



## Continuous Bus Duct Monitoring for Data Centers

USA/Frankfurt Germany

### Project Overview

Recently, a major US-based cloud computing provider was looking for a busway temperature monitoring solution for their European hub. Specifically, they were looking for a continuous monitoring solution for the busway runs between switch rooms and the data hall. This facility had evolved over time and is operating as a modern cloud provider for their German market.

In order to streamline the daily maintenance process of the physical layers, AP Sensing's Continuous Bus Duct Temperature Monitoring (CBTM) solution was retrofitted for Schneider 2000A busways spanning across switch room and the data hall.

### Solution

In the event of an overheating bus duct, the cloud provider wanted to be informed and able to identify the location of the hotspot. This knowledge facilitates an immediate decision about whether further investigation and physical access into the secure area is required.

AP Sensing collaborated with STS Group for deployment of the sensor cable and Distributed Temperature Sensing (DTS) panel installation; this facility was retrofitted with one fiber optic DTS device with four channels, each monitoring up to approximately 2 km per channel.

While the cloud facility was in full operation, the fiber optic sensor cable was carefully fitted along the required 2000A ampacity busway using a fastening solution specially developed for bus ducts. This live production data center has busway infrastructure spanning across two levels of the building and crossing more than a dozen separate rooms and corridors and at a typical height of 3 m above the floor level.



### Background

- Cloud computing provider required busway monitoring solution for production data center with corridors, rooms and white space fitted with raised floor



### Solution & Benefits

- One DTS device with two channels plus specialty sensor cable
- 24/7 monitoring of hotspots, and localization along the busway within 1 m
- Alerts to maintenance with built-in, local hard wired relay contacts to designated monitoring point of DCIM
- Preventative maintenance and quick emergency response

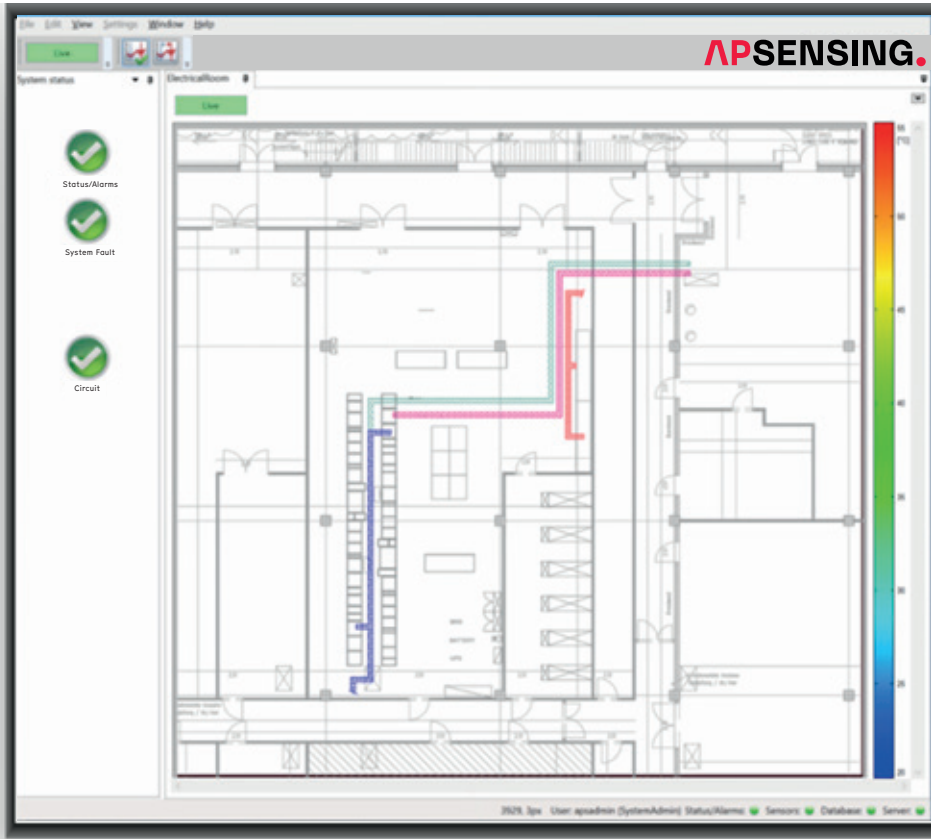


Figure 1: SmartVision operator interface

## Installation

Following discussion with Facility Management, STS Group assisted in the CBTM solution. The sensor cable routing is in direct physical contact with the busway housing, with the DTS continuously measuring the busway housing temperature along each feeder, elbow, tee and busway joint.

At this cloud facility, AP Sensing configured approximately 20 zones for alarms and temperature values to be sent from the DTS unit, allowing SmartVision and the NOC to display temperature information for the entire busway infrastructure.

Upon detection of a busway hotspot, the site BMS receives a single alarm signal from the DTS and the position of the event within 1 m, prompting Facility Management to investigate and manage the irregular event or fault.

SmartVision AssetViewer software provides a visual overview of the entire infrastructure and any points of concern. Having been alerted of a hotspot alarm, the on-site maintenance engineer is able to utilize SmartVision to carry out a local investigation and rapid, detailed assessment without needing physical access to the secure location.

## Conclusion

For this cloud provider, a new standard practice for busway maintenance was achieved.

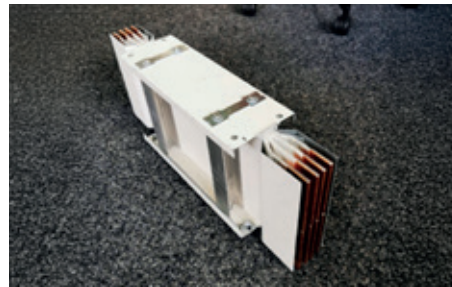


Figure 2: Schneider 2000A busway - sensor cable route planning and retrofitting by STS group

CBTM provides real-time temperature monitoring of the complete bus duct infrastructure, addressing the limitations of traditional methods and providing rapid alerts in a live data center. This advanced monitoring system not only detects temperature fluctuations properly, but also offers a proactive approach to identifying overheating and potential damage. Bus ducts equipped with fiber optic sensors eliminate the need for retrofitting discrete sensors or requiring on frequent thermal imaging services. AP Sensing's comprehensive and continuous monitoring solution ensures that assets are completely monitored and even inaccessible or hidden areas are monitored effectively.