



# Pre-Processor: Simulation Model Building Tool



BUILDER™

Builder™ simplifies the creation of simulation models by providing a framework for data integration and workflow management between IMEX, GEM, STARS and external data sources.

- Easily build complex simulation models with advanced process wizards
- Streamline data integration and workflow management with Results™
- Import data from third-party reservoir simulators, geological or hydraulic fracture modelling software

## Model Building

Builder™ has an interactive, intuitive and easy-to-use interface that enables users to quickly and efficiently incorporate all required data to build a simulation model. The built-in wizards and workflows organize data the way an engineer expects and allows users to remain focused on reservoir engineering, rather than keyword syntax.

### Geomodelling and Geostatistics

- Create 3D geomodels using contour maps and zone thickness maps
- Use well logs and core data with the geostatistical module for property distribution calculations

### Productivity Improvement Tools

- Easily import or create geological models, reservoir property distributions, PVT models, injection/production history, well trajectories, well completions, and hydraulic fracture data
- Utilize the grid-editing tool to perform: refinements, sub-model extraction, upscaling and grid splitting
- Use correlations to generate data for relative permeability and PVT
- Convert datasets from IMEX™ to STARS™ or GEM™ to model complex recovery processes
- Define and edit properties for any sector or region of a reservoir
- Easily select properties and data for output to Results
- Intuitive well planning and field development tools for pattern-based or horizontal well drilling, defining group and cyclic well controls, and more
- Quality check input from geostatistical data to assess model quality and to revise correlations between permeability, porosity and water saturation

## Process Wizards

Builder's guided task-based advanced process wizards helps users to build complex simulation models, enabling fast and efficient comparisons of different recovery processes. Builder has easy step-by-step data input for:

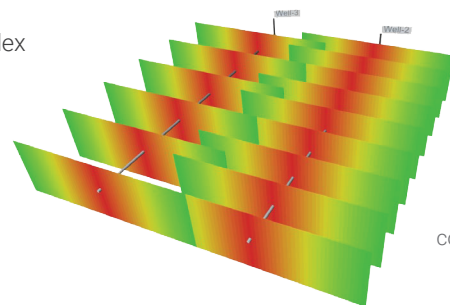
- Unconventional Reservoirs (shale gas, hydraulic fractures & coal bed methane)
- Chemical EOR (foamy oil, ASP injection, low salinity waterflooding)
- Geomechanics, Geomodelling and Geostatistics
- In Situ Combustion
- Asphaltene Precipitation

### Benefits

- User-friendly advanced process wizards and workflows
- Quickly organize complex data into simulation input format
- Increase data integration and workflow management using Builder and Results
- Automatically quality check and convert data during imports
- Easily navigate multi-million grid cell models

### Features

- Define flux boundaries within Builder for faster simulator run times and history matches
- Easily import hydraulic fracture injection information
- Effortlessly implement tracers or polymers in IMEX using the new process wizards



Analyze the presence and extent of inter-well communication with an option to connect overlapping hydraulic fractures

## Process Wizards (continued)

### Hydraulic Fracture

- Create different fracture representations including simple bi-wings and complex networks
- Import third-party fracture design and parameter data for better fracture characterization, history matching and forecasting
- Quickly add or modify fracture properties for multiple stages or wells
- Vary propped/unpropped hydraulic and natural fractures' half-lengths and conductivities
- Easily adjust values of fracture permeability and non-Darcy flow coefficients to accurately capture effects occurring in the field
- Save fracture templates to easily apply identical fracture properties to multiple wells

### Chemical Enhanced Oil Recovery (cEOR)

- Process wizard inputs include reduction in residual oil with surfactants and alkali, adsorption of injected chemicals and complex non-Newtonian polymers
- Implement relative permeability interpolation based on the composition of certain components
- Reactions for In Situ foam generation or degradation help capture the true physics of the foam process
- Match lab data more efficiently with the foam wizard for GEM and STARS
- Confidently forecast production/recovery factor by configuring full-field or hybrid Low Salinity Waterflood (LSW) models
- Utilize the LSW process wizard to set up geochemistry reactions

### Combustion

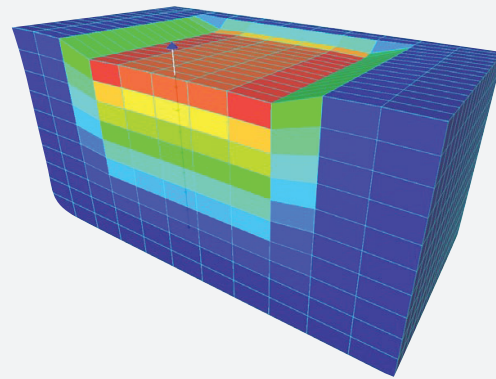
- Easily define In Situ Combustion reactions and components
- Select from three different customized reactions and components for Low-Temperature Oxidization (LTO) and High-Temperature Oxidization (HTO) based In Situ Combustion reactions

## Advanced Wellbore Modelling

- Wizard to import/edit well completions, trajectories, production and injection data for a large number of wells
- Easily create well groups, and define complex well and field operating controls
- Well control options include: pressures, rates, layer-specific dynamic layer and monitoring fluid
- Import well path information based on trajectories
- Trajectory smoothing for removal of unrealistic 'kinks' in trajectories
- Convert trajectory and perforation information for one or more wells into iSegWell keywords

### Geomechanics

- Model stress-strain relationships with several different geomechanical models
- Fully control type of coupling and other geomechanical numerical parameters
- Select important geomechanical properties for output to Results



Model the geomechanical phenomena observed in the field with one and two-way coupling between Builder, IMEX and the geomechanics module.



#### Contact

For more information please contact [marketing@cmgl.ca](mailto:marketing@cmgl.ca)



#### R&D Investment

CMG reinvests 20% annual revenue back into R&D, to further innovation and drive technology forward



#### Superior Software

CMG delivers easy to use software that provides the most accurate results



#### Dedicated Support

Experienced technical sales & support personnel, deliver highquality, timely and personalized customer support



#### Relevant Training

CMG's industry renowned reservoir software training provides the skills to improve productivity and efficiency