

Computer Aided Refinery Operations Scheduling - FORWARD

Application: FORWARD is an interactive system dedicated to the scheduling of refinery operations. It provides a single tool to solve all refinery scheduling problems from crude arrivals to finished product delivery.

Strategy: FORWARD combines the experience of the scheduling team and the power of object-oriented programming, artificial intelligence, constraint propagation, linear programming, simulation and efficient user interface techniques.

FORWARD contains facilities to easily configure and maintain the refinery model :

- flowsheet information can be easily entered to define the scheduling scheme
- process unit models can be configured or selected from a library of process unit models

Main features: FORWARD is built around two main views which make all necessary information easily available at the user's fingertips:

- The Gantt Chart is used to build and visualize the production scenario.
- The Refinery Graph view provides a snapshot of the refinery operations at any time.

A scenario is built by placing events either manually or automatically on the Gantt chart and entering the event attributes through pop-up windows.

During the scenario simulation, FORWARD warns the user of any unfeasibility and provides guidance for proper action.

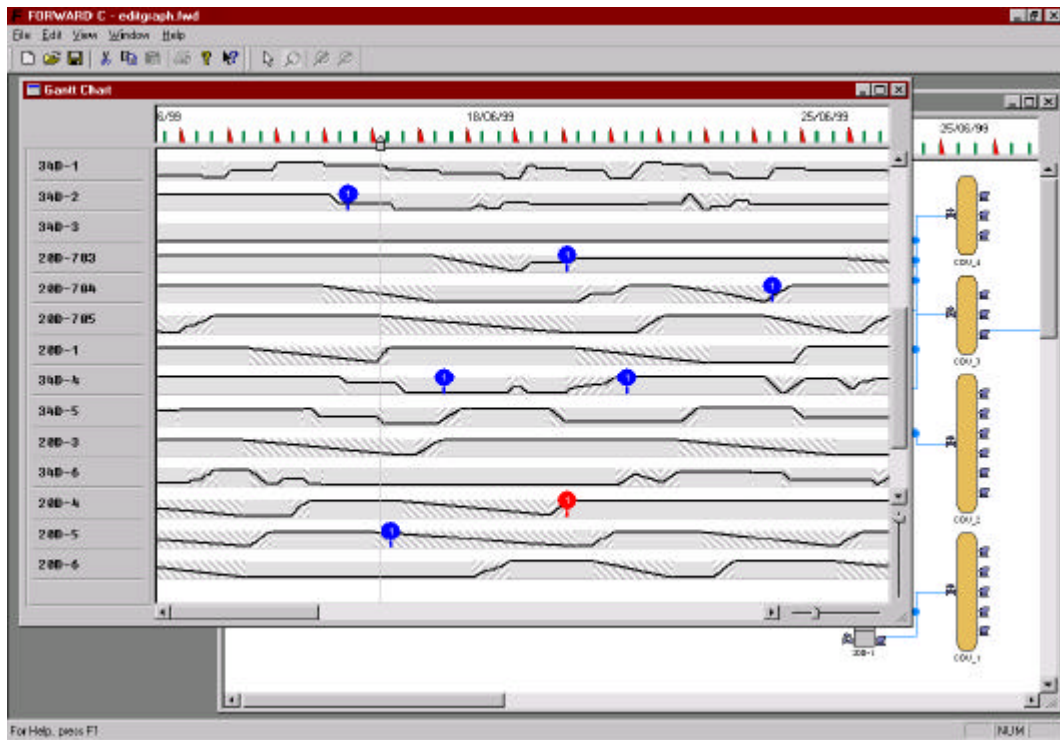
FORWARD includes facilities to optimize crude unloading operations, crude mixing in tanks, crude sequences to ADUs and finished product blending operations.

Economics: FORWARD bridges the gap between the production plans and the daily operations. It enables the user to define the operating instructions for short term horizon without losing track of the optimum monthly or weekly plans and provides trends for a longer-term horizon. Its computational power enables the user to identify potential problems and dynamically modify the scenario to react quickly to new events. Benefits are obtained from increased throughput, better utilization of feedstocks and intermediate streams, better utilization of components in blending, reduction of demurrage.

Commercial installations : FORWARD has been implemented in several refineries in Europe and Asia: BP Lavéra (France), ERGMed/ISAB Priolo (Italy), TOTAL Antwerp (Belgium), LG-CALTEX OIL CORP. Yosu (Korea), JOMO Mizushima (Japan), CHEVRONTEXACO, Pembroke (UK).

Licensors : TECHNIP, ASE Department, Paris and Rome.

An example of FORWARD display of Gantt chart



An example of FORWARD dynamic display of the refinery network

