



THE STRONGEST LINK.

STAHL

CCTV SYSTEMS AND CAMERAS

For Zone 1, 2, 21, 22 hazardous areas
and safe industrial areas



STATE-OF-THE-ART CCTV SYSTEMS FOR HAZARDOUS AREAS

Our CCTV systems help with the early detection of danger to staff, machines and environment caused by faults, damage, leakages or fire. Using CCTV systems can prevent damage to staff and material as well as production downtime.

Our aim is to develop the best possible video surveillance system for every type of hazardous area in Zone 1, 2, 21, 22. We use our portfolio of explosion-protected cameras, servers, switches and video management systems to design

tailor-made monitoring systems. Already existing cameras, even those in safe areas, can easily be integrated.

Our services encompass site inspections, system configuration and integration, training, documentation, FAT, SAT and commissioning, as well as service and maintenance plans.

We see ourselves as a **ONE-STOP SUPPLIER** for explosion-protected CCTV systems.

R. STAHL – YOUR ONE-STOP SUPPLIER FOR EX CCTV SYSTEMS

- SITE INSPECTION
- SYSTEM DESIGN AND CONFIGURATION
- SYSTEM TEST AND INTEGRATION
- FAT, SAT AND COMMISSIONING
- TRAINING AND DOCUMENTATION
- SERVICE AND MAINTENANCE PLANS

A CCTV SYSTEM CUSTOMISED FOR YOUR SYSTEM

NEW VIDEO ANALYSIS TECHNOLOGY FOR THE PTZ CAMERAS



The video analysis technology used by our PTZ cameras is a high-end solution to detect danger in monitored areas of industrial plants.

The object detection and tracking functions are the result of years of experience in this field. They enable users to react efficiently, swiftly and preventatively to dangerous situations in a production plant.

Object recognition and tracking as well as the preconfigured alarm scenarios are fully automatic, thus practically eliminating human error that would otherwise

be likely to result from hectic emergencies. Every time an alarm is triggered, auto-tracking is automatically activated and the event metadata is sent via the ONVIF protocol to the video management software.

At the same time, security staff is alerted and recording begins. The camera keeps the moving target at the centre of the frame and zooms in to facilitate recognition. The metadata sent to the video management system can be used to frame the target with a bounding box for clear identification.



Calibration & Detection mask

By means of simple calibration, all surveillance objects are divided into three categories: general objects, persons and vehicles. These are calibrated by criteria such as size. Based on the "size" criterion these targets will then trigger an alarm. The DETECTION MASK feature provides the option of deactivating object recognition for a specified area.



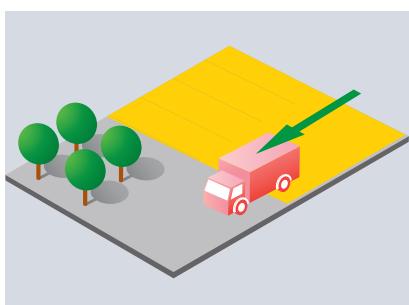
Rules & loitering

All object tracking scenarios must have rules specified for them. Based on these rules, an alarm will be triggered and auto-tracking activated as soon as an object enters or exits an area. The LOITERING function tracks persons who stay in an area for longer than configured.



Line crossing

The LINE CROSSING function is a very precise surveillance tool. This function is used to define the perimeter of hazardous areas. Every time a predefined object crosses this perimeter an alarm is triggered. LINE CROSSING can be used indoors as well as outdoors.

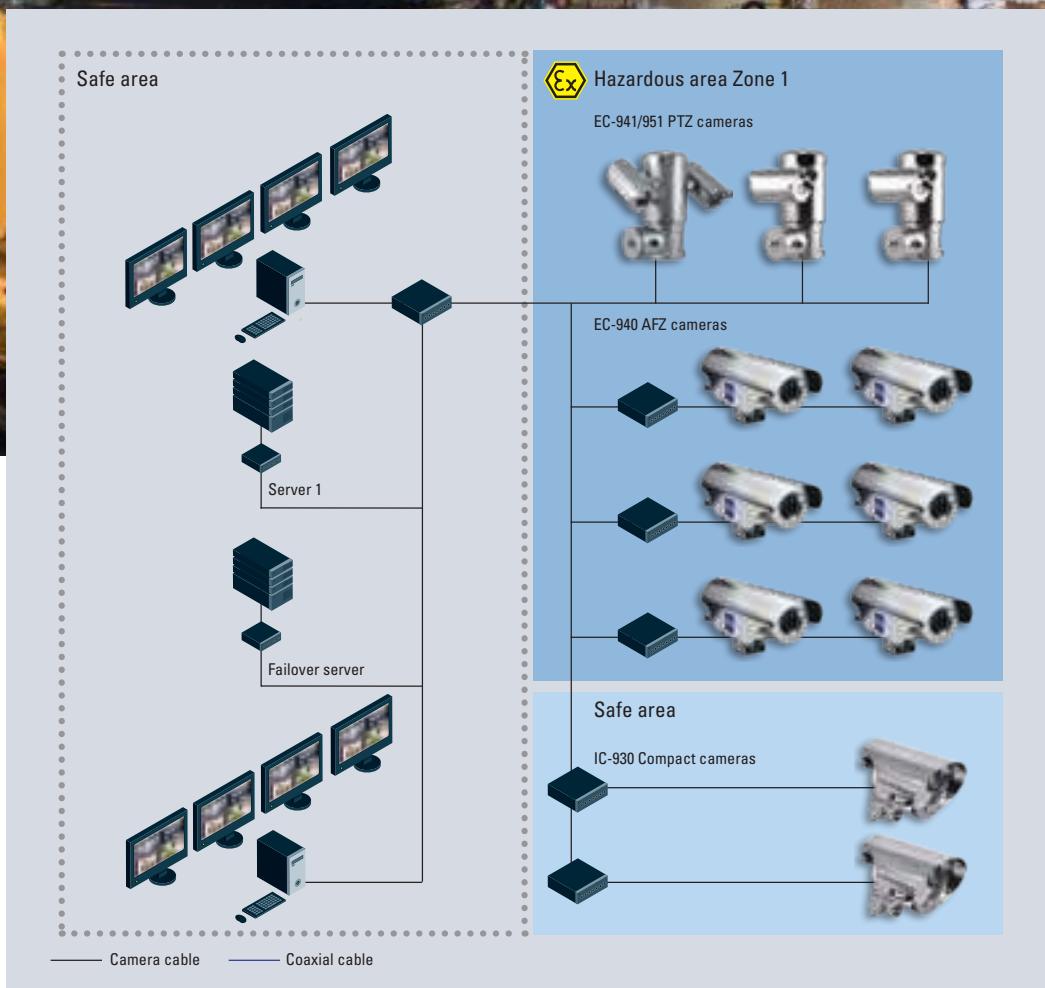


Appearing, entering/leaving an area

An alarm is triggered in line with preconfigured settings when a predefined target appears in a certain area. An alarm and its associated alarm scenario is also triggered when the target enters or leaves a certain area.

CCTV SYSTEM SOLUTION FOR A REFINERY

EXAMPLE OF A SOLUTION



The large volume of highly flammable hazardous substances present in the production areas of a refinery make explosion-protected cameras in addition to cameras in safe areas an absolute necessity.

For this refinery, ATEX- and IECEX-certified zoom and PTZ cameras were selected for Zone 1. They are extremely light sensitive, fast panning, and thanks to WDR and DEFOG functions can identify objects clearly. The video data is shown simultaneously in two control rooms, and stored redundantly.

The new video analysis technology of the PTZ cameras means that object recognition and tracking, followed by certain alarm scenarios, can also be configured.

Badly lit areas are covered by PTZ cameras with integrated IR illuminator, enabling clear vision across distances of up to 200 m.

AFZ cameras ensure optimum surveillance of large areas as well as detailed surveillance, thanks to preset configurations.



EC-941 PTZ camera

- Object recognition and tracking with video analysis technology.
- Complies with data protection requirements via dynamic masking.
- Full HD and electronic image stabilisation.
- Optical fibre connection, directly above SFP slot.
- Extremely high repetition accuracy (+/- 0.02°).
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -40 °C ... +60 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.



EC-951 PTZ camera with IR illuminator

- Image recognition in darkness at distances of up to 200 m.
- Object recognition and tracking with video analysis technology.
- Complies with data protection requirements via dynamic masking.
- Full HD and electronic image stabilisation.
- Optical fibre connection, directly above SFP slot.
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -40 °C ... +60 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.



EC-940 AFZ camera

- Full HD, WDR and DEFOG function.
- Fast installation with Ex e connection box.
- As FO, PoE++ or IP version.
- ONVIF S, can be integrated worldwide.
- Temperature range -55 °C ... +65 °C.
- ATEX, IECEx.

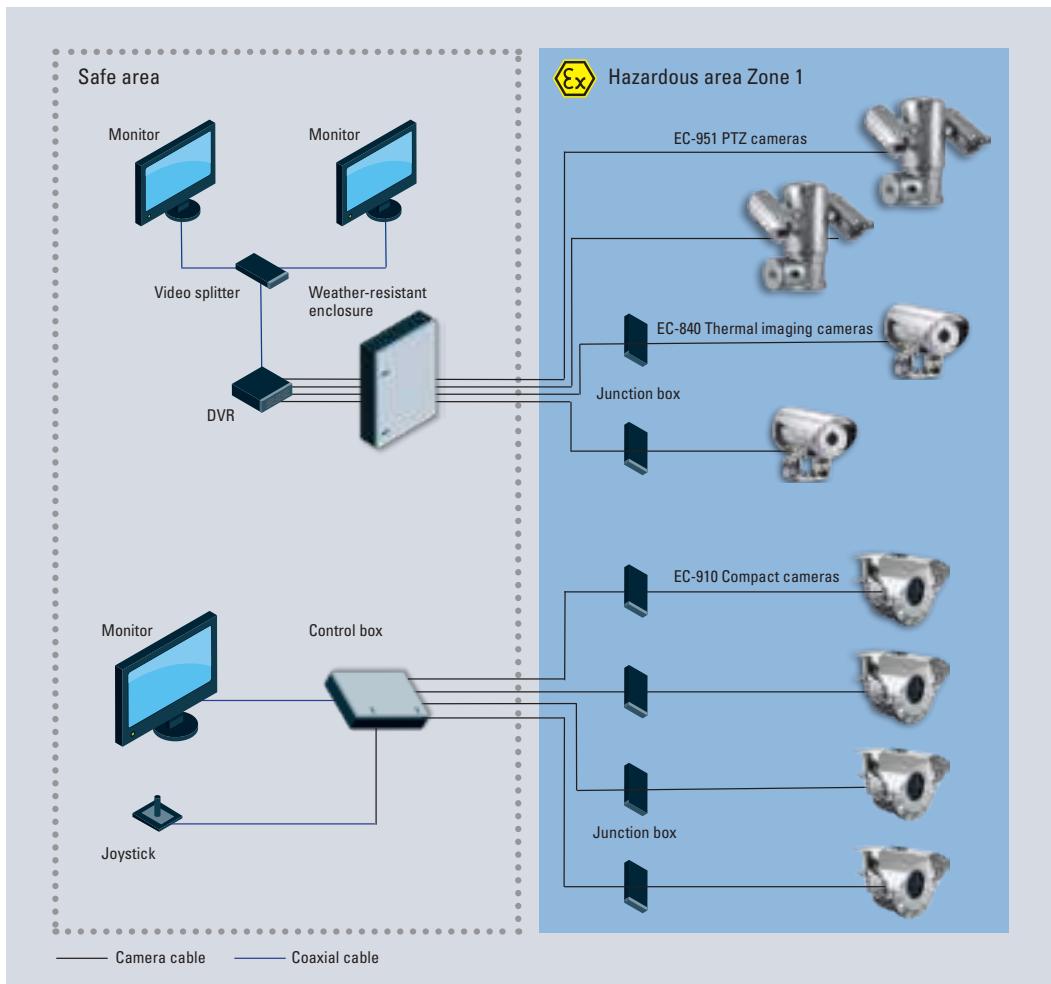


Photograph of tankfarm detail

A virtual guard tour is used to monitor critical points of a tankfarm – for example, as shown here, the area below the tank, so that leakages can be spotted in time.

MAJOR CCTV SURVEILLANCE SOLUTION FOR AN OFFSHORE RIG

EXAMPLE OF A SOLUTION



This project for an offshore rig involved a combined surveillance solution for the drill pipe, certain gas and fire detectors and other critical areas on the rig.

The EC-910 compact cameras are used to monitor the drill pipe. Their compact size, high degree of light sensitivity and full HD resolution make them an ideal visualisation option at close range.

The gas and fire detectors are monitored by particularly temperature-sensitive

thermal imaging cameras which search the environment for the source of heat as soon as the alarm is triggered, thereby enabling immediate intervention.

PTZ cameras were used to monitor all other areas of the offshore rig. Their high image quality and fast 360° panning enable them to quickly display all relevant areas. The integrated video analysis feature ensures that any parts found that do not belong in that place are spotted by the object recognition, triggering an alarm.





EC-951 PTZ camera with IR illuminator

- Image recognition in darkness at distances of up to 200 m.
- Object recognition and tracking with video analysis technology.
- Complies with data protection requirements via dynamic masking.
- Full HD and electronic image stabilisation.
- Optical fibre connection, directly above SFP slot.
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -40 °C ... +60 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.



EC-840S Thermal imaging camera

- IP camera with temperature measurement at any point of the image.
- Distinction between flame ignition and temperature.
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -50 °C ... +65 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.



EC-910 Compact camera

- Full HD, highly light sensitive.
- Requires little space.
- PoE+, 24 VAC or 24 VDC.
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -40 °C ... +65 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.

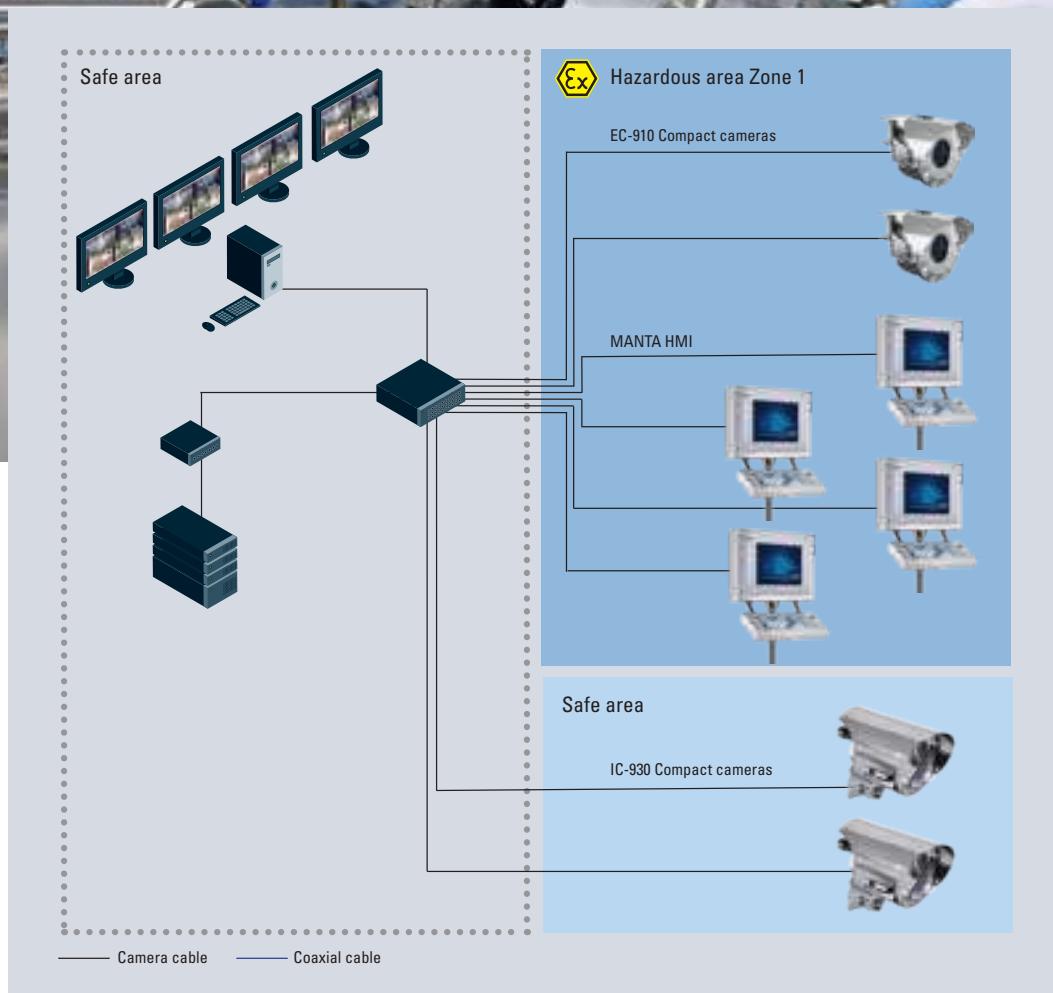


SHARK HMI in the network

Vibration- and shock-proof SHARK screens integrated in the network – with visualisation in the drilling rig and other control rooms.

SIGHT GLASS AND ROOM MONITORING IN PHARMACEUTICAL PRODUCTION

EXAMPLE OF A SOLUTION



For this pharmaceutical production plant, the light-sensitive EC-910 compact camera attached to sight glass mounts constitutes the central means of monitoring the production tanks.

The great light sensitivity of this camera provides an excellent image quality in full HD resolution even in dark containers.

The safe, non-hazardous areas of this plant are monitored with the full HD IP

IC-930 camera. Its 30x optical zoom enables the camera to track all critical control spots as programmed for the virtual guard tour, depicting them with excellent image quality.

All video data is transferred via the IP network to the control room and the on-site operator stations. The 22" Thin Clients with the MANTA device platform are ideal for pharmaceutical production plants and have been integrated as Zone 1 operator and visualisation stations.



EC-910 Compact camera

- Full HD, highly light sensitive.
- Requires little space.
- PoE+, 24 VAC or 24 VDC.
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -40 °C ... +65 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.



IC-930 Compact camera for safe areas

- Full HD IP camera with 30x optical zoom.
- For room and process monitoring.
- PoE+, 24 VAC or 24 VDC.
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -40 °C ... +65 °C.



MANTA operator station

- For pharmaceutical, chemical, life sciences industries.
- GMP-compliant.
- Compliant with FDA 21 CFR Part 11.
- As PC, Thin Client or KVM system.
- ATEX, IECEx, NEC, CEC, EAC, KGS.

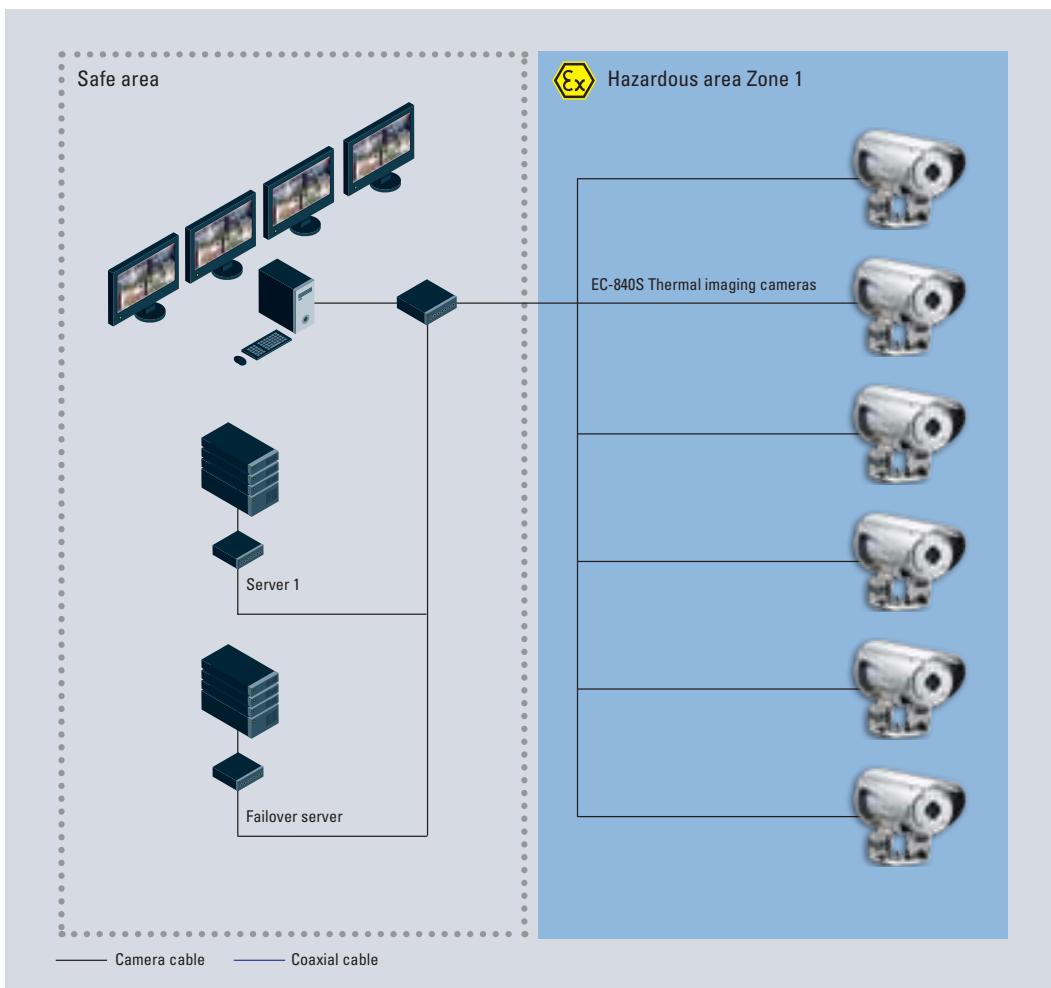


Universal for sight glass monitoring

The EC-910 is attached directly onto the sight glass with an appropriate mount to ensure optimum sight glass monitoring. The cameras' great light sensitivity make any further container lighting unnecessary.

TANK FARM AND CONTAINER MONITORING

EXAMPLE OF A SOLUTION



This CCTV project involved monitoring the surface of four large tanks with four thermal imaging cameras each. Previously, this had been done by means of actual inspection rounds.

Not only did this tie up staff for a large amount of time, but it also put them at considerable risk.

A highly safe and cost-efficient solution was realised with the automated monitoring system, without using any on-site staff.

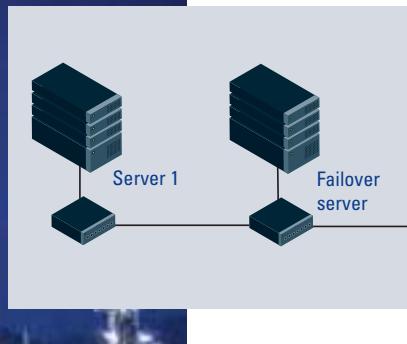
Automated alarms when predefined limits are exceeded were set up to ensure faster intervention in the case of problems.





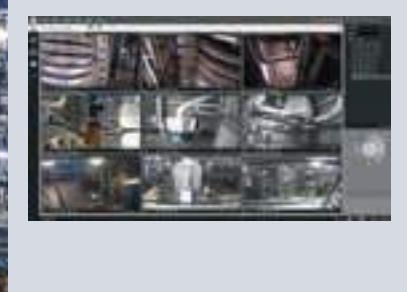
EC-840S Thermal imaging camera

- IP camera with temperature measurement at any point of the image.
- Distinction between flame ignition and temperature.
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -50 °C ... +65 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.



Redundant server structures

- Establishment of individual server structures.
- Redundant server plans with failover server.
- Industrial hardware components.
- Industry application after extensive temperature testing.



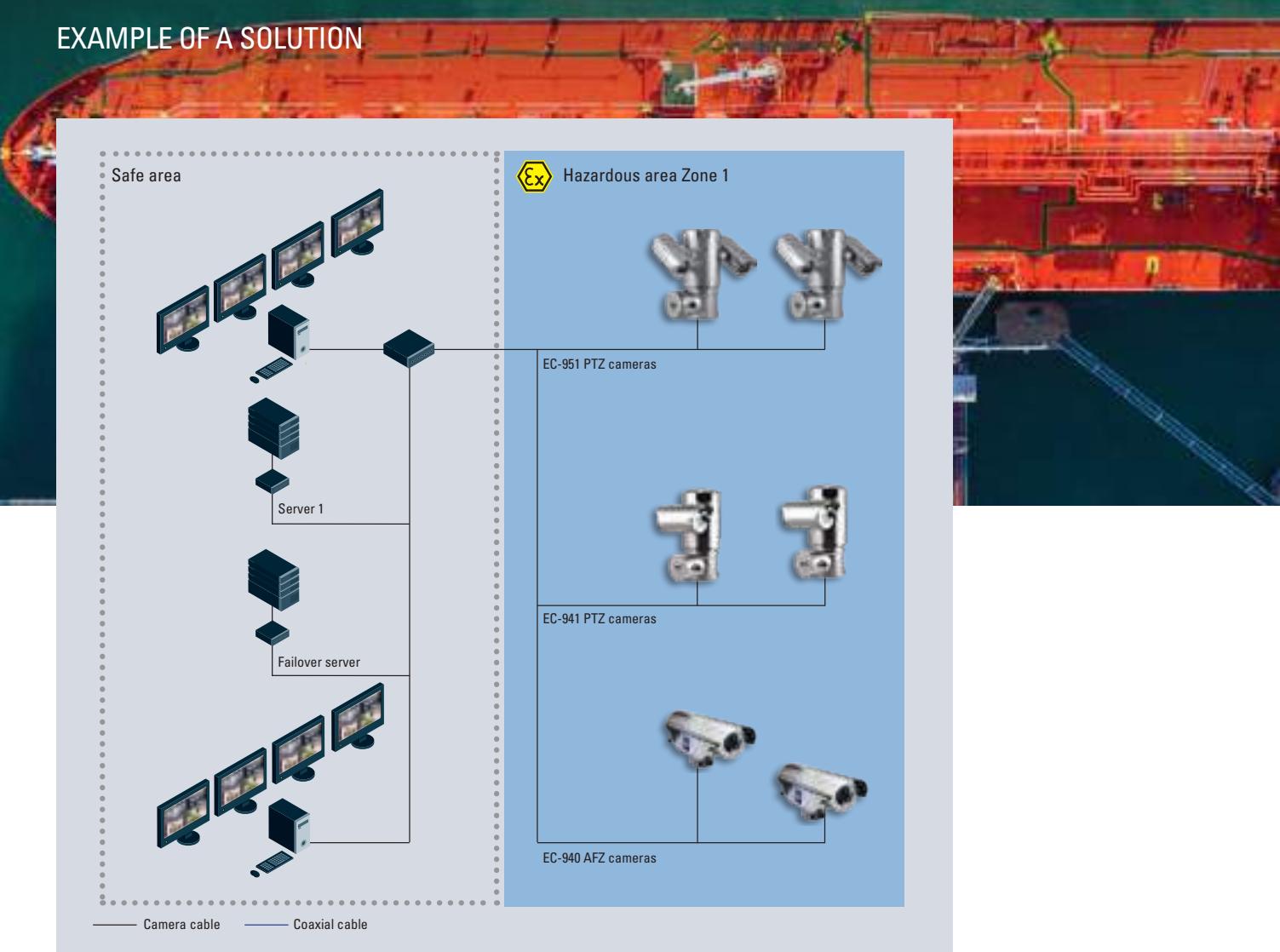
Software Qognify VMS (Basic, Advanced, Infinity)

- Open design, unlimited compatibility.
- Variable and scaleable.
- Intuitive, without the need for extensive training.
- Video analysis with intelligent analysis routines.
- Native Client, Web Client, Mobile Client.
- Citrix / Remote Desktop and multi-installation login.



LOADING OF HAZARDOUS GOODS MONITORED SAFELY

EXAMPLE OF A SOLUTION



The mooring of vessels carrying flammable liquids is an operation with increased risk.

A swaying load or the vessel hitting the moorings too hard represent a very high risk of explosion.

For this project, monitoring the mooring and loading/unloading processes

required fast panning cameras with a powerful zoom, producing clear images even in difficult light and enabling fast intervention in the case of problems.

Monitoring and data storage of the video stream in full HD takes place in two control rooms at some distance apart, making costly and risky guard tours unnecessary.



EC-941 PTZ camera

- Object recognition and tracking with video analysis technology.
- Complies with data protection requirements via dynamic masking.
- Full HD and electronic image stabilisation.
- Optical fibre connection, directly above SFP slot.
- Extremely high repetition accuracy (+/- 0.02°).
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -40 °C ... +60 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.



EC-951 PTZ camera with IR illuminator

- Image recognition in darkness at distances of up to 200 m.
- Object recognition and tracking with video analysis technology.
- Complies with data protection requirements via dynamic masking.
- Full HD and electronic image stabilisation.
- Optical fibre connection, directly above SFP slot.
- ONVIF Q, S, T, can be integrated worldwide.
- Temperature range -40 °C ... +60 °C.
- ATEX, IECEx, NEC, CEC, EAC, Lloyd's.



EC-940 AFZ camera

- Full HD, WDR and DEFOG function.
- Fast installation with Ex e connection box.
- As FO, PoE++ or IP version.
- ONVIF S, can be integrated worldwide.
- Temperature range -55 °C ... +65 °C.
- ATEX, IECEx.



Close control of hazardous goods

The cameras with their strong focus on detailed areas can react very fast to any danger, faster than humans can. Preset alarm scenarios enable those responsible to intervene quickly.



R. STAHL CCTV SYSTEM SERVICES

Do you need to protect your site from intrusive damage? Do you want to monitor processes? Spot fires early? What is required of automation, the cameras, data transmission and data storage?

These are all questions we consider when designing a CCTV system, in order to suggest different solutions for you. This enables you to select the best possible option for your system.

In order to design a customised system we will inspect your site together with you and identify the key parameters.

After the site inspection we will develop a CCTV design together with you, which will then be realised as a 3D simulation to enable us to spot any mistakes at an early stage. After its release, the system will be implemented and thoroughly tested by us before submitting it to you for FAT/SAT.

Last but not least we produce the documentation, a customised training program as well as individual service and maintenance plans, according to your needs.

As a provider of system solutions we accompany your CCTV projects from start to finish.

ONE-STOP SUPPLIER OF CCTV SOLUTIONS

System design and system test



After the site inspection we will develop a CCTV design together with you. In a virtual 3D simulation the configuration with all its components is subjected to first tests. Finally, the CCTV system will undergo exhaustive test scenarios to eliminate any remaining error sources.

FAT & SAT



Technical acceptance of your CCTV system is usually carried out directly on site. Our installation experts will be on site to commission the system, ensuring a smooth start-up of your new system.

Training & documentation



Our training experts will instruct your staff in how to operate the CCTV system in hazardous areas to ensure safe regular operation. In addition, we can also conduct training sessions for legally compliant documentation and archiving of monitoring data – also with regard to existing data protection legislation.

Individual service & maintenance plans



Although R. STAHL's CCTV systems have been designed to be largely maintenance free, we cannot completely rule out the need for maintenance. We try and find the best possible solution for each system with an individual service and maintenance plan made up of various components, as well as an examination of your entire CCTV system on site.

OVERVIEW OF CCTV CAMERAS

EC-910 Compact camera



- Full HD.
- 3x/10x optical zoom.
- Compact size.
- ONVIF Q, S, T, can be integrated worldwide.
- Optional sight glass mount.
- PoE+.

EC-840S Thermal imaging camera



- IP camera with temperature measurement at any point of the image.
- Distinction between flame ignition and temperature.
- ONVIF Q, S, T, can be integrated worldwide.

EC-940 AFZ camera

EX e CONNECTION BOX



- Full HD.
- 32x optical zoom.
- Separate Ex e connection box for installation directly in the hazardous area.
- PoE++.

EC-940S AFZ camera



- Full HD.
- Area and detail monitoring.
- 30x optical zoom.
- Wash & wiper function.

EC-941 PTZ camera

NEW



- Dynamic masking.
- Object recognition and tracking.
- Image stabilisation.
- High precision and fast panning.

EC-951 PTZ camera

NEW



- PTZ camera with IR illuminator, 200 m range.
- Dynamic masking.
- Object recognition and tracking.
- Image stabilisation.

IC-930 Compact camera



- Full HD IP camera for safe areas.
- PoE+.
- 30x optical zoom.
- Low-light technology.

CCTV System Finder



Use the R. STAHL CCTV System Finder for the best possible CCTV system.
<https://r-stahl.com/en/global/cctv-system-finder-explosion-protection-r-stahl>

CCTV SOFTWARE

Qognify VMS (Basic, Advanced, Infinity) video management software



The Qognify VMS (Basic, Advanced, Infinity) software is our go-to software for many projects. It can be used in a great variety of applications that go beyond the classic security field, and is one of the most up-to-date video management systems currently on the market.

A great many modules and interfaces result in highly professional individual and scaleable video management solutions for every conceivable area of application.

Our project team will be happy to assist you with further software solutions.

Other video management systems can be installed on request.

- Open design, unlimited compatibility.
- Variable and scaleable.
- Integration of third-party and existing devices.
- Intuitive, without the need for extensive training.
- Video analysis with intelligent analysis routines.
- Clearly structured user interface.
- Live, archive and configuration modes.
- Native Client, Web Client, Mobile Client.
- Citrix / Remote Desktop and multi-installation login.

R. STAHL CCTV CAMERAS IN DETAIL

	Product code	Certificates	SAP no.	Resolution	Dynamic masking	Video analysis	Low-light
EC-910 COMPACT CAMERAS FOR ZONE 1/2/21/22 							
	EC-910-AFZ-I03-P00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	264963	Full HD			
	EC-910-AFZ-I03-P04	ATEX, IECEEx, EAC, Lloyd's	265897	Full HD			
	EC-910-AFZ-I03-P10	ATEX, IECEEx, EAC, Lloyd's	265898	Full HD			
	EC-910-AFZ-I0D-P00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	289859	Full HD			
	EC-910-AFZ-I0D-P04	ATEX, IECEEx, EAC, Lloyd's	289860	Full HD			
	EC-910-AFZ-I0D-P10	ATEX, IECEEx, EAC, Lloyd's	289891	Full HD			
EC-940 AFZ CAMERAS FOR ZONE 1/2/21/22 WITH INTEGRATED EX D CONNECTION BOX 							
	EC-940-AFZ-HDI-04H	ATEX, IECEEx	266895	Full HD			
	EC-940-AFZ-HDI-05H	ATEX, IECEEx	266897	Full HD			
	EC-940-AFZ-HDI-06H	ATEX, IECEEx	266898	Full HD			
	EC-940-AFZ-HDF-04I	ATEX, IECEEx	266893	Full HD			
	EC-940-AFZ-HDF-05I	ATEX, IECEEx	266894	Full HD			
EC-940S AFZ CAMERAS FOR ZONE 1/2/21/22 							
	EC-940S-AFZ-HGI-W24-56B	ATEX, IECEEx, EAC, Lloyd's	290556	Full HD			✓
	EC-940S-AFZ-HGI-W2F-55B	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	290557	Full HD			
NEW EC-941 PTZ CAMERAS – WITH DYNAMIC MASKING, VIDEO ANALYSIS FOR ZONE 1/2/21/22 							
	EC-941-V1C02T1MV00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	289892	Full HD	✓	✓	✓
	EC-941-V2C02T1MV00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	289893	Full HD	✓	✓	✓
	EC-941-V3C02T1MV00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	289894	Full HD	✓	✓	✓
	EC-941-V1C02T0M000	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	278310	Full HD	✓		✓
	EC-941-V2C02T0M000	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	278701	Full HD	✓		✓
	EC-941-V3C02T0M000	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	278702	Full HD	✓		✓
NEW EC-951 PTZ CAMERAS – WITH DYNAMIC MASKING, VIDEO ANALYSIS AND IR ILLUMINATOR FOR ZONE 1/2/21/22 							
	EC-951-V1C02L8R2T0M000	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	296133	Full HD	✓		✓
	EC-951-V2C02L8R2T0M000	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	296134	Full HD	✓		✓
	EC-951-V3C02L8R2T0M000	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	296135	Full HD	✓		✓
	EC-951-V6C02L8R2T0M000	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	296136	Full HD	✓		✓
	EC-951-V1C02L8R2T1MV00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	294436	Full HD	✓	✓	✓
	EC-951-V2C02L8R2T1MV00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	294437	Full HD	✓	✓	✓
	EC-951-V3C02L8R2T1MV00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	294438	Full HD	✓	✓	✓
	EC-951-V6C02L8R2T1MV00	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	294439	Full HD	✓	✓	✓
NEW EC-840S THERMAL IMAGING CAMERAS – WITH RADIOMETRIC FUNCTIONS FOR ZONE 1/2/21/22 							
	EC-840S-TIC-35I-DR2-456-B	ATEX, IECEEx, EAC, Lloyd's	278869	640x512			
	EC-840S-TIC-35I-DR2-F55-B	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	279759	640x512			
	EC-840S-TIC-35I-IR2-456-B	ATEX, IECEEx, EAC, Lloyd's	279862	336x256			
	EC-840S-TIC-35I-IR2-F55-B	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	279863	336x256			
	EC-840S-TIC-19I-UR2-456-B	ATEX, IECEEx, EAC, Lloyd's	279866	640x512			
	EC-840S-TIC-19I-UR2-F55-B	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	279867	640x512			
	EC-840S-TIC-19I-ZR2-456-B	ATEX, IECEEx, EAC, Lloyd's	279868	336x256			
	EC-840S-TIC-19I-ZR2-F55-B	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	252762	336x256			
	EC-840S-TIC-09I-HR2-456-B	ATEX, IECEEx, EAC, Lloyd's	279760	640x512			
	EC-840S-TIC-09I-HR2-F55-B	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	279861	640x512			
	EC-840S-TIC-09I-QR2-456-B	ATEX, IECEEx, EAC, Lloyd's	279864	336x256			
	EC-840S-TIC-09I-QR2-F55-B	ATEX, IECEEx, NEC, CEC, EAC, Lloyd's	279865	336x256			
IC-930 COMPACT CAMERAS FOR SAFE INDUSTRIAL AREAS							
	IC-930-AFZ-W00		271549	Full HD			✓
	IC-930-AFZ-W01		271550	Full HD			

CCTV CAMERA ACCESSORIES

Wash & wiper system



- Permanently clear view even in rain (e.g. on offshore rigs) thanks to the optional wash & wiper system.
- Including spray can and water tank for Zone 1.
- Designed for the EC-941/951-PTZ and EC-940S-AFZ camera versions.

Sight glass mount



- Sight glass mount made of high-quality stainless steel for batch reactors in the process industry.
- Including folding mechanism, designed for standard size.
- For the compact all-rounder EC-910 camera.

Camera mounts



- Simple, strong camera mounts from electropolished stainless steel (AISI 316L).
- Different wall and ceiling mounts, depending on type and model.
- Various mounting accessories for pole and corner mounts.

Ex d enclosures



- Explosion-protected enclosures for installation of non-explosion-protected components.
- Large selection of stainless-steel or aluminium enclosures.
- Customised enclosures available where technically feasible.

Ex e terminal boxes



- Ex e terminal boxes for wiring in hazardous areas.
- Direct connection at the Ex d enclosure for connecting individual components inside the enclosure.
- Large selection of stainless-steel or glass-fibre reinforced plastic enclosures.

Video surveillance even under extreme conditions – xx8 SHARK Panel PCs (15" / 21.5")



- Powerful 15"/21.5" Panel PCs with Intel® Core™ i7 dual-core processors.
- Developed for network-based video surveillance.
- Featuring high-brightness display, multi-touch functions, brightness sensor, Bluetooth® and camera interfaces.
- IP66, can be operated in temperatures from -40 °C to +65 °C.

SHARK KVM systems in offshore rig surveillance – xx8 (15" / 21.5")



- 15"/21.5" KVM systems with access to separate, data-providing PCs for video surveillance
- SHARK HMIs are shockproof, vibration-proof, saltwater- and salt-spray-proof.
- IP66, can be operated in temperatures from -40 °C to +65 °C.

9721 Media converter



- For the conversion of electric signals into explosion-protected "op is" signals.
- Allows installation and maintenance work on fibre optics without the need for downtime (hot swap/hot work).
- Particularly suited for the Ethernet remote I/O system IS1+.

9721 Unmanaged switch



- For linking electrical Ethernet networks with optical 100 Mbit/s Ethernet networks.
- 4 FO ports in "op is" for operation in hazardous areas.
- Conventional fibre optic cables can be used in hazardous areas (hot swap).

Multicable – armoured or standard

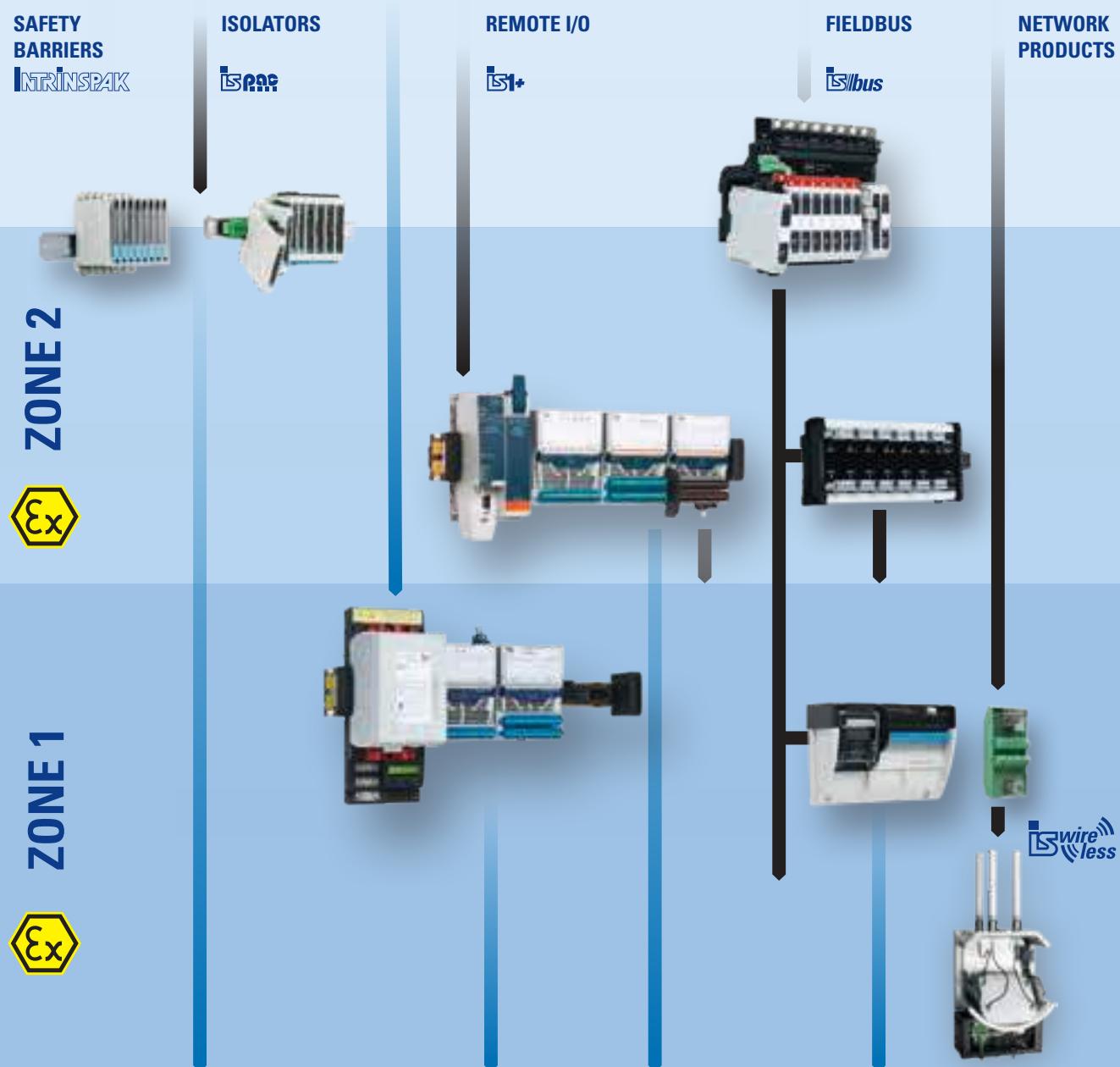


- Wide range of cable types, from armoured Ethernet multicables for full HD IP cameras to standard multicables for analogue cameras.
- The ideal cable type from a combination of insulation, shielding and coating for every area of application.

#STAHL4AUTOMATION

MORE THAN YOU EXPECT

AUTOMATION



HART
COMMUNICATION PROTOCOL

PROFI
NET

PROFI
IBUS

FOUNDATION

ISA100.11a

STAHL

LEVEL



LEVEL

WirelessHART



EtherNet/IP™
conformance tested

Modbus
TCP

Modbus
RTU



THINKING IN TERMS OF SOLUTIONS – SYSTEM SOLUTIONS



#STAHL4AUTOMATION

MORE THAN YOU EXPECT

R. STAHL was founded as a family-run German company in 1876 and has been actively involved in explosion protection since the 1940s.

AUTOMATION has been firmly established in the company for 50 years, and has resulted in significant pioneering work, for example, in explosion-protected remote I/O systems and intrinsically safe fieldbus solutions.

We actively cooperate in **future topics**, such as NAMUR Open Architecture (NOA), the Open Process Automation

Forum (OPAF), Ethernet API (Advanced Physical Layer), and Cyber Security, so that our customers can digitalise their process plant of the future.

Nowadays, R. STAHL is one of the world's three largest providers of components and solutions for electrical explosion protection.

We are the the number one company for **system solutions**, including for the most extreme ambient conditions. R. STAHL actively supports standardisation in accordance with ATEX, IECEx and

NEC/CEC for its customers in order to ensure a high safety standard within Germany and internationally.

From development through to production and operation in systems, we act true to the **"Made in Germany"** seal.

R. STAHL places great importance on the safety, quality and durability of its products. This is why we have been certified since 1993 in accordance with ISO 9001 and are one of the first manufacturers to be certified in explosion protection in accordance with IEC EN 80079-34.





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