

# EG4K BLACKBOX

## CASE STUDY



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## EG4K Making a Difference at LG's Internet Data Center In South-Korea

**LG, Gasan-Dong, Seoul, South Korea:** Installs 41 EG4K PQ devices in one of their biggest internet data centers. Engineers turned to Elspec's technology, in order to run a full investigation after a major network power failure. Unlike the existing PQ system that could only provide short-term data, the EG4K free of pre-defined triggers, provided the engineers with comprehensive data prior, during & after the event.

### LG Adopts Enhanced Power Quality Analyzers

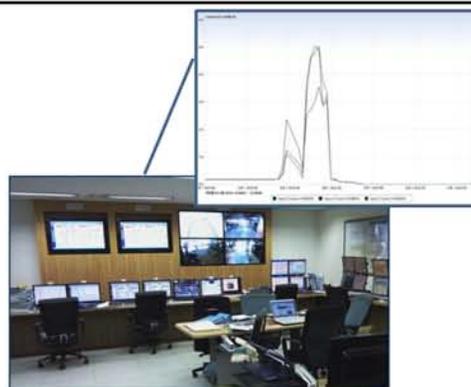
LG's largest Internet Data Centers (IDC) in South-Korea, has recently purchased an additional 10 EG4K Power Quality Analyzers to improve their monitoring accuracy of their network power. This puts the total number of EG4K's in use at 41 units. Since power quality is of the outmost importance for their facility, LG has decided to also make use of 10 Elspec Activar systems, which connect and disconnect at zero current crossing and thus do not introduce any spikes or transients into their network.

Opened in May 2009 the 14-story center relies on a stable power supply of 40,000 kW on two parallel lines. The facility houses a data processing room of 13,224 m<sup>2</sup>; its UPS infrastructure requires a power supply of 1 kW/m<sup>2</sup>, with its cooling system's capacity at 0.5 RT/m<sup>2</sup> alone.



*EG4K Installation at LG IDC, Seoul Korea*

The main loads in this center are the servers. Because of their importance, every server has a thermo-hygrostat, a cooling system and an UPS. In addition, their network is linked with other international networks, and is configured at a full NOC monitoring of 24 x 365.



*Elspec's Investigator Software in use @ LG  
IDC's Control Room*

### LG's Needs

To guarantee a lucrative uninterrupted internet service to some of South Korea's prominent businesses and government sectors, the center strives to be:

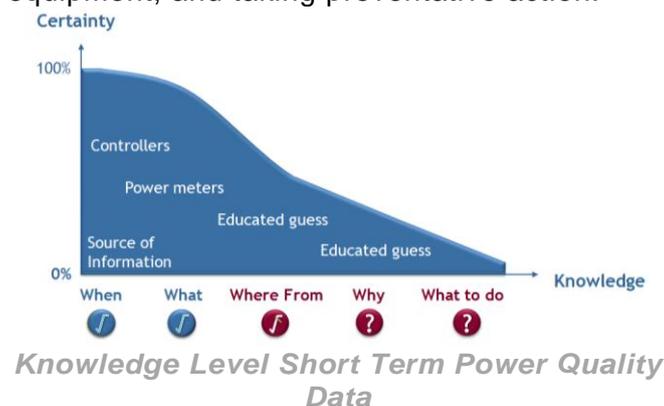
- **Efficient:** Monitor the power network 24 hours a day,
- **Resourceful:** Anticipate any future power events before they occur,
- **Competent:** Be able to pin-point the root cause of any power quality issues,
- **Cost-Effective:** Reduce the costs of electricity, avoid unnecessary equipment failure.

It is therefore imperative that the Power Quality Analysis system available to them address all their needs. Specifically, the system needs to provide effective and adequate back up of all the events, uninterrupted recordings over many parameters, monitors and measures the power network at a high accuracy level, and stores all the data for recall via a sophisticated, yet user-friendly software system.

### CONVENTIONAL TECHNOLOGY FAILS TO DELIVER

The original power quality meters that were installed in the building in 2009 are designed to measure voltage and current inputs of 32 samples per cycle. Events are analyzed according predefined triggers, and it has a built-in alarm that is triggered simultaneously when the event occurs. The system is further hampered with a storage capacity of only 89 seconds for waveform data, or alternatively may store a total number of 256 events limited to only 20 cycles for each event. The software's configuration for LG included data from a specific range – i.e.: 2 cycles before the event and 60 cycles post the event, meaning a total number of 62 cycles for a maximum number of 82 events.

After a major event, the engineers realized the disadvantages of the original system. Compared to the EG4K units, the system was only able to detect that some event happened and when the event happened, which in itself is obvious information (see Graphs below). In addition, conventional technologies are usually designed to measure expected events. This may suffice in the general operation of the building where the offset of alarms are needed, and corrective action may be taken immediately. However, finding the cause for the event and doing an in-depth analysis was almost impossible with the available short term data of the event. This holds many detriments in itself, especially in the protection of the equipment, and taking preventative action.



### EG4K COMPLIES WITH LG'S SPECIFICATIONS

After this experience LG's engineers decided to replace the existing PQ analysis system with Elspec's technology. Elspec's technology complies with the company's specifications for data storage, with a hard drive capacity on their main server of 1TB. Other benefits of the EG4K Blackbox include:-

**Continuous Recordings** Identify not just the failure, but also the condition(s) that lead up to the failure.

**High Sampling Rate** Samples 1,024 samples per cycle, simultaneously, over all the channels.

**Setup is Threshold Free** Continuous 1+ year onboard recording of all parameters. No need to worry about missed events due to incorrect setup.

**Compatibility** Equipped standard industrial protocols for seamless integration with any SCADA system.

**Standard Compliance** EN50160, IEC 61000-4-15 and IEC 61000-4-30 Class A, as well as other National Standards. Custom Standards can be modified per customer request.



**Conclusion:** The engineers at LG's Internet Data Center in South Korea were quick to realize the superior quality of the EG4K BLACKBOX. The EG4K monitors their network power accurately, efficiently and continuously at a very high sampling rate, thus guaranteeing a lucrative uninterrupted internet service to their clients.