DRYING CHAMBER

Functional Sample Drying Chamber

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The functional sample Drying Chamber is instrumental to the experimental assessment of drying curves of porous building materials. From the point of view of limitation of moisture ingress into the buildings and its transport in inbuilt materials, there is necessary to know water transport and storage properties that represent necessary information for proper application of building materials in practice. Usually, the water transport properties are determined on the basis of water suction experiments. However, building materials are exposed during their service life to cyclic drying and wetting under real conditions. On this account, there is necessary to optimize the experimental procedures and setups for determination of moisture dependent material parameters that should correspond to wetting as well as to drying phase of moisture transport.

The functional sample Drying Chamber allows measurement of drying curves at specific controlled conditions. This data can be then used for the assessment of moisture diffusivity within the drying process.

The Drying Chamber consists of four self-contained walls that are made of acrylic glass. The particular walls are along the circumference provided with vapour tight insulation. Within the experiments, the particular walls are joined by steel screw coupling. The Drying Chamber is provided by drying agent (usually silica gel) placed on automatic digital balance for monitoring the absorption of water vapour evaporated from the saturated specimen. The studied specimen is usually placed into the Drying Chamber in horizontal orientation, and moisture profiles continuously monitored using the TDR method.
The functional sample NONSTAT is instrumental to the experimental assessment of hygrothermal function of building materials and fragments of building structures in the conditions close to the reality. The studied specimens are within the experimental testing exposed to the difference climate that corresponds to the real climatic loading of building structures. The functional sample NONSTAT consists of two climatic chambers and connecting tunnel that is placed between the chambers and serves for the samples' placing. Usually, 1-D analysis of hygrothermal behaviour is performed. However, also the 2-D and 3-D experiments are possible. Within the climatic loading, moisture content, relative humidity, temperature and salinity are monitored in the studied specimen. For that purpose, sophisticated DRYING CHAMBER

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Figure 1. Arrangement of drying experiment – measurement of drying curves for cement based composite.
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Figure 2. Detail view of the sample arrangement and applied combined relative humidity/temperature sensors.
Figure 3a, b. TDR moisture content sensors placing and insulation.