"Our role is to help refineries to reduce costs while improving your bottom line."

Simcon Advanced Application Services, an solutions and consulting firm in the area of refinery APC, simulation and blending, has over 100 man-years of technical experience and knowledge in the applications of blending advanced control and process optimization.

Our Intelligent Oil Movement and Storage System (iOM&S) represents only one of our totally integrated solution applications. The iOM&S system is designed for refining, production, bulk terminals, petrochemicals, food and beverage, pharmaceuticals and many other industries. These systems target your particular needs to maximize your profitability.

ABB is a worldwide supplier of refinery APC and offsite automation services.

Partners in Productivity

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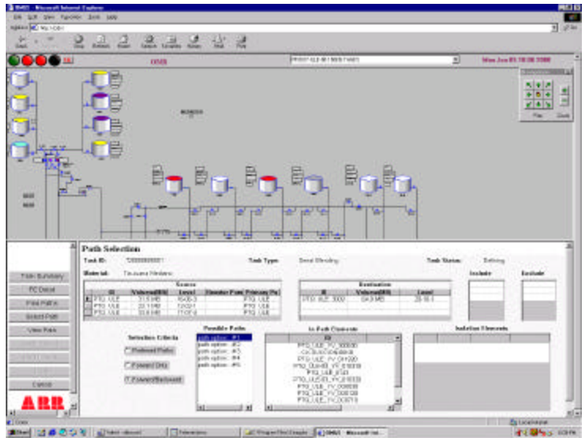
Oil Movement and Storage Expert System for Tank Farms



Supply chain management and control represents a key area for profit improvements in a wide range of industries. ABB's Intelligent Oil Movement and Storage (iOM&S) expert system brings valuable technology to your tank farms.

What it means to you

ABB's iOM&S system approach reduces configuration and deployment costs. It also minimizes client support requirements, thus reducing the overall operational costs.

- Increased utilization factor for tankage, berths, pipelines
- Decreased time for product loading/unloading
- Decreased time for complete customer order execution, from receiving order to actual shipment
- Decreased inventory and quality giveaway from downgrading
- Increased manpower efficiency
- A typical 100,000 barrel/day conversion refinery with 100 storage tanks can realize $8 to $10 million per year in real benefits

Functions

- Automatic path selection, line-up, start-up, control, monitoring, shutdown and reporting for:
  - Marine loading/unloading
  - Pipeline receipts/shipments
  - Tank to tank transfers
  - Unit feed/rundown
  - Blending
- Optimal path selection to:
  - Minimize manual field elements
  - Minimize displacement volume
  - Use/do not use specified field equipment
- Automatic fallback/workarounds
- Material compatibility checking
- Material balance checking
- Tank inventory management
- Interfaces to planning, scheduling, plant database

ABB Inc. Simcon Advanced Application Services

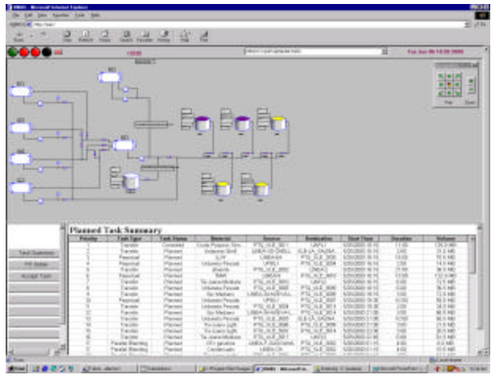
Easy configuration.
Material optimization.
Fast results.

The iOM&S application is seamlessly integrated with the ABB's Material Planning and Scheduling (MP&S) application. The results from a short term plan (a 72 hour schedule of various shipments and receipts) from the MP&S application are easily and automatically downloaded from the MP&S application and converted into the actual tasks in iOM&S.

The iOM&S uses easily configured rules and facilities topology to optimize material movement and path selection. It identifies the best use of equipment and inventories and presents its results in easy to understand graphics. All typical tank farm task types are handled.

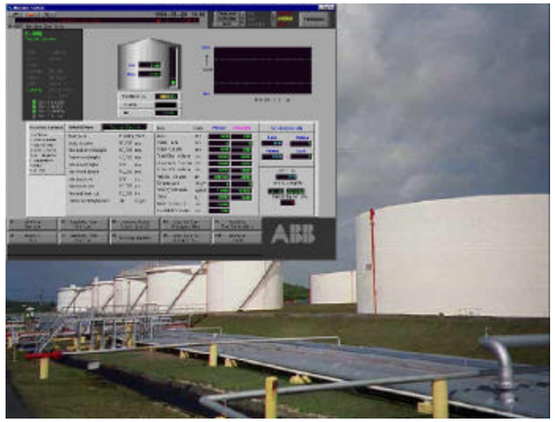
A single model topology of the tank farm is presented graphically to the process operators and any other users in much the same form as a Process Flow Diagram or Plot Plan. Equipment and tasks are intelligent "objects", generated from ABB's extensive library of customized objects for the process industry. Each object is connected to others through the iOM&S engine AIEM (ABB Intelligent Enterprise Manager). Each object understands its own relationship to every other object it is connected to. This connectivity also enables the system to understand the relationship between materials and products.

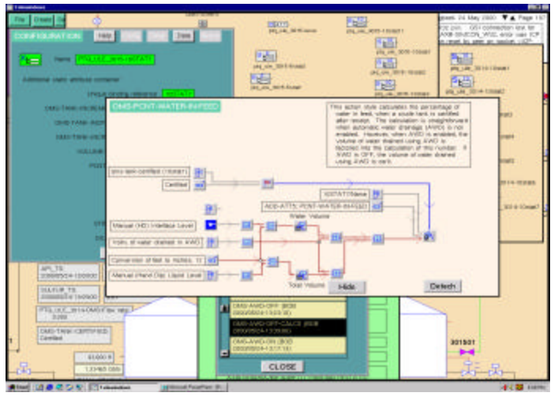
A product rundown or storage tank "understands" all existing piping to which it is connected, the piping capacities, associated valving, pumps, and instrumentation such as gauging systems, laboratory information



systems and all possible destination tanks. Associated with each object, such as tanks, pumps, valves, etc., equipment rules are designed to prevent damage, errors in use and violations of environmental regulations. Rules are also applied to objects and tasks to prevent cross-contamination, minimize degradation of product, manage inventory and provide normal operating rules for job and task execution. Special sequences can be set up to ensure that the material is displaced properly to prevent contamination, downgrading or thermal expansion that could cause equipment damage (i.e. float paths).

Optimal material movements and path selection between sources and destinations encompass rules that address issues such as product degradation, material compatibility, resident materials flushing, equipment loading, equipment commitment and utilization.





High tech.
Limited staff.

Technology Advantage

- iOM&S object expert system permits the utilization of domain knowledge in every aspect of supply chain management
- Rules applied to objects and tasks provide optimal utilization of equipment and inventories
- Eliminates the need for specialized software support personnel
- A "drag and drop" and "fill in the blanks" configuration methodology permits rapid modifications and changes following initial project completion
- Library of rule objects provides simple configuration of rules to protect personnel, equipment and products

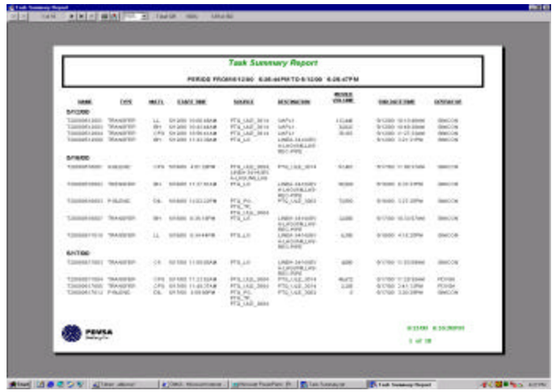
Graphical System

- ABB's iOM&S resides on an NT computer, under the AIEM engine
- End users such as operators, dispatchers, and supervisors access the model via a "web browser" available on all workstations
- System can be easily customized to fit their exact needs related to their operational requirements

Simple interface.
Integration and reporting.
Fast calculations.

Engineering Calculations

Highly efficient action objects carry out the real time calculations at high speed. They are linked in much the same way as the iOM&S plant objects are in the definition of the process topology. Collectively called action styles, these objects are symbolized by intuitive icons that can be easily understood by the user to rapidly put together logical and arithmetic functions. The action objects can be connected to the real time inputs and calculated values from the action styles can be displayed to the operator and /or stored in the satellite ORACLE database for alternate uses such as reporting (via crystal reports), historizing and communication to other plant applications. Tools are provided for automatic and fast replication of the action styles across the objects in a given



Interface to Instrument Subsystems

Standard COM/OPC interface exists between the instrumentation subsystem such as a DCS or a SCADA system and the iOM&S system. The components of task actions such as path line-ups, flow starters, source/destination swing actions, task suspension/resumption and task completion, are carried out by individual sequence tables (ST's) that get translated into the DCS/SCADA commands such as close, open, start and stop. As far as the inputs are concerned, the plant variables are transmitted through the interface with appropriate signal quality indicators that can be used within the engineering calculations as conditions.

Fully Integrated Crystal Reports

The reports are generated via Crystal Reports application (from Seagate Technologies) that is seamlessly and fully integrated with the iOM&S product. The satellite ORACLE database is designed to support approximately a number of standard OM&S reports such as tankage inventory, end of task and equipment run-time reports. Additional custom-tailored reports can be readily implemented via easy to execute standard engineering practices such as implementation of new action styles (for additional calculations), extension of the ORACLE tables to store the newly calculated values (if necessary) and application of the crystal report design tools.

Common processes.
Flexibility and reliability.
Proven expertise.

An easy to use icon driven user interface connects the user to a garden variety of operating reports representing events during a selectable period as well as standard periodic reports such as inventory monitor.

A variety of restart options are available during any unlikely outage of the system while task definitions and executions were in progress. The procedure allows for a full recovery for a bumpless transfer to the actual state of the tank farm no matter how long the system outage had been in effect.

Embedded in the iOM&S system are typical plant offsites operations such as:

- Receipts of feed and other intermediate products/feeds
- Unit feeds from tankage
- Rundown (off-the unit), batch, parallel and serial blending
- Transfers, shipments and custody transfers
- Unit rundowns
- Water Drainage