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CASE STUDY

DEVICE-INTEGRATED-FIRE PROTECTION

Media technology in critical infrastructure (Airport)

INNOVATIVE FIRE PROTECTION TECHNOLOGY „MADE IN GERMANY“

The JOB Group, based in Ahrensburg near Hamburg, develops, produces and sells thermally activated glass bulbs for automatic sprinklers. The JOB Thermo Bulb has become the standard across the sprinkler industry. In addition, new extinguishing products aimed at reducing damage, can detect fires very early and tackle them in a targeted way.

The company is the global market leader in the research, development and production of heat-sensitive Thermo Bulbs (glass containers) for the sprinkler industry, automotive industry, and other industries. For almost 50 years, around 150 employees have been working on continuous innovation and the implementation of new technologies. The high technical standard is further enhanced by their own highly flexible glass tube production, enabling JOB Group to individualise products for each customer. The company name goes back to when Eduard J. Job founded JOB GmbH in 1971.

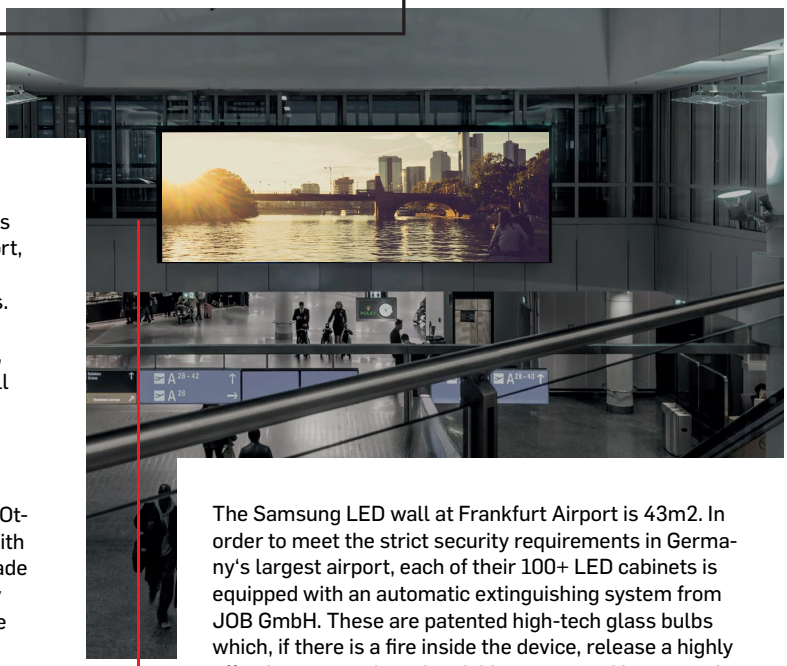
> JOB supplies **high-tech fire exntinguishing bulbs for Samsung media technology.**

Innovative Fire Protection at Frankfurt Airport

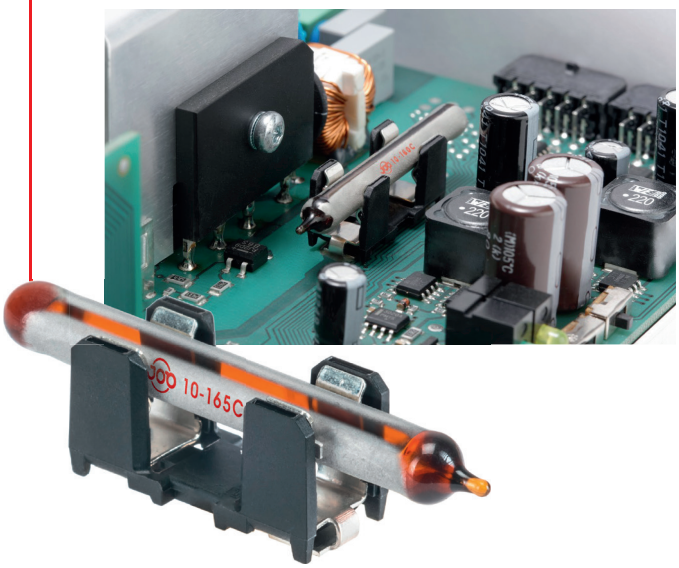
Wherever people gather in large numbers, fire protection plays an important role. This applies in particular to Frankfurt Airport, Germany's largest and most frequented airport, with almost 200,000 passengers a day (2019), and over 81,000 employees. Given this, the safety requirements are high for all types of technical infrastructure. Thanks to an invention by Job GmbH, electronics company Samsung has received approval to install large-format LED media screens in the airport.

With E-Bulbs, developed by JOB and produced in Germany, installed inside the individual LED displays, the first Samsung models now have a highly efficient self-extinguishing system. Other display providers can also make use of the technology. „With our E-Bulbs, we have, so to speak, integrated its own fire brigade into the media technology," says Rajko Eichhorn, who is jointly responsible for the new business field of device-integrated fire protection at the north German technology company.

The JOB E-Bulbs are patented high-tech glass bulbs that burst thermally, i.e. at a predefined temperature, releasing a special, highly effective extinguishing agent that immediately extinguishes a fire inside the device. What is special about this is that the E-Bulbs tackle the fire where it occurs, namely in the electrical system, which can start due to faults in the electronics. „Normally a fire can only be extinguished when the device is already visibly on fire," explains electrical engineer Rajko Eichhorn. "The E-Bulbs react faster because they are located in the immediate vicinity of the potential fire source. In this way they prevent the fire from spreading." And this is completely reliable, as extensive tests by independent testing facilities have shown, and as confirmed by the VDS approval.



The Samsung LED wall at Frankfurt Airport is 43m2. In order to meet the strict security requirements in Germany's largest airport, each of their 100+ LED cabinets is equipped with an automatic extinguishing system from JOB GmbH. These are patented high-tech glass bulbs which, if there is a fire inside the device, release a highly effective, non-toxic extinguishing agent and interrupt the power supply. A fire caused by a possible electronic fault is stopped in its tracks, before it can spread and cause major damage.



> The **smallest fire extinguisher in the world** – the E-Bulb.

Integrating the E-Bulb into the LED displays was not difficult, due to its small dimensions. The smallest version of the high-tech glass bulb is only 20mm long, its circumference is 5mm, and its weight is just 10g. "A smaller fire extinguisher than the E-Bulb is currently not available on the market," confirms Walter Jünkering, Managing Director of Ben Hur GmbH, which, as an authorised partner of JOB, integrates the fire protection devices into media technology. "There is space for it on every circuit board." When designing the bulbs, JOB provided support with many practical tests, enabling the E-Bulb to be placed correctly, in order to work as effectively and as quickly as possible.

„The result of this cooperation is so far unique in the industry and shows once again our efforts to continuously develop our products in close cooperation with our partners", says Markus Korn, Director Display Solutions at Samsung Electronics GmbH. In fact, the device-integrated fire protection of the media technology installed at Frankfurt Airport provides a convincing unique selling point for the global company. It's no surprise the two installations at Frankfurt Airport led to further LED walls in the "MyZeil" shopping centre in Frankfurt's city centre, and at Tegel Airport in Berlin.

HOLISTIC FIRE PROTECTION

The thermal fuses with extinguishing capability offer three fire protection functions: they recognise when a fire breaks out in the device electronics; they extinguish it; and they interrupt the power supply, so the fire does not re-ignite. This holistic approach takes fire protection to a new level. A further advantage is that in the event of a fire, only a single element is affected, not the entire wall. This is because the special, environmentally friendly, non-conductive extinguishing agent works completely residue-free, without affecting the electronics. „With our device-integrated fire protection, together with the manufacturer, the system integrator Ben Hur GmbH, and the distributor Lang AG, we have made safe systems even safer," says Rajko Eichhorn. "From a fire protection point of view, without this it would not have been possible to place the LED media walls at Frankfurt Airport. Now it is even possible to install the walls overhead in sensitive locations in the airport." In fact, in tests the LED walls performed better than the B1 fire reaction required by the relevant DIN 4102 standard, as confirmed by the responsible material testing institute in Braunschweig, Germany.

> A sprinkler **directly in the device** is the solution!

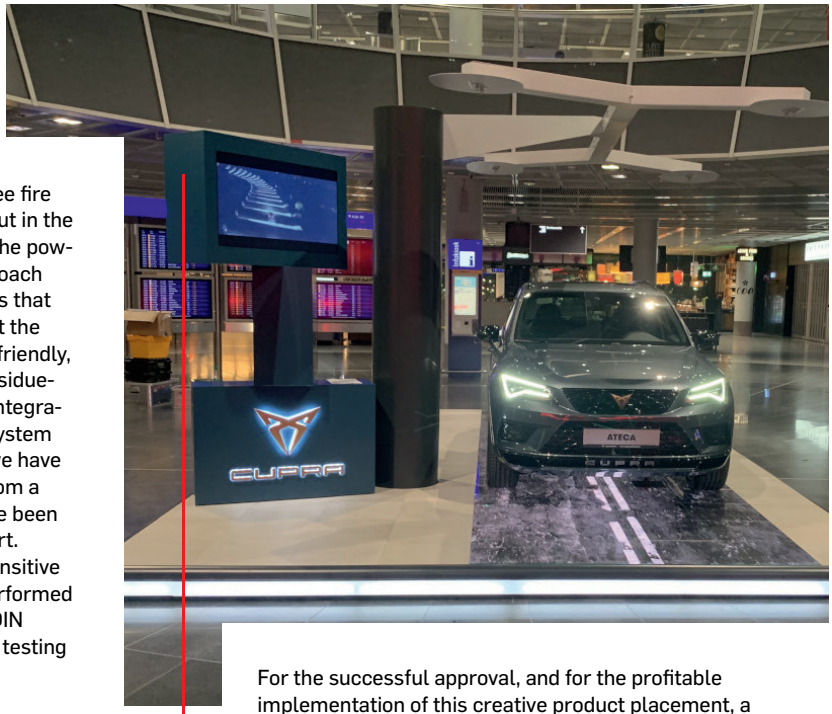
The requirements for fire protection are very high in major thoroughfares, especially in public and transit areas (e.g. airports, train stations, shopping centres). In these locations, where many people are present at the same time, there is a particular duty to protect life and assets.

Nevertheless, especially for sectors with many potential consumers, there is also a desire to use modern technology to target them with digital advertising and other relevant location-specific information.

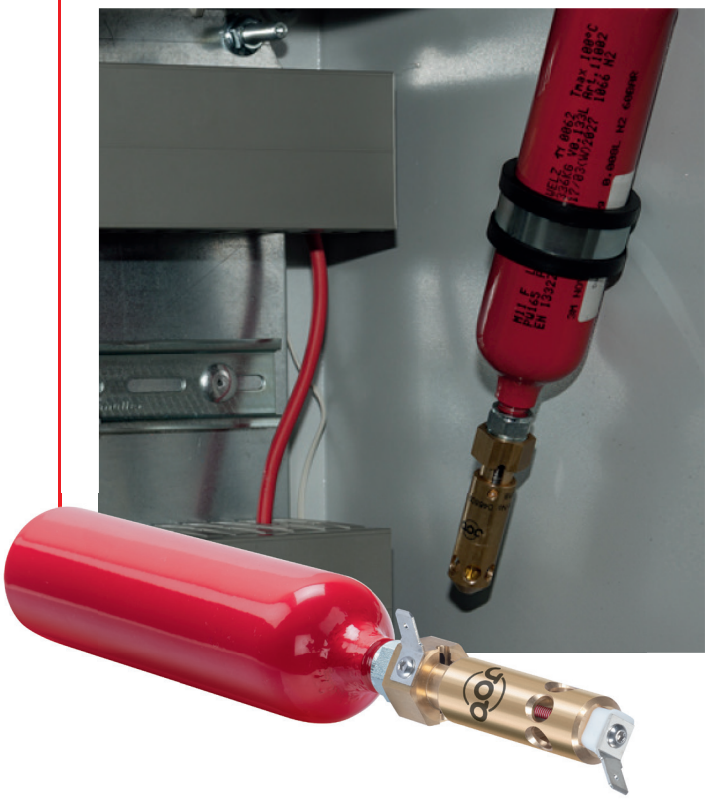
The use of such digital media technology, innovative product placement, and audio-visual displays always goes hand in hand with the use of electrical devices and systems. For example, every monitor is an electrical device connected to a voltage supply / voltage converter, and therefore represents a particularly high fire risk. A fire, started by defective components within such devices, can quickly cause confusion, panic, or even worse, among the users of high footfall areas in these quasi-public locations.

Therefore, previously many projects that are both appealing for consumers and commercially interesting for operators, could only be implemented in such areas with extremely high costs to minimise the fire risks, if they were even feasible at all.

For example, a targeted product placement, e.g. a car, in combination with modern LED and digital display systems for moving images, and additional information, at a major airport.



For the successful approval, and for the profitable implementation of this creative product placement, a solution with the AMFE series from JOB GmbH was relied upon. These TÜV-certified automatic miniature fire extinguishing systems, reliably detect the origin of a fire directly within the installation, and extinguishes the fire before it can spread to other devices, or parts of the building. Through the use of intelligent circuitry by the system integrator, the mains voltage is interrupted in the podium so that re-ignition cannot take place. In case of activation, the non-toxic 3M NOVEC engineered extinguishing agent does not cause additional damage, due to its non-conductive and non-corrosive properties. From a fire protection point of view, such an electrical installation changes from being a possible cause of fire, to being a passive participant in a fire. Thus, the inherent fire risk is significantly reduced through the use of the device-integrated fire protection solution.



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