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Reservoir seismic characterisation

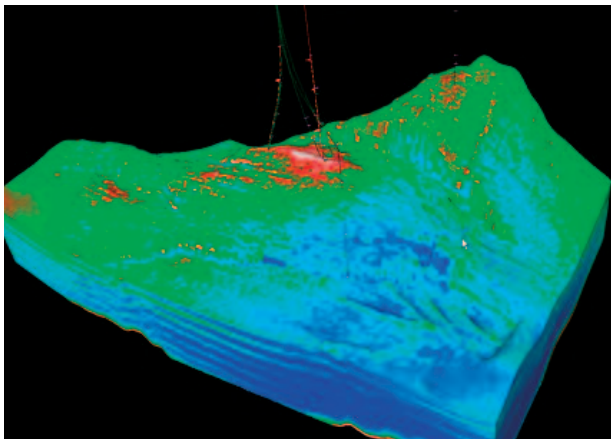
Well Planning and field development are very high risk activities. The implications and the economic impact of drilling a bad well or computing an erroneous number of reserves are big. One wishes to combine all existing data available in a field to come up with the best possible description of our reservoir using the most scientific approach possible, rather than try to “guess” the answer.

Senergy’s reservoir seismic characterisation group (RSC) combines extensive subsurface skills already within the company, with strategic recruitment of experienced individuals in this field. We take a rock physics based view of seismic and attribute mapping.

Within one focused group we pool best available methods. Whether you want an understanding of the distribution of fluids in the subsurface or to map targeted sedimentological features, our customisable workflows will address your subsurface technical requirements.

Our own technical standards are exacting. For seismic interpretation, we require that seismic surfaces are conformable, structurally accurate and representative. Prior to this, we perform outstanding pre-conditioning of 3D seismic data to make it suitable for AVO inversion. Consistent multi-well, multi-mineral petrophysical evaluation further ensures that our detailed rock physics modelling will reveal the petrophysical character in your seismic data.

Your very best well placement option today is to choose RSC, whether for conventional oil and gas or carbon storage studies.



More about rock physics

Rock physics establishes a relationship between the seismic signal and the petrophysical properties in the subsurface. This connection allows us to understand and model the petrophysical and geometrical properties which give rise to the seismic signal. We then use this to “extract” information from the seismic data about the character of the reservoir in three dimensions to map extensions to existing reservoirs; locate unaccessed pay away from well control; resolve seal integrity issues; and guide optimum placement of wells in complex reservoirs.

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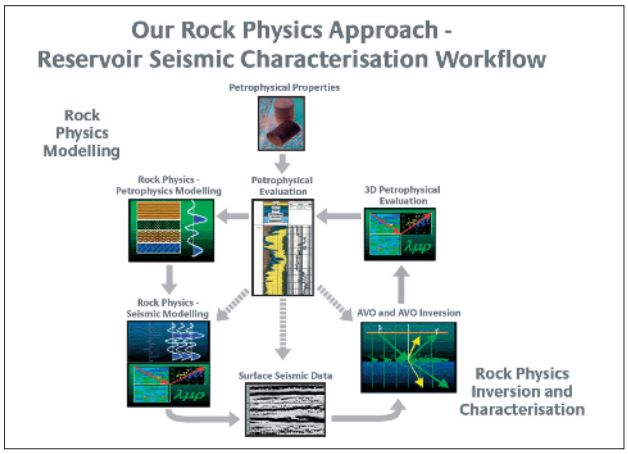

Rock physics requires a knowledge and understanding of geophysics, petrophysics, geomechanics, and the causes of the distribution of fluids in the subsurface.

Competencies in well log analysis, core measurement and analysis, elastic theory, wave propagation and energy partitioning, signal analysis and seismic processing and seismic geomorphology are all essential tools for the rock physicist.

In Senergy, we combine all these tools to perform a thorough rock physics analysis to determine the petrophysical parameters that control reservoir quality, defining a strategy that allows the extraction of these parameters from seismic data.

Where grid mapping and geostatistical methods fail to describe the inter-well character of the subsurface, rock physics based seismic characterisation is the best quantitative tool we have at our disposal to reduce uncertainty and unlock the commercial potential of our assets.

Our rock physics capabilities include:

- multi-well, multi-mineral, multi-fluid petrophysical evaluation for rock physics
- resolution analysis
- fluid substitution and seismic modelling
- shear wave velocity prediction
- crossplot analysis for lithology/fluid identification
- 1D synthetic seismic modelling for velocity modelling and depth conversion
- 2D synthetic modelling for AVO/inversion
- simultaneous AVO/AVA inversion
- seismic trace shape modelling and seismic facies analysis
- seismic-based pore pressure analysis
- seismic-based fracture detection
- rock physics based seismic pre-conditioning for AVO/AVA/inversion
- 4D synthetic modelling and inversion

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