8-3 某厂脱水塔塔体内径为800mm,实测最小厚度为12mm,材料为20R,其20℃时的 σ_s = 245MPa,塔的工作压力为2MPa,工作温度为180 ℃,塔体采用双面对接焊,局部无损探伤,腐蚀裕量1mm。试校核塔体工作与试压时的强度。

$$t_e = t_{min} - C_2 = 12 - 1 = 11$$
mm
$$\sigma^t = \frac{P(D_i + t_e)}{2t_e} = \frac{2 \times 811}{2 \times 11} = 73.7 \text{ MPa}$$

$$\sigma^t < [\sigma]^t \phi = 126.6 \times 0.85 = 107.61 \text{ MPa}$$

水压实验时:

$$P_T = 1.25P imes rac{[\sigma]}{[\sigma]^T} = 1.25 imes 2 imes rac{133}{126.6} = 2.63 ext{ MPa}$$
 $\sigma_T = rac{P_T(D_i + t_e)}{2t_e} = rac{2.63 imes 811}{2 imes 11} = 96.95 ext{ MPa}$
 $0.9\phi\sigma_S = 0.9 imes 0.85 imes 245 = 187.43$
 $\sigma_T < 0.9\phi\sigma_S \implies rac{1}{12} \implies 1.25 imes 2 imes 2.63 i$