

OIL WELL CEMENTING

CEMENT HYDRATION ANALYZER

MODEL 7200

A Critical Tool for Oil Well Cementing

Gas migration through hydrating cement slurry is a major reason for well completion failures which require costly remedial well treatments. Chandler Engineering developed the Model 7200 Cement Hydration Analyzer (CHA) to realistically simulate gas migration scenarios of varying severity.

The Model 7200 Cement Hydration Analyzer is a precision instrument that measures four key aspects of oil-well cement: (a) its susceptibility to gas migration, (b) its degree of hydration, (c) its shrinkage during curing and (d) the gas permeability of the cement.

Instrument Description

The Model 7200 is a closed system in which nitrogen gas is injected into the bottom of a cement slurry at any time during its hydration (setting). The cement's susceptibility to gas migration is determined by whether or not the nitrogen gas injection pressure is transmitted up through the column of cement to the opposite (top) side of the cement sample where the pore pressure is measured.

Gas migration will result in the pore pressure of the sample rising and possibly becoming and/or remaining equal to the gas injection pressure. If no gas migration occurs, the pore pressure will continue to drop (due to the shrinkage and loss of fluid communication through the sample) during hydration, possibly continuing to reach a vacuum.

FEATURES

- ✓ Can Test Multiple Scenarios of Gas Migration (Severe and Less Severe)
- ✓ Simple to Operate
- ✓ Graphical User Interface Software for Control of Experiment, Data Acquisition and Logging Results
- ✓ Unattended Operation of Test
- ✓ Designed to Ensure No Line Plugging and Easy Clean up After Tests



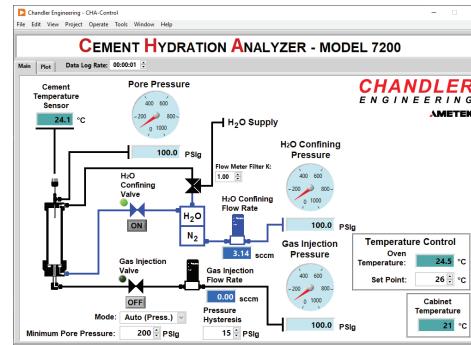
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Operational Simplicity

The Model 7200 is designed to be as easy to use as possible. The instrument's software controls, records and displays all test measurements in real time.

Test conditions, including the static gel strength profile of the cement, are easily programmed and controlled through this system. As the system is designed to avoid line plugging, cleanup after testing is both quick and easy.



SPECIFICATIONS

Temperature Range

Ambient to 325°F (163°C)

Maximum Pressure

1000 psi / 6.9 MPa

Pressure Measurement Accuracy

0.2 % of Full Scale

Pressure Measurement Resolution

0.25 psi / 1.7 kPa

Pressure Control Accuracy

±10 - 20 psi / 70 - 140 kPa

Cement Temperature and Cabinet Temperature

Measurement Accuracy ±0.5°C

Measurement Resolution 0.1°C

Oven Temperature

Measurement Accuracy ±1°C

Measurement Resolution 0.1°C

Temperature Control Stability

±0.5°

Gas Injection Flow Rate

0 - 5 sccm of Nitrogen

Confining Flow Rate

0 - 5 sccm of Nitrogen

Flow Rate Measurement Accuracy

1.2 % of Full Scale (±0.06 sccm)

Flow Rate Measurement Resolution

0.01 sccm

Cell Volumes

Cement sample 417 cm³

Accumulator 100 cm³

Utilities

Water

20-80 psi / 140 – 550 kPa

Air

20-160 psi / 140 – 1100 kPa

Nitrogen

1000-3000 psi / 7-21 MPa

Power Supply

220 VAC ±15%, 50/60 Hz, 10A 1-phase

Physical Dimensions

0.25 psi / 1.7 kPa

Dimensions (w x d x h)

44 x 28 x 36 in / 112 x 74 x 92 cm

Weight

1000 lb / 450 kgh

Manufacturer's specifications subject to change without notice

