Mass Concrete Temperature Monitoring

For Mass Concrete Applications

Vedantrik Technologies

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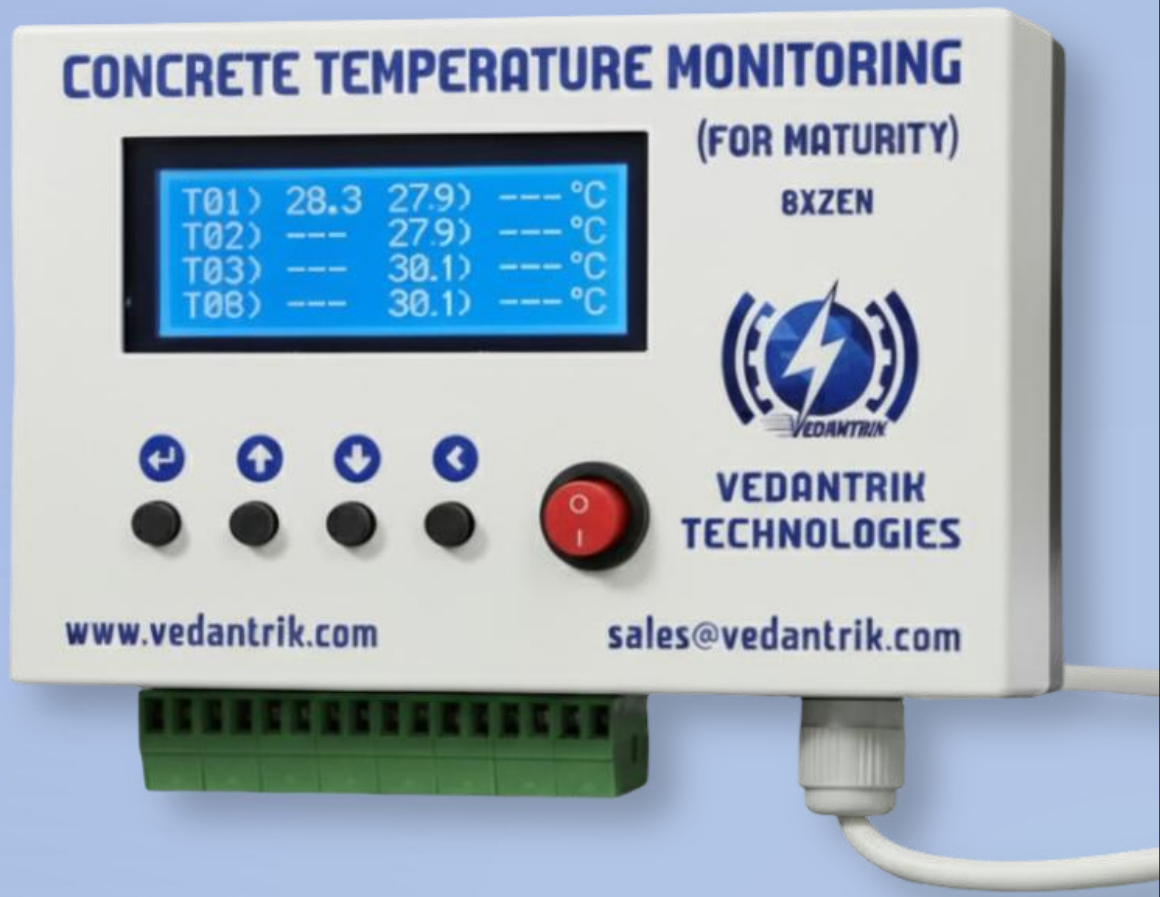
Technical Specifications

- Temperature Sensing Range: 0 °C to 100 °C.
- Temperature Accuracy: ± 1 °C
- Number of Channels: Up to 16, allowing multiple sensor connections.
- Maximum Sensor Lead Length: Up to 500 m with accurate readings ± 1 °C.
- Report Generation: Automatic reports with temperature date and time stamp.
- Sensor : High-precision Temperature sensor for long-cable applications.
- Input Power Supply: 230V.



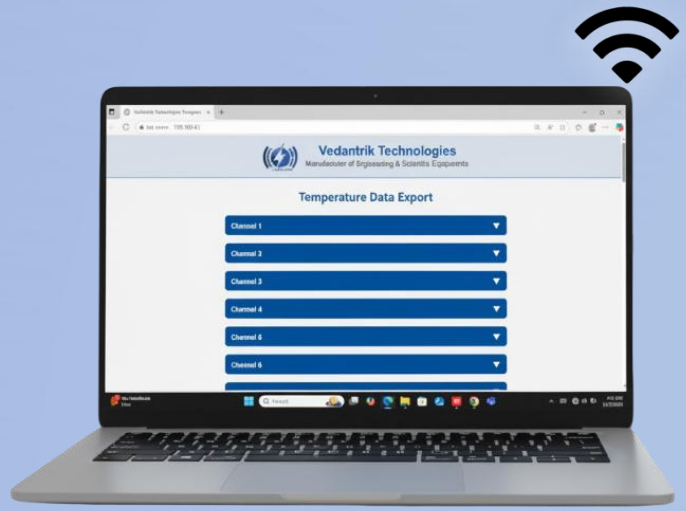
In-Built Hot-spot

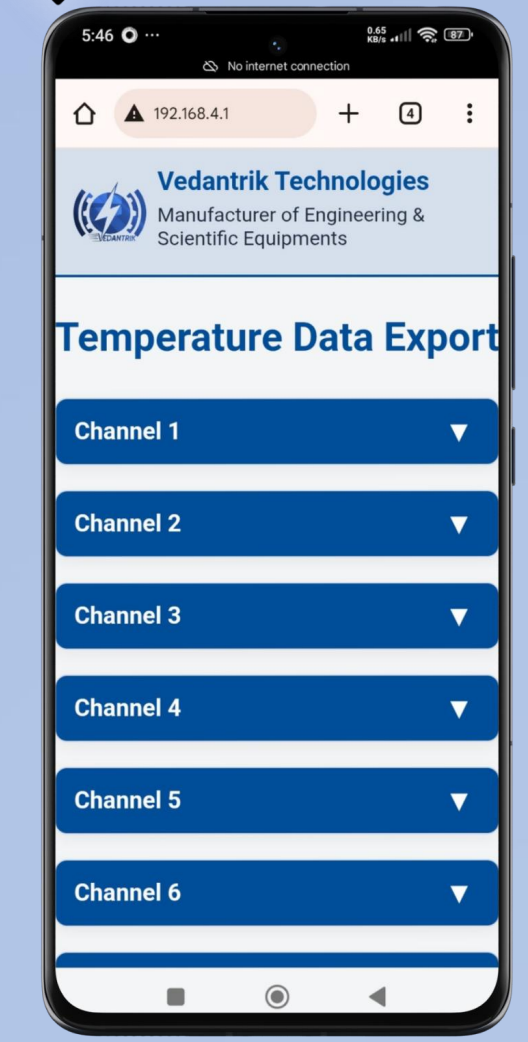
Continuous temperature monitoring is vital in mass concrete applications to manage hydration heat and prevent thermal cracking.

VedaTherma streamlines this process with an in-built hotspot, enabling engineers to connect any device (Laptop, PC or Mobile Phones) via Wi-Fi and remotely monitor live temperature data in real time.

This setup eliminates the need for additional cables, software, or drivers, providing flexible, uninterrupted, and accurate monitoring.

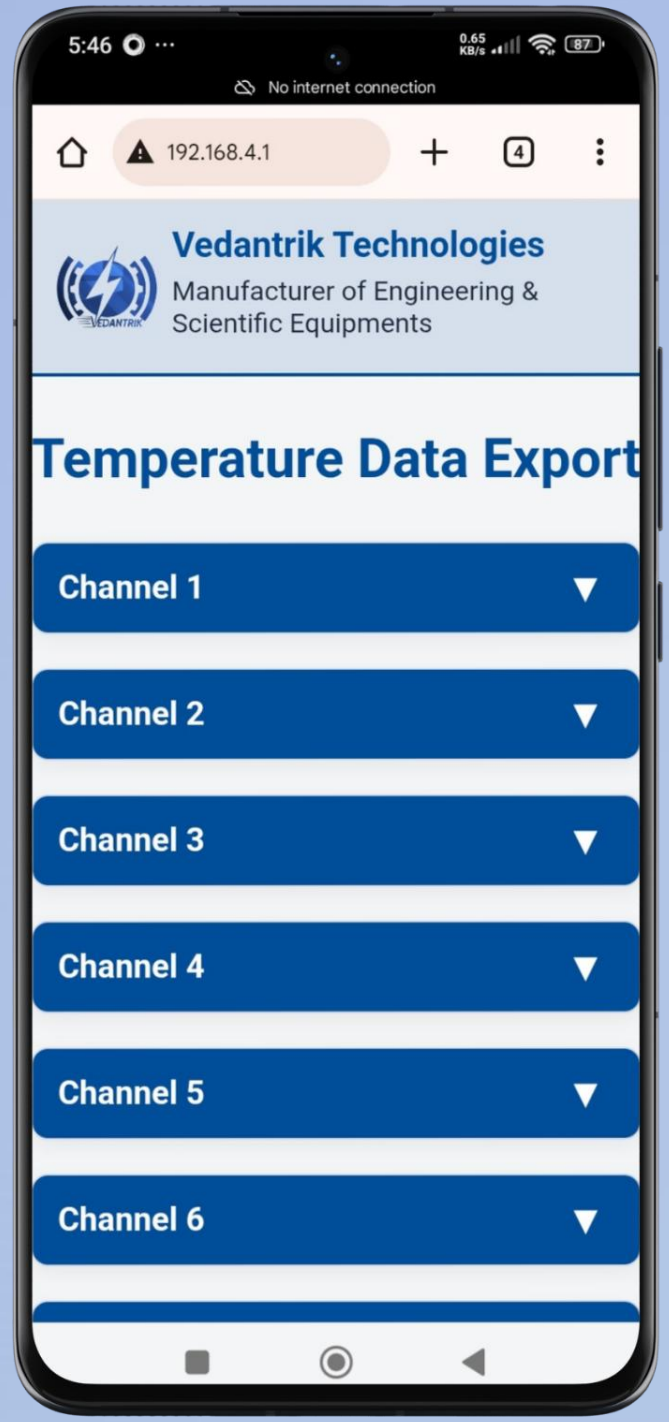
WIRELESS CONNECTIVITY





Web-Based software Access using in-built Hot-spot

- VedaTherma features robust web-based software that operates directly via its built-in hotspot, requiring no internet, installation, or compatibility setup.
- Engineers can connect from any laptop, PC, or smartphone using a standard web browser to monitor live temperature readings in real time.
- The system also supports automatic test report generation, including detailed temperature logs, which can be instantly downloaded or exported for analysis and documentation.
- This ensures seamless, accurate, and efficient thermal monitoring of mass concrete without additional infrastructure

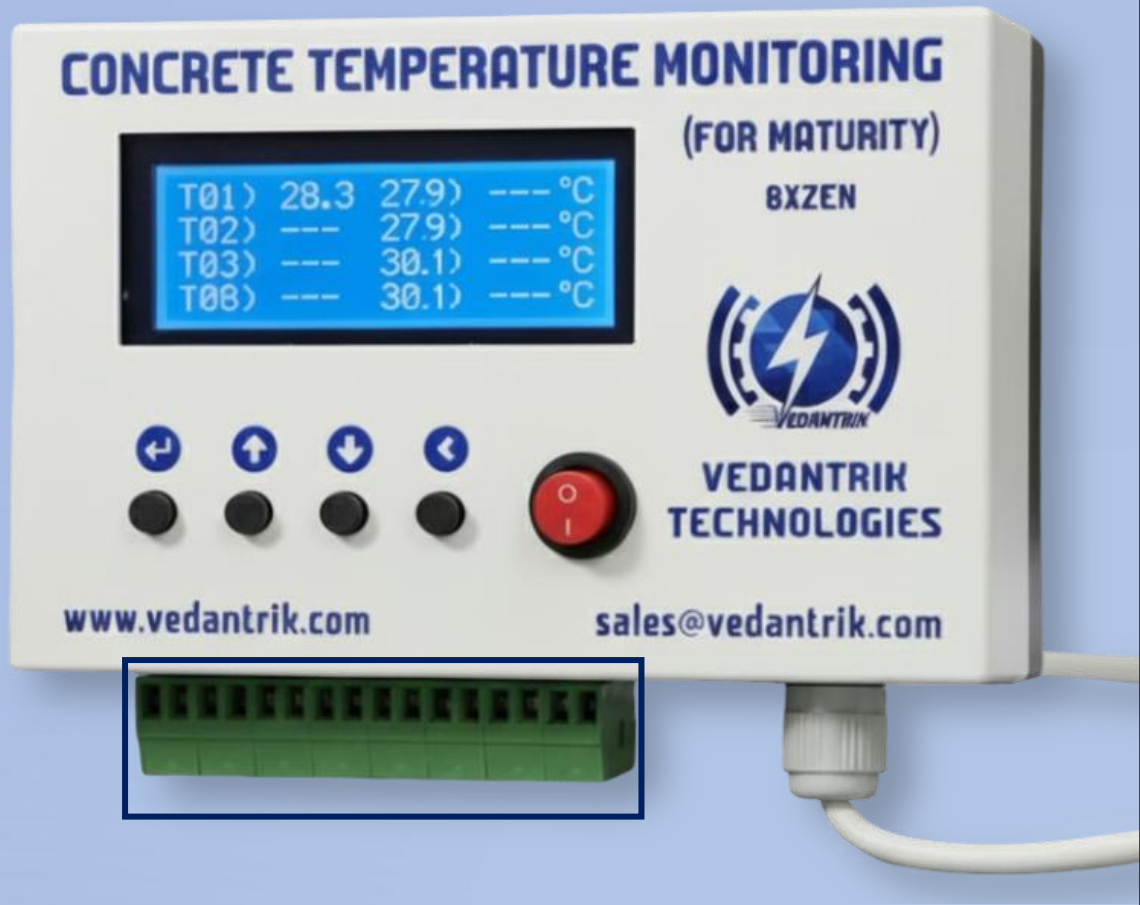


Automatic Report generation

- VedaTherma provides continuous temperature monitoring and logging via its internal data logger, ensuring all readings are securely stored.
- Enginners can access and download reports through the web-based software by connecting any device over Wi-Fi, enabling remote temperature monitoring.
- This simplifies data interpretation, documentation, and analysis, supporting quality assurance, regulatory compliance, and project management, while eliminating manual recording and minimizing the risk of errors.

Multi-Channel Connectivity

- In mass concrete, heat generated during hydration is often trapped and cannot escape easily, creating thermal gradients. It is therefore crucial to measure temperature at multiple points within the concrete.
- VedaTherma supports up to 16 sensor channels, allowing multiple sensors to be installed throughout the concrete mass.
- This enables simultaneous, real-time monitoring at different locations, providing a complete and accurate view of temperature variations throughout the concrete mass.



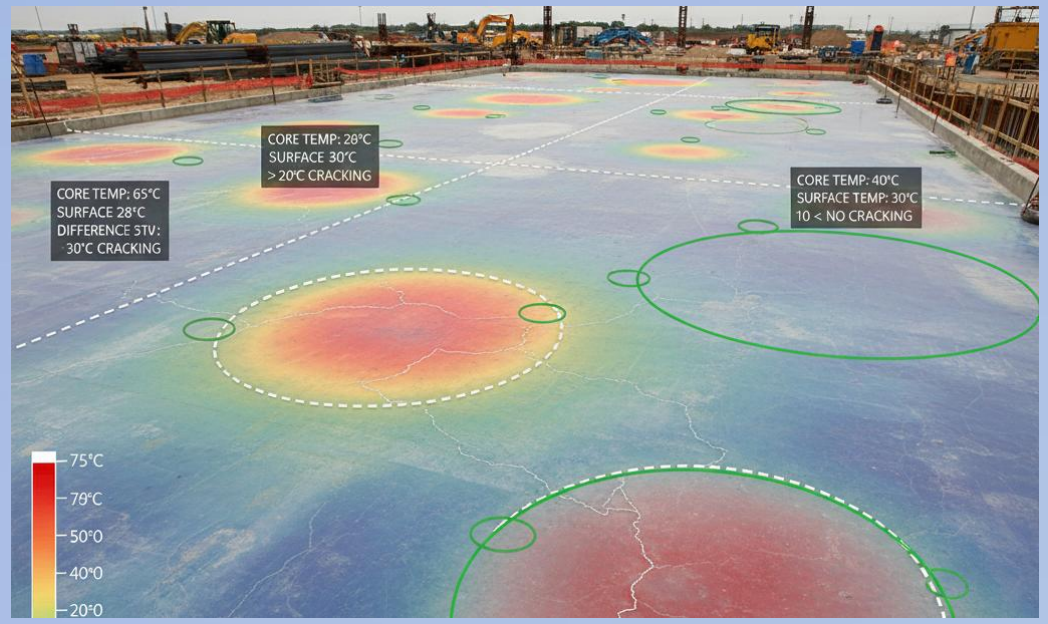
Wide Range Temperature Sensing

During mass concrete pours, heat generated by cement hydration often becomes trapped, leading to significant temperature differences between the core and surface.

If this difference exceeds 20°C, as outlined in ACI 301 and ACI 207.1R, thermal cracking can occur, reducing concrete durability and strength.

The VedaTherma system, equipped with high-precision sensors with ±1°C accuracy and 0–100°C range ,provides real-time temperature monitoring to control hydration heat effectively and prevent thermal damage of mass concrete.

Problem

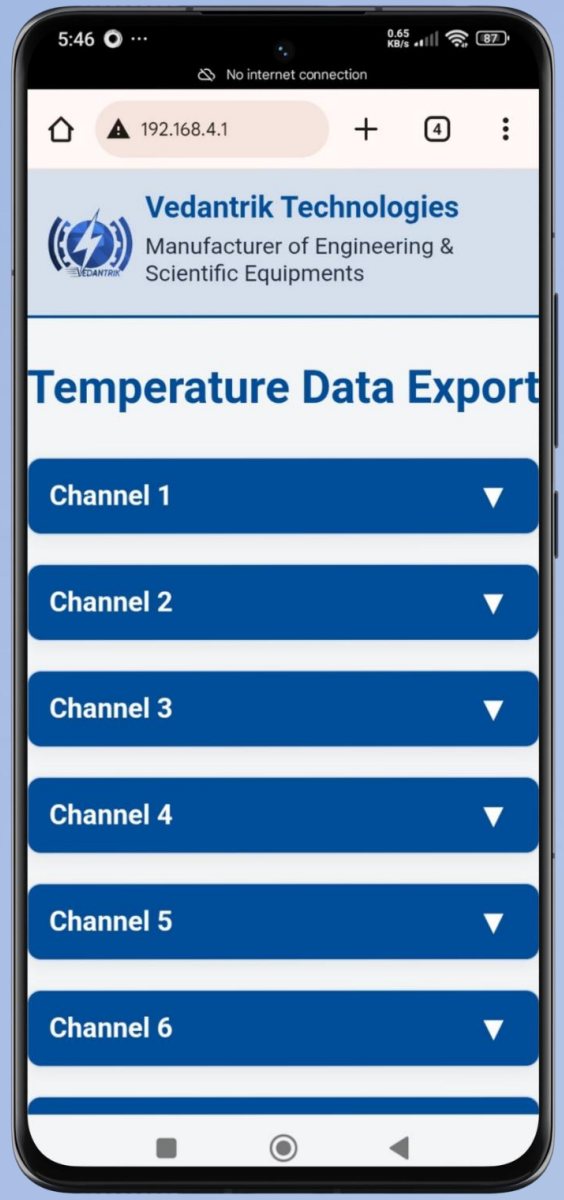


Solution

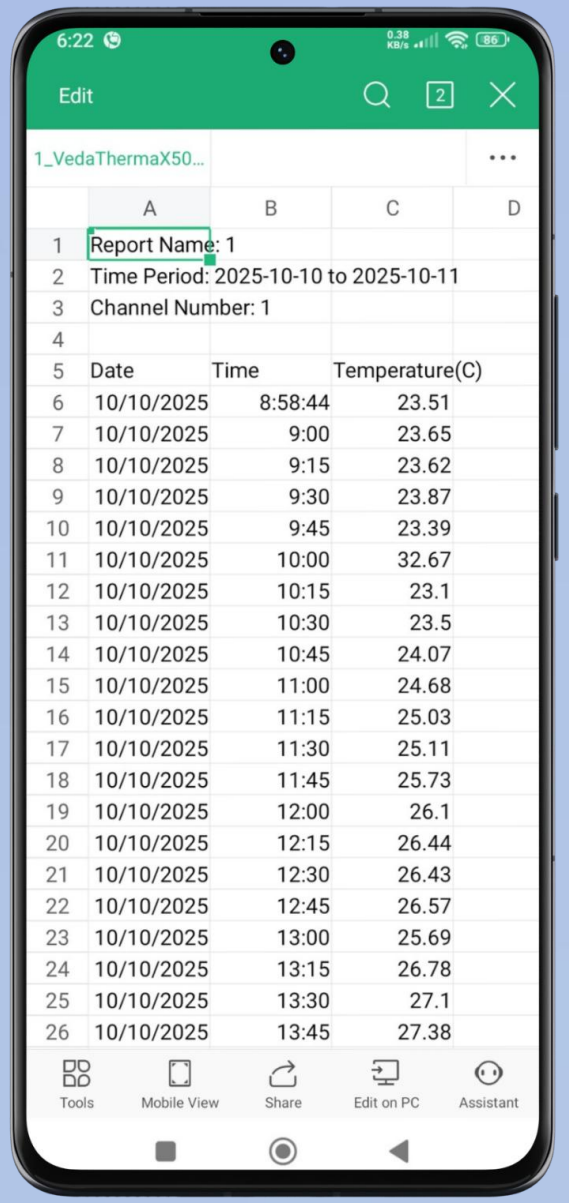
Automatic Data Logging

Traditional methods of monitoring mass concrete temperatures are often manual, and limited where readings are taken on-site, making them prone to human error, amissing critical temperature variations. Data recording is labor-intensive, and real-time remote monitoring is usually impossible.

VedaTherma by Vedantrik Technologies overcomes all these challenges with automated data logging system at user-defined intervals, ensuring continuous, reliable, and accurate temperature control to prevent thermal cracking and ensure durable concrete.



Data Logging



Long distance Accuracy

- Conventional RTD thermocouples commonly used for concrete temperature monitoring are accurate only up to 5 meters.
- Beyond this length, the increase in lead resistance is non-linear and cannot be easily corrected, resulting in elevated or inaccurate temperature readings.
- This limitation poses a significant challenge in large-scale mass concrete applications, where precise temperature measurement across the structure is critical to prevent thermal cracking.
- VedaTherma addresses this issue by providing highly accurate readings up to 500 meters, ensuring reliable and consistent temperature monitoring across multiple points in extensive concrete pours, enabling effective thermal management and structural quality assurance.

inaccurate Temperature, Due to difference in wire legth

Required Accessories

- VedaTherma Main Unit
- Temperature Sensor
- SD Card