Future®
SERAFIM

The Reservoir Engineer's
Integrated Asset Model

SERAFIM Future is software developed by SERAFIM Ltd, in association with ADDAX, to provide an integrated asset model specifically for reservoir engineers. It ties reservoir simulation results, historic production data, and surface network constraints together to forecast future production, study the behaviour of reservoirs under different constraints, and optimise field developments. This is achieved through the combination of standard methods, innovative algorithms developed by SERAFIM Ltd, and a design that allows the reservoir engineer to express their understanding of the problem.

SERAFIM Future: The reservoir engineers' integrated assets model

SERAFIM Future was developed to meet the specific needs of Reservoir Engineers for an integrated asset model that can quickly combine individual field reservoir simulation and decline analysis forecasts, to calculate the effects of multi-field production constraints.

SERAFIM Future offers reservoir engineers the ability to quickly estimate the effects of network constraints on the long-term or short-term behaviour of their reservoirs by easily combining the results of reservoir simulation, historic production data and network models.

Testimonials

"With Future we solved problems that bigger companies are still struggling with."

"SERAFIM Ltd keeps to its promise of 24hrs response time."

"Future simplifies tasks. The concept of notional production time is very useful. Future helps to eliminate errors."

"Future saves two weeks per year for every reservoir engineer we have just by using it for reserves updates."

"There is always somebody who looks at the problem and provides a quick answer. This is a sign of high competence."

Aggregate

In Future you can easily aggregate numerous production profiles (historic and simulated) in a secure environment and use them in a multitude of ways to reach optimal decision making.

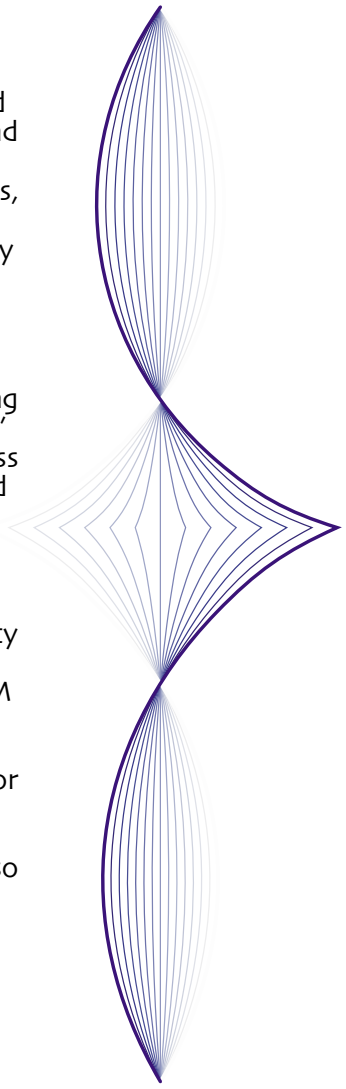
Both the workflow management features and the comprehensive set of built-in calculations enable you to eliminate the costs and risks associated with using spreadsheets.

Prove your guess

With SERAFIM Future, you can gain tangible insights into your field development options. Scenario building, which is enabled by work scheduling and change definitions, helps you to understand the impact of different choices on your business objectives. SERAFIM Future, thus, helps you to maximise your ROI and to optimise your decision making both early in your field development process and throughout the life of the field.

Invest in your software

SERAFIM Future is software that is evolving and improving in response to our clients' needs. We understand that every business has its own practices and procedures and we are ready to design and implement specific features you require. These may be additional import/export options, charting options, calculation options, information management options, security options, etc, even changes to the basic algorithms Moreover, thanks to its .COM compatibility, you can control SERAFIM Future programmatically from other Windows applications (Microsoft Excel for example) to implement non-standard features through the object oriented architecture of the software. You can also link Future to other algorithms such as Monte Carlo calculations with @Risk or Crystalball.



Make use of pioneering methods and the most comprehensive decline analysis models in the industry

The mix of skills and knowledge in SERAFIM Ltd has allowed it to pioneer several methods and techniques in the field of reservoir engineering that you can access in Future. For instance, algorithms, such as the Free Gas:Liquid and the simplified material balance method, have been developed with the view that the choice of reservoir engineering calculations should depend on the uncertainties and the degree of knowledge we have of the reservoir. In recent years, companies like BP have started designing reservoir and field management procedures that are in line with this view (BP TDRM®). In short, Future allows you to easily achieve the optimisation of your reservoir and surface facilities systems as whole using decline curve or approximate reservoir simulation results before embarking on a more detailed simulation programme.

Moreover, Future offers the most comprehensive decline analysis models in the industry. They include the traditional exponential, harmonic and hyperbolic models, as well as the innovative C-curve method (see technical notes). This collection, together with the interactive curve fitting tool, offers a uniquely flexible decline analysis instrument.

Make the most of your information, people and assets with SERAFIM Future

In a truly global and competitive industry, the limits of spreadsheets and manual data management are reached rapidly and the need for tools that provide consistency and security emerges. SERAFIM Future allows you and your entire team to use a common platform without worrying about portability, consistency and transferability. It helps you construct a clear case for your decision making quickly both in terms of calculation time and processing time. It helps you free a lot of human resources to work on constructive tasks.

Future offers unique workflow management by the means of a comprehensive database design, security features and the handling of multi-users accounts. Future is also highly scalable; it is equally adapted for use by a single user, with minimum or no security set-up, as by a large team using a secured, corporate Future database running on SQLServer or Oracle.

Possible uses

You have to make a decision on upgrading surface facilities shared by several fields. You need to see the impact of different options on the production profiles

On a new field development, you need to know the approximate gas-lift requirements. But the reservoir simulation model is not yet ready.

You need a secured and controlled way to calculate and store your production forecasts for your annual review of reserves.

You need to study the effects of different reservoir simulation modelling hypothesis on long term productivity of your field.

Your team spends too much time with spreadsheets sent back and forth across the world; they struggle with importing and exporting data between different software; and you have no information management procedure.

You have a very large number of combinations of field development options and you cannot afford the time to run a simulation for each one. Future allows you to study the effects of each option effectively and rapidly.

SERAFIM Ltd support

SERAFIM Ltd is a company that believes in delivering value. We work closely with our clients to achieve this goal. We are team players and prefer long-term relationships to a one-off transaction.

We know the importance of time to our clients. When you use our software packages and require help, we always aim to solve your problem within 24 hours. Our clients have found that we almost always succeed, both in helping with the modelling and in providing fixes or work-arounds to bugs, within the promised period.

We provide you with a dedicated email address and an account on our website to allow you to monitor the progress of your requests.

You will be in contact with a software developer / consultant who has an extensive understanding of reservoir engineering. This ensures that your contact in SERAFIM Ltd will be able to answer any type of question you may have.

We ensure that our staff have the right mix of skills in order to provide as much value as possible to our customers. SERAFIM Ltd is a company that emphasises mathematical, reservoir engineering, database design and software development skills. SERAFIM Future software package and SERAFIM Perimeter and Consultancy services are products of the combination of these skills. Our customer care is motivated by the company's philosophy.

SERAFIM Future®

Design enabled benefits

Build on knowledge and reasoning
Flexible surface network definition
Scenario approval procedure
Robust database design
Programmatic control
Customised querying
Team work
Flexibility

Reservoir simulation results
- From Eclipse or other simulator
- Imported automatically
- Capacity to handle multi-reservoirs

Historic production data
- From OFM or other database
- Imported automatically
- Imported for each well or reservoir

Material balance data
- Option to use material balance
- GUI base input
- Option to use the free gas:liquid

Decline curves analysis
- Interactive curve fitting
- GUI based data input
- Option to use C-curves decline model

Future calculations pre-processing

SERAFIM Ltd support

Work with a team oriented company
Ability to check progress of requests online
Provision of algorithms for special calculations
Promise to solve users' problems within 24 hours
Use a software that evolves with customers' needs
Dedicated password protected website account
Direct contact with a software developer
Implement customised features speedily
Use a technology pioneering software
Access a unique combination of skills
Dedicated email address

Tangible benefits

Save time and invest it in other value adding activities
Study the interconnectedness of different projects
Study the effects of constraints on your reservoirs
Make reserves update a less tedious task
Forecast project economics economically
Access geographically disparate data
Improve your communication
Back up your decisions
Enable team work
Control data

Design enabled benefits

Quick field development optimisation
Know who changes what calculations
Visualise scenario results
Share forecasts and data
access them securely
Export data easily
Approve data
Flexibility

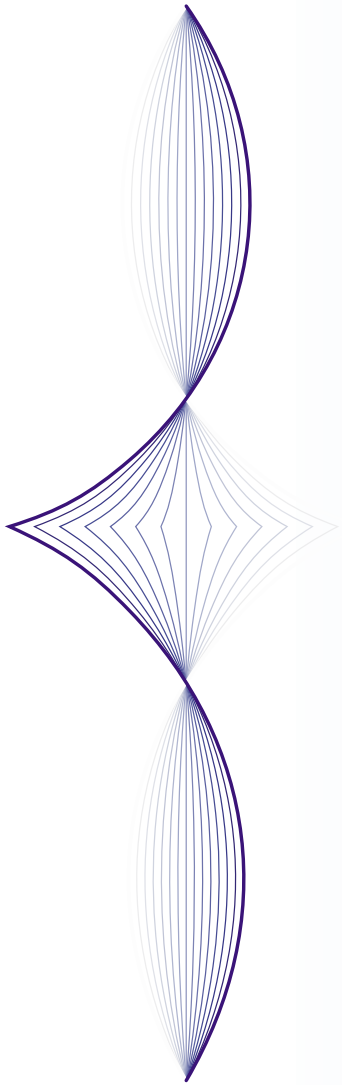
Production forecast
- Production forecast: oil, gas water
- Optimised injection
- GOR, BSW, Hydrocarbon composition etc.

Results accessibility
- Security features
- Integrity checks for auditing
- Results automatically stored in database

Charting and plotting
- Reporting groups
- Plots exporting options
- Flexible charting for all forecast data

Scenario comparison
- Simultaneous plotting
- Simultaneous exporting
- Field development optimisation

Future calculations post-processing



Technical notes

Production rates: athe simplex algorithm is used for flow-rates calculations. Each step in the run yields the rates that maximise the value of the production, subject to different constraints (rates, pressures etc). The 'value' of produced or injected fluids can be either positive or negative.

Gas lift optimisation: the effects of gas-lift on flow rates and pressures are fundamentally non-linear. This is handled by dividing the gas-lift curves into linear segments and applying a different linear equation for each segment. The number of segments is set programmatically.

Changes in production potential, BSW and GOR: Well and reservoir performance change, obviously, with time and production. This is modelled using either look-up tables (typically of simulator output) of BSW, PI etc vs. cumulative production or with decline curve extrapolations of historic production data.

Simplified material balance: Future assumes constant oil compressibility above the bubble-point. Below the bubble-point, GOR and oil formation volume factor at reservoir temperature are linear functions of pressure. Gas follows the equation P.V = n.Z.R.T.

Features

- Forecast:
  - Production: oil, gas and water
  - Optimised gas injection
  - Water injection
  - THP, BHP, pipeline pressures
  - GOR/BSW
- Inclusion of work sequence or scheduled changes
- Flexible import/export options
- Robust database design
- Security and approval system
- Innovative 'C-curve' decline curve method
- Fast running time and personalised database querying
- User defined reporting groups
- Professional windows style user interface
- User friendly information sharing across the corporate
- Flexible definition of network node behaviour
  - distinction production/injection
  - Well production/choke etc.
  - Pumps defined by pump curves, VFP tables etc
  - Uptime/availability
- Production forecasts reported per reservoir; any type of node such as platforms or pumps
- Flexible charting tool and scenario comparison charting
- Programmatic control and easy tie to other software
- Does not require running alongside a reservoir simulator
- Multi-reservoir and multi-platform models
- Short run times
- Runs with Jet Access, SQLServer and Oracle databases

Cost

A single user license is priced at $35000. An asset or field unit (unlimited PCs) license is priced at $65000. Corporate license prices are decided upon agreement with the buyer. With a license of any type, we offer 5 days of free maintenance and special requirements' implementation.

Contact

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