Fire Detection in Self-Unloaders
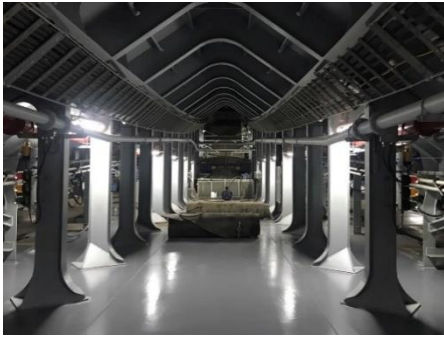
Yangtze River Shipyard

AP Sensing was selected to provide a Linear Heat Detection solution for a vessel at the Yangtze River shipyard in China. The customer Algoma Central, owns and operates bulk carriers, and required an advanced and reliable fire detection system for the protection and security of its self-unloaders.

There are more than 400 meters of conveyor belt in self-unloaders, bulk carriers that discharge cargo without requiring external equipment. Conveyor belts in these ships need to be protected and monitored because fire can spread quickly along the belt and the material that these ships transport can be flammable. A small fire has the potential to lead to extensive damage and disrupt the ship's operation.

Self-unloading bulk carrier

AP Sensing's Distributed Temperature Sensing (DTS) system was chosen to detect fires and trigger alarms for these ships due to meeting Algoma Central's environmental, fire, and safety standards. The system has the necessary certifications (EN54-22, UL-521, ATEX Zone 0), and meets EMV test requirements. In addition, AP Sensing was selected due to its reputation and a mean time between failures equivalent to 33 years. This provides security in an often-harsh environment (humidity, vibration, dust, extreme temperatures, corrosion) that requires reliability each time that the vessel is at sea.

Inside of the ship, cabin, and conveyers on side

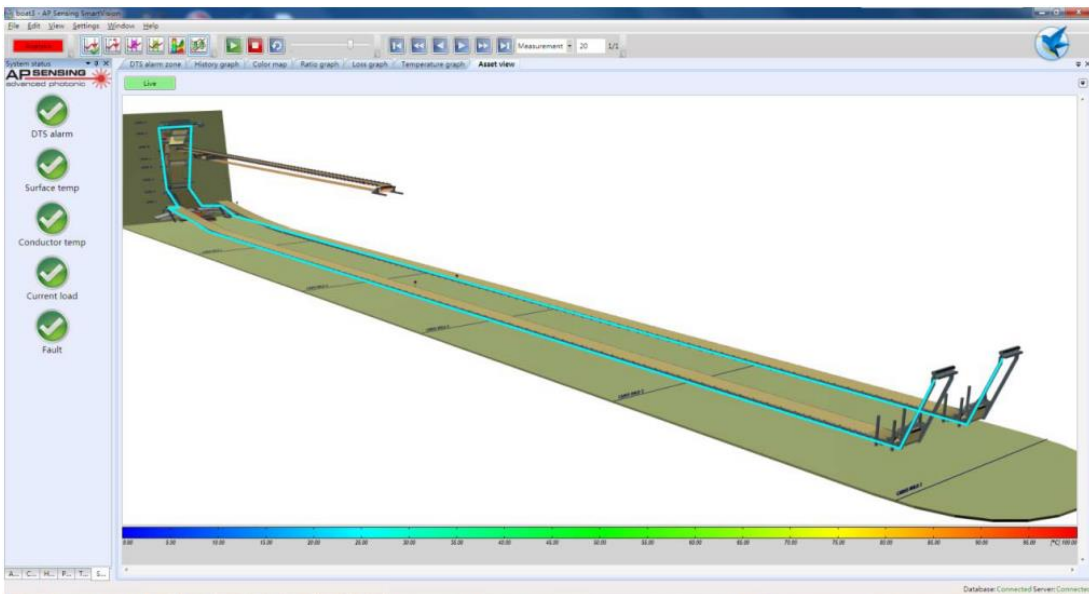*EM-SM beam clip can be used to fix sensor cable onto conveyer*

EM-SM beam clip can be used to fix the sensor cable on the conveyer belt

The first self-unloader used one DTS with IP66 housing and about 1100m of fiber optic sensing cable. The conveyer belt was divided into 43 alarm zones that comply to EN54-22.

One more self-unloading bulk carrier has since installed AP Sensing's DTS system, while several more are planning to install this system in the near future.

DTS installed in control room

Two conveyer systems in the vessel with an elevator that lifts cargo upwards onto a boom to discharge the cargo. This is displayed on a SmartVision screen.