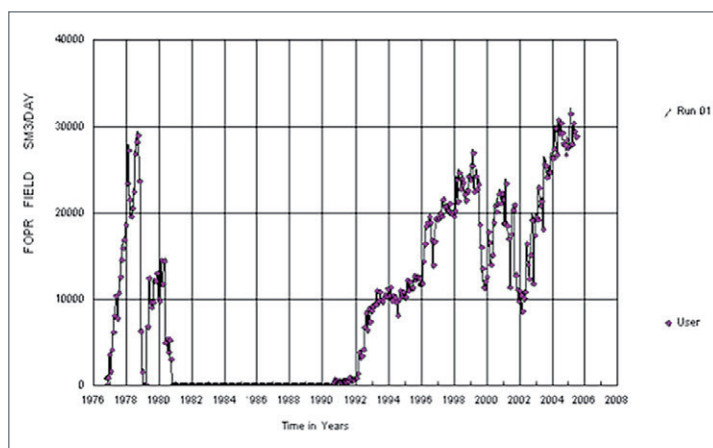
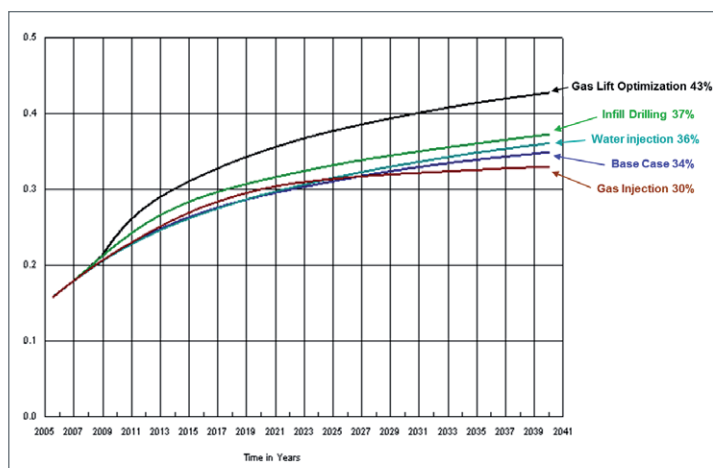


Match history and forecast production accurately

RockMod® performs multiple stack (AVO/AVA) geostatistical reservoir characterization to produce multiple highly detailed models through tightly integrating disparate data across all pertinent geoscience domains. The outcome is accurate reservoir models in depth for prediction of field reserves, fluid flow patterns, and future production. Another value it provides is a reliable basis for quantitative measure of uncertainty. **RockMod** is relevant where dual or triple parameters like P-Impedance, S-Impedance and Density are needed to distinguish the facies of interest.



Excellent match in the prediction of monthly production rate from the simulator (Black line) versus the historic data (Purple dots) with no use of Porosity modifiers in the simulation model.



Projected ultimate recovery for various production scenarios through 2040.

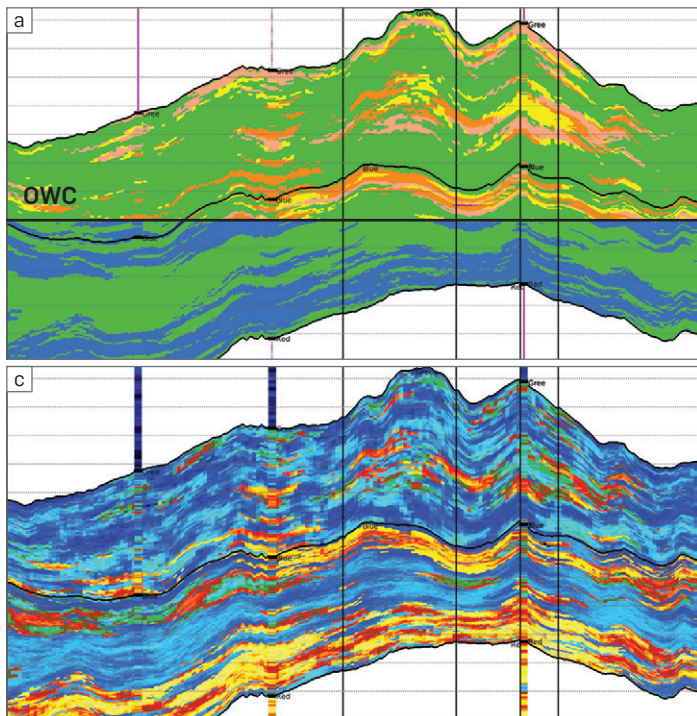
Presented at the 2008 Petroleum International Exhibition and Conference held in Abu Dhabi, UAE, 3-8 November 2008. SPE paper 118178.

- Produces accurate reservoir models that are consistent with all data and knowledge available in the field, ready as input for follow-on flow simulation and production assessment
- Generates highly detailed multiple realizations to better capture uncertainties associated with data, models, and thin beds

Key features and benefits

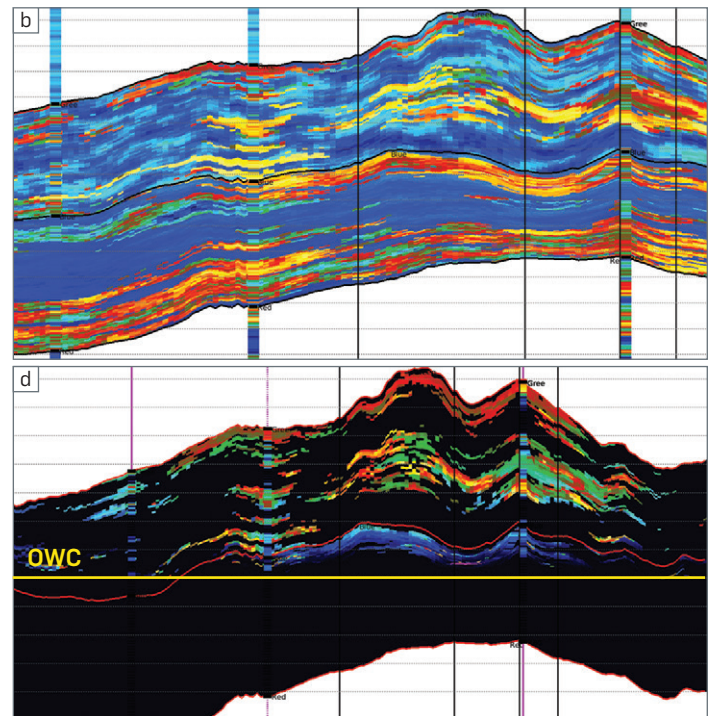
- Joint inversion of facies, elastic, and engineering (petrophysical) properties
- Invert directly for engineering properties through rock physics models that include uncertainties between properties
- Invert in depth through the use of velocity model
- Advanced multi-level facies association and ordering
- Advanced use of Constant, 1D, 2D and 3D facies proportions
- Intuitive 1D and 3D facies probabilities trend editor
- Flexible variogram modeling
- Backus upscaling of elastic properties for enhanced calibration with seismic
- Advanced geophysical options (Laterally varying wavelet and S/N, 4D, PP-PS, and Anisotropic Inversion)
- Automated quality controls for single and multiple realizations
- Support for multi-core and multi-machine processing for maximum productivity
- Quick Property Setup available to speed up preparation of run job
- Advanced Ranking tool with flexible cutoff criteria and highly configurable volume extent to select P10, P50 and P90 models
- Efficient and accurate transfer of results into reservoir and simulation models (CPGs)

RockMod



Highly detailed RockMod models honoring Oil Water Contact: (a) Facies – Green: Shale; Blue: Brine Sand; Yellow: Low Quality Oil Sand; Pink: Mid Quality Oil Sand; Brown: High Quality Oil Sand. (b) Porosity – Gold: 0.28; Blue: 0.01. (c) Volume of Clay – Gold: 0.0; Blue: 0.7. (d) Water Saturation– Gold: 0.0; Black: 1.0.

Presented at the 75th EAGE Conference and Exhibition incorporating SPE EUROPEC 2013 held in London, UK, 10-13 June 2013. Paper We-07-01.



Recommended hardware

Processor:

8+, 16+ and 32+ cores for working with small, mid and large sized datasets respectively.

Hard drives:

SATA-II hard drive with enough disk space for your data.

Disk space for software installation:

10 GB of free disk space recommended for installation since the installer un-compresses files and generates temporary files. The installed software will occupy about 4 GB of disk space.

Memory:

16+, 64+ and 128+ GB for small, mid and large sized datasets respectively.

Graphics card:

512 MB NVIDIA® OpenGL 3.0 capable video card with at least 48 shader cores. No requirement for computer cluster.

Monitors:

Dual monitors are recommended. On Linux™, configure the X-server to use NVIDIA's TwinView™ architecture. Xinerama is not supported because it causes performance issues in the viewers.

Operating system requirements

On Linux™ x64, the following operating systems are supported:

- SUSE™ Linux™ Enterprise Server 11 or later, with latest updates
- Red Hat® Linux™ Enterprise Server (CentOS) 4, 5 or 6, with latest updates

On Windows®, only 64-bit version of the following are supported:

- Windows® 7 and 8, with latest service packs installed

Interoperability

- Jason® Workbench
- EarthModel® FT
- Easy transfer of model properties to Petrel® corner point grids, through EarthModel FT Petrel plugin

Regional Contacts

Please visit cgg.com/contact

General Contact

geosoftware.info@cgg.com

CGG Worldwide Headquarters - Tour Maine-Montparnasse - 33, avenue du Maine - B.P. 191 - 75755 Paris Cedex 15, FRANCE +33 1 64 47 45 00