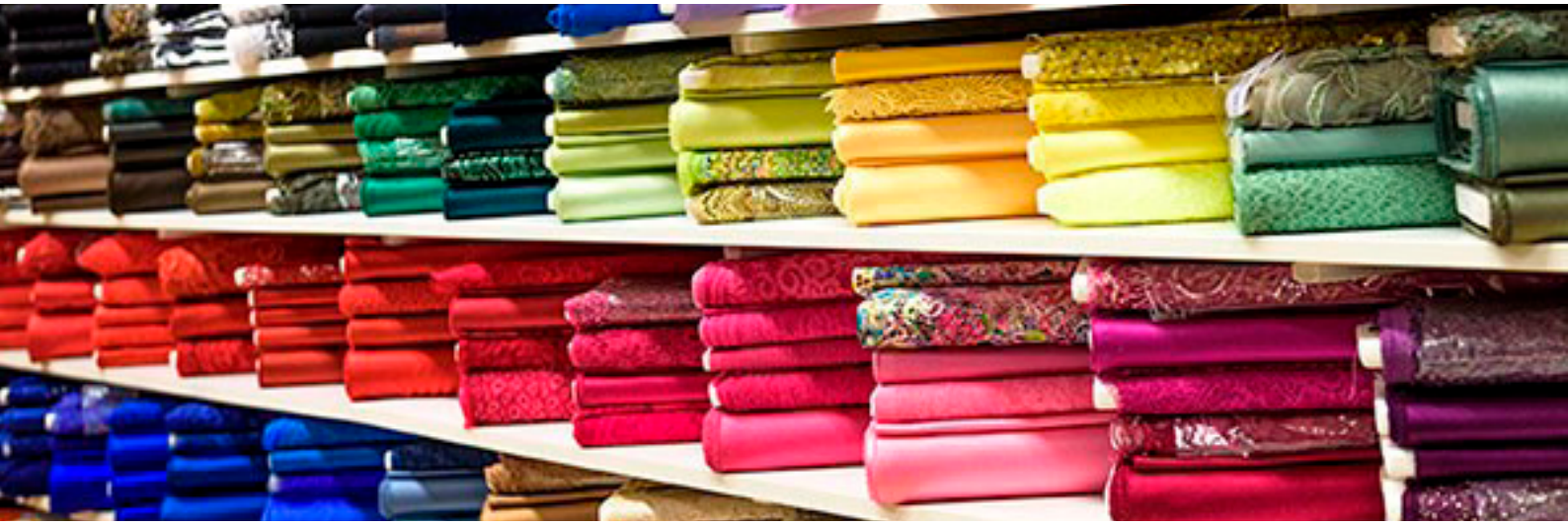
Bandweaver

CASE STUDY

PROTECTION OF TEXTILE FACTORY USING FIBER OPTIC LINEAR HEAT DETECTION (LHD) SYSTEM



In conjunction with:

bts 20 yıl
YANGIN GÜVENLİK
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The Scenario

Textile manufacturing is a major industry and one of the most established. Historically, textile manufacturing has been at the forefront of industrial innovation and continues to incorporate a number of new technologies from automation through to robotics. The textile manufacturing process involves a variety of different fibres and fabrics, chemicals and machinery and is carried out in facilities of all shapes and sizes, from very small to very large.

As in any manufacturing facility, there are a number of fire risks. Therefore, suitable fire detection must be in place to protect life, materials and property whilst ensure the plants smooth and continuous operation.

Some of the key risks include:

Flammable Materials: Materials used in textile manufacturing can be highly flammable and can represent a fire loading risk due to their concentration

Textile Dust and Fibres: As in most manufacturing environments, airborne particles are highly flammable and also distribute throughout the facility, making rapid fire spread a risk.

Flammable Chemicals: Dyes and other chemicals used in textile manufacturing are often highly flammable and similarly to materials can represent a fire loading risk.

Textile Machinery: Machinery such as mills and conveyor belts can be sources of heat either from friction (e.g. bearings) or failure of electrical components.

Client Requirements

The client is a major textile manufacturer with advanced manufacturing plants. One of their manufacturing facilities is a 17,000 sqm facility with multiple product lines.

Textile manufacturing facilities can be very harsh environments with high levels of cotton and textile dust. The client had experienced issues with point smoke detectors and aspirating smoke detectors (ASD), both of which had malfunctioned and false alarmed due to the high level of dust particles in both the manufacturing area and the warehouse storage area.

The owner was looking for a more robust technology which could still offer comprehensive coverage throughout the large area but with improved reliability, lower maintenance costs and fewer false alarms. It was imperative that the system met international fire regulation standards - in this scenario the appropriate standard was the European standard EN54 part 22.

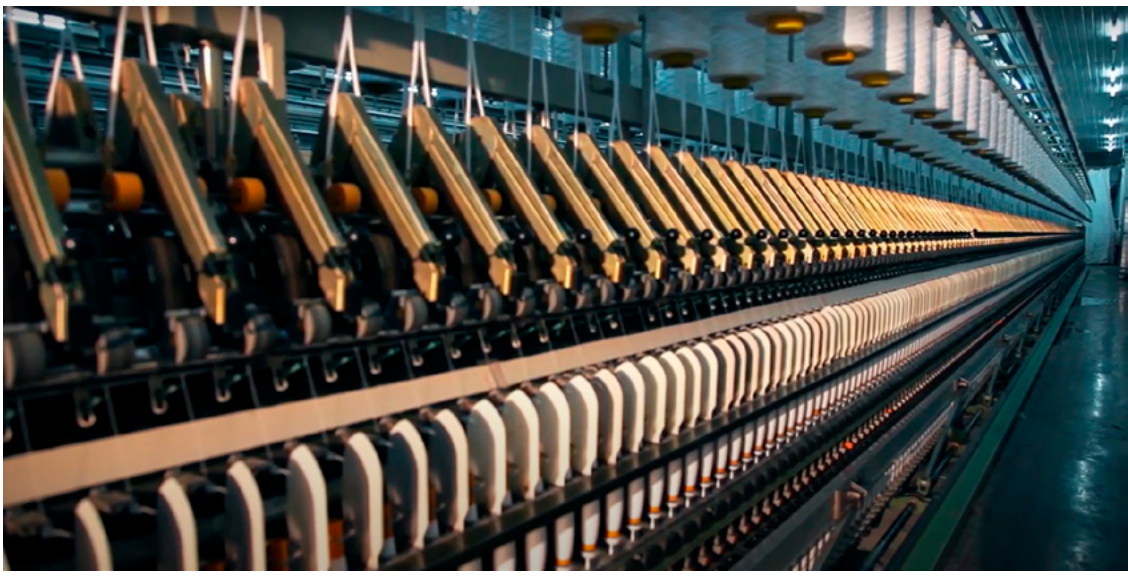


Figure 1: Example of production line in customer's premises

What Did We Do?

BTS Yangin together with Bandweaver designed and installed a fiber optic Linear Heat Detection (LHD) system based on Bandweaver's FireLaser system. BTS Yangin has installed over 150 fiber optic LHD systems with over 430,000m of fiber optic sensing cable installed and so has extensive experience in designing and installing these systems.

BTS worked with the owner to design a detection system utilising the Bandweaver FireLaser fiber optic linear heat detection controller. With over 4,600m of fiber optic sensing cable within the facility, the cable was installed at the ceiling level, which was at a height of between 8 to 11 meters. The spacing between fiber cables was 8 to 9m, which matches the norms for the industry.

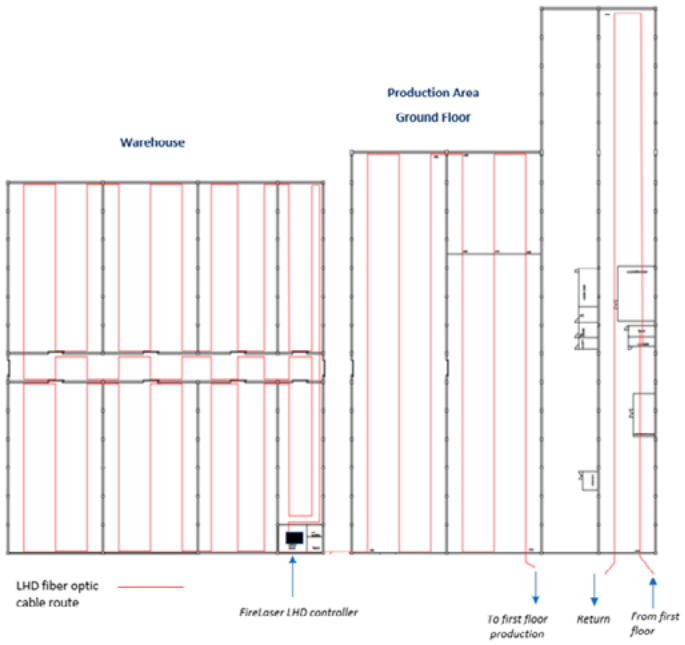
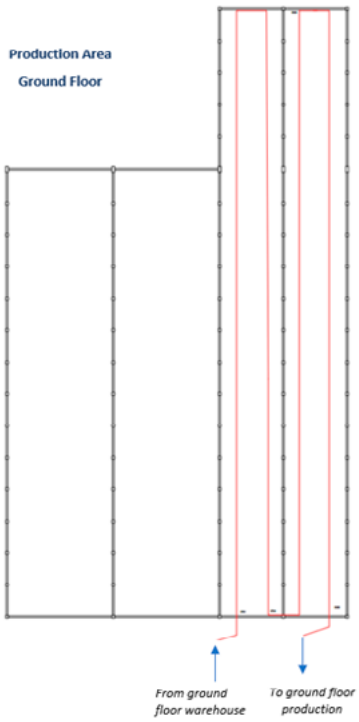


Figure 2: Installation Path of LHD cable at Ground Level

Figure 3: Installation Path of LHD cable on First Floor



The cable route was deployed in both the production area and the warehouse, at both ground level and first floor.

The FireFiber AT cable used is a lightweight, flexible yet rugged design, which allows it to be easily installed and manipulated. It was installed in a 2-channel loop configuration which provides a level of redundancy. In the event that the cable is severed at any point along its length, the system will continue to function.

One of the key factors to success was to ensure that the LHD sensing cable provided extensive coverage to the facility. One of the unique features of Bandweaver's FireLaser LHD system is that it provides measurement points every 50cm along the length of the cable and so any heat event can typically be located to within a few metres.

Benefits to the Client

The customer was completely satisfied with the solution and has installed this technology across four additional facilities with plans to extend to other facilities in the future.

When evaluating the system, the client was influenced a number of factors across the lifetime of the project. Below are the following benefits that helped to persuade the client that fiber optic LHD systems were a superior choice to other technologies.

Low Cost of Ownership: Fiber optic sensors are completely passive and are immune to EMC interference. They are not affected by dust or other environmental factors and are completely non-corrosive. Therefore, the lifetime of a fiber optic cable can be greater than 30 years, without any maintenance required. This was in contrast to the experience the owner had with aspiration and point smoke detectors, both of which required frequent maintenance and have a high failure and false alarm rate.

High Reliability: Another benefit of the passive, inert nature of fiber optics is that they are very reliable and so there is no downtime. In addition to the lower maintenance costs, they also provide a higher level of coverage, which lowers the overall risk and improves protection levels. The Bandweaver FireLaser has an MTBF of >29 years (Telcordia standard) and is SIL2 certified, which makes it appropriate for some of the most stringent applications.

Fully Certified to Internationally recognised standards: The Bandweaver FireLaser DTS together with the FireFiber AT sensing cable has been certified to EN54 part 22. This gives the customer the knowledge and security that the system has been designed and tested to the highest standards in the fire detection industry.

Early Detection: Because the sensing cable was installed throughout the facility, it means that the precision and speed of detection can be much quicker. With the fiber optic LHD, the client is able to take measurements every 50cm and so there is always a sensing point close to the fire. Consequently, it is detected earlier and any fire or water related damage is minimised.

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