SENSOR RESERVOIR

The Miethke SENSOR RESERVOIR is the first long-term implantable measuring cell for the measurement of pressures within a shunt system. It is integrated into a reservoir for a ventricular drainage system and transmits pressure values using telemetric methods, thus non-invasively, via a reader unit.

The SENSOR RESERVOIR allows, for the first time, the pressure in a shunt system to be measured and evaluated, and integrated into treatment options. In addition to pressure measurement, the SENSOR RESERVOIR offers the same advantages as any other Miethke reservoir. The measuring cell is protected from possible penetration by a titanium membrane. Every SENSOR RESERVOIR is calibrated. The calibration data are stored on an associated SD card that is included with the reservoir.

The reservoir membrane permits:

The pressure measurement in the shuntsystem

The injection of medication

Fluid removal

valve inspections.

SENSOR RESERVOIR Reader Unit

The SENSOR RESERVOIR Reader is used to read and display the pressure in the reservoir using telemetric methods. The readings are automatically stored on an SD card and can be evaluated later.

The relative behavior of the CSF pressure in the shunt system can provide information about its function. This permits the non-invasive detection, localization, and evaluation of occlusion in the shunt as well as mechanical loss of function of the shunt values. The measured pressure values can also be used to improve the configured opening pressure of adjustable shunt valves.

There are three measurement types: Individual measurement, continuous measurement and quick measurement. The data are stored by date and time on the SD card and can be evaluated on the reader or on a computer using Excel. The pressure curve is shown in a diagram both on the reader and in the Excel file.

INDIVIDUAL MEASUREMENT The individual measurement is a static measurement of the current pressure value and is displayed as a digital value averaged from 8 to 10 measurements. The unit of measurement can be selected in the settings.

CONTINUOUS MEASUREMENT In continuous measurement, the measured values are displayed sequentially as individual measurements in a curve over a configured measurement interval.

QUICK MEASUREMENT The quick measurement is a sequence of non-averaged individual measured values at the maximum measurement rate available (about 40 measurements per second*) that can be shown sequentially as a curve.

Norager NH, Lilja-Cyron A, Hansen TS, Juhler M. Deciding on Appropriate Telemetric Intracranial Pressure Monitoring System. World Neurosurg. 2019 Jun;126:564-569. doi: 10.1016/j.wneu.2019.03.077. Epub 2019 Mar 18. PubMed PMID: 30898734.

2: Antes S, Stadie A, Müller S, Linsler S, Breuskin D, Oertel J. Intracranial Pressure-Guided Shunt Valve Adjustments with the Miethke Sensor Reservoir. World Neurosurg. 2018 Jan;109:e642-e650. doi: 10.1016/j.wneu.2017.10.044. Epub 2017 Oct 17. PubMed PMID: 29054776.