

## FireLaser LHD Solves Suspended Ceiling Fire Detection Challenge at Istanbul Retail Complex



### Project Summary

- **Client:** Ağaoğlu Elektrik Group
- **Application:** Shopping Centre & Parking Facility, Mixed-Use Development
- **Solution:** Bandweaver FireLaser Linear Heat Detection (LHD)
- **Technology:** Distributed Fibre Optic Sensing
- **Key Benefit:** Maintenance-Free, EN54-Compliant Detection with Precise Location Identification

## The Scenario

The Ağaoğlu Elektrik Group embarked on a large mixed-use development in Turkey comprising approximately 700 residential units together with a new shopping centre of around 38,000 m<sup>2</sup> and a multi-floor parking facility of approximately 28,000–29,000 m<sup>2</sup>. The project was built in phases, with the residential element already occupied before the commercial floors were completed.

The shopping centre featured a striking gallery-style suspended ceiling approximately 2 metres in depth. This architectural element posed a fundamental problem for the project's fire detection design: conventional point detectors and remote indicator lamps mounted beneath the ceiling would require regularly spaced intervention access covers for future maintenance. The architect rejected this proposal on aesthetic grounds, leaving the electrical engineering team without a compliant solution.



Figure 1 - Suspended ceiling locations (schematic)

*"I don't just recommend this system to colleagues — I bring them here and show them in person. Every single one of them is surprised. It is the most practical, solution-oriented technology I have encountered in my career."*



*Figure 2 - Photo of suspended ceiling run*

The parking facility presented a complementary challenge — a large open-air, humid environment exposed to external conditions — where moisture sensitivity of conventional electrical detectors was already a concern for the long-term operational team.



*Figure 3 - Photo of parking garage*

*Maintenance advantage:*

*"With conventional detectors you have cleaning schedules, you have reservations about humidity. With the fiber optic system, we have none of those concerns. It simply works — day after day, without any maintenance."*

## Client Requirements

- › A fire detection system capable of operating within a 2-metre deep gallery-style suspended ceiling without requiring maintenance access covers or visible intervention points
- › Full compliance with EN54, the mandatory standard for fire detection and alarm systems on the project
- › Straightforward installation compatible with a construction programme that was evolving as architectural decisions were finalised
- › Coverage of both the shopping centre floor and the open parking facility within a single, consistent system
- › Minimal ongoing maintenance, given the open, humid, externally exposed environment of the parking levels
- › Precise alarm location reporting to allow rapid identification and response to any heat event
- › A cost-effective solution that could be approved by senior management

## What Did We Do?

BTS Yangin introduced the Bandweaver FireLaser distributed fibre optic linear heat detection system as the solution to the architectural constraints. Following a technical evaluation and positive test results, the FireLaser LHD was deployed across both the suspended ceiling of the shopping centre and throughout the parking facility.



Figure 4 - Fiber route within mall

*On solving an impossible problem: "The architect refused to allow access covers in the suspended ceiling, and we had no compliant solution. The Bandweaver fiber optic system solved a problem that no conventional detector could."*

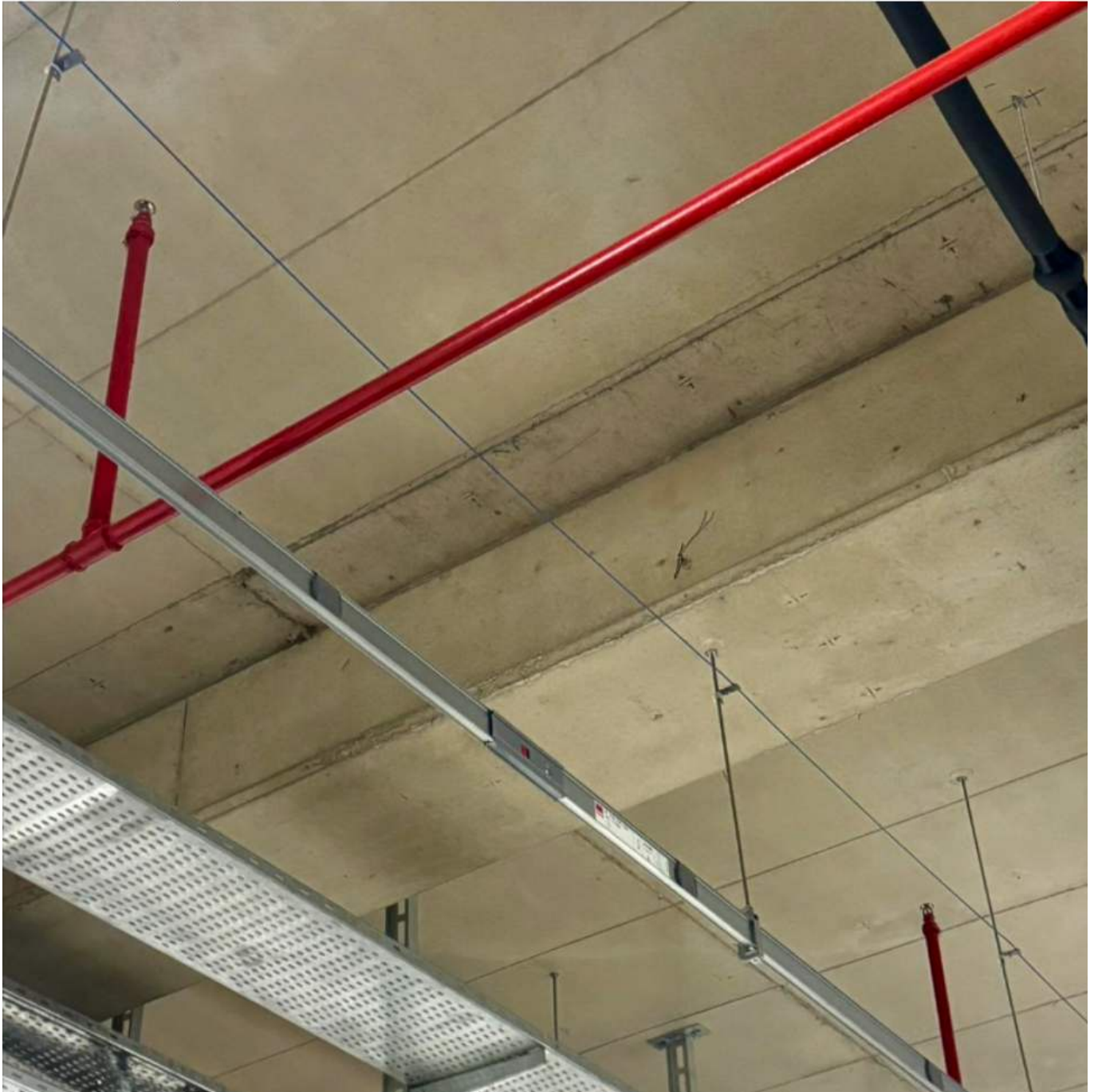
The fibre optic sensing cable was routed continuously through the suspended ceiling structure, eliminating the need for individual point detectors, remote indicator lamps, or maintenance access covers entirely. Where the cable route required directional changes, the BTS Yangin installation team developed bespoke routing solutions using Bandweaver's cable-tying apparatus, resolving any construction challenges on site.



Figure 5 - Cable route in suspended ceiling

*On the real-world test: "During asphalt works on our parking floor, the alarm activated the moment a blowtorch came near the heating machine. We could pinpoint the exact location instantly from the central controller. It was a perfect test — and it gave us complete confidence in the system."*

In the parking facility, the same system architecture was adopted, providing consistent, seamless coverage across the large open floor area. The system performs 20–30 temperature measurements per minute along the full length of the sensing cable, continuously comparing peak values against configurable alarm thresholds to deliver reliable, early detection without nuisance alarms.



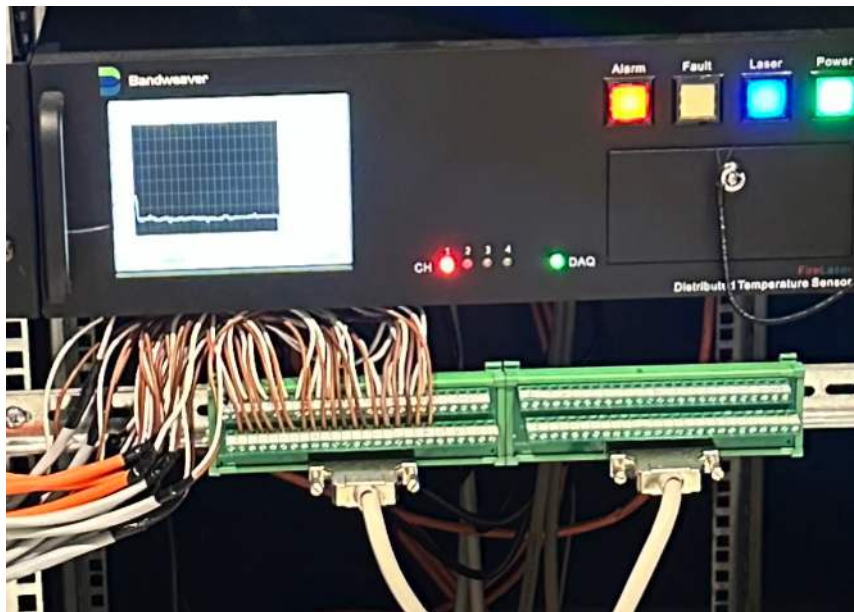
*Figure 6 - Sensors installed in the parking garage*

*"If I were building this project again from scratch, I would install exactly the same system. And we fully intend to work with BTS again on our future projects."*

Throughout the project, BTS Yangin provided close technical support — including on-site attendance during walk-throughs with ECE Turkey representatives — helping the client explain and demonstrate the unfamiliar technology to building operators and stakeholders. Post-completion, BTS Yangin remained readily available to the client, responding to any operational queries as the building came into full use.



*Figure 7 - System testing on site*




*Figure 8 -FireLaser*

*On ongoing support: "Even three months after completion, we still call BTS when we need help — and they always answer. That level of support is worth as much as the technology itself."*



## Benefits To The Client

- › **Precise alarm location:** During asphalt-laying works on the parking floor, the FireLaser system detected heat from blowtorches used with asphalt heating machines and immediately identified the exact location on the central controller — a real-world test that gave the operations team immediate confidence in the system.
  - › **Complete coverage with no blind spots:** The distributed sensing cable provides continuous measurement every metre along its length — critical in the gallery-style suspended ceiling where no individual point detector could be positioned without requiring maintenance access covers.
  - › **Zero maintenance:** The fully passive fibre optic cable has no moving parts, no in-field electrical components, and requires no periodic cleaning or servicing — a significant operational advantage for a large open shopping centre and externally exposed parking facility.
  - › **Resilience in challenging environments:** The system is immune to dust, humidity, and electromagnetic interference, directly addressing concerns about conventional electrical detectors degrading in the open, humid parking environment.
  - › **EN54 compliance:** The FireLaser LHD is certified to EN54, satisfying the mandatory standard required for project sign-off and building approval.
  - › **Rapid and reliable detection:** With 20–30 temperature measurements per minute and smart alarm algorithms that compare peak values before triggering, the system delivers fast, dependable detection without false alarms from environmental factors.
  - › **Outstanding post-installation support:** BTS Yangın remained actively engaged after project completion, providing responsive assistance whenever operational questions arose — a quality of support the client cited as central to their continued confidence in the system.
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## About Bandweaver Technologies

With an installed base of over 90,000km and 9,000 systems installed worldwide, Bandweaver's vision is to be the first choice for integrated distributed fiber optic sensing solutions across the globe. Since 2002, Bandweaver has been committed to delivering reliable, innovative, client-centric and value-added products and services, via a dedicated and talented team of people.

Bandweaver manufactures and distributes advanced fiber optic monitoring sensors and integrated technologies, enabling customers to monitor, secure and keep personnel and critical assets safe.

Utilising the latest technologies, Bandweaver provides solutions for Linear Heat Detection, Intrusion Detection, Condition Monitoring, Dynamic Cable Rating and Leak Detection.

For further information please contact our global team at [info@bandweaver.com](mailto:info@bandweaver.com)

## About BTS Yangin

BTS Fire Safety and Building Technologies (BTS Yangin) is one of Turkey's leading fire, life safety and building technologies companies, headquartered in Istanbul. Founded in 1998 under the name BTS Building Technological Systems, the company rebranded as BTS Fire Safety and Building Technologies in 2007 and has since grown into a major force in the Turkish fire protection market.

With more than 25 years of experience, BTS specialises in fire detection and warning systems, fire extinguishing systems, passive fire insulation and protection, gas detection, building security and control systems, perimeter security, and emergency voice alarm systems. The company serves a broad range of sectors including industrial plants, hotels, shopping malls, high-rise office buildings, hospitals, airport terminals, railway and motorway tunnels, dockyards, and the marine and transportation sectors

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