

MUSEUM ENVIRONMENTAL MONITORING PROTECTS EXHIBITS

WIRELESS MONITORING SATISFIES MUSEUM ENVIRONMENTAL STANDARDS



Eltek has supplied the next-generation museum environmental monitoring solution for the interior of a prestigious museum located in Cambridge, England to ensure that the exhibits are in a controlled and non-destructive environment. The site is approximately one square kilometer but in actual surface area is much larger, as it consists of 4 levels and some basement area.

This is made more complicated by the fact that the building is a stone structure with modern construction extensions. Therefore museum curators needed a flexible monitoring system with

a broad range of data logging capabilities. Staff also requested analysis software to track readings by room to get a highly accurate environmental profile to aid in long-term preservation.

INSTALLATION

Due to the sheer size of the museum, it would be extremely difficult to install a conventional wired monitoring system. Individual data loggers could have been used in different areas, but this would make it difficult to collect and aggregate the data

with a cost-effective solution. With this in mind, Eltek supplied the museum with a wireless data logging system to meet all of its environmental monitoring requirements.

[Eltek Gen II Wireless Radio Data Loggers](#) have been designed to log the environmental data and generate alarms for parameters out of the desired range. This system supports up to 128 transmitter units and up to 250 measurement channels. The added flexibility of data loggers with internal or external sensors makes the system easy to install and use.

The museum's extensive system consists of:

- 54 GD-10 Temp/RH Transmitters
- 7 GL-70 Temp/RH, Light, & UV Transmitters
- 2 RP250GD Radio Repeaters to Extend Range
- 1 RX250AL Data Logger Receiver

USAGE

The museum's 54 model [GD-10](#) transmitters and 7 model GL-70 environmental data loggers make a total of 159 individual sensor channels. The loggers transmit data to the centrally located [RX250AL](#) receiver which is a large setup by any manufacturer's standards! This combination ensures optimal coverage for all exhibits. The GD-10 transmitters use built-in temperature and humidity sensors while the GL-70 units have an internal temperature, humidity, visible light, and ultraviolet light (UV) sensors to record the desired environmental parameters.

Each Wireless Transmitter digitizes the environmental data in its location and transmits it to the central RX250AL Data Logging Receiver. Data is stored in the receiver which then sends the data to an office PC via USB, Ethernet, serial



or cellular modem communication. For truly independent and robust monitoring, the system will continue functioning in the event of PC or mains AC failure, and it's not necessary to have a PC permanently connected because of the internal memory in the RX250AL. The museum's system also uses a pair of Eltek [RP250GD](#) repeaters to extend the transmitter wireless range and cover this difficult site in terms of radio communications.

Eltek worked closely with [Tobit Curteis Associates LLP](#) who specializes in the conservation of wall paintings. This resulted in the development and supply of Eltek's [Darca Heritage software](#), which was designed for conservation monitoring applica-

tions. Darca Heritage allows users to organize the data collection by zone, allowing the museum staff to view data from specific areas in the facility such as the Egyptology section. Darca Heritage also enables a long-term analysis of environmental data to form environmental profiles for the various exhibit spaces.

Darca Heritage has been designed specifically for museum curators and conservators monitoring large installations. The software allows users to access sensors according to their physical location. Sophisticated but simple to use, it provides power-

ful tools for:

- Configuring and metering sensors
- Changing logger settings
- Automatically updating site data to a data file or database
- Sending alarms via email or text message if any channel inputs go outside of safe limits
- Generating meaningful reports from the data



In addition to standard measured values, calculated parameters may be added and analyzed either graphically or statistically. Sensors may also be metered graphically on user-entered floor plans which show each sensor group's physical location. The enhanced version of the software, Version 2, has been designed specifically for environmental monitoring on a large-scale site with data accessible by multiple users. All site layout information and downloaded data are stored centrally in a database for ease of maintenance.

For more information on [Eltek Data Loggers](#), or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800)956-4437** or www.DataLoggerInc.com.