



CC - SAFETY NET

CC-SAFETY NET is an engineering software tool designed to simulate the steady state behavior of pressure relief devices, blowdown piping systems, and piping networks under actual component mixture flowing conditions. It also provides powerful facilities for environmental audits in the prediction of volatile organic compound (VOC) emissions to atmosphere at equilibrium conditions.

The module is fully integrated into the **CHEMCAD** structure, sharing common features such as user interface, physical property database for 1900 components, 36 thermodynamic options, plotting and reporting.

Specific features allow for relief device sizing using the Design Institute for Emergency Relief System (DIERS) method and includes the basic unit operations for all types of piping networks including blowdown piping network sizing and rating.

UNIT OPERATIONS

- **Pressure node** - network mass & energy balance automatic convergence
- **Pipe** - rating or design by isothermal gas long pipe, single phase, two phase Baker or Beggs & Brill, Hazen Williams for water and Fritzsche for steam
- **Pumps, compressors, and expanders** - performance curves can be included
- **Valves** - valve pressure drop can be calculated or specified
- **Flash** - vapor liquid or liquid liquid equilibrium and condensation with or without inerts

RELIEF DEVICE SIZING (DIERS)

- Design and rating of relief valves and rupture (bursting) discs
- Vessel models - bubbly, churn-turbulent and homogeneous
- Vent flow models - HEM, ERM, Henry-Fauske, HNE, non-flashing liquid and single phase vap
- Heat models - API 520/521, API 2000, OSHA1910.116, NFPA 30, specify heat rate or tempered runaway reaction. User vent flow rate can be entered
- User fluid properties can be entered

FACILITIES

- Plot and report facility for physical property databank of 1900 pure components
- User added component facilities
- Extensive thermodynamics for vle and lle
- K-value options - ideal vap, BWRS, PR, SRK, NRTL, UNIQUAC, Wilson, UNIFAC, Margules, van Laar, electrolytes, and others
- H-value options - BWRS, PR, SRK, Lee-Kessler, Latent Heat, Steam tables
- Export facility to Microsoft Excel?
- Powerful unit conversion facilities

APPLICATIONS

- Relief system analysis
- Blowdown pipe network design and rating
- Flare system headers design and rating
- General pipe network steady state design and rating
- VOC emission predictions at equilibrium conditions for environmental audits
- Heat and mass balances

SPECIAL NOTE ON DYNAMIC ANALYSIS

Dynamic analysis of pipe networks **cannot** be carried out with this software module. To carry out dynamic analysis of knock-out pots, blowdown drums and flare systems Chemstations modules CC-DCOLUMN or CC-ReACS are required.



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