

Item No	Description	References	Page	Item	Paragraph	Comment / Deviation	Conclusion	Client topics	User Topic 1	User Topic 2	Criticality
1	1. Static Equipment - 3. Heat Exchangers - 1. Shell and Tube Heat Exchangers		3/4	1.6.1	Design requirements	Heat exchanger will meet requirements of TEMA C instead of TEMA R.	accepted	Mechanical Design	Shell & Tube - Heat Exchanger	TEMA	3
6			6	1.10.1	pipes of tube bundles	Beside pipes D19.1 x 2.1 mm, using of pipes acc. Manufacturer standard with 16 x 1 mm pipes shall be accepted	accepted	Mechanical Design	Shell & Tube - Heat Exchanger	Tube size / Tube diameter / Tube thickness	4
7			6	1.10.3	seamless tubes	Using of longitudinally welded tubes shall be possible	accepted	Mechanical Design	Shell & Tube - Heat Exchanger	Seamless/longitudinal	4
8			6	E	Official test for heat exchanger	Test according to Coperion ITP including NDT of welds-outside, air bubble test for tubes as well as a hydrostatic pressure test.	accepted	Mechanical Design	Shell & Tube - Heat Exchanger	Inspection/ Test	3

Item No	Description	References	Page	Item	Paragraph	Comment / Deviation	Conclusion	Client topics	User Topic 1	User Topic 2	Criticality
1	Mechanical Static Equipment: Shell and Tube Heat Exchanger Design Criteria		1	9.2.1	General requirements	As the material handling system is not part of the process service of the plant, TEMA class C shall be sufficient for heat exchangers.	ok, confirmed	Mechanical Design	Shell & Tube - Heat Exchanger	TEMA	3
2			2/3	9.2.3.2	Tube Diameter	Tube size incl tube thickness is according to MFR-Standard. Longitudinal welded tubes are used. The selection made is in accordance with TEMA-C requirements	ok, confirmed	Mechanical Design	Shell & Tube - Heat Exchanger	Tube size / Tube diameter / Tube thickness	4
3			5	9.2.4	Cooling water on tube side	Process gas will be on tube side	ok, confirmed	Mechanical Design	Shell & Tube - Heat Exchanger	Tubeside / shellside	3
4				9.2.5	Tube side / Shell side selection	Gas/Air on Tube side, water on shell side	ok, confirmed	Mechanical Design	Shell & Tube - Heat Exchanger	Tubeside / shellside	3
5				10.0 d	seamless tubes	Welded tubes are used as basis. Seamless tubes to be possible only with high additional costs.	Seamless tube to be considered even if higher costs occur.	Mechanical Design	Shell & Tube - Heat Exchanger	Seamless/longitudinal	4

Item No	Standard Comment	Client topics	User Topic 1	User Topic 2	Criticality
1	Design code according to ASME VIII Div. 1	Mechanical Design	Heat Exchanger	Code/ Standard	3
2	TEMA standard according to TEMA Class C	Mechanical Design	Heat Exchanger	TEMA	3
3	Design type according to BEM	Mechanical Design	Heat Exchanger	Fixed	3
4	Design type according to BEW	Mechanical Design	Heat Exchanger	Extractable	3
5	Tube size: 16x1 mm or 18x1 mm tubes	Mechanical Design	Heat Exchanger	Tube size / Tube diameter / Tub	5
6	Tube design: longitudinally welded tubes	Mechanical Design	Heat Exchanger	Seamless/ longitudinal	5
7	Welding tube to tubesheet: one layer welding	Mechanical Design	Heat Exchanger	Tubesheet	4
8	Tube layout: Triangular 30° Minimum tube pitch: 1.25 x Tube diameter	Mechanical Design	Heat Exchanger	Tube bundle	3
9	Process gas chamber: tube side Utility chamber: shell side	Mechanical Design	Heat Exchanger	Tubeside / shellside	3
10	Material of shell, tube bundle, saddle according to Coperion quotation.	Mechanical Design	Heat Exchanger	Material	
11	Inspection according to Coperion ITP.	Mechanical Design	Heat Exchanger	Inspection/ Test	3
12	Documentation according to Coperion document list.	Mechanical Design	Heat Exchanger	Documentation	3
13	API will not be followed.	Mechanical Design	Heat Exchanger	API	3