The CaviMeter measuring system

Product specifications

Areas of use
The measuring system is intended to be used to ensure the quality finished rock reinforcements for grouted rock and wire bolts. CaviMeter is CE marked.

Gas cylinder
1.0 liter single-use gas cylinder. The gas cylinder contains nitrogen gas (N_2) with an initial pressure of 110 bar. A pressure regulator reduces the pressure to a working pressure of about 8 bar.
The gas cylinder is normally sufficient for > 1000 measurements.

Measuring pressure
The measuring pressure is adjustable from 0 to about 8 bar. Normally, a measuring pressure of 3 bar is used for hardened cement.

System voltage
CaviMeter is powered by a lithium-ion battery: 12 V, 3 Ah.

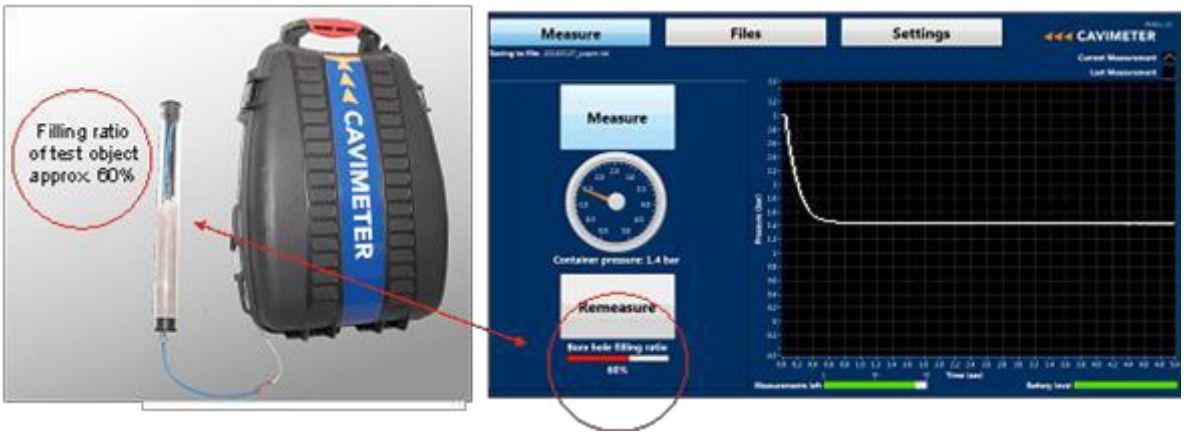
Operating voltage
12 V

Weight
About 9 kg

Dimenstions
430x320x160 mm

Measuring principle
Before the rock bolt is inserted into the bore hole through the cement slurry, a perforated measuring tube (4.0 mm diameter) is fitted alongside the bolt. Measuring begins by pressurizing a 1.0 dl gas tube with a set measuring pressure (usually 3 bar). The plastic gas tube from CaviMeter is connected to the measuring tube on the rock bolt and a valve is opened so the gas can fill any cavities in the bore hole via the perforated measuring tube while the pressure in the gas cylinder is read by a pressure sensor. Based on the change in pressure in the gas cylinder, the CaviMeter computer, via parameter-based algorithms, calculates the volume of any cavities in the bore hole and to what percent the grouting mass filled the bore hole.

Presentation of measurement results



CaviMeter is equipped with WiFi which means that the user can choose any computer or tablet that has Windows Explorer for steering and presentation of measuring results. The filling ratio for a bore hole with cavities can be shown directly in % if one enters the parameters for the current bore hole. A data file with all measurements is saved in CaviMeter and can be easily downloaded to an external computer for documentation and/or further analysis.

Accuracy

Cavities up to 0.5 liters ±2.5%