

PROCESS DESIGN PRACTICES
DESIGN CONDITIONS

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3.6. Example (continue)

• Equipment design conditions (continue)

– Feed-Bottoms Exchanger (continue)

Tube side (Low pressure side)

Material = Carbon Steel (from MSD)

Design pres = Based on Stripper relief valve

$$= P_d + \Delta P_{trays} + \Delta P_{elev} \text{ or } \frac{10}{13} \text{ HP side}$$

$$= 1250 + 25 \times 0.12 \times 6.895 + (15+7) \times 9.81 \times 0.535 / 3.2808 \text{ or } \frac{10}{13} \times 1600$$

$$= 1305 \text{ or } 1230 \text{ kPag}$$

$$= 1330 \text{ kPag (rounded)}$$

Design temp = Max of 120 or $T_{operating} + 28$

$$= \text{Max of } 120 \text{ or } 191 + 28$$

$$= 219 \text{ }^\circ\text{C}$$

$$= 225 \text{ }^\circ\text{C (rounded)}$$

Flange class = Class 300

– Feed Pump Discharge Piping

Material = Carbon Steel (from MSD)

Design pres = Based on pump shut off pressure

$$= P_{d, Feed Drum} + \Delta P_{max level} + \Delta P_{max pump}$$

$$= 350 + (15+7) \times 9.81 \times 0.708 / 3.2808 + 1.25 \times (1701-201)$$

$$= 2272 \text{ kPag}$$

$$= 2300 \text{ kPag (rounded)}$$

Design temp = Max of 120 or $T_{operating} + 28$

$$= \text{Max of } 120 \text{ or } 30 + 28$$

$$= 120 \text{ }^\circ\text{C}$$

Flange class = Class 300