Plant-Wide Mass Balance Reconciliation - GERA

Application: The GERA mass balance reconciliation system, is used to interactively generate validated daily plant-wide mass balances and reconciled data for oil accounting and to provide sound data for an integrated plant information system.

Strategy: The main plant facilities are described as a simplified process flow sheet - the GERA network- including nodes (process units, tanks, blenders, receipt/shipment facilities) and flows between nodes. The GERA network is represented graphically in a very intuitive manner - GERA graph - thanks to powerful graphical facilities included in the software.
GERA reconciles cumulated flow measurements, tank inventories and estimated losses together with their associated uncertainty.

Main features : The latest release of GERA includes:

- fully graphical generation of the mass balance equations by just drawing the network,
- direct visualization of the balance reconciliation results on the graph,
- treatment of several plant network graphs concurrently,
- multi-user access for consulting validated results,
- Excel add-ins for unit and production reporting,
- full compliance with Microsoft Windows NT standards and ORACLE.

Economics: Benefits generated by GERA are essentially derived from a better day by day knowledge of the plant operations from crude receipts to finished products shipments. In particular, the benefits consist in supply of a coherent and timely set of data to be used by all plant's departments, improved monitoring of instrumentation and consequent savings in maintenance and alleviation of mass balancing computation tasks. GERA also provides coherent tank farm inventory and product movements reporting, reliable process unit yield analysis as well as timely and better knowledge of magnitude and location of the losses. Typically, benefits amount to 0.5 - 1.5 million of USD per year in complex refineries with high capacity.

Commercial installations by TECHNIP: GERA has been implemented at ten sites in Europe, Asia, Africa and the Middle East including: ELF ANTAR FRANCE, TOTALFINA (Belgium), API (Italy), ELF-MIDER (Germany), SAUDI ARAMCO (Saudi Arabia), ADNOC TAKREER (UAE) , HYUNDAI PETROCHEMICAL CO (Korea), SOCIETE CHERIFIENNE DES PETROLES (Morocco).

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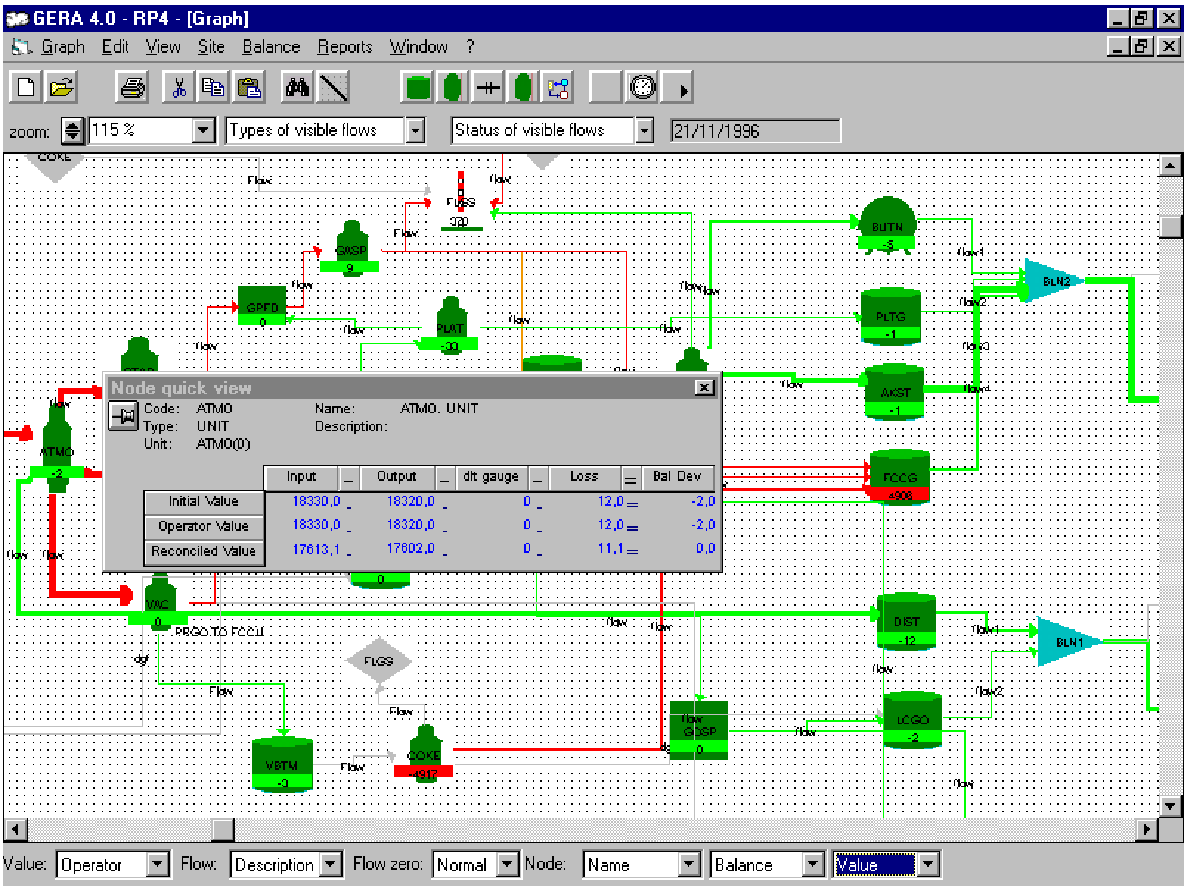
A typical GERA display



GERA working principle