

Tubeshet Calculation

Tema Code

Eqpt: ST-02

Stationary Tubeshet

Design Conditions:

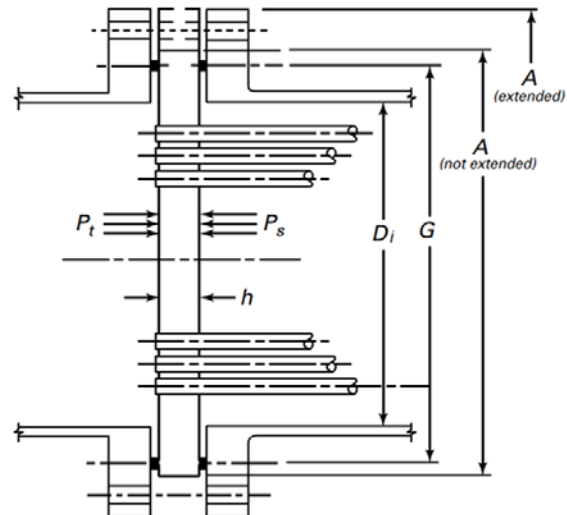
2	245	Td [°C] - Design Temperature
3	0,56	Pi [MPa] - Internal pressure
4	25	Ta [°C] - Ambient Temperature
5	0,000	SG [-] - Specific gravity
6	0	LL [mm] - Liquid level
7	0,56	P [MPa] - Design internal pressure
8	3,0	CA _t [mm] - CA tube side
9	3,0	CA _s [mm] - CA shell side
10	3,0	G _t [mm] - Channel groove thk

Materials & Allowable Stresses:

12	SA-105	Material Designation
13	136	S [MPa] - allowable stress @ design T°

Tubeshet Design:

14	Non Extended	Tubeshet Design
15	Square	Tube pattern
16	1.524,0	A [mm] - tubeshet diameter
17	19,05	do [mm] - tube outside diameter
18	25,4	Po [mm] - tube layout pitch
19	1,0	F _[dless] - tubeshet factor (table A.131)
20	7,0	ts [mm] - shell thickness
21	1.400,0	Di [mm] - shell inside diameter
22	32,0	Gw [mm] - gasket width - table 2-4 VIII Div.1
23	1.460,0	G [mm] - gasket mean diameter
24	0,558	η [mm] - pattern factor
25	3.958	C [mm] - outside tubes perimeter
26	1.246.898,12	A [mm ²] - area inside the tubes
27	1.260,00	DL [mm] - equivalent diameter

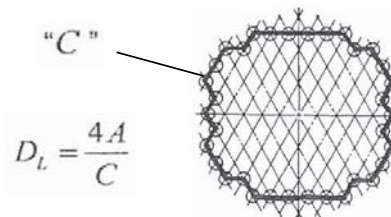


For Tube pattern $\square \diamond$,

$$\eta = 1 - \left[\frac{0.785}{(Pitch/Tube\ OD)^2} \right]$$

For Tube pattern $\triangleright \triangle$,

$$\eta = 1 - \left[\frac{0.907}{(Pitch/Tube\ OD)^2} \right]$$



Required Thickness: TEMA RCB 7.1

Bending Condition:

$tb_{[mm]} = F \cdot G / 3 \cdot V(P/\eta \cdot S)$ req'd thickness due to bending = 41,79

Shear Condition:

$ts_{[mm]} = 0,31 \cdot DL / [1 - do/Po] \cdot [P/S]$ req'd thickness due to shear = 6,43

Final Thickness:

$Treq_{[mm]} = \text{Max}(tb;ts) + CA_s + CA_t + G_t$ required minimum thickness = 50,8

$T_{[mm]} = \text{Selected}$ nominal thickness = 51

Check T = Treq <= T = 50,8 <= 51 = **Acceptable**

Calculation method used is according to TEMA RCB 7.1.
 The required weld size is not checked on this sheet.
 The UG-16(b) minimum thickness requirement has not been taken into consideration here.
 This sheet is for educational use only - use at your own risk.