

Manage your business from anywhere

A new PC/Network-based platform designed specifically for petroleum engineers lets them completely manage every aspect of their businesses from their laptops.

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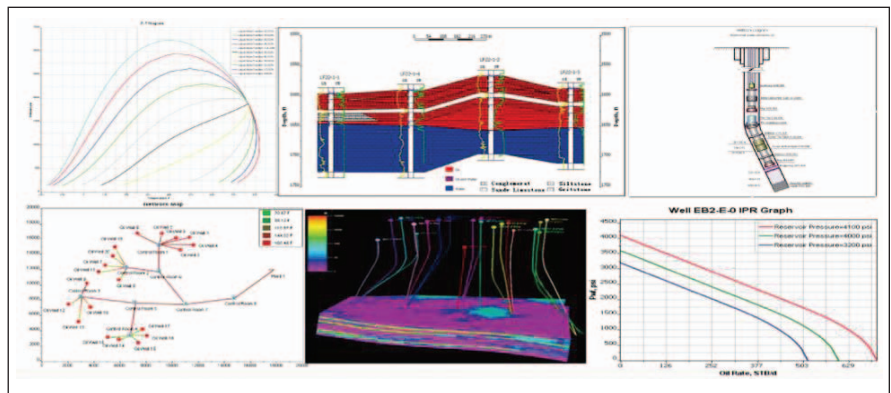
Global mobility is the name of the game these days. Operations that previously were designed or operated using “rules of thumb” now demand more precision. Decisions require detailed analysis, especially when risk is a factor.

The old silos engineers used to work in are disappearing. Where previously petroleum engineers were engaged in drilling, completion, production, or reservoir work, the old walls separating these activities are falling. Enterprise, or asset management, is taking the place of task-oriented functions, and engineers need to maintain much broader perspectives than before.

A new tool evolves

An essential ingredient of efficiency is the ability to turn data into actionable information presented in a coherent, standardized way. Optimization Petroleum Technologies Inc. made this the number one requirement for its new software platform, called PEOffice. Key design parameters carried through to the final product include:

- User-friendly operations with intuitive graphical illustration capabilities;
- Complete, continuous workflows from initial exploration to abandonment with the ability to access and exit the program at any point;
- Systematic, comprehensive and ana-



Mapping and visualization tools create a framework from which to start building a reservoir model. (Images courtesy of Optimization Petroleum Technologies Inc.)

lytical evaluation of the entire oil and gas production system or any subset thereof;

- Ability to access legacy data from a wide variety of database systems;
- Appeal to geologists, geophysicists, petrophysicists, upper-level managers, and field superintendents as a communication and collaboration tool; and
- Ability to perform economic and risk analyses as well as contextual decision-making.

Many excellent task-oriented software systems have been designed over the years. But for the first time, PEOffice links all of the various functions associated with oil or gas well drilling and production into a single package that completely describes the skills required of an experienced petroleum engineer.

User-friendly vendor-neutral features

PEOffice accepts input from virtually all acquisition systems and software programs, regardless of the vendor. It can access legacy systems and integrate historical data with new information.

Programs are offered in reservoir and

wellbore visualization and rock/fluid characterization along with reservoir and individual well production analysis. Specialty activities are included such as water injection system analysis, gathering system and transportation system analyses, and results management. Within these categories reside programs that can be used singly to help understand a particular problem or analyze a specific scenario. Additionally, they can be grouped to help solve more complex reservoir or asset issues involving several parameters.

For example, the production analysis section contains programs for naturally producing oil or gas wells as well as specific programs tailored for wells being produced using beam pumps or wells on electrical submersible pumps (ESPs). A field-assist program helps users map production for the entire field and identify bottlenecks and problem wells. Workovers can be prioritized based on which well will contribute the most incremental added production after the workover so that efforts are directed where they will do the most good in the least time.

Reservoir modeling allows users to

visualize everything in 3-D and helps to import data from all sources. Later, it can provide a full 3-D visualization to facilitate communication between members of the asset team. By linking reservoir performance with production system analysis, the entire production system can be characterized and modeled. Production surveillance systems can be established using existing monitoring data to evaluate individual well or injector performance as well as that of the asset. Potential production enhancements can be evaluated before implementation. At the same time, production issues can be addressed and analyzed and problems diagnosed.

Ultimately, production can be optimized for the existing system. And responsible growth strategies can be modeled to determine the best way forward to maximize ultimate recovery from the reservoir over its economic life.

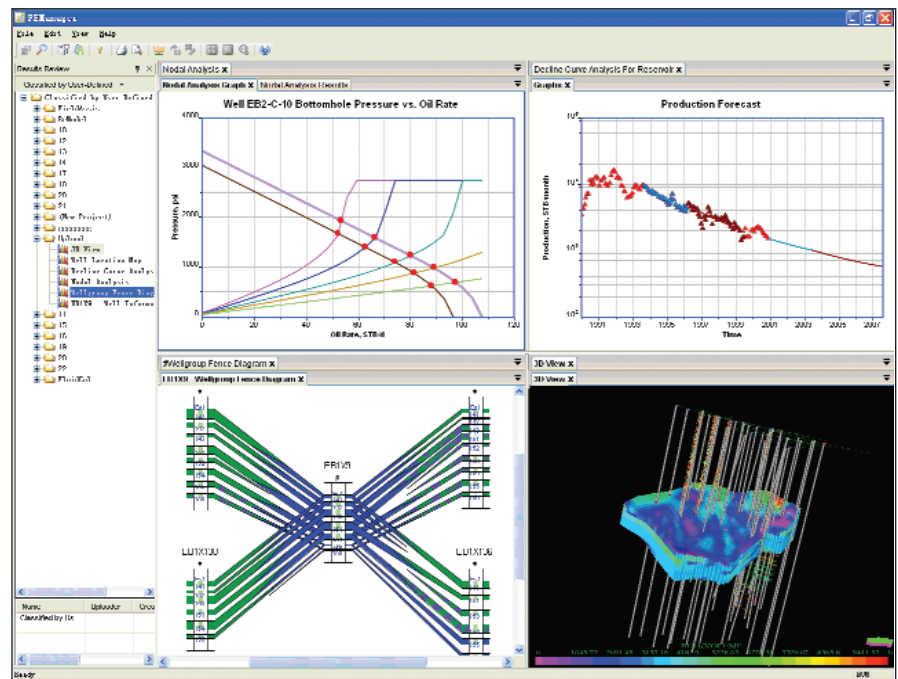
Details make the case

The program uses knowledge management principles together with petroleum engineering workflows and a powerful data engine to perform numerous essential tasks with high efficiency. The seven modules contain 18 petroleum engineering programs that can be run in standalone mode or linked seamlessly.

Programs range from sophisticated 3-D reservoir visualization rendering to mapping programs that tie locations of producing wells, observation wells, and injector wells with surface facilities and pipelines and superimpose them onto the reservoir structure map. Practical programs help present static well data

in tabular format, graphic views, cross sections, or fence diagrams. And a wellbore design program helps engineers perform loading stress analyses as they design well trajectories and space out completions.

The rock/fluid characterization module contains a rock properties analysis program and a fluid proper-



Production performance as well as technical data (logs, formations, wellspacing, drainage) can be visualized for any number of wells using PEOffice Manager.

ties analysis that uses both a compositional model and a black oil model. Both can match lab and field test data to find the best solution for the scenario under study. The reservoir production analysis module contains a production statistics and analysis program that takes the drudgery out of amassing daily measurements and statistics into useful reports. The results can be integrated with the mapping program and/or presented in tabular format. Trends, graphs, and charts can be integrated into the report to provide a rich understanding of what the asset is doing. The production analysis module also contains forecasting engines for both oil and gas reservoirs and production systems as well as the SimON numerical simulator.

SimON optimizes preprocessing data preparation and streamlines workflow steps without jeopardizing accuracy or consistency. It gives diverse, reliable results under a variety of scenarios. It allows data sharing between reservoir simulation and production analysis and is designed for use by professional simulation engi-

neers as well as non-professionals, tested and validated from fields in North America, Latin America, the Middle East, Africa, and China. SimON is a fully implicit, three-dimensional and three-phase black oil reservoir simulator, capable of simulating gas/water, oil/water, or gas/oil/water flows. Users can choose from a diverse variety of reservoir descriptor parameters to make the simulator as realistic as possible; then the numerical engine goes to work. A post-processing function creates curve plots and 2-D and 3-D grid views to help all members of the asset team visualize the results.

Essentially, PEOffice acts as a systematic, comprehensive, and analytical tool for the evaluation of the oil and gas production system through the integration of reservoir engineering, production engineering, facility engineering and analysis/findings results management. It allows engineers to quickly and economically turn myriad, disparate data into actionable, practical information by which they can manage their assets and maximize profitability. **HP**