- Responsible oil and gas
- Basins and reservoirs modeling and simulation

- Carnot IFPEN Ressources Energétiques

Basins and reservoirs modeling and simulation overview and challenges

Sedimentary basins and the geological reservoirs that lie within them contain exploitable natural resources, including hydrocarbons, minerals, water, heat, etc. Sound knowledge of sedimentary basins and reservoirs in the underground environment is essential to reduce the risks associated with operations undertaken in such areas. The approaches and tools developed to exploit oil and gas resources can also be used for other activities, such as the storage of certain materials, for example, CO_2, natural gas, hydrogen or nuclear waste.

Sedimentary basin modeling addresses various challenges in the resource exploration phase:

- reducing operational risks: overpressure, fluid types, acid gases, etc.,
- more quantitative predictions: multi-physical approaches, etc.
- reducing the degree of uncertainty at all levels: identification and quantification
- the potential to have tools that can easily be used by non-experts.

Reservoir simulation provides the industry with the means to address the following issues during the resource exploitation phase:

- reduce the uncertainties and risks associated with complex reservoirs: for example, dense fracture networks
- optimize field development
- develop comprehensive dynamic simulation solutions for the behavior of porous media and complex fluids, and especially for EOR

For more than thirty years, IFPEN has developed laboratory techniques and high-performance software, which provide a detailed understanding of the oil system at the scale of basins and reservoirs.
IFPEN also provides assistance for the industry in process digitalization by carrying out POC (proof of concepts) actions that focus on their data.

Our solutions Our strenghts

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