- Multi-Porosity
- Multi-Permeability
- Multi-Components

COMET3 Reservoir Simulator for Unconventional Gas Reservoirs

COMET3 is a technically advanced yet simple to use reservoir simulator for any company interested in maximizing natural gas recovery from unconventional reservoirs. It is an industry preferred model for fractured reservoirs, coalbed methane, gas-bearing shales and sandstones, and fractured carbonates.

COMET3 offers true triple porosity, dual permeability capability for accurate modeling of naturally fractured reservoirs with matrix porosity and gas desorption. Two additional options – enhanced methane recovery using carbon dioxide or nitrogen injection further extend ***COMET3*** for modeling new technology. ***COMET3*** provides modern and rigorous solution techniques, has a fully implicit wellbore algorithm.

Principal Features

COMET3 is a three-dimensional, finite-difference fractured reservoir simulator designed for unconventional gas and black oil problems.

- **Triple Porosity/ Dual Permeability:** Rigorously handles the release and transport mechanisms of desorption, diffusion and Darcy flow through a dual permeability network (matrix and fractures). Binary Gas Sorption: Defines the non-linear relationship between free and adsorbed multi-component gas mixtures (methane-nitrogen and methane-carbon dioxide) as a function of methane concentration using extended Langmuir isotherms.
- **Complex Conditions:** Aquifer functions allow the modeling of water influx and recharge. Stress-sensitive permeability and porosity, matrix shrinkage and swelling, hydraulically fractured and cavitated wells can be modeled.
- **Two-Phase Flow:** Models two-phase flow (gas-water, oil-water, or gas-oil) through either a single-or dual-permeability network.
- **Fully 3-dimensional:** Accurately handles thick, layered reservoirs and multiple, independent zones.

Applications

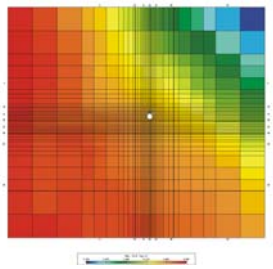
COMET3 is an excellent engineering tool for understanding individual well or full field production results, determining appropriate well completion methods, optimizing full field development strategies, and assessing enhanced recovery and/or carbon sequestration potential.

- **Fractured Reservoirs:** Coalbed methane, fractured shales, tight, fractured sands and carbonates can all be modeled using ***COMET3***.
- **Enhanced Methane Recovery:** Compositional features enable operators to examine N2 or CO2 injection for their coal seam and gas shale reservoirs, and forecast gas production resulting from the process.
- **Gas Storage Reservoirs:** Models gas injection and deliverability for gas storage facilities.
- **Mine Degasification:** Features allow determination of gas production and degasification effectiveness from gob wells, and horizontal boreholes. Examine the effect of nearby surface mining on CBM recovery.
- **Well Test Analysis:** Fully implicit wellbore algorithm allows detailed simulation of multi-zone completions with drawdown/buildup data.

Utility

COMET3 is designed for ease-of-use with a menu-driven program interface, CometEditor:

- **Model Construction:** Easily construct single or multi-well models in a graphical interface.
- **Geologic Features:** Import geologic maps for accurate reservoir descriptions.
- **Data Importation:** Import production information and easily create recurrent data records.
- **Graphical Output:** Full plotting capability of all output parameters, plus 4D visualization of results.
- **Data Conversion:** Metric and English units.
- **Automated Features:** Automated time step selection to reduce computational time; gas PVT package for automatic generation of gas properties; automated computation of well productivity indices; batch processing of multiple simulation runs.



Dynamic memory allocation allows gridding of larger problems.

- **New Program Version:** ***COMET3*** benefits from along continuous development program that is committed to maintaining and improving the software now and years in the future. New releases are generally provided twice per year.

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