

# CONCRETE HEAT MONITORING

Northern Cape, South Africa

## PROJECT TYPE: Concrete heat monitoring

### PROJECT CHALLENGE:

Wind energy facility consists of 47 Turbine bases and were 19 meters in diameter and about 2.35 meters high. For quality control, over 336 cubes of concrete were needed for strength monitoring.

The local climate was one of extremes with temperatures ranging from -15°C/-27°F on the plateau in winter and over 40°C/104°F on the plains in summer. These tremendous temperatures differences created significant challenges.

### PROJECT SOLUTION:

Extreme temperature variances significantly increases evaporation of water used to hydrate and cure concrete. It was necessary to provide adequate curing conditions and provide additional moisture in the air, mostly using mist spray, to reduce the risk of shrinkage cracking.

An in-situ monitoring system providing real time conditions was needed to let the team know exactly when to apply cooling strategies. As a result, sensors were placed at the core of the element. Additional sensors were placed below the concrete surface to also measure the coldest temperature in the concrete element as temperature differential was also a concern.

On previous projects, Concor used wired thermocouple data loggers to monitor temperature but on conventional controllers, if there is a hardware issue, then all the data is gone.

Using in-situ monitoring strength data for backfilling enabled Concor to minimise traditional time-consuming steps and realize important timesavings.

