

# Glycerol Evaporation Plant (GLYCEROL)

### DESCRIPTION:

Several unit operation models in ChemCAD III represent complete equipment pieces. Sometimes, however, a complex equipment must be made of 'building blocks', i.e., unit operations. This is the case of the three-effect evaporator unit shown in this example. This unit concentrates aqueous glycerol solution from 10 to 95 weight percent.

### NOTES:

1. A single evaporation effect is generally modeled as a heat exchanger, flash, and valve combination. In the co-current evaporator setup, vapor from an effect is evaporating expanded liquid from that

effect. We have added more auxiliary equipment to show the layout of the true unit.

2. Evaporators are not easy to model. As the effects work at tight temperature differences, the key task is to specify correct pressure split between the effects. Here, the effects work under 1.15, 0.4, and 0.06 bara.
3. Heat integration also causes problems. This specific job depends on many specifications, primary ones being: the split in divider 10, temperature of stream 3, and operation of heat exchangers 6 and 7.
4. The thermo model is Wilson, which models well alcohol/water systems with single liquid phase.

