# DEVELOPMENT OF PETROPHYSICAL MEASUREMENTS AND THE RELATED INSTRUMENTS

**Measurement and determination of petrophysical parameters which are necessary for the exploration, resource estimation and cultivation of hydrocarbon fields and water bodies, involving investigation of physical and chemical parameters which fulfil the special needs of the construction and chemical industry.**

## COMPETENCIES

The determination of the desired parameters usually take place directly on a sample formed from a drilling core brought to the surface by deep drilling. If there is no drilling core available or in case of special needs, we are able to manufacture artifically consolidated porous sample bodies of the desired properties and composition by applying materials which fulfil the need of the industry, and then the storage, conductive, insulating, physical, mechanical and rheological properties of the porous system can be analyzed and modeled. Our devices can ensure both laboratory and desired pT condition analysis.

Researches of our Institute have a long-time experience in the fields of recovery factor enhancement, storage protection and formation treatment. In the past decades we have performed hundreds of successful experiments influencing fluid transport processes on core samples both from Hungary and abroad, and also on artificially consolidated rock samples. During the measurements we modeled the migration of the hydrocarbon, the saturation equilibrium states before (primary production state), during and after EOR/EGR treatment and the corresponding pressure conditions (permeability changes).

## SERVICES

### TYPES OF MEASUREMENTS

- RCA & SCA (routin and special core analysis)
- CFA ( core flooding analysis)
- EOR (enhanced oil recovery)
- EGR ( enhanced gas recovery)

Prototype measurement devices, all-round activities necessary for development of laboratory equipments related to the implementation of measurement/experiment processes beyond the basic service profile:

- Modeling of the measurement process
- Device design and programming
- Measurement device construction and assembly
- Interpretation of the obtained results in accordance with the industrial protocol in terms of quality and data security

## DEVICES

- Nano-K permeameters, LiquiPerm és PermeaMaster permeameters
- PPD permeameter
- Quantachrome 1200e pycnométer
- Determination of mercury injection porosity and pore size distribution with Pascal 140, Pascal 440 devices
- Ultra Rock Centrifuge, devices for displacement measurements
- DT310 device for zeta potential and electrical conductivity measurements

## REFERENCES

- Laboratory support of MOL - Pilot tests – reservoir engineering monitoring program
- Design and manufacturing of a prototype equipment suitable for the investigation of acoustic propagation under a CT scanner on MOL rock samples
- Development and implementation of a self-propelled measurement robot for natural gamma ray measurements on rock samples obtained from MOL drillings
- Mecsekérc Ltd. – Development and implementation of a laboratory test equiment suitable for the investigation of fracturing
- MOL – Development and implementation of high pressure laboratory feeding equipments for oil and gas industry displacement measurements

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