HeatWatch
Equipment for Monitoring Hardening Process in Concrete

When casting concrete structures, a number of conditions should be documented. One condition is the registration of actual temperatures.

HeatWatch is a complete system for measuring of temperatures, including hardware for data acquisition and software.

In relation to the positions where thermocouples have been placed , it possible to show the progress of:

- Temperature
- Maturity
- Compression Strength
- Tensile Strength

Also temperatures of air, cooling water, subsoil etc. can be recorded. Furthermore calculated averages and differences between values can be visualized.

User defined alerts can be set up for generating SMS-messages, e.g. in case a temperature is exceeding a certain limit.

By using the HeatWatch system it is possible to document that the construction method is fulfilling the requirements concerning freezing, evaporation, differences in temperature, maximum temperature level and strength.

The hardware is installed in a robust box and is suitable for use at the construction site without further precautions. Dimensions are 30 cm x 15 cm x 38 cm.

The box contains a module for measuring temperatures, a power supply, heating element (when measuring below the freezing-point) and a GSM-router with an antenna.
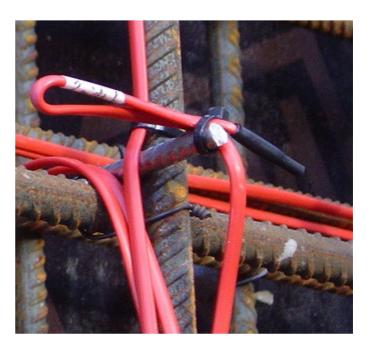
Operation

Thermocouples are placed in the formwork before casting and are connected to the data logger. Up to 30 channels can be connected to the same data logger.

The data acquisition module is continuously in contact with the software on your computer. The software shows the actual temperatures and saves the data.

The connection is established by means of either the Internet or a local wireless network on the site. The Internet connection requires that a GSM-network is available at the site[1].

Alternative the data acquisition module and your PC can both be connected to a wireless local area network (LAN). If such a network is not already present at the site, the HeatWatch system can as an option be delivered with a router including an a 500 metres range antenna for establishing of the LAN.

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[1] The Internet connection requires a SIM-card with a public IP-address, provided by the user.

The box containing module for measuring temperatures, power supply and GSM-router.
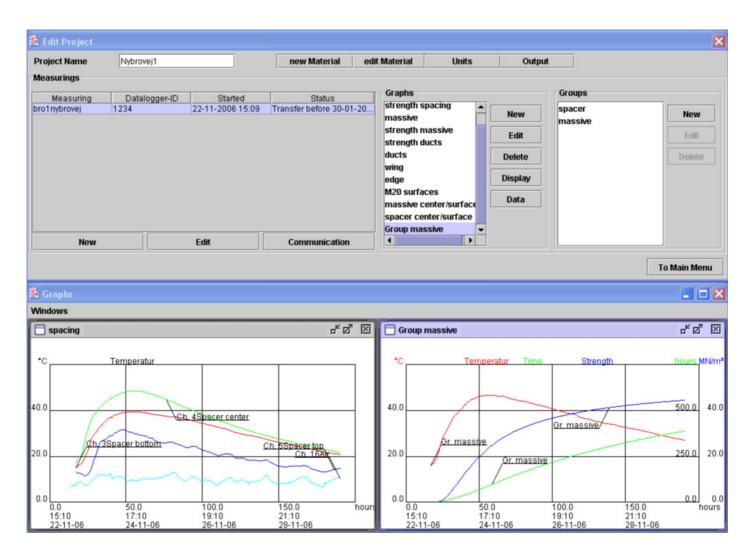
Software

The software is installed on your computer and is used for initializing the measurement, collecting the data and for presentation of data.

The presentation includes graphic visualization of temperatures, maturities, compression- and tensile-strengths and combinations from this (typically averages and differences). Maturities are calculated by the software based on Arrhenius or Nurse-Saul functions. Presentation of strengths are based on user defined strength developments given as function of maturity. The presentations are also available as printed output.

Furthermore all values (measured and calculated) are available as numbers, e.g. for spread-sheet purposes.

It is possible for the user to define his own units regarding temperatures, maturities etc.

In addition to the software the data acquisition module can be accessed directly through a web page for showing the actual values of temperatures.