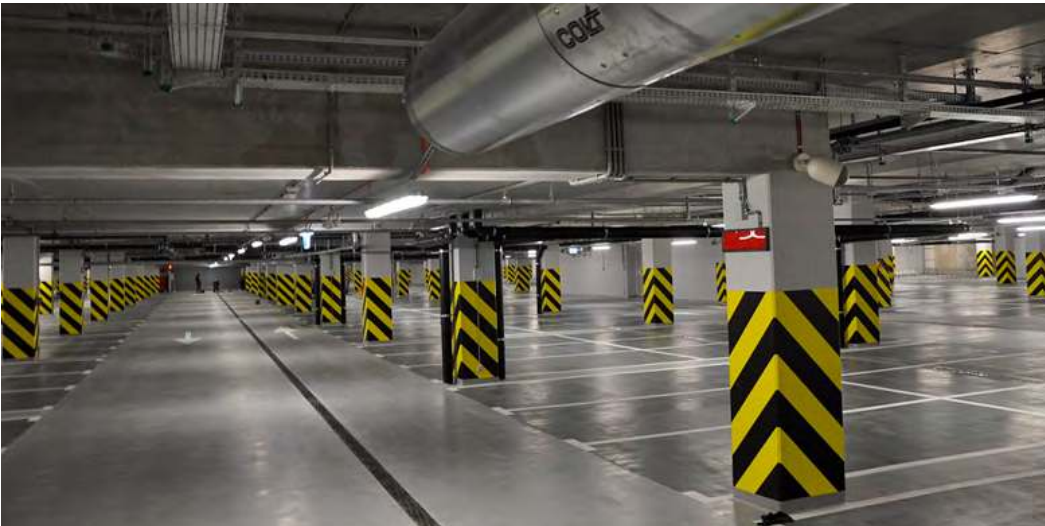


## APPROVING BANDWEAVER LINEAR HEAT DETECTION (LDH) SYSTEM FOR USE IN CAR PARKS IN THE NETHERLANDS



### The Scenario

One of Bandweaver's customers had a requirement for a linear heat detection system for a car park in Holland. While the Bandweaver Linear Heat Detection system is approved to the European EN54 standard, the Dutch Fire Authorities also wanted to witness a test that was to the specific Dutch standards.

Modern car parks have a significant fire risk, as vehicles produce intense fires that generate very high temperatures. Once initiated, a fire often rapidly spread between vehicles, and adjacent floors and buildings. Fire detection systems need to be able to detect quickly and prevent damage to property or loss of life.

One of the issues with conventional smoke detectors are the exhaust fumes that are generated by vehicles, which can lead to both false alarms and also maintenance issues (blocked vents and orifices). Linear heat detection cable is completely passive and is not adversely affected by these conditions. Bandweaver's products are all fiber optic and so are non-corrosive, have no moving parts and so are not affected by damp, humidity or high EMC conditions.

For these reasons, the Dutch fire authority was very keen to approve the Bandweaver LHD system.

## Client Requirements

The client wanted to prove with a fire pan test witnessed by the Dutch Fire Authorities that the system can detect an alarm within the specified time frame

The LDH cable was installed on the roof of the car park. The route of the cable ran along the length of each of the car lanes. It was planned so the maximum distance between sensing points was 8m (according to the regulations).

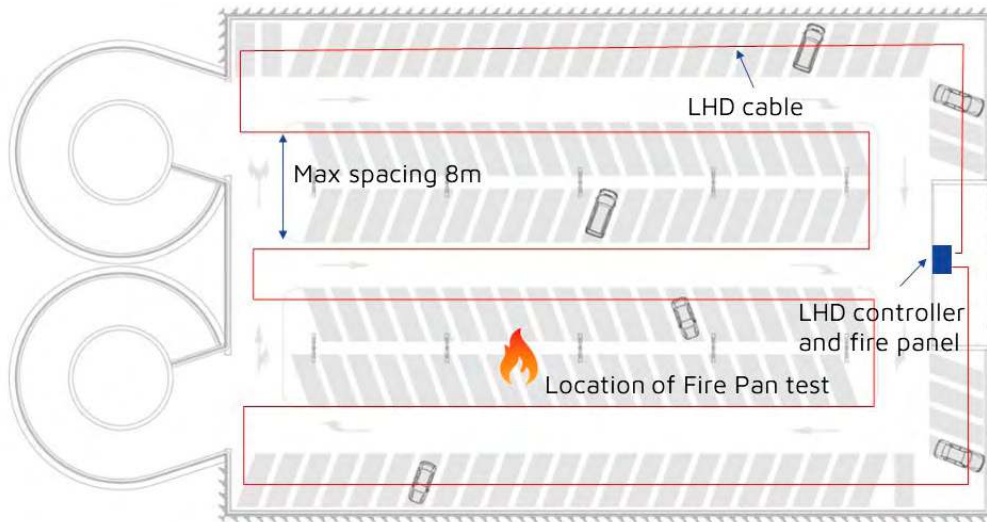


Figure 1 –  
Schematic of Car  
Park Layout

The fire pan test was then carried out at the point furthest from the cable (4m) in order to demonstrate the worst case scenario.

## What Did We Do?

Bandweaver installed FireFiber AT cable in the car park along with the FireLaser DTS Linear heat detection system. The fire pan test was then carried out and time to detection was calculated.

One of the key advantages of the fiber optic linear heat detection systems over the conventional copper based systems is that actual temperature is monitored at all times. This allows the FireLaser DTS to be configured using the rate of rise algorithm, which detects a fire much earlier than waiting for the system to exceed a maximum value.

Typically fire pan tests are carried out using either 1.2 or 2.4 L of ethyl alcohol depending on the wind speed in the car park. In this case the wind speed was 1.8 m/s and so the fire pan was carried out using 2.4L.

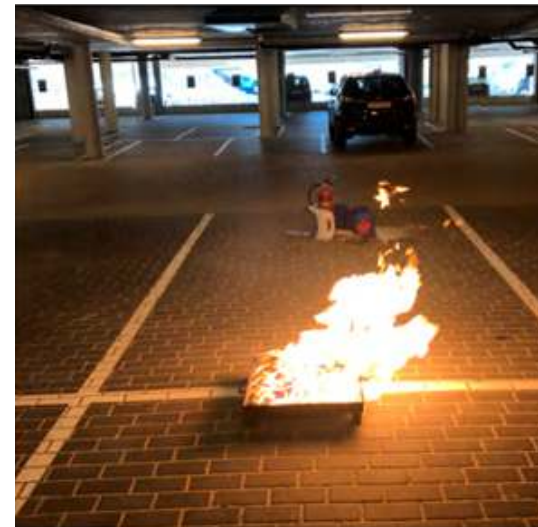


Figure 2 - Photos  
of Fire Pan Test  
and Wind Speed



Even with the high wind speed subduing the flames, the temperature rose enough for the system to alarm within 25 seconds, which was well within the requirements.

### Temperature vs Time 3D Plot For Fire Detection Test

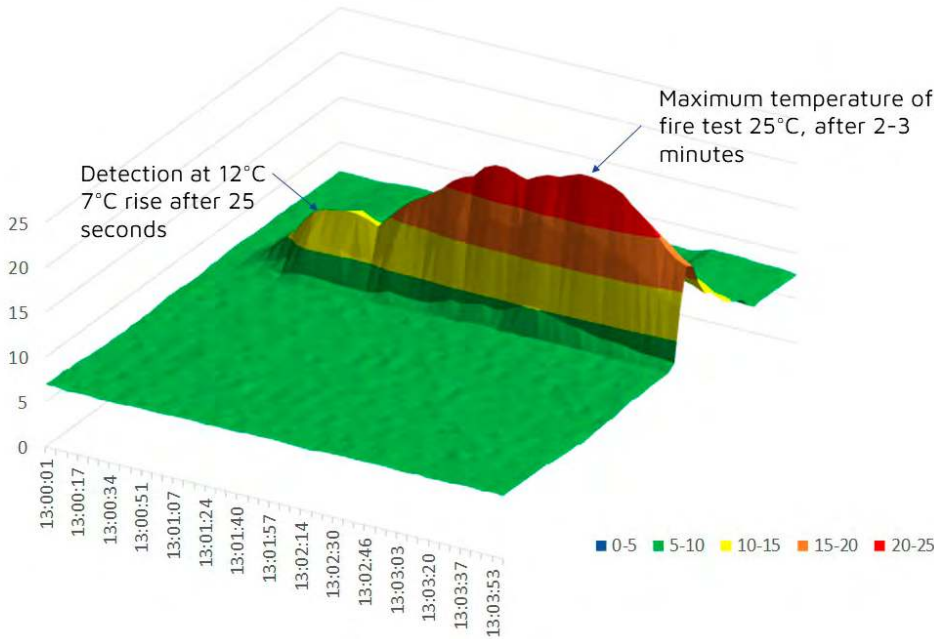


Figure 3 - Temperature Profile For Fire Pan Test

### Benefits to the Client

The FireLaser fiber optic based linear heat detection system exceeded the expectations of the Dutch Fire Authorities and together with the EN54 approvals is authorised for use in car parks. This opens up the following benefits and advantages to the end user and car park owners.

**Early detection of fire:** In this case the fire was detected within 25 seconds and the temperature had only increased up by 7°C (from 5 to 12°C). This is due to the FireLaser’s ability to monitor the rate of rise. In fact given that the maximum temperature of this test only reached 25°C, it would not have been possible for conventional copper based LHD systems to have passed this fire pan test.

**Low Cost of Ownership:** Fiber optic cables have no moving parts, are non-corrosive and immune to electromagnetic interference and typically have lifetimes in excess of 30 years and so carry a very low cost of ownership and no maintenance.

**Low False Alarms:** As opposed point smoke detectors, the fiber optic based linear heat detection (LHD) system is based on temperature and is immune to any potential false alarms from smoke from vehicle emissions. The intelligent nature of the software allows the specific rate of rise to be configured to the appropriate environment to optimise detection time while minimising any false alarms due to ambient temperature changes.

**Greater Coverage:** The distributed nature of the FireLaser DTS means that the sensing points are effectively 1m apart which gives a much denser coverage of detection points than conventional technology.