

HI-FOG® case study

swb AG power plant, Bremen, Germany



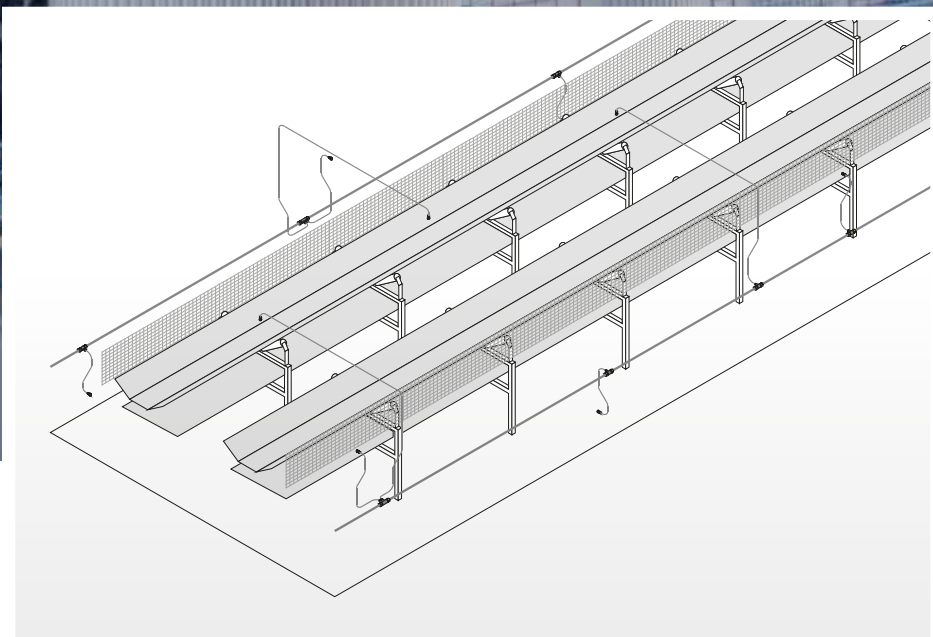
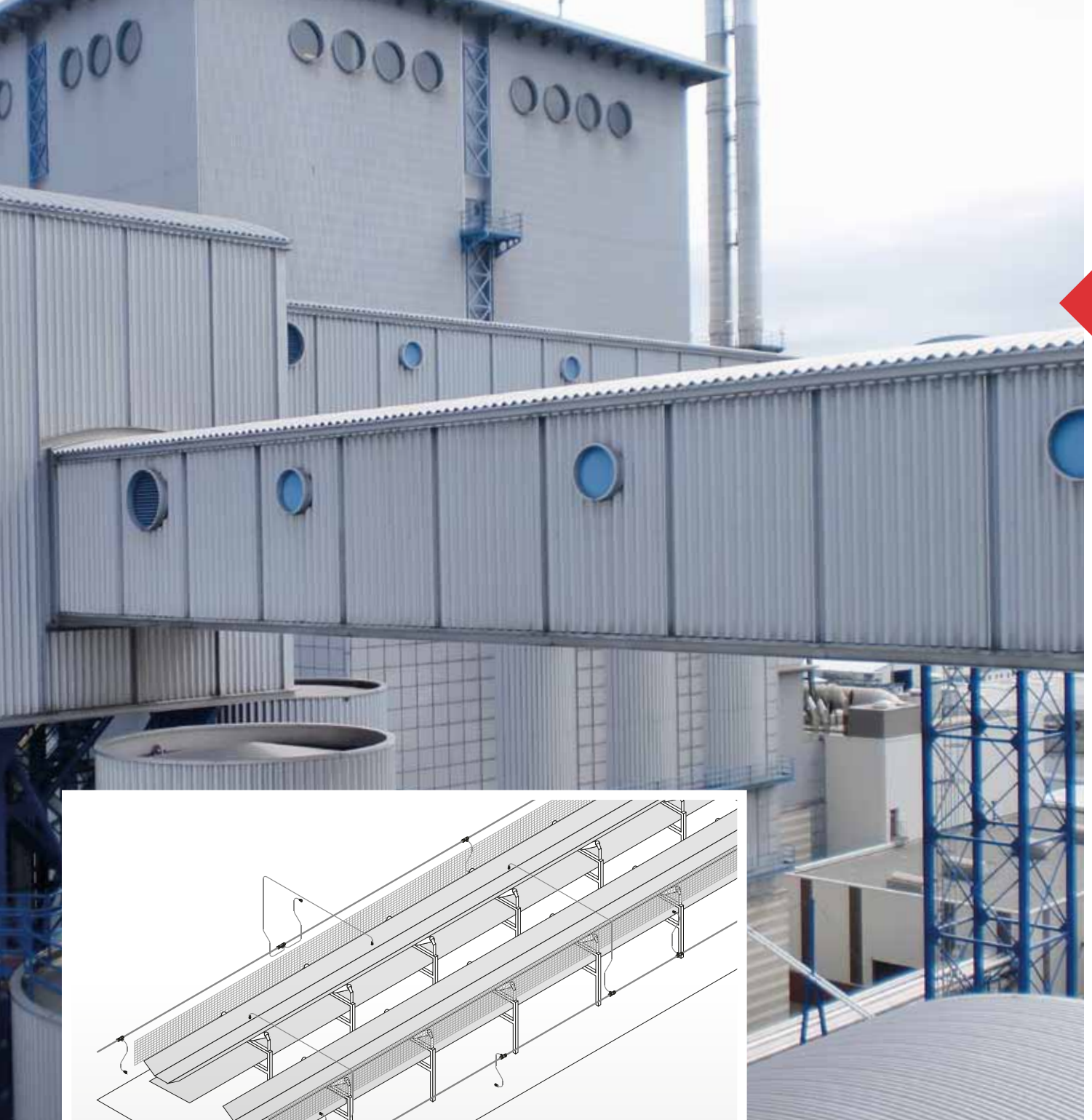


With a rich history of over 150 years of business, swb AG has become one of Bremen's largest companies. In 1893, they gave Bremen its first coal-fired power plant. Today, swb AG operates power generation facilities at four sites in the Bremen metropolitan area, with a total installed capacity of over 1,000 megawatts.

One of the high fire risk areas in coal-fired power plant is the conveyor belt system. The coal on the belt is not the problem, but rather the main cause of fire in these areas is mechanical friction of the moving belts. If just one roller gets stuck, significant heat is generated which can cause the belt to set fire.

This fire risk is particularly dangerous for the plant. A conveyor belt that has

caught fire continues to move down the corridor, putting the entire space at risk. Such a fire is disabling experience for plant operations, disrupting business and customer power supply. The HI-FOG® Water Mist Fire Protection System was chosen by swb AG to protect these critical areas.



Schematic view of HI-FOG® installation for one corridor. The HI-FOG® system is also extended into the towers that join different corridors. The tubing network and nozzles run around the walls of the tower.

Recognising the conveyor belts as the major fire risk, Marioff performed full-scale fire tests at the DMT test facility in Dortmund. The test results confirmed the effectiveness of HI-FOG® against conveyor belt fires and gave Marioff concrete data for establishing how the HI-FOG® system should be installed.

Installation of the HI-FOG® system was completed in 2010. The system protects

a total 460 meters of elevated corridors. The width of the corridors varies from just over 3 meters to nearly 5 meters. Some contain a single conveyor belt, while the wider corridors carry two parallel belts.

HI-FOG® spray heads were installed in two positions along each corridor to discharge water mist at high pressure from both the ceiling and walls to assure com-

plete coverage of the conveyor belts as well as power cables that run along the ceiling of the corridors. The system is dimensioned to discharge for the entire length of a target corridor. The largest single discharge would cover a space 90 meters long and 4.9 meters wide.



HI-FOG® spray head



HI-FOG® 2000-series sprinkler



Machinery space section valve

The HI-FOG® system is fed by a single HI-FOG® pump unit, capable of supplying up to 1210 litres per minute at high pressure. The pump unit uses a modular configuration with built-in redundancy that ensures reliable operation.

The system utilizes open spray heads connected to a distribution network constructed of stainless steel tubing. Each section is separated from the main distribution line by a normally closed section valve, set for both remote and local actuation. Water is kept in the tubing up to the section valve.

Monitoring and activation

The HI-FOG® system is controlled and monitored from a manned control centre. The monitoring systems include smoke and gas detectors as well as closed circuit video. The HI-FOG® system can be activated from the control centre or from manual call points adjacent to the conveyors.



Modular electric pump unit (MSPU)

HI-FOG® system for swb AG conveyor belts

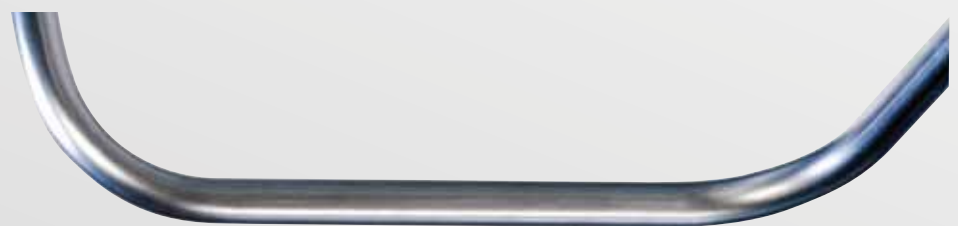
Pump: MSPU-13

Nozzles: 370 HI-FOG® spray heads

Section valves: 15

Discharge: Pendant (ceiling grid) and horizontal (wall mounted)

Protected zones: 14 (10 corridor sections and 4 connecting towers)



The small diameter, high quality stainless steel tubing bends easily around corners and obstructions.

MARIOFF

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