

## Program provides short-cut distillation tower calculations

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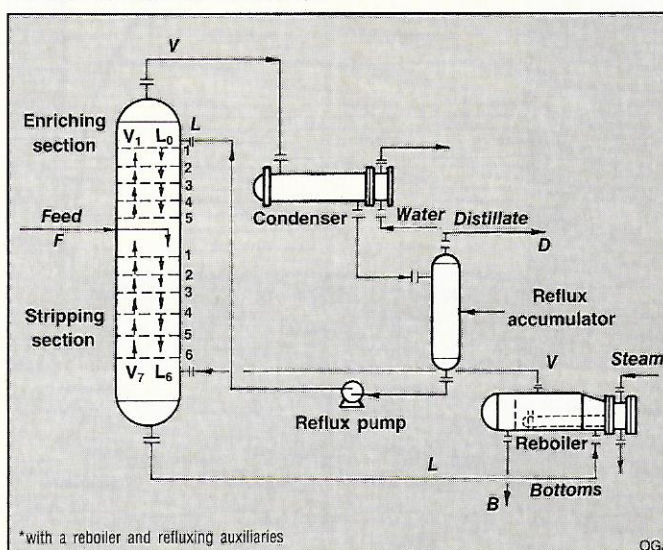
An interactive Fortran 77 program, named MTRANS, has been developed for short-cut distillation tower calculations based upon the derived method of the Hengstebeck-Geddes equation.

The program has an option of entering either the equilibrium constant or the relative volatility with the feed-stream key component.

It also arranges the relative volatilities in order of decreasing magnitude before proceeding to compute the correlation constants. The following assumptions are used in the program:

- There is only one feed stream with 12 or fewer key components.
- There is only one heavy key component.
- Feed components may be arranged in order of decreasing relative volatility, but the light key (LK) and heavy key (HK) components must be adjacent to each other.
- The feed enters the column at the optimum stage.
- The column produces two products (distillate and bottoms) with overhead condenser and bottom reboiler.

### Fractionation column\*



The program uses the bisection method to determine Underwood's constant ( $\theta$ ), or the root of Underwood's equation, and then proceeds to evaluate the minimum reflux ratio. From a given multiplier (FACTOR), the actual reflux ratio is determined.

Fenske's equation determines the minimum number of stages. Gilliland's graphical correlation, as expressed by McCormick in terms of a single equation, computes the actual number of stages.

The location of the feed stage is determined by Kirkbride's empirical equation.

The program can be loaded onto a hard disk of a personal computer, or it can be run from a floppy diskette. The program can be executed directly in the DOS environment.

To run the program from a hard disk system, simply type MTRANS.EXE or MTRANS after the C> prompt. If running from a floppy disk, type MTRANS after the A> or B>

Fig. 1