ADICOS

Industrial Fire Detection

GTE Industrieelektronik GmbH

ADICOS®

Industrial Fire Detection – Innovative Early Warning System

The ADICOS System ensures reliable early detection of fires – especially under adverse environmental conditions. It provides safety and immediately prevents damage in industrial plants or in hazardous areas at risk of explosion but also in other special structures such as historical buildings.

ADICOS fire detectors are a solution especially when dust, moisture, or smoke and exhaust fumes are common: for example, in power plants, recycling plants, steel mills, silos or warehouses and production facilities. Whether for embers, smoldering or glowing fires, open or concealed fires, overheated or ignited parts, the ADICOS system is suitable for a wide variety of fire hazards.

It is a proven system in safety technology for over 20 years.

Two different detector types are available:
- ADICOS fire gas detectors detect typical fire-critical gases.
- ADICOS infrared fire detectors detect dangerous heat sources.

In combination with the corresponding system technology and system software, they form a flexible, expandable complete solution. The detectors can be individually selected, placed and parameterized depending on the situation and task. The ADICOS system is specially designed for the high requirements of fire protection concepts of special buildings.
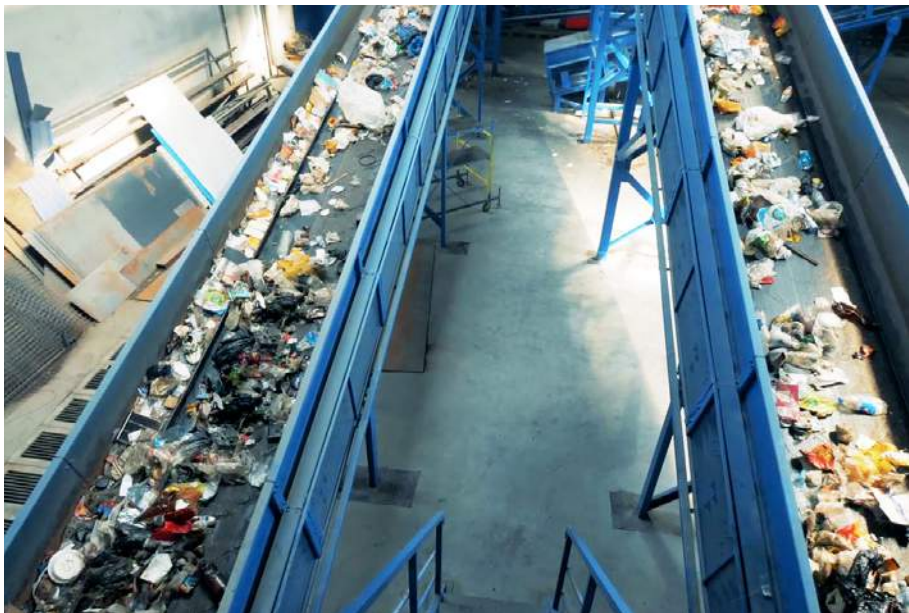
Detectors for Gases or Heat Sources

Industrial Fire Gas Detectors

There are several characteristic gases or gaseous components that are released at an early stage during fires in industrial plants. GSME fire gas detectors can reliably detect these gases and discover both open and concealed smoldering fires.

GSME-M4

Four parameterizable semiconductor gas sensors are integrated in the GSME-M4 fire gas detectors. They are highly sensitive and robust. Sintered metal filter technology protects them against entry of dust and dirt.

Industrial Infrared Fire Detectors

HOTSPOT fire detectors are infrared detectors with thermal imaging sensors and intelligent signal evaluation. They detect all types of smoldering and open fires even in the incipient stage, provided the view of the hazardous material is unobstructed. Thanks to their high response speed of 100 milliseconds, they also monitor moving objects such as ember pockets on conveyor belts or heated batteries in recycling conveyor systems.

HOTSPOT-1000

The HOTSPOT-1000 infrared detectors measure the temperature distribution of an object via the thermal imaging camera. With a resolution of 1000 heat-sensitive pixels, the entire field of view of the thermographic detectors can be parameterized with alarm criteria. The robust design and the integrated purge air adapter protect against ingress of dust, dirt and moisture.

Suitable for Potentially Explosive Atmospheres

ADICOS fire detectors are also available in variants for use in potentially explosive gas and dust atmospheres. They are type-tested or approved according to the ATEX Directives or IECEx Scheme.

GSME-X20 | GSME-X22

GSME-X20 and GSME-X22 are approved for ATEX zones 21 and 20 and respectively 22. They are equipped with spray protection.

HOTSPOT-X0

HOTSPOT-X0 have an approval for explosive gas atmospheres of ATEX zones 0 to 2, the corresponding interface for zones 1 and 2. This innovative thermal imaging camera is used for early fire detection in chemical parks and gas power plants as well as in all other areas at risk of a gas explosion.

HOTSPOT-X20 | HOTSPOT-X22/X2

The fire detectors HOTSPOT-X20 and HOTSPOT-X22/X2 are approved for hazardous areas: the HOTSPOT-X20 for ATEX zones 21 to 20 (dust) and the HOTSPOT-X22/X2 for ATEX zones 22 (dust) and 2 (gas). They have an integrated purge air adapter.

GSME-M4
Gas Detector for Fire-Characteristic Gases

Gas Sensors:
CO | H$_2$ | HC | NO$_x$

GSME-M4 have four semiconductor gas sensors and discover both open and concealed smoldering fires even in the incipient stage.
The four parameterizable semiconductor gas sensors monitor and evaluate the concentration curve of these gases according to multi-criteria technology. This enables the GSME-M4 detectors to distinguish real fires from interference signals.
The robust design protects against dust, dirt, and moisture. The spray protection is made of stainless steel. A detector heater is integrated.

Parameterizable Sensors and Multi-Criteria Technology

There are several typical gases or gaseous components that are released at an early stage during fires in industrial plants, such as carbon monoxide, hydrogen, and various hydrocarbons and nitrogen oxides. Detecting these gases is the task of GSME fire gas detectors.

First, the signal spectrum that is common when the gas detectors are commissioned on site is recorded. The sensors are then parameterized according to the plant and environment-specific conditions. False alarms caused by process-related back-ground gases are avoided by multi-criteria technology. Outgassing in biological decomposition processes, such as those that occur in biomass or refuse-derived fuel, can be excluded as a disturbance variable by specific parameterization.

The ADICOS Software supports evaluation and documentation, displays fault and spurious alarms, and documents their chronological course. The gas concentrations of the individual leading gases can be reported for all devices of the ADICOS fire alarm system.

GSME-X20
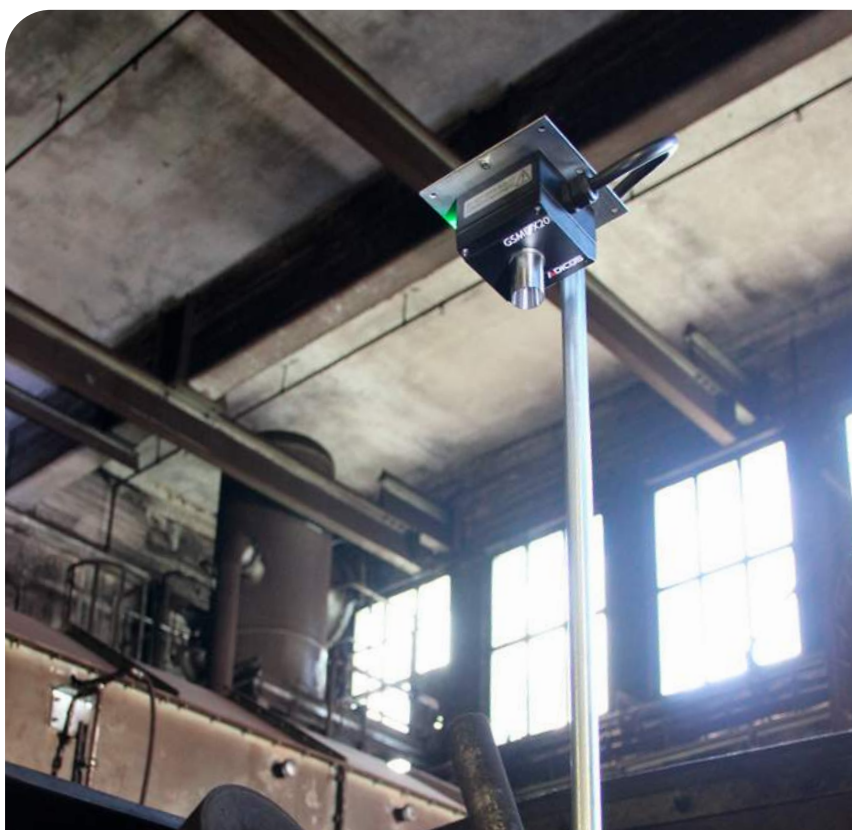## Fire Gas Detector for ATEX Zone 20 and 21

The GSME-X20 fire gas detector is designed for areas with a particularly high risk of explosion. It works in exactly the same way as the GSME-M4 detector, but is equipped for hazards caused by dust explosion. The four parameterizable semiconductor gas sensors detect open and concealed smoldering fires already in the incipient phase. Interference is tolerated by multi-criteria selection.

Robust and Type-Tested

In many industrial plants, the ATEX Directive 1999/92/EC applies to certain areas where there is a risk for explosions. Electrical equipment may only be operated with the appropriate approval. This also applies to fire detection technology. For this reason, the GSME fire gas detector type X20 is available in a type-tested version according to ATEX product directive 2014/34/EU as well as IECEx. It is approved for operation in particularly explosive dust atmospheres of zones 20 and 21 according to the ATEX directive.

GSME-X22
Fire Gas Detector for ATEX Zone 22

The fire gas detector GSME-X22 is approved for use in potentially explosive dust atmospheres of ATEX zone 22 by an in-house test with manufacturer's declaration. The detector is equipped with the same functions as the fire gas detector GSME-M4 and also represents an economical intermediate solution between the GSME-M4 without approval for potentially explosive dust atmospheres and the type-tested GSME-X20 for particularly high safety requirements. The GSME-X22 is equipped with permanently installed spray protection.

Permissible Application Fields of GSME Fire Gas Detectors in Areas Endangered by Dust Explosion

| ATEX zone	Fire Gas Detector GSME	Explosion Hazard: A cloud of a dangerous mixture of dust ...
Zone 20 (dust)	GSME-X20*	...persists frequently and often for long periods of time. Particularly critical!
Zone 21 (dust)	GSME-X20*	...forms only occasionally during normal operation.
Zone 22 (dust)	GSME-X22	...does not or rarely form during normal operation.
not explosive	GSME-M4	...does not arise during normal operation.

*type-tested

HOTSPOT-1000
Intelligent Infrared Heat Detector

The ADICOS HOTSPOT-1000 is a fire detector with infrared measurement technology and intelligent signal evaluation. It uses a thermal imaging sensor to detect the temperature distribution of an object and recognizes both smoldering fires and open fires even in the incipient stage. In addition to the infrared sensor, a conventional camera is installed for easy alignment and orientation.

The robust design and the purge air adapter is integrated as standard to protect the HOTSPOT-1000 from dust, dirt, and moisture.
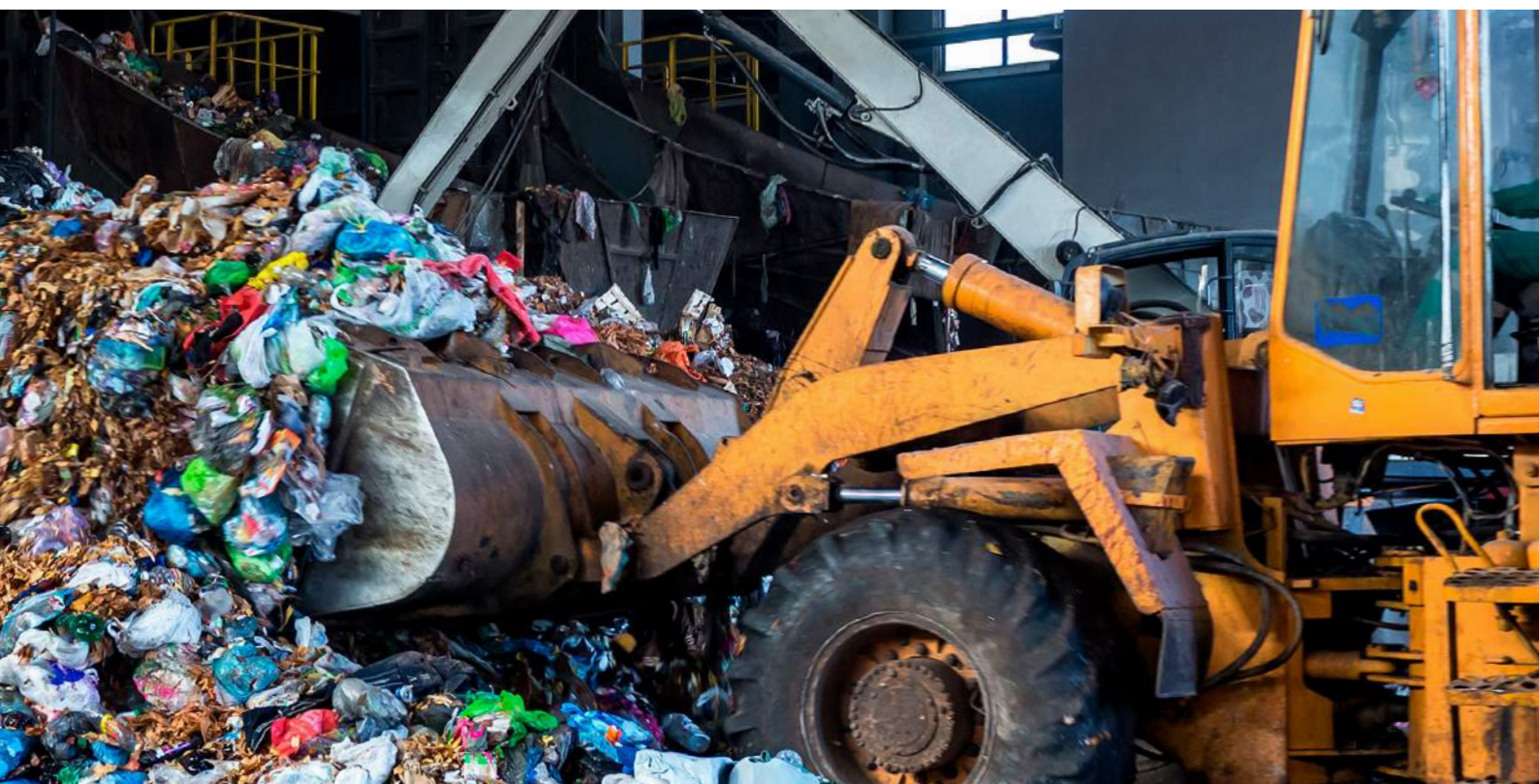
Extremely Fast Response

The HOTSPOT-1000 uses an integrated thermal imaging sensor with a resolution of 1000 high-sensitive pixels. The alarm thresholds are freely parameterizable so that the detector can be individually adapted to its environment and purpose. The ADICOS system software enables convenient, computer-supported visualization, evaluation and documentation.

Thanks to its high response speed of 100 milliseconds, the HOTSPOT-1000 can also monitor moving objects such as ember pockets on conveyor belts or heated batteries in recycling conveyor systems. The detector also quickly discovers drives, shaft bearings and rollers that heat up during operation.

In recycling plants, the HOTSPOT-1000 detectors are also used in combined operation with GSME fire gas detectors. While infrared fire detectors detect a heated, overheated or burning object in no time at all, fire gas detectors detect smoldering areas at an early stage. This combination works well when stored bulk material is to be monitored.

A mounting bracket is available as an accessory, which makes it easy to fix the detector in the desired angular position.

HOTSPOT-X0
Infrared Fire Detector for ATEX Zone 0 to 2

ADICOS HOTSPOT-X0 Sensor Unit and Interface-X1

For Permanently Explosive Gas Atmospheres

The HOTSPOT-X0 is an innovative detector with a thermal imaging camera for areas with permanently explosive gas atmospheres such as in chemical parks or gas power plants.

HOTSPOT-X0 is the world's first infrared fire detector with an approval for explosive gas atmospheres of zones 0 to 2 for the sensor unit. The associated interface is approved for ATEX zones 1 and 2. It is the interface between the sensor unit and the fire alarm panel and it also serves as a connection distributor. Together, the sensor unit and interface enable optical and spatially resolved fire and heat detection in hazardous areas of ATEX zones 0, 1 and 2.

The HOTSPOT-X0 detects excess temperatures and flames and supports multiple alarm zones with independent alarm parameters. This ensures the best possible adaptation of the detector to the respective application. Its compact design allows for use even in confined areas. The detector can be directly integrated into the fire alarm bus for fire alarm control panels. A mounting bracket and connection cable come as accessories for the sensor unit. Several cable glands are available for the interface.

HOTSPOT-X20
Infrared Heat Detector for ATEX Zone 20 and 21

ADICOS HOTSPOT-X20 is a thermographic detector and specially tailored to the requirements of early fire detection in the industrial sector up to ATEX zone 20. HOTSPOT-X20 is a freely parameterizable infrared camera system with integrated signal evaluation.

Due to their robust mechanical design, they are protected against the ingress of dust and moisture and can be used in potentially explosive areas up to ATEX zone 20 and 21.

For Permanent Explosive Dust Atmospheres

The HOTSPOT-X20 detector is suitable for process monitoring applications. It is particularly suitable for the detection of plant components that heat up during operation and for monitoring conveyed goods. It is type-tested according to ATEX and IECEx.

Instead of the additional, conventional camera, a HOTSPOT-X20 is equipped as standard with a flange for mounting on enclosures of any type. A mounting bracket is available as an accessory.

HOTSPOT-X22/X2
Infrared Heat Detector for ATEX Zone 22

HOTSPOT-X22/X2 is a sturdy, freely parameterizable infrared fire detector. Application fields are areas endangered by dust (ATEX zone 22) as well as by gas (ATEX zone 2). HOTSPOT-X22/X2 is suitable for process monitoring, and especially for the detection of hot running plant components and for monitoring conveyed goods. In addition to the thermal imaging camera, the device is equipped with a conventional camera for easy alignment and commissioning.

Permissible Application Fields of HOTSPOT Heat Detectors in Areas Endangered by Dust and Gas Explosion

| ATEX zone	Infrared Detector HOTSPOT	Explosion Hazard: A cloud of a dangerous mixture of gas/dust …
Zone 0 (gas)	HOTSPOT-X0*	…persists frequently and often for long periods of time.
Zone 20 (dust)	HOTSPOT-X20*	Particularly critical!
Zone 1 (gas)	HOTSPOT-X0*	…forms only occasionally during normal operation.
Zone 21 (dust)	HOTSPOT-X20*	
Zone 2 (gas)	HOTSPOT-X22/X2	…does not or rarely form during normal operation.
Zone 22 (dust)	HOTSPOT-X22/X2	
Not explosive	HOTSPOT-1000	…does not arise during normal operation.

*type-tested

Fast Evaluation by PC Software

The ADICOS system software mana-ges the comfortable, computer-aided visualization of all measured data and states of the ADICOS detectors. It displays all information about the situation of the entire system in an overview. Optionally, graphics and the position of the detectors can be integrated in the building plan. Thus, an exact spatially resolved visualiza-tion of the system can be realized.

The stored data is also available for documentation and analysis of fire events. The program offers conve-nient options for the management of these large amounts of data, so each striking event over the entire period or a selected section can be easily found.

The ADICOS software is an ideal tool to analyze and evaluate measured data. It supports the commissioning and parameterization of the detec-tors. Users can optimally adjust the sensitivities of the sensors to avoid false alarms, as in the case of chang-ing background loads or harmless interference influences. In addition, test alarms and faults can be trig-gered in a targeted manner to check the safe operation of the system.

The software is individually adap-table for special applications. All security-relevant data and program parts are password protected.
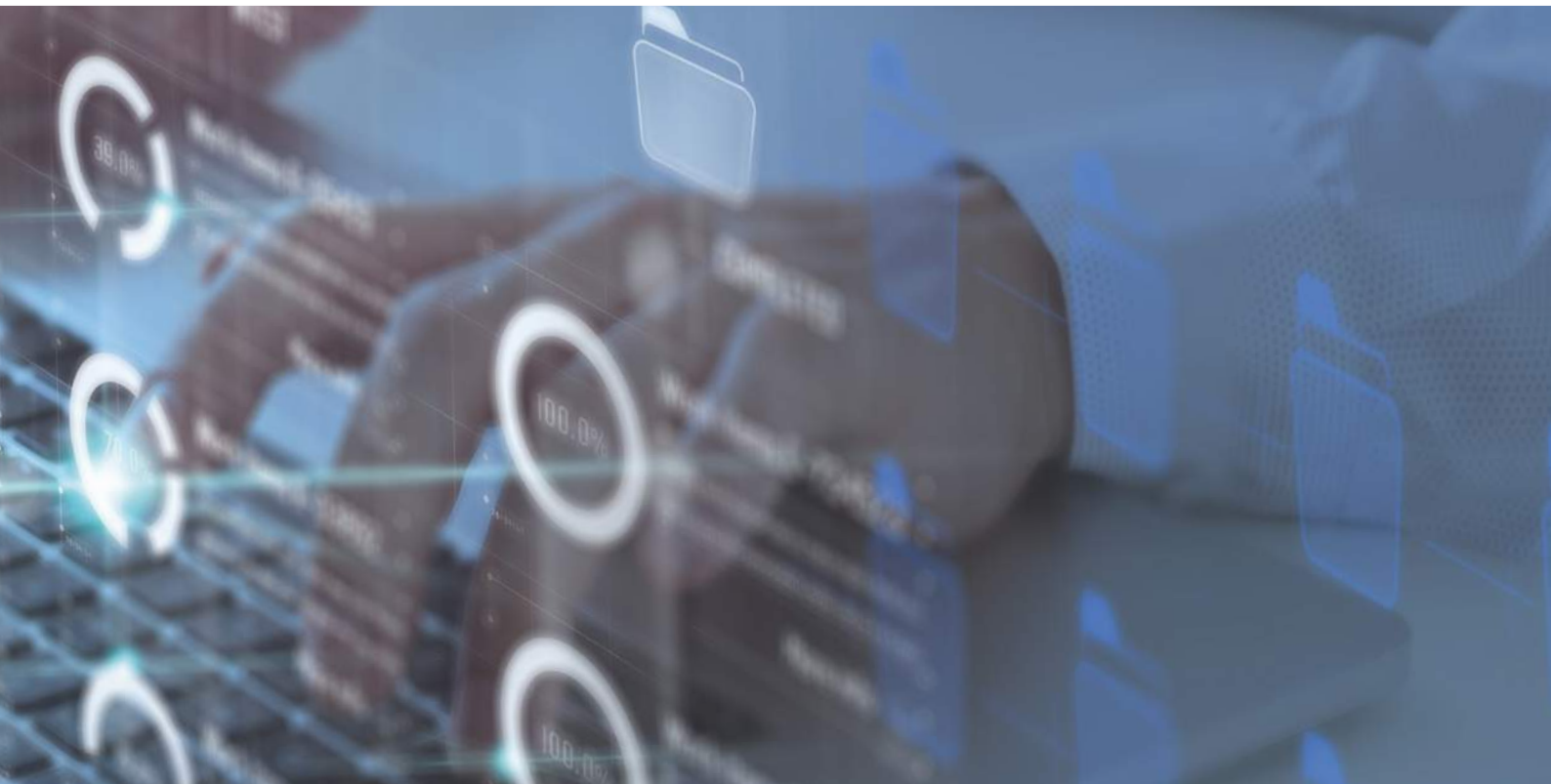
ADICOS System Software
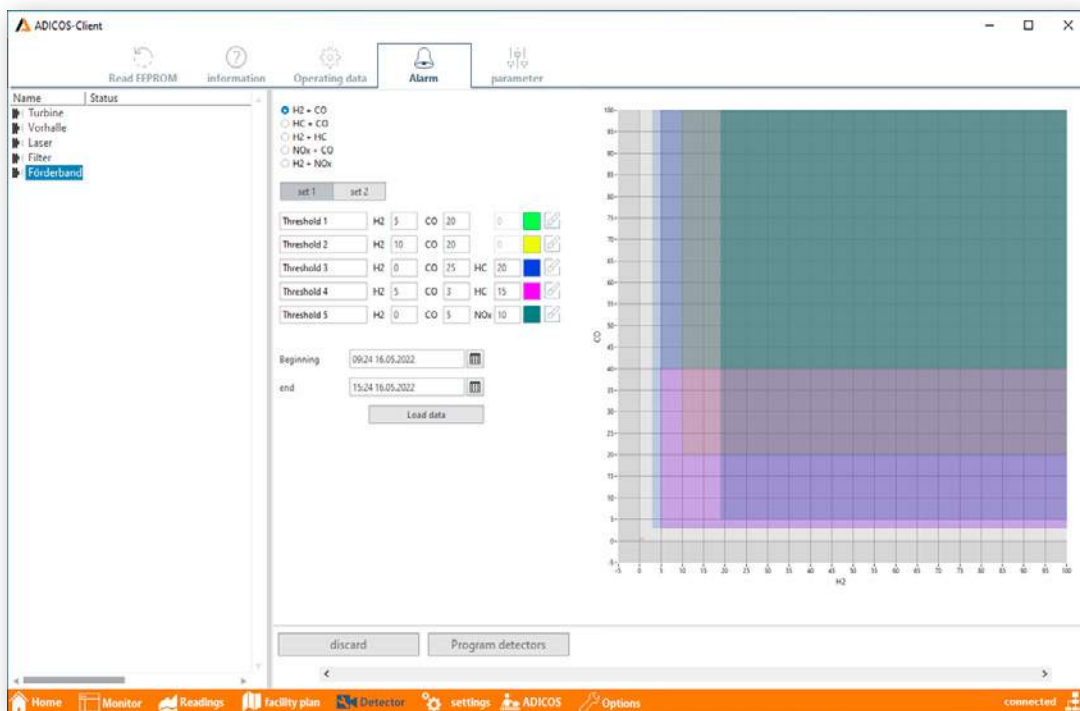
System Technology │ Accessories

System and Connection Technology

The components of the ADICOS system technology connect and expand the intelligent high-performance detectors. They turn individual detection units into a variable monitoring and early warning system that can be optimally designed for numerous industrial environments. The system technology offers versatile possibilities and has simple assembly and handling.

M-BUSMASTER XF

The M-BUSMASTER is the central interface for ADICOS fire detectors. The M-BUSMASTER XF has extended functionality: It controls the communication with up to 255 ADICOS detectors and can also be used at long ranges. Access by a service PC is possible via a serial interface (RS232, with adapter USB) or through ethernet.

M-BUSMASTER S

The M-BUSMASTER S is the communication interface for up to 20 ADICOS detectors. It is the economical, smaller and mobile version when compared to the M-BUSMASTER XF. The PC connection is based on a USB or Ethernet interface as standard.

Power Supply NT V40-A3

The ADICOS NT V40-A3 power supply unit guarantees the optimum power supply for your fire alarm system. In contrast to conventional fire detectors, the special fire detectors from the ADICOS range have a higher power consumption. Therefore, the detectors can also be supplied with 40 V in order to reduce the power losses on the supply line.

Branching and Connection Boxes

ADICOS Branching and Connection Boxes (AAB) serve as wiring aids for all models of ADICOS detectors or for connecting detector lines to third-party fire alarm systems. They are surface-mounted junction boxes with an internally connected printed circuit board.

AAB

The AAB is our standard branching and connection box and serves as wiring aid for ADICOS detectors in industrial plants and other special structures.

AAB-L

An ADICOS AAB-L branching and connection box serves as wiring aid for ADICOS detectors under difficult conditions with up to eight cable glands. For example, the AAB-L is suitable for applications in the energy and mining industry.

AAB-X22/X2

The AAB-X22/X2 branching and connection box is designed for areas at risk of dust or gas explosion in ATEX zone 22 as well as in zone 2. Thanks to the polyester enclosure, the branching and connection box AAB-X22/X2 is robust and shock-proof even under the special environmental conditions such as in storage facilities, bunkers, silos, mills and in the chemical industry.

COM-Modules

Various expansion modules are available for integrating ADICOS detectors into an existing fire protection system. The detectors from the GSME and HOTSPOT product series can be connected via these plug-in boards to fire alarm control panels from Siemens and Bosch, among others.

Connection Cable

All ADICOS detector variants that do not require approval for potentially explosive areas are uniformly equipped with an industrial bayonet coupling. Therefore, a pre-assembled standard cable can be used when installing the system. This shielded connection cable is equipped on one side with the ADICOS bayonet connector and is available in a length of five meters. Special lengths are available on request.

Mounting Bracket

A mounting bracket is available as an accessory for all HOTSPOT detectors. This allows the detectors to be easily mounted and individually aligned depending on the angular position. Positioning is quick and easy thanks to a ball joint.

HOTSPOT Test Device HTL-2

The ADICOS HTL-2 is a mobile device for functional testing of all infra-red fire detectors of the HOTSPOT product series. For testing the alarm thresholds, the heating plate is pressed against the optics of the HOTSPOT detector under test so that the entire field of view of the detector sensor is homogeneously excited. Accessories include a rechargeable battery with quick charger and a telescopic pole for use at great heights.
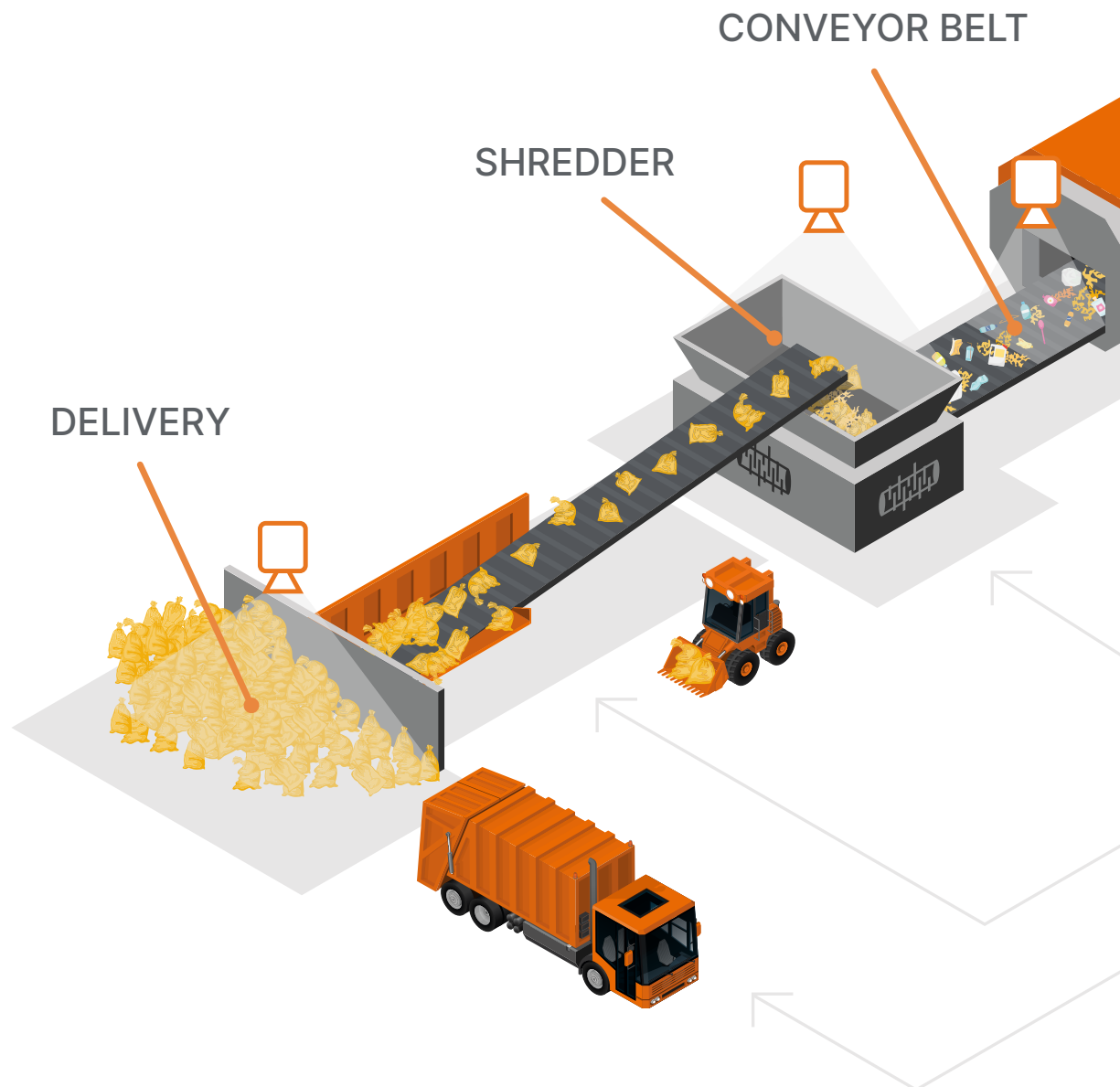

GSME Test Device GTL-3

GTL-3 is a test device that can be used for functional testing of all GSME fire gas detectors. For this purpose, the fire-typical gases are released by dosing a "cocktail" of various gases from a test gas cylinder in a controlled manner. Accessories include a rechargeable battery with quick charger and a telescopic pole.
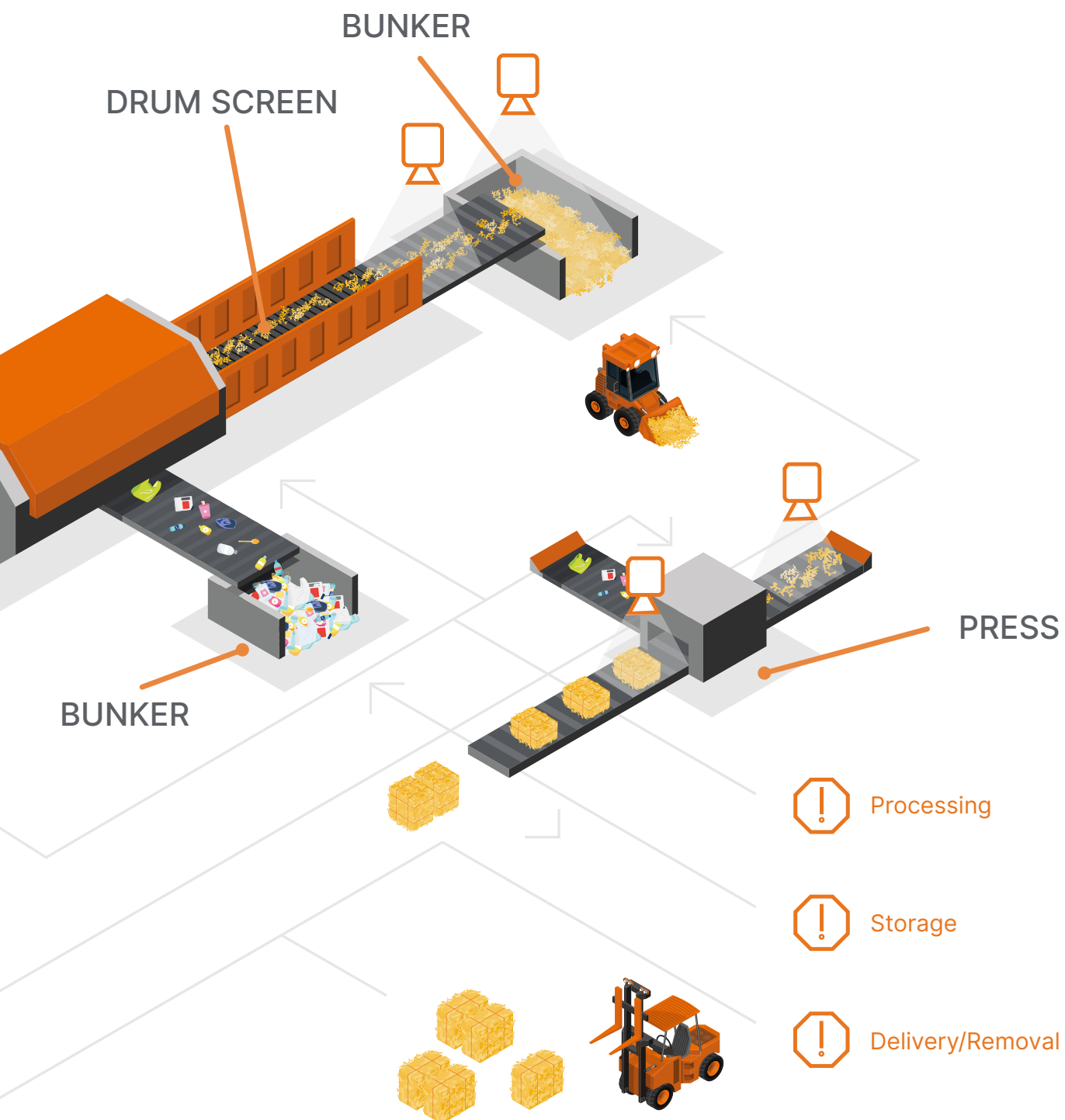
Application Example Recycling Plant

Monitoring recycling facilities with their typical large halls, shredders and storage boxes is challenging. Harsh conditions caused by dust, exhaust fumes, dirt, humidity and fog make work difficult. Added to this are embers, heat buildup, and flying sparks. The causes of unexpected overheating and fires are as complex and varied as the recycling plants and the materials processed: self-igniting parts, flammable liquids, hot-running and overheated drives and motors, friction or defects in plant components. These are often in contact with large quantities of flammable material and can sometimes even cause risk for explosion.

CONVEYOR BELT

SHREDDER

DELIVERY

BUNKER

DRUM SCREEN

BUNKER

PRESS

⚠ Processing

⚠ Storage

⚠ Delivery/Removal