**APPLICATIONS**

- Qualitative and quantitative evaluation and ranking of EOR techniques based on specific reservoir properties
- Economic analysis of selected EOR method

**BENEFITS**

- Maps and analyzes EOR methods’ recovery potential for each reservoir zone
- Increases conformance by matching EOR with reservoir properties
- Quantifies rock and fluid data reliability and validity
- Saves costs through comparative cost–benefit analysis

**FEATURES**

- Estimates EOR potential for dual-porosity and naturally fractured reservoirs with fit-for-purpose, novel workflow
- Assists in reservoir analysis and data quality evaluation
- Incorporates present and past experience to guide EOR technique selection
- Uses numerical simulation for forward modeling
- Performs geology-driven analysis that correlates all available reservoir information

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**Fast, comprehensive evaluation**

Effective evaluation of EOR alternatives can substantially increase value and decrease development risk—for both new and mature assets. To quickly provide a reliable ranking of EOR techniques, Schlumberger developed the EORt® enhanced oil recovery method evaluation and screening tool. This process-based, interactively guided tool is used by Schlumberger petrotechnical experts to conduct detailed data and reservoir evaluation with a comprehensive process that helps guide every step of EOR screening and implementation.

Supporting different reservoir types, from single-porosity to naturally fractured dual-porosity reservoirs, the EORt tool incorporates detailed documentation about specific displacement processes. This extensive database, in combination with embedded knowledge and optimized workflows, enables efficiently performing geologically consistent screenings for selecting the best EOR solution for the asset. Further, Schlumberger EOR specialists work in close collaboration with in-house teams to ensure that all available reservoir information is effectively used.

Using the EORt tool enables

- rapid assessment of the enhanced recovery potential of each area of the reservoir
- maximized conformance by matching EOR and reservoir architecture
- quantification of the validity of rock and fluid data for reliable EOR evaluation.

The tool can be used to perform a qualitative and quantitative ranking of all plausible EOR alternatives. It uses multidimensional screening, combining detailed analyses of the field’s current saturation conditions and rock-type distribution with past project information that is pulled from a database of more than 2,700 EOR projects. The EORt tool uses analytical and numerical methods to rank the most suitable EOR alternatives for the field.

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**Workflow of the EORt Tool**

- **Data Loading and Validation**
  - Reservoir description and data validation ensure that enough data of sufficient quality is available for the evaluation of EOR methods.

- **Data Interpretation and Analysis**
  - Using the EORt tool enables qualitative and quantitative evaluation of the EOR potential of a given field in a data-driven workflow.

- **Screening**
  - Analytical and numerical methods are checked against a benchmark database of more than 2,700 projects from around the world.

- **Production Forecast**
  - Production optimization, numerical modeling, and geomechanics and simulation software allow evaluating and comparing field behavior for enhanced production.
Reservoir architecture and displacement mechanisms
Locating potential movable oil in the reservoir and analyzing displacement potential in gravity- or capillarity-dominated flows allows the EORt tool to help maximize reservoir conformance and, therefore, increases the potential for EOR success. The tool is used to analyze present, past, and future behavior of the reservoir in terms of recovery mechanisms, flow patterns, and geological settings.

Oil displacement in the reservoir is dominated by the balance of capillary, gravity, and viscous forces. A successful screening requires the detailed understanding of these forces, particularly in highly heterogeneous reservoirs where depositional environments can heavily influence the advancement of any displacement agent. The EORt tool considers this balance when screening each EOR method, ensuring that every technique can achieve its maximum potential.

The EORt tool consists of four main modules:

- data loading and validation—ensures data quality and quantity are consistent with EOR evaluation standards
- data interpretation and analysis—enables improved reservoir description for better-informed decision making through all phases of the workflow
- first-stage screening—includes analytical and numerical methods augmented with past and present EOR experiences and results
- production forecasting—derives information from sector models to quantify the benefit of a given displacement process.

Data loading and validation
Displacement mechanisms are subjected to the interaction of the injection agent with both rock and reservoir fluids. Misinterpretation of this information—or lack thereof—may cause analysis bias, yielding results that are not fully representative of the reservoir behavior. Experts use the EORt tool to perform a comprehensive validation on available data to ensure that enough data of sufficient quality is available to use as input to the EORt tool.

Data interpretation and analysis
Performing reservoir description and data analysis provides a guide system that enables the user to complement the reservoir information for displacement evaluation. Analysis begins at the geological model and continues through reservoir simulation for a broader, more comprehensive investigation. The depth and reliability of data interpretation and analysis enabled by the EORt tool go beyond laboratory data by including a quality check of the simulation model. This ensures that the dominant features of the tool are fully accounted for in the forecasting and ranking of the EOR techniques.

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