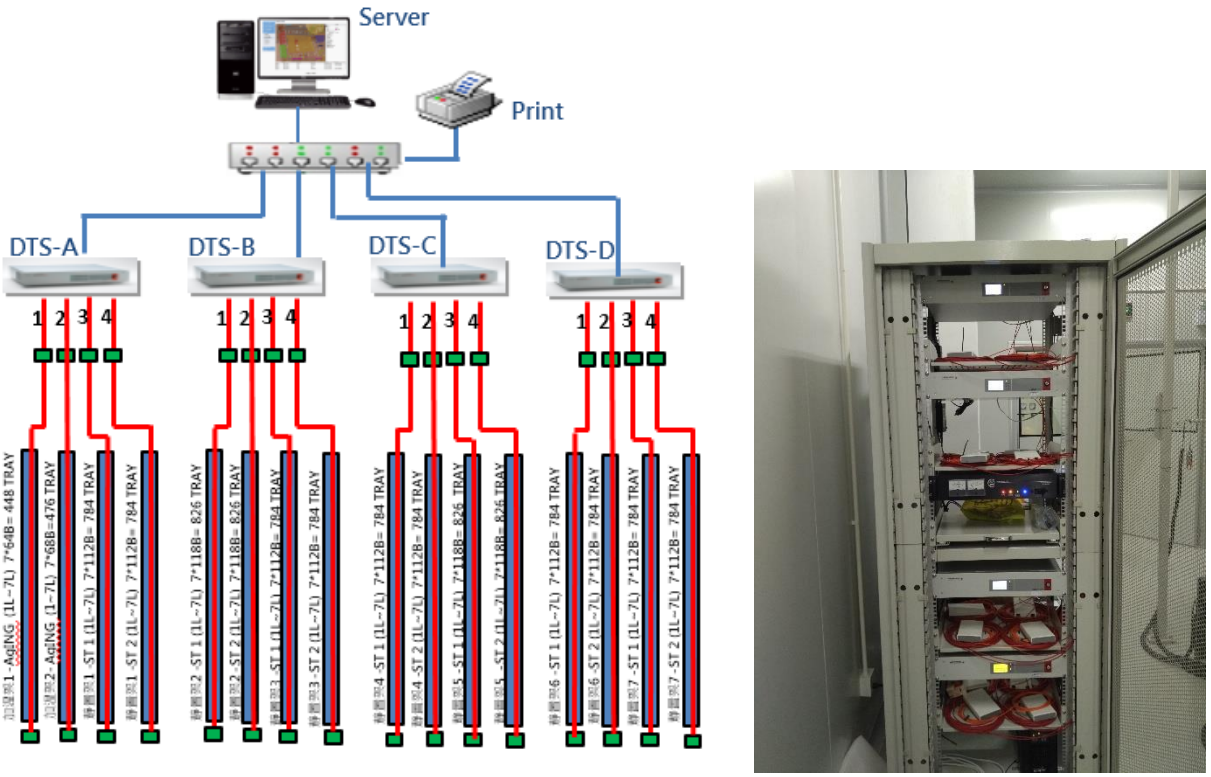
Fire Detection in a Battery Warehouse

Fujian, China

Amperex Technology is a **market leader in the design, manufacture, sales and marketing of rechargeable lithium ion/polymer battery cells** and related battery packs and systems.

In their new battery warehouse they have the capacity to **store some 7000 batteries and packs**. To mitigate the risk of overheating or of a fire, which could have devastating consequences, Amperex **selected four AP Sensing Linear Heat Series 1km devices**, each with 4 channels, to protect the warehouse. The 4 DTS units are installed in a rack in a remote control room.

The passive **sensor cable has many advantages**, because it is immune to dirt, dust, humidity, corrosive materials and electromagnetic interference (EMI).



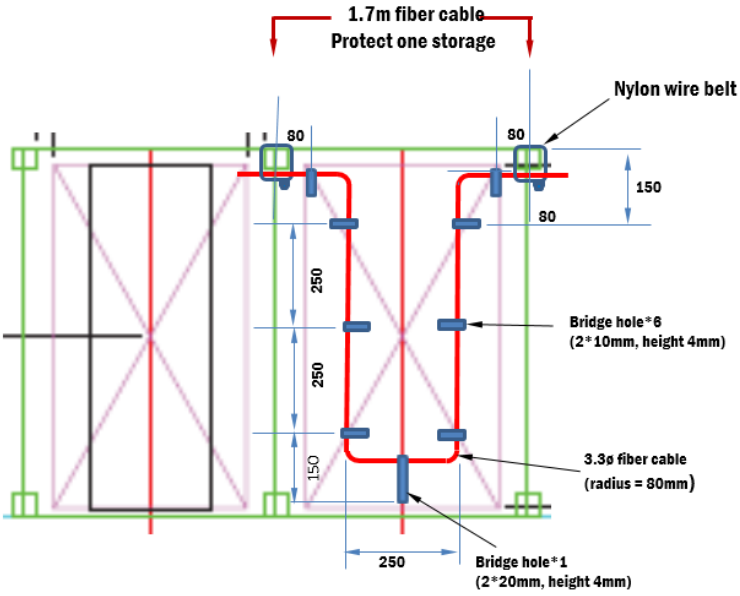
System configuration and rack installation

The battery warehouse has **7 layers of shelves**, with each layer separated by a fireproof panel. The fiber **cable could then be installed around the perimeters of these fireproof panels**, as shown below.

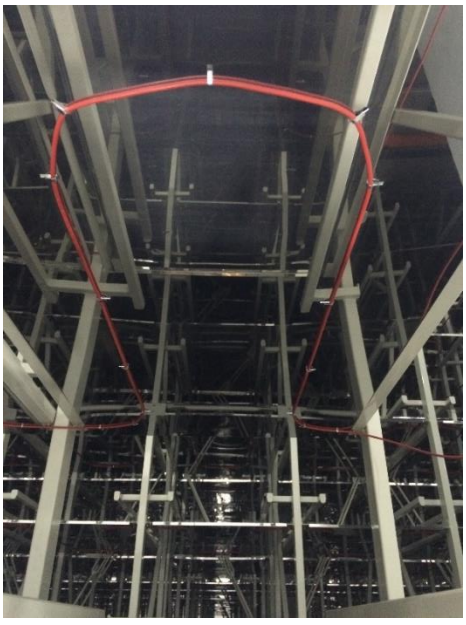
Each loop of the DTS can be divided into **256 alarm zones**, and each zone can be defined with one of 5 alarm criteria. Because 2 storage shelf locations could be protected by one alarm zone, there are **more than 3500 alarm zones** in this installation. A heat gun was used to position and test the alarm zones. In general 2 storage shelves constituted an alarm zone.

Each DTS device is equipped with a **Modbus TCP** slave module and the alarm configurations for each zone. The average temperatures and the maximum temperatures for each zone are **relayed to the SCADA system** via the Modbus TCP protocol.

The system **passed the final acceptance test with no issues** and has been working without any issues since it was installed. A valuable infrastructure remains protected.



Protection coverage layout diagram



Optical fiber cable installation in the warehouse