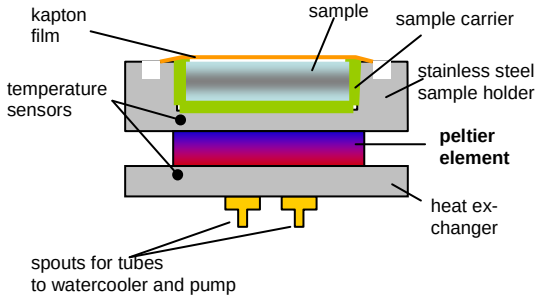
A NEW HIGHLY PRECISE TEMPERATURE CONTROL IN THE RANGE OF -3 – 80 ℃ FOR XRD SAMPLE HOLDERS

The ambient temperature has a strong influence on the kinetics and phase formation during the hydration of hydraulic binders. Therefore for the description of hydraulic reactions, the strict observance of exact temperatures is necessary.
For this reason a compact sample holder with a temperature range of -3 ℃ – 80 ℃, especially suited for the demands of the hydration reaction investigations in cement chemistry, was developed.
To enable tempering direct at the sample, heating and cooling is done by a peltier element. The sample holder with about 80 mm in diameter and a height of 30 mm has only a weight of 150 g and is inserted in the XRD device like a normal sample holder.



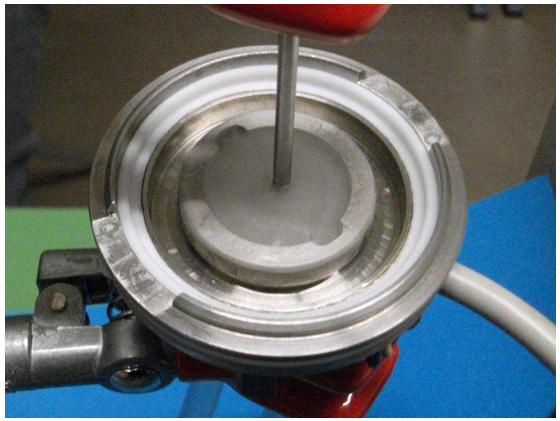
The whole device consists of:

- stainless steel sample holder with peltier element, temperature sensors and heat exchanger with water cooling system
- controlling unit in 19‘‘ plug in with RS 485 Interfaces and power unit
- controller software with temperature recording and power consumption recording
- watercooler

Performance of the system

Temperature limits: -3 ℃ to 80 ℃

Temperature control is not done by a commercial controller, but by computer interfaces and software. With this system it is possible to adapt the controlling algorithm exactly to the conditions of tempering by a peltier element. Inaccuracies have been minimized by using Pt 100 temperature sensors with an accuracy of 0.1 or 0.03 ℃. The resolution of the temperature interface is 16 bit (0.003 ℃). The controller allows controlling of the temperature with a deviation of ± 0.02 ℃ from the target temperature



Easy handling

- in most cases the sample holder is inserted in the XDR device like a normal sample holder
- the sample is prepared in a sample carrier with a special preparation tool
- easy controlling of the device by the software MAETRE

The software MAETRE

The software allows an easy controlling of the device. It shows the ambient temperature and the temperature of the watercooler. It records the temperature of the sample holder and the cooling or heating power. It is possible to record one additional temperature, for example with a sensor within the sample.
The software offers the opportunity to run temperature profiles.

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please send an offer for a sample holder and controlling system

please call me for some additional information

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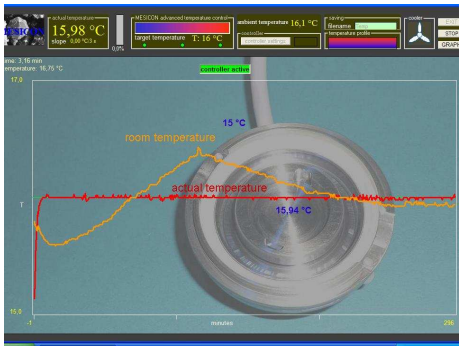
MAETRE



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