

## **Increase the Cement Systems Durability through the Evaluation and Selection of Slurries Design for Oil Wells**

V.L. Ciccola, G. Pineda, J.C. Millan  
*PDVSA Intevep, Caracas, Venezuela*

Cement is used as insulating element and structural support in oil well construction. It is necessary that the formulation of all cement system allows to maintain its mechanical integrity under different conditions presented in the well during its useful life. This work describes an oriented methodology to extend the durability of cement systems, optimizing their chemical design, supported on the integration of laboratory special techniques and numeric simulation. New laboratory tests were developed for mechanical characterization of cement and hydration process, under well equivalent conditions of pressure and temperature. Numeric simulation allows to quantify the cement stresses requested by the loads occurred in well since the hydration stage. Validation and use of this methodology, supported in characteristic wells failure analysis and its application, allows to guarantee zonal isolation and mechanical integrity by means of the good design of cement system.