**Problem statement:**

*1. Design a shell and tube heat exchanger (stripped heavy naphtha trim cooler) to cool the heavy naphtha stream of 3 + 0.06 (G-20) kg/s at 85 + 0.5 (G -20) oC to 55 oC using water at 27 oC as the coolant.*

*(G = group number)*

*Process Requirements:*

1. *Design tolerance < 5 %*
2. *Tube side pressure drop < 10 psi*
3. *Overdesign area tolerance < 10 %*