to Code		Nozzle Flange	GFK / CS galv.	3)
30	Heat Treatment			Internals Welded		
31	Non-Destructive Test	Acc. to Code		Internals Removable		
32	Painting	ES-Y1		Bolts / Nuts Inside		
33	Pickling and Passivation	For SS Parts		Bolts / Nuts Outside	SS	
34	Insulation mm			Gaskets Inside		
35	Weight, delivery kg		1)	Gaskets Outside	EPDM W. St Ins.	
36	Weight,w. process fluid kg		1)	Gaskets Shell Flange		
37	Weight, water-filled kg		1)	Davit		
38				Footring		
39				Lifting Lugs / Trunnions		
40				Anchor Bolts	SS (chemical anchor bolts)	
41				Demister		
42				Ladders/Platforms	CS painted	
43						
44	Remarks :					
45	1) To be given by manufacturer 2) All materials shall be supplied with test certificates. 3) Loose flanges for NPS <= 150 - Prestressed GRP; for NPS >150 - CS Hot dip galvanised. 4) According to painting specification for saddles (ES-Y1)  Note the addition for GRP-Vessels on page 6					

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		<b>Nozzle Sheet</b> <b>Catholyte Drain Tank</b>						TON <b>31D003B</b>	
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Nozzle Symbol	Designation	DN mm	PN	Standard DIN	Flange Type	Flange Facing	Pipe Dimensions mm	Remarks	Rev.
N01	Catholyte Inlet	200	10	16966	F1,B2	Plain			
N02	Vent	80	10	16966	F1,B2	Plain			
N03	Catholyte Outlet	150	10	16966	F1,B2	Plain			
N04	Nitrogen Inlet	50	10	16966	F1,B2	Plain			
N05	Level Transmitter	80	10	16966	F1,B2	Plain			
N06	Level Transmitter	80	10	16966	F1,B2	Plain			
N07	Level Switch	50	10	16966	F1,B2	Plain			
N08	Level Switch	50	10	16966	F1,B2	Plain			
N09	Spare	40	10	16966	F1,B2	Plain		with Blind Flange	
N10	Catholyte Inlet	50	10	16966	F1,B2	Plain			
N11	Drain	80	10	16966	F1,B2	Plain		with Blind Flange	
N12	Spare	80	0	16966	F1,B2	Plain		with Blind Flange	
M01	Manhole	600		UN2002-03	C	Plain		with Cover and Handle	
Remark:									
N09 Grounding device spare place									
1) Nozzle length: 200 mm for DN<= 100, 250 mm for DN > 100 2) For nozzle <= DN 80 the conical reinforcement shall be provided									

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	<b>Detail</b> <b>Catholyte Drain Tank</b>			TON <b>31D003B</b>
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Design features:


- 1) Heads: torispherical heads in acc. with DIN 28011;
- 2) Support saddles:
  - based on DIN 28080, clammed at shell with upper strip, neopren inlet between saddle and vessel and 1x earthin lug per saddle.;
  - lifting lugs fastened at saddles;
  - sliding point with sliding plate ( Material S.S.)
  - anchor bolts (chemical anchors);
  - name plate
- 3) Technological steel constructions:
  - ladder (material C.S. painted) with railing;


Notes:


- anchor bolts calculation and supply by vendor;
- final nozzle location acc. to nozzle orientation sheet;
- all dimensions in mm
- sketch is not to scale

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		<b>Applicable Codes &amp; Standards</b> <b>Catholyte Drain Tank</b>						TON <b>31D003B</b>		
								Item		
								Rev.	00	Page
1	Info	Type	Description					Issue Date		Rev.
2		<b>Global Codes &amp; Standards</b>								
3		<input type="checkbox"/> PED 2014/68/EU	Pressure Equipment Directive					latest issue		
4		<input type="checkbox"/> EN 13445	Unfired pressure vessel					latest issue		
5		<input checked="" type="checkbox"/> EN 13121	GRP tanks and vessels for used above ground					latest issue		
6		<input type="checkbox"/> Manufacturer Standard								
7										
8		<b>Company Standards: tk Uhde Project Engineering Specifications</b>								
9		<input checked="" type="checkbox"/> PDEL-EQS-G000-EC-0001	ES Vessels and Equipment of GRP							
10		<input type="checkbox"/> PDEL-EQS-G000-EC-0002	ES for Plate Heat Exchanger							
11		<input type="checkbox"/> PDEL-EQS-G000-EC-0003	Process vessel and equipment>0.5bar(g) (based on PED)							
12										
13		<b>Company Standards: UN</b>								
14		<input checked="" type="checkbox"/> UN 2000-06 Part 2	Clips for ladders and platforms							
15		<input type="checkbox"/> UN 2000-09 Part 1	Name plate for vessel							
16		<input type="checkbox"/> UN 2000-10 Part 1	Title blocks for manufactures drawing							
17		<input checked="" type="checkbox"/> UN 2002-05 Part 1	Manufacturing defects at glass reinforced thermosetting plastics vessel and equipment							
18		<input checked="" type="checkbox"/> UN 2002-03 Part 1	Vessel and equip. of glass-fibre-reinforced plastics; Typical configuration							
19		<input checked="" type="checkbox"/> UN 2002-04	Transport and erection for vessel and tanks of GRP							
20		<input checked="" type="checkbox"/> UN 2003-01	Earthing connections for vessels and equipment							
21		<input checked="" type="checkbox"/> UN V416-04	Water quality for pressure tests and flushing of equipment and other components							
22		<input checked="" type="checkbox"/> UN 8281-02 Part 7	Foundation and anchoring, type F							
23		<input checked="" type="checkbox"/> ES-Y1	Painting							
24										
25		<b>Remarks :</b>								
26										

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		<b>General Requirements</b> <b>Catholyte Drain Tank</b>						TON <b>31D003B</b>		
								Item		
								Rev.	00	Page
1	Info	Description								Rev.
2		<b>General</b>								
3		<input checked="" type="checkbox"/> Stress analysis shall be performed by the manufacturer in accordance with design specifications								
4		<input checked="" type="checkbox"/> Specified wall thicknesses are minimum values and shall be increased if required by stress calculation								
5		<input checked="" type="checkbox"/> Nozzle necks shall be least DN 50/ 2". They shall be reduced to the required nominal flange size if necessary.								
6		<input checked="" type="checkbox"/> Bolts, nuts and gaskets for joints with tapped holes have to be supplied by the vessel manufacturer.								
7										
8		<b>Supplies Shall include the following items</b>								
9		<input checked="" type="checkbox"/> Clips, pads and ladders for vessel								
10		<input checked="" type="checkbox"/> Additional 2 sets gaskets for flanges with cover and blind flanges								
11		<input checked="" type="checkbox"/> Additional 10% of bolts and nuts, as spare								
12		<input checked="" type="checkbox"/> Lifting lugs for erection								
13		<input checked="" type="checkbox"/> 2 separate earthing connections to be provided 180 degree apart resp. 1 per saddle, if not otherwise specified								
14		<input type="checkbox"/> All internals								
15		<input checked="" type="checkbox"/> Spare parts for 2 years to be quoted separately								
16		<input checked="" type="checkbox"/> Anchor Bolts								
17		<input checked="" type="checkbox"/> For applicable standards see page ' Index of Applicable Codes and Standards'								
18										
19		<b>Remarks :</b>								
20		1) Materials: PP-R-liner: - RA130E-8427 (PP-R) backed with glass fabric shall be used. Structure of carrying laminate: - Only polyester powder bonded textileglass-mats, -tissues and rovings of E-glass shall be used. Resin: - Tdesign ≤ 95°C: DERAKANE MOMENTUM™ 441-400 - Final resin coat shall include an UV- stabilizator. 2) Stress calculation: - Lining shall not be considered at calculations. 3) Manufacturing: - For spark penetration testing the conductive strips (graphite) shall be applying onto the welding seams prior to application of GRP laminate. - Lined vessels shall not be cured by heating. 4) Tests: - All PP welding must be checked by spark penetration testing acc. to DVS 2206. - Cut-out for nozzles are to be marked with item-no., nozzle-no. and kept minimum 2 years for tests. 5) Add. spare: - For repair work supply some PP welding rods.								

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	<b>Inspection Data, Class: GRP1</b> <b>Catholyte Drain Tank</b>			TON	<b>31D003B</b>																	
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<p>The tests indicated are min. requirements. They have to be performed in addition to the tests specified in the codes and standards. In case of discrepancies between the inspection data sheet (IDS) and the workshop documents approved by tk Uhde the latter shall apply. The manufacturer shall be responsible that the required tests are performed and that the inspector is invited in due time to witness the tests. The manufacturer shall try to perform as many individual tests as possible on the same day, provided that the fabrication process permits such a procedure.</p>																						
Line				<table border="1"> <tr> <th colspan="2">Inspection by</th> <th rowspan="2">IDX</th> <th rowspan="2">Rev</th> </tr> <tr> <th>Manuf.</th> <th>NCA</th> </tr> </table>		Inspection by		IDX	Rev	Manuf.	NCA											
Inspection by		IDX	Rev																			
Manuf.	NCA																					
1	<b>Examination before manufacturing</b>																					
2	Checking of "Quality Control" of manufacturer (audit)			-	◇																	
3	Checking of laminator's qualification (DVS 2220)			△	X																	
4	Checking of welder qualification ( DVS 2212)			△	X																	
5	Checking of weld joints with bend test (DVS 2203-5); Tests that are not made per equipment but minimum once per contract, per liner material and per welder			△	X																	
6	<b>Examination during manufacturing (consider duty class acc. UN 2002-05 Part 1 and DDS)</b>																					
7	Visual check of the lining, especially the welding joints prior lamination			◇	□																	
8	Leakage test of the welding joints of assembled sections and heads and nozzle lamination with electr. high voltage procedure (DVS 2206) before lamination			△	□																	
9	Checking of the tensil strength (EN ISO 527-4)			△	X																	
10	Bending test (EN ISO 14125)			△	X																	
11	Checking of the glass content and the laminate structure (EN ISO 1172)			△	X																	
12	Barcol - hardness test (EN 59)			△	X																	
13	Checking of the tensil strength (EN ISO 527-4)			△	X																	
14	Shear strength (EN 13121-3 (D8), for liner shell made of pipe material DIN 53769-1)			△	X																	
15	Adhesive strength test (DIN 53766-1); Tests that are not made per equipment but minimum once per contract and per liner material. The no. of tests to be agreed during negotiation meeting.			△	X																	
16	Peel resistance test (EN 13121-3 (D9)); Tests that are not made per equipment but minimum once per contract and per liner material. The no. of tests to be agreed during negotiation meeting.			△	X																	
17	<b>Examination after manufacturing (consider duty class acc. UN 2002-05 Part 1 and DDS)</b>																					
18	Dimensional check / as build drawing			△	□																	
19	Pressure test / leakage test			△	■																	
20	Checking of marking			◇	□																	
21	Checking of completeness			◇	◇																	
22	Checking of documentation, presentation during final inspection			◇	◇																	
23	Visual check of the finished product			◇	■																	
24	Leakage test of the welding joints with electr. high voltage procedure (DVS 2206) after pressure test			△	■																	
25	<p>Inspection data Sheet Legend</p> <p>■ - Hold Point, Fabrication stop until inspection has been performed or written release note is given</p> <p>□ - Witeness Point, Fabrication may be continued if inspector is not present after invitation issued in due time</p> <p>△ - Examination with test report</p> <p>X - Review of test report</p> <p>◇ - Test respectively execution</p> <table> <tr> <td>LS = Longitudinal seam</td> <td>MT = Magnetic particle examination</td> <td>DDS = Design Data Sheet</td> </tr> <tr> <td>CS = Circumferential seam</td> <td>PT = Liquid penetrant examination</td> <td>t = Wall thickness</td> </tr> <tr> <td>NCS = Shell-nozzle seam</td> <td>UT = Ultrasonic examination</td> <td>DN = Nominal pipe size (NPS)</td> </tr> <tr> <td>AS = Attachment seam</td> <td>RT = Radiographic examination</td> <td>HAZ = Heat affected zone</td> </tr> <tr> <td>TS = T-Joints</td> <td>DK = Leakage class acc. to UN V416-02 part 1</td> <td>PWHT = Post Weld Heat Treatment</td> </tr> </table>					LS = Longitudinal seam	MT = Magnetic particle examination	DDS = Design Data Sheet	CS = Circumferential seam	PT = Liquid penetrant examination	t = Wall thickness	NCS = Shell-nozzle seam	UT = Ultrasonic examination	DN = Nominal pipe size (NPS)	AS = Attachment seam	RT = Radiographic examination	HAZ = Heat affected zone	TS = T-Joints	DK = Leakage class acc. to UN V416-02 part 1	PWHT = Post Weld Heat Treatment		
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 <b>thyssenkrupp</b>	<b>Documentation</b> <b>Catholyte Drain Tank</b>				TON <b>31D003B</b>					
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	<b>For Information</b>		<b>For Review</b>		<b>For Approval</b>		<b>Erection Doc.</b>		<b>Final Doc.</b>	
	Dispatch of Documents	No. of copies	Dispatch of Documents	No. of copies	Dispatch of Documents	No. of copies	Dispatch of Documents	No. of copies	Dispatch of Documents	No. of copies
Priced spare parts list	2 weeks after order	e								
Fabrication schedule	4 weeks after order/each month	e								
Material status report	8 weeks after order/each month	e								
Stress calculation			6 weeks after order	e					with delivery	4
Foundation loads Foundation drawing 1)	3 weeks after order	e								
General arrangement drawing (1st issue)					4 weeks after order	e	2 months before delivery	e	with delivery	4
General arrangement drawing (rev. issue)					2 week after receipt of comments	e				
Detail drawing with part list (1st issue)					4 weeks after order	e	2 months before delivery	e	with delivery	4
Detail drawing with part list (rev. issue)					2 weeks after receipt of comments	e				
Welding procedure specification (WPS) and qualification record (PQR)			8 weeks after order	e					with delivery	4
Quality plan and testing schedule			4 weeks after order	e			2 months before delivery	e	with delivery	4
Transportation sketch			8 weeks after order	e			2 months before delivery	e	with delivery	4
Operation and maintenance instruction 2)			8 weeks after order	e			2 months before delivery	e	with delivery	4
Storage instruction			8 weeks after order	e			2 months before delivery	e		
Certificates (material test, test/inspection, quality, welder/laminator qualification, etc.)									with delivery	4
1) penalized data    2) in English and Polish language e-> electronic format										