

Purpose

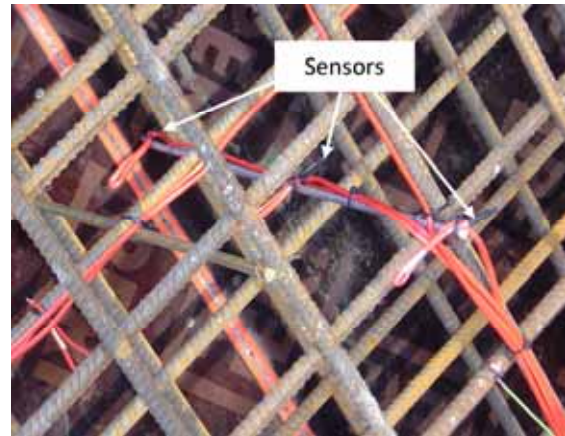
TMS is a system to measure temperatures (**T**), calculate maturity (**M**) values at critical locations, such as those identified by **B4Cast** simulations (see pg. 17), and estimate in-place strength (**S**) at early ages, based on a provided strength-maturity relationship. **TMS** provides remote monitoring capabilities similar to those described for **HeatWatch** on page 74.

Alarms stored in the **TMS** software alert the operator if preset temperatures or temperature differences have been exceeded. The **TMS** also permits automatic control of cooling or heating measures designed by **B4Cast** simulations.

Besides measuring temperatures, **TMS** can monitor other sensors that provide an appropriate electrical output. For example, **TMS** can monitor wind speed, relative humidity, barometric pressure, water levels, strains, corrosion parameters, and crack movement.

Principle

Thermocouples are installed at pre-established locations in the structure and connected to the data logger. The **TMS** software (same as used for **HeatWatch**) is installed on a PC with a Windows® operating system. Temperatures are recorded by the data logger at desired time intervals from the time of casting. The data are transferred to a PC, either by local area network connection to the logger or by a wireless cell phone connection, allowing remote monitoring of the temperatures and other measured parameters. Strength development at the thermocouple locations can be estimated through the use of pre-established **strength-maturity relationship**. See page 75 for a discussion of the maturity method.



Operation

The data logger is kept on-site in a watertight case, allowing it to operate in all kinds of weather conditions. Each logger can accommodate up to 48 channels. The amount of data that can be recorded is limited only by the amount of RAM in the computer. The unit has a back-up battery ensuring continuous operation should a power outage occur.

For remote monitoring, the purchaser needs to provide two SIM cards, one for the data logger's modem and one for a SGM mobile phone connected to the office computer. As many data loggers as desired can be mounted at building sites, each with 48 channels. By phoning the modem of each data logger, the temperature data can be transferred wirelessly to the office computer with the installed software.



The software allows the user to display the temperature history of each channel together with the maturity and estimated strength development (see pg. 76). Reports can be printed with full documentation of temperature history, maturity and estimated strength.



TMS Ordering Numbers

Item	Order #
Data logger (48 channels with GSM modem*)	TMS-3000
Laptop with installed HeatWatch software	TMS-3100
HASP key for opening software	TMS-3200
Mobile phone* with USB cable for connection to computer	TMS-3300
1.5 thermocouple sensors (2)	TMS-3400
Manual	TMS-3500
Thermocouple wire, 100 m (optional)	TMS-3600



*Purchaser provides two SIM cards for modem and phone.