

VODAFONE

Business: Mobile telecommunications – world's largest.

Location: Newbury England

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Vodafone data centres are the backbone of the business, with responsibility for customer billing, handling over 1 million transactions per day. At the time of the initial installation, Vodafone had 1 data centres, (Apollo), with another about to be commissioned, (Andrew).

Because of the critical nature of these installations to the business, and the potential loss of revenue / downtime cost in event of power failure, the decision was taken to thermally monitor key air circuit breakers and bus bar sections in the main electrical switchgear enclosures.

The first install involved a retro-fit of 72 Infrared sensors in Apollo data centre. These were monitoring key air circuit breakers, (one sensor per phase). On main incomer and 4 critical breakers both sides of breaker were monitored. On further 3 breakers outgoing side of breaker was monitored (despite some thermal lag, heat will conduct across breaker connections). Key bus bar sections were also monitored, with one sensor approx per 1.5m length. System was stand alone with dedicated PC in plant room.

The second larger data centre (Andrew), was installed via specifying thermal monitoring at build stage of electrical switchgear, thus enabling the sensors to be fitted by the panel builder during manufacture. Two identical panels were built by 2 separate Companies. Once again key breakers and bus bar sections were monitored, with 72 sensors per panel.



The system operated via stand alone PC located in plant room. A volt free connection from system relay card enabled remote alarm facility, in event pre-set temperature level set point was exceeded.

During the next 3 year period, Vodafone installed a building management system (BEMS), and also added 2 further data centres. ExerTherm is now installed in one of these (Maxwell), and is planned into the other. In addition, ExerTherm is now fully integrated into the BEMS. Thus no stand alone PC's in plant room, instead direct connection (via protocol conversion hardware) into the BEMS, enabling view of temperature levels, trend information, and alarms from Vodafone WAN.

The decision to utilise continuous thermal monitoring of critical electrical switchgear was taken as result of the recognised requirement to reduce the risk of electrical failure in locations which could potentially result in significant damage / cost to the business.

Paul Morris also uses the ExerTherm hand held Super E instrument for various on-site periodic inspections of cables, fuses, MCCB's, DIN rails, etc.

Discussions now taking place to roll out thermal monitoring of power equipment in Vodafone 8,000 unmanned base stations, with data transfer utilising QHI GPRS based wireless telemetry equipment.