



# Camera Systems

Innovative Process & Security Monitoring





# Camera Systems

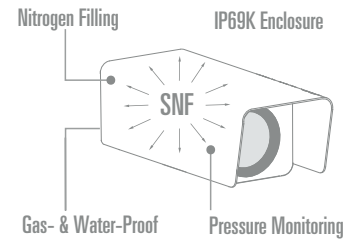
Innovative Process & Security Monitoring





The aim of R. STAHL Camera Systems is to develop innovative and rugged camera systems that can be applied in industrial and hazardous areas throughout the world—and our latest product range meets all these requirements.

Thanks to our latest development, the state-of-the-art SNF technology with sensor-controlled nitrogen filling, all our cameras are extremely rugged, ensure reliable long-term performance irrespective of temperature, and are extremely lightweight at only 0.5 kg to 15 kg (1.1 lbs to 33 lbs).



The low weight allows easy installation, while the rugged construction ensures long-term, maintenance-free performance—on some oil rigs for example, you can find Compact Cameras that were installed 10 years ago, and that are still running reliably and maintenance-free.

This is due to our highly innovative technology which ensures long-term performance and extreme temperature operations ranging between  $-40^{\circ}\text{C}$  up to  $+75^{\circ}\text{C}$ . R. STAHL Cameras can therefore be installed in polar zones as well as in sub-/tropical regions—on drilling rigs, on industrial ships, and in the process industry.

High-quality stainless-steel enclosures (316L) in combination with this SNF-technology provide many cameras with a unique degree of protection ranging from IP68 to IP69K—which is one of the reasons behind the high demand for R. STAHL Camera Systems in the oil and gas industries, as well as in the process industry for sight glass monitoring purposes.

Our wide product range covers industrial as well as explosion-protected cameras, software systems and application-specific surveillance monitors and accessories. The comprehensive product range allows us to develop the ideal custom system solution for your business—our experts are at your service at any time.

R. STAHL Camera Systems GmbH – we create your solution

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# Oil Rig / Crane - Applications

Long-term performance, ruggedness and reliable operation for temperatures ranging between -40°C up to +75°C are the key features required for applications on oil rigs and platforms. Made of high quality stainless steel (316L), our cameras are designed for long-term performance even under extreme conditions. The innovative Wash & Wiper system allows cleaning of the protective glass of the PTZ Cameras at any time; a motor that would require additional monitoring is not required. With the water tank certified for Zone 1, and which can be installed at a distance of up to 20 meters away from the camera, this system represents an absolute innovation in the area of oil rig monitoring.

## **P** Process Monitoring

Our camera and display monitoring systems optimize oil rig operations for a wide range of applications such as general process monitoring, drilling operations, cargo handling operations—a camera system provides the operator with a comprehensive overview.



### Drilling Rig Monitoring: Compact Camera

Several locations in the derrick of a drilling rig require permanent monitoring, for example the tophead drive, the fingerboard and the crown block. The explosion protected EC-710 Compact Camera provides the staff members with a comprehensive overview of all the locations, thus increasing the operator's profitability.



### Helideck Monitoring: PTZ Camera

Helicopter landings and take-offs are amongst the most hazardous activities on an offshore platform. An EC-740 PTZ Camera installed at the helideck allows day and night, 24-hour monitoring and video recording of any operation.



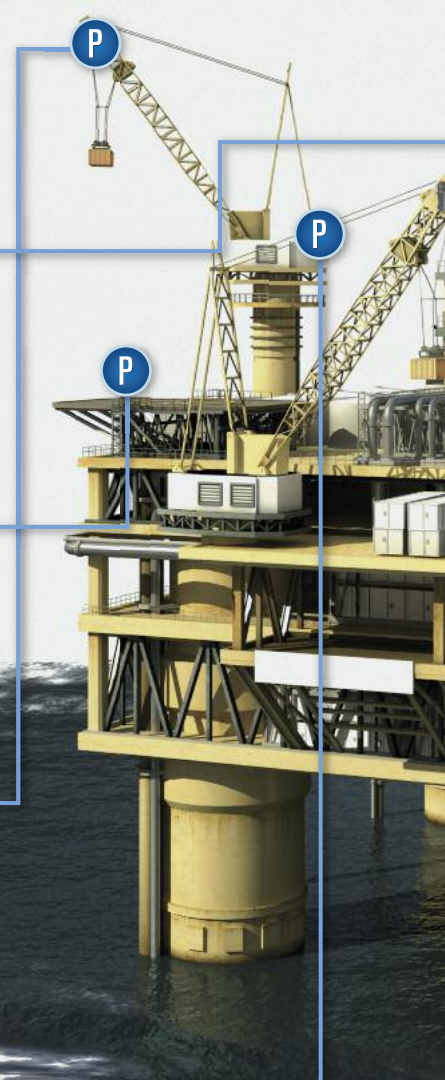
### Load View Monitoring: Zoom Camera

A Zoom Camera mounted at the boom tip increases safety during crane operations. In combination with the oil damped bracket it provides the crane operator with the best possible, vibration-free view of the cargo and the surrounding area.



### Winch Monitoring: Compact Camera

On most cranes, direct vision of the winches from the cabin is impossible. An R. STAHL monitoring system with display can be used to display images provided by both, the camera installed at the boom tip and by the camera mounted at the winch, thus enabling operators to quickly detect and react to failures and problems.



## **S** Safety & Security Monitoring

While the number of personnel in a crew on oil rigs has been constantly decreasing in recent years, the workload has remained the same. However, to ensure site safety and security, highly efficient systems are needed for simultaneous monitoring and recording. The recordings aim to increase immediate security, and can also be used for crew training purposes and accident prevention.



### **Panoramic Video Surveillance System – Dome Camera**

The lightweight (8 kg / 17.6 lbs) Dome Camera allows 360-degree panoramic surveillance on oil rigs. The 18x optical zoom ensures perfect pictures of close-up and long-distance situations. Programmable patrols and the IP68-certified stainless steel make the EC-750 Dome Camera a first-class device for enhanced safety & security monitoring in Zone 1 / 2 / 21 / 22.



### **Man Overboard Monitoring – Thermal Imaging Camera**

The EC-800 Thermal Imaging Camera series ensures perfect day and night surveillance on oil rigs. The high sensitivity of the camera lens with the 24° viewing angle allows to detect human body heat even in complete darkness (0 lux illumination). Heated camera lenses allow extreme temperature applications ranging from -40°C up to +75°C, and prevent from frost and condensation.

Product details, page 12 - 13



### **Oil Damper System for Vibration-Free Images**

Thanks to the sophisticated oil damper system developed by R.STAHL, the Zoom Camera provides clear and vibration-free images. The oil damper always stabilizes the vertical position of the camera. Any vibrations caused by the movement of the crane are corrected by the system.



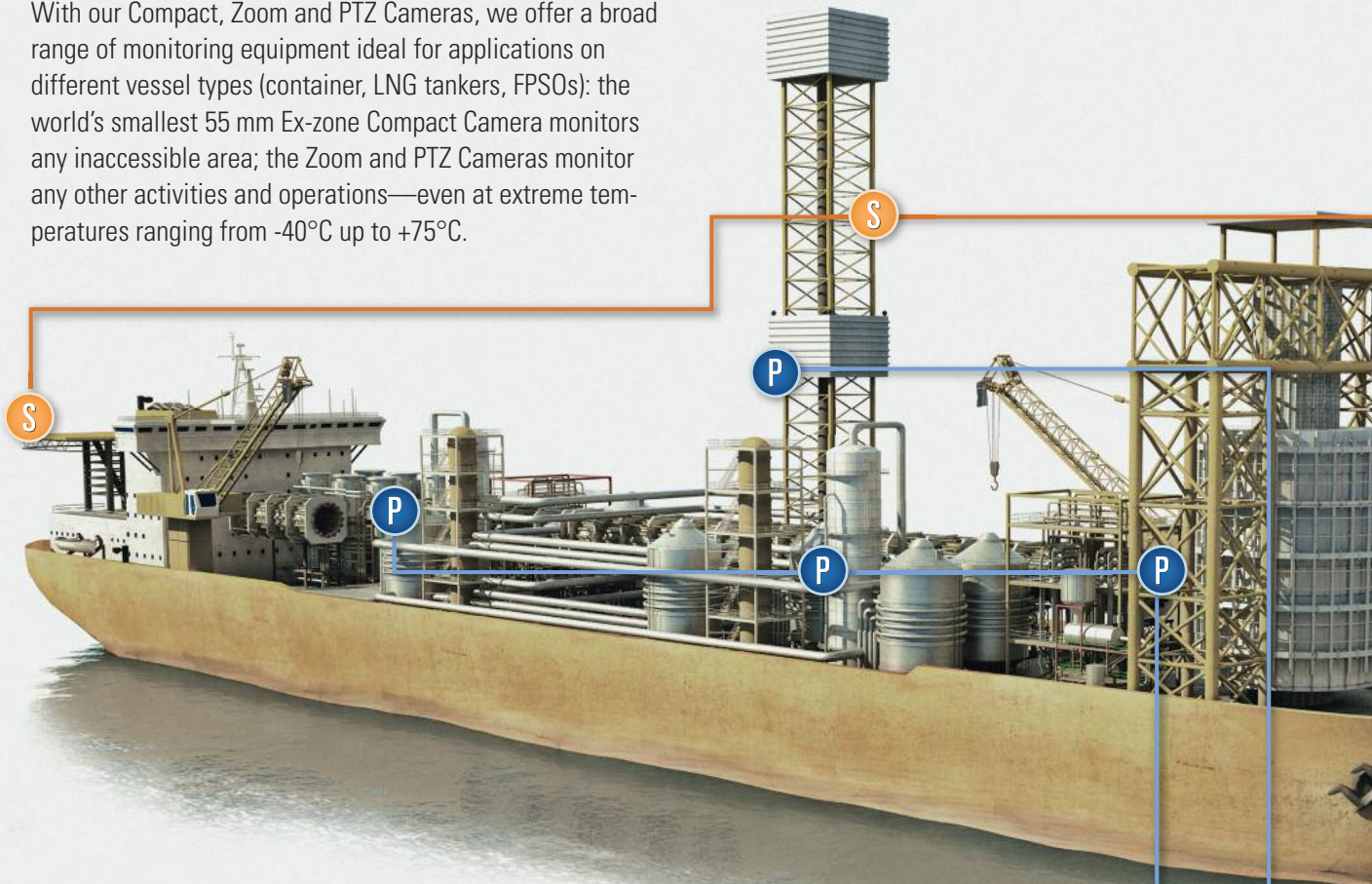
### **Wash & Wiper Technology without Motor**

The Wash & Wiper function of the EC-740 PTZ Camera ensures clear sight without requiring an additional motor. Optionally, it is equipped with a water tank that can be installed remotely at a distance of up to 20 meters; the system is therefore ideally suited for operations in Ex Zone 1 environments.

# Marine & Tank Farm - Applications



With our Compact, Zoom and PTZ Cameras, we offer a broad range of monitoring equipment ideal for applications on different vessel types (container, LNG tankers, FPSOs): the world's smallest 55 mm Ex-zone Compact Camera monitors any inaccessible area; the Zoom and PTZ Cameras monitor any other activities and operations—even at extreme temperatures ranging from -40°C up to +75°C.



## **P** Process Monitoring

R. STAHL's camera and display surveillance systems enhance safety and security in any onboard operation. Either for monitoring routine operations, for operations in the turret area, or for loading and unloading operations. Our camera system provides the CCTV operator with a comprehensive overview and detailed images.



### Routine Operation Monitoring: Compact Camera

The EC-710 Compact Camera and its different lenses allows operations monitoring from different viewing angles, thus providing the required overview of any operation on the vessel.



### Turret Area Monitoring: Compact Camera

The EC-710 Compact Cameras are ideally suited to quickly detect any potential hazards in the turret area—with only 55 mm, they are a space-saving solution; 7 different close-up lenses allow monitoring of any relevant operation.

# S Safety & Security Monitoring

Safety on board is important and should be guaranteed at any time for the crew, the equipment and the vessel. A camera and display surveillance system by R. STAHL helps to ensure onboard safety and security. By installing the cameras at key locations, the CCTV operator can monitor all the potentially hazardous areas—a vital aspect in particular when considering the decreasing number of personnel in a crew.



## Safety & Security Monitoring: PTZ Camera

The PTZ Camera is the ideal solution for safety and security monitoring on board a vessel. Horizontal panning of 340°, vertical tilting of 180°, and the large zoom range allow to detect any potentially hazardous operations in the short-distance and far-distance area.



## Tank Farm Monitoring: Dome Camera

360° rotation, 18x optical zoom and programmable patrols make the EC-750 Dome Camera the ideal surveillance tool for any potentially hazardous areas of a tank farm.



## Day/Night Surveillance: Thermal Imaging Camera

The EC-800 TIC (Thermal Imaging Camera) high-sensitivity camera monitors any potentially hazardous spots during the day and at night; with a sensitivity of 0.05° (< 50mk f/1.0) any leakage or unauthorized persons in the tank farm area are immediately detected.

Product details, page 12 -13



# Land Rig - Applications

Easy installation, lightweight construction and worldwide application are the criteria land rig cameras have to fulfill. R. STAHL's cameras meet all these required criteria: the Compact Camera with less than 0.5 kg (1.1 lbs) is one of the world's most lightweight and smallest explosion-protected cameras, and even R. STAHL's heaviest camera—the PTZ Camera—only has a weight of 15 kg (33 lbs). Apart from the easy mounting and installation and the ruggedness of this camera, land rig operators appreciate its extreme temperature application ranging from -40°C up to +75°C.

## **P** Process Monitoring

Process monitoring on land rigs is often realized with Compact and Zoom Cameras. The 7 different lenses of the Compact Cameras allow specific applications, while the Zoom Camera is actively used for short as well as long distance monitoring.



### **Drill Rig / Drill Floor: Compact Camera**

The Compact Cameras are ideally suited to monitor the functioning of the drill pipe, drill head and the land rig area. The different lenses and the space-saving, compact and extremely rugged design make them ideally suited for drill floor monitoring.



### **General Process Monitoring: Compact Camera**

Installing one or more Compact Cameras in the area of the drilling turret ensures a high-degree of monitoring and therefore safety in the process area.



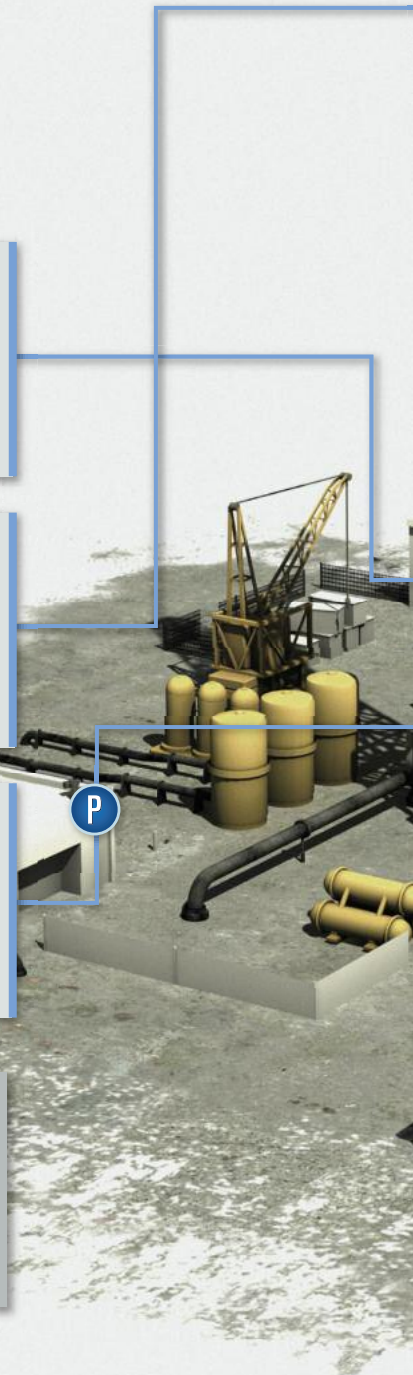
### **Shaker Room: Compact Camera**

Optimal monitoring of the shaker and the pumps is ensured by installing a Compact Camera in the shaker room.



### **Video Monitoring: CCTV Monitor with Recording Capability**

For recording the camera images, we have developed a remote CCTV solution that operates as an autonomous monitoring and video recording station apart from the drilling turret.





## S Safety & Security Monitoring

The variety of operations and activities on a land rig require safety monitoring of the entire area, including warehouse and processing sites. R. STAHL's PTZ and Thermal Imaging Cameras allow the creation of a perfect surveillance system for the entire area.



### Environment Monitoring: PTZ Camera

The processing of hazardous goods is critical and requires constant monitoring. The 340° pan function, the 180° tilt function and the 18x optical zoom of the PTZ Camera allow customized patrols of specific land rig areas.



### Tank Farm Monitoring: Thermal Imaging Camera

Monitoring of the storage of hazardous goods is necessary even at night, and our EC-800 Thermal Imaging Camera is the ideal solution. The high sensitivity ensures immediate detection of leakage or access of unauthorized persons; additional illumination of the area is not necessary.

Product details, page 12 -13



# Chemical / Pharmaceutical - Applications

For security-relevant monitoring of complex processing systems, R. STAHL offers a comprehensive portfolio of monitoring equipment: a Compact Camera for monitoring hardly accessible areas, a Zoom Camera for close-up and long-distance surveillance, a 360° panoramic Dome Camera, and a PTZ Camera for complex panoramic surveillance. Controllable via ISview or SeeTec software, several 100 cameras installed in the production areas or hazardous areas can thus be integrated in a video surveillance and recording system that offers your company the highest degree in safety and efficiency.

## **S** Safety & Security Monitoring

The number of different operations and activities on a land rig require overall monitoring of the entire area, including warehouse and processing units. The R. STAHL PTZ Cameras and Thermal Imaging Cameras allow to create an ideal surveillance system for the entire area.



### Dome Camera

With a panning range of 360°, 18x optical zoom and programmable security patrols this camera ensures perfect security and overview of the process plant.



### Thermal Imaging Camera

If monitoring is mostly required at night, the EC-800 will be the ideal instrument. Highly sensitive, it captures differences in temperature between human body heat and objects, and makes these differences immediately visible. The camera is available as fixed or pan/tilt version.



### Standard Video Surveillance: ISview for Small-Scale Systems

ISview is a standard video software designed for the display of real-time images from IP cameras and video encoders with VAPIX protocol (AXIS and MOXA). As an intuitive software for touch screen operation, it is the ideal entry level model for surveillance solutions in hazardous areas.



### Multiple Video Surveillance: SeeTec 5 on a Network Basis

SeeTec 5 is a professional video software for complex safety and security solutions—from small-scale applications with a maximum of five cameras up to the largest possible application involving over 1,000 cameras. The simultaneous control option of various components, including existing cameras, can easily be implemented.

Product details, page 12 - 13

## P Process Monitoring



To monitor every single detail in an industrial processing environment represents a real challenge. Our cameras are equipped with lenses for any viewing angle, and zoom functions to ensure perfect monitoring of any operation—in chemical environments as well as in pharmaceutical clean-room environments.

Because SAFETY is of great importance to R. STAHL Camera Systems GmbH.



### Compact Camera

Among the main features of the EC-710 Compact Camera is the small, compact and rugged design. With the fixed lenses, the camera monitors any viewing angle in the processing area. Made of stainless steel and IP69K-certified, it allows easy high-pressure cleaning.



### Zoom Camera

The EC-740 Zoom Camera can be customized according to the operator's requirements for overall monitoring of the plant or specific process monitoring—the 18x optical zoom for example can be controlled via professional software systems.



### Compact Camera Optional with Sight Glass

For boiler monitoring, we offer a sight glass holder suitable for clean-room applications. It is an ideal tool for sight glass holder of critical process steps.



# Technical Data

## EC-710 Compact Camera



<b>Pan/Tilt range</b>	
<b>Weight</b>	SST: 0.7 kg (1.6 lbs) (incl. 5 m cable); 0.5 kg (1.1 lbs) (without cable)
<b>IP protection</b>	IP69K
<b>Zoom</b>	fixed zoom
<b>Temperature range</b>	-40°C up to +75°C
<b>Sensor</b>	Sensor 1/4" (0.635 cm) HAD CCD sensor
<b>Total number of pixels</b>	PAL 795 (H) x 596 (V), NTSC 811 (H) x 508 (V)
<b>Video output</b>	1,0 V p-p composite video 75 Ohm
<b>Lens glass</b>	Chemically hardened, strengthened float glass, 5 to 7 times harder than ordinary glass
<b>Enclosure</b>	Stainless steel SS316L
<b>Cable</b>	5.0 m (+0,1)
<b>Certifications</b>	ATEX and IECEx, further certifications upon request
<b>Power consumption</b>	12 VDC +/-10%, consumption 250 mA, heater ON, 85 mA heater OFF

## EC-740-AFZ Zoom Camera



<b>Pan/Tilt range</b>	manual vertical tilt
<b>Weight</b>	ALU: 3 kg (6.6 lbs); SST: 6 kg (13.2 lbs) (incl. 5 m cable)
<b>IP protection</b>	IP69K
<b>Zoom</b>	18x optical zoom / 12x digital zoom
<b>Temperature range</b>	-40°C up to +75°C
<b>Sensor</b>	1/4" (0.635 cm) HAD CCD sensor
<b>Total number of pixels</b>	752 (H) x 582 (V) > 440 000 pixels
<b>Lens</b>	4.1 mm (wide) to 73.8 mm (tele); 216x zoom ratio
<b>Video output</b>	1,0 V p-p composite video 75 Ohm
<b>Lens glass</b>	Chemically strengthened, hardened float glass, 5 to 7 times harder than ordinary glass
<b>Enclosure</b>	Stainless steel SS316 or coated aluminium
<b>Cable</b>	5.0 m (+0.1)
<b>Certifications</b>	ATEX and IECEx, further certifications upon request

## EC-740-PTZ Pan/Tilt/Zoom Camera



<b>Pan/Tilt range</b>	340° horizontal pan degree / 180° vertical tilt degree
<b>Weight</b>	ALU: 8 kg (11 lbs) / SST: 15 kg (33 lbs) (incl. 5 m cable)
<b>IP protection</b>	IP69K
<b>Zoom</b>	18x optical zoom / 12x digital zoom
<b>Temperature range</b>	-40°C up to +75°C
<b>Sensor</b>	1/4" (0.635 cm) HAD CCD Sensor
<b>Total number of pixels</b>	752 (H) x 582 (V) > 440 000 pixels
<b>Lens</b>	4.1 mm (wide) to 73.8 mm (tele); 216x zoom ratio
<b>Video output</b>	1,0 V p-p composite video 75 Ohm
<b>Lens glass</b>	Chemically strengthened, hardened float glass, 5 to 7 times harder than ordinary glass
<b>Enclosure</b>	Stainless steel SS316 or coated aluminium
<b>Cable</b>	5.0 m (+0.1)
<b>Certifications</b>	ATEX and IECEx, further certifications upon request



## EC-750 Dome Camera

<b>Pan/Tilt range</b>	360° horizontal pan degree / 180° vertical tilt degree
<b>Weight</b>	SST: 8 kg (17.6 lbs) (incl. 5 m cable)
<b>IP protection</b>	IP68
<b>Zoom</b>	18x optical zoom
<b>Temperature range</b>	-20°C up to +60°C
<b>Sensor</b>	1/4" (0.635 cm) HAD CCD sensor
<b>Total number of pixels</b>	440 000 (PAL), 380 000 (NTSC)
<b>Lens</b>	4.1 mm (wide) up to 73.8 mm (tele); 18x optical zoom
<b>Video output</b>	Analog: 1.0 V p-p composite video 75 Ohm / IP: Motion JPEG and MPEG4
<b>Pan rotation speed</b>	0-42°/s
<b>Enclosure</b>	Stainless steel SS316
<b>Cable</b>	5.0 m (+0.1)
<b>Certifications</b>	ATEX and IECEx, further certifications upon request



## EC-800-TIC Thermal Imaging Camera

<b>Pan/Tilt range</b>	manual vertical tilt
<b>Weight</b>	ALU: 2.9 kg (6.3 lbs)/ SST: 6 kg (13.22 lbs) (incl. 5 m cable)
<b>IP protection</b>	IP68
<b>Zoom</b>	2x optical zoom / 4x digital zoom
<b>Temperature range</b>	-40°C up to +75°C
<b>Sensor</b>	Thermal imager, uncooled VOx microbolometer
<b>Total number of pixels</b>	324 x 256 (pixel size: 25 micron)
<b>Lens</b>	19 mm, viewing angle 24°
<b>Detection Range</b>	Detection range up to 450 m (human body heat)
<b>Color range</b>	4 color ranges
<b>Scene temperature range</b>	-40°C up to +160°C
<b>Video output</b>	PAL / NTSC
<b>Enclosure</b>	Stainless steel SS316 or coated aluminium
<b>Shock/Vibration</b>	Vibration (4.3 gs three axis, 8 hrs each) / Shock (200 g shock pulse w/ 11 msec saw tooth)
<b>Cable</b>	5.0 m (+0.1)
<b>Certifications</b>	ATEX and IECEx, further certifications upon request



## EC-800-PTT Pan/Tilt Thermal Imaging Camera

<b>Pan/Tilt range</b>	340° horizontal pan degree / 180° vertical tilt degree
<b>Weight</b>	ALU: 8 kg (17.6 lbs) / SST: 15 kg (33 lbs) (incl. 5 m cable)
<b>IP protection</b>	IP68
<b>Zoom</b>	2x and 4x digital zoom
<b>Temperature range</b>	-40°C up to +75°C
<b>Sensor</b>	Thermal imager, uncooled VOx microbolometer
<b>Total number of pixels</b>	324 x 256 (pixel size: 25 micron)
<b>Lens</b>	19 mm, viewing angle 24°
<b>Detection Range</b>	Up to 450 m (human body heat)
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<b>Enclosure</b>	Stainless steel SS316 or coated aluminium
<b>Cable</b>	5.0 m (+0.1)
<b>Certifications</b>	ATEX and IECEx, further certifications upon request



To all our cameras there are corresponding versions for the industrial area.

# Software Solutions

## ISview—Standard Video Surveillance for Small-Scale Systems



ISview is a standard video software designed for the display of real-time images from IP cameras and video encoders with VAPIX protocol (AXIS and MOXA). It is an intuitive software which has been optimised for touch screen operation. Thanks to the large touch buttons it can easily be operated with work gloves. This makes the software ideally suitable for the display of video images on HMIs in hazardous areas.

### Features

- Easy operation, no training required
- Single image and quad image screen
- Up to 12 cameras can be managed
- Optimized for the human machine interfaces  
by R. STAHL HMI Systems GmbH

### Highlights

- Large touch buttons for operation with work gloves
- In combination with an HMI a closed Zone 1 solution can easily be implemented

## SeeTec 5—Network-Based Video Surveillance



SeeTec 5 is a professional video software for complex safety and security solutions—from small-scale applications with a maximum of five cameras up to the largest possible application involving over 1,000 cameras and simultaneous control of a great variety of components (e.g. existing cameras). SeeTec is flexible and can be adapted to fit in with existing system requirements. It is more powerful and cost-efficient than conventional video systems. Already existing analogue components can be integrated into a network technology. Third-party systems can be integrated and controlled via a variety of existing IP interfaces.

### Features

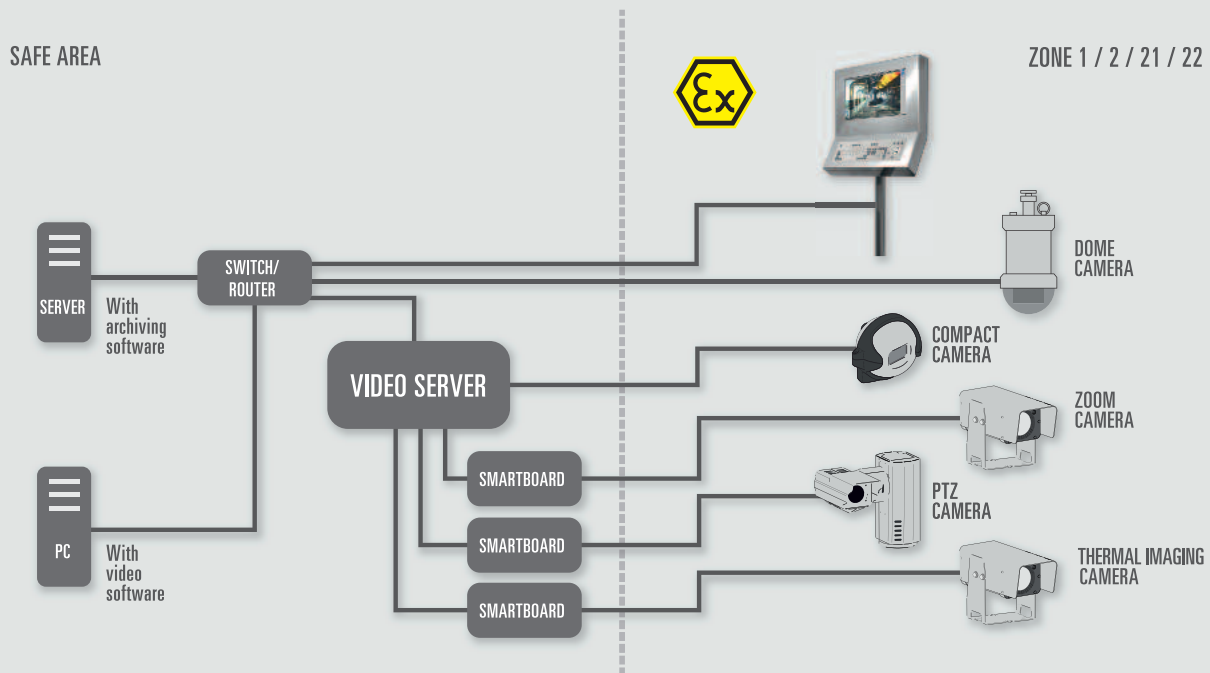
- Video recordings can be timed for each camera separately
- Alarm forwarding possible, enabling quick reaction
- Multi-monitor operation for better overview
- Different user levels/groups
- Selection of cameras via floor plans for easy camera management (Enterprise Edition only)

### Highlights

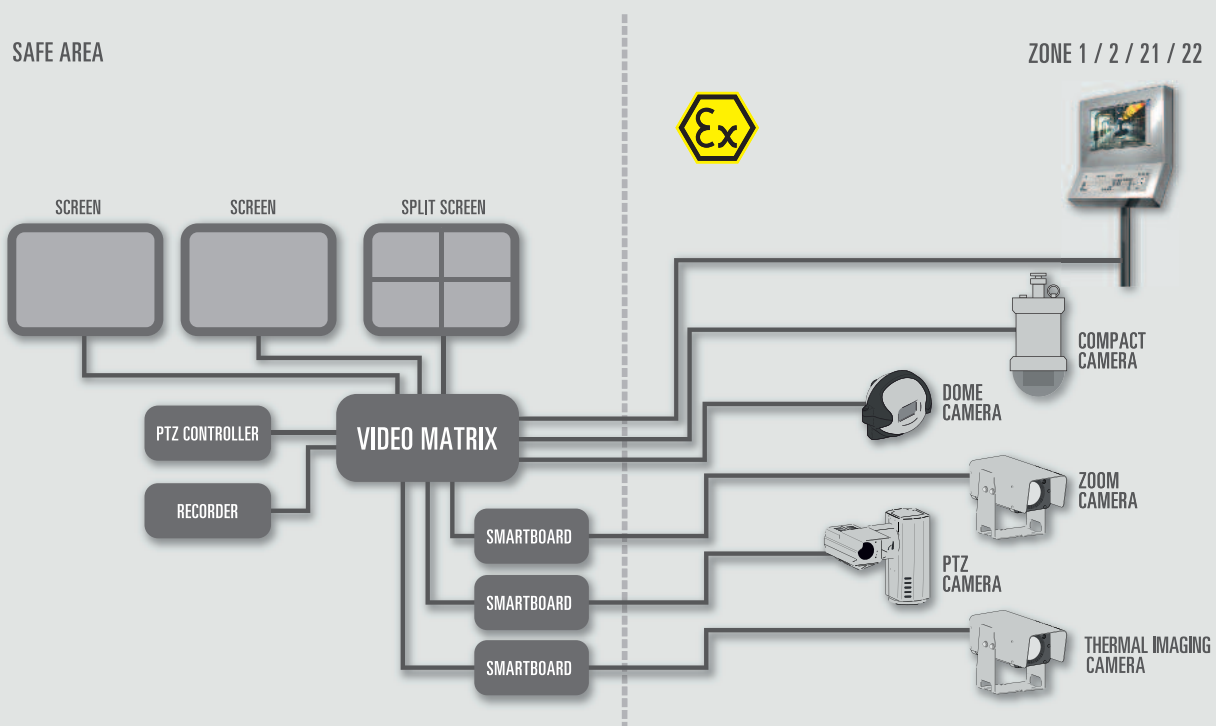
- Possibility of integrating existing systems
- Available in many languages
- Suitable for small and large plants
- Functions of the Enterprise Version can be expanded

# Functional Principles

## Analog Video Surveillance System



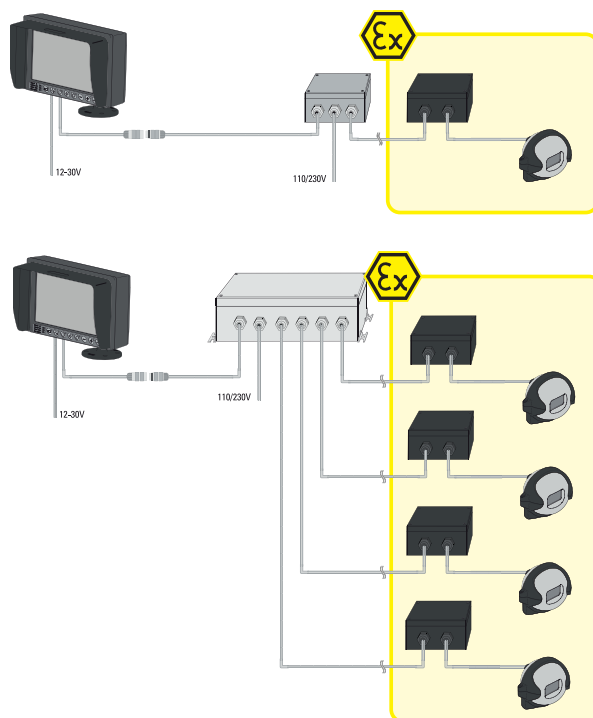
## IP Video Surveillance System



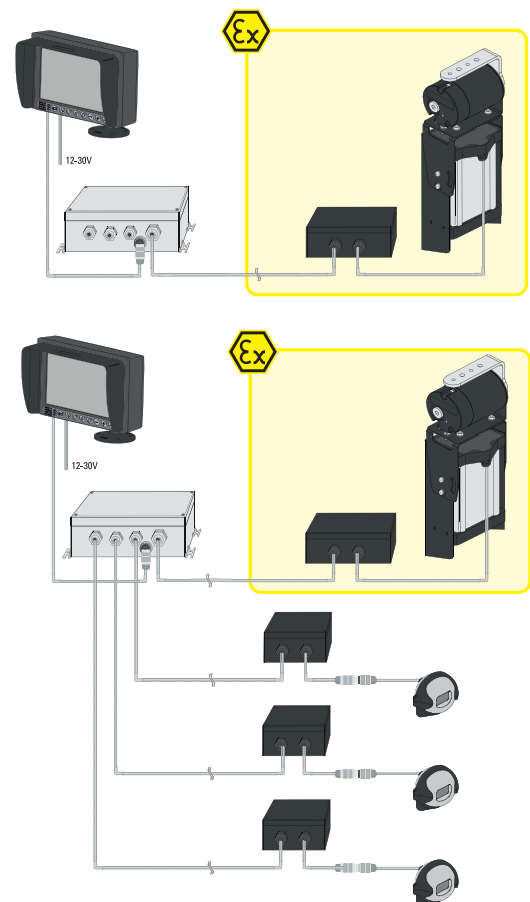
# System Solutions

With our comprehensive portfolio of state-of-the-art cameras, professional accessories and software systems, we offer a wide variety of combinations, and can provide the optimized surveillance system solution for your plant. The following examples will give you an idea of the many possibilities.

## 4 Compact Cameras in Zone 1 with Quad Image Display

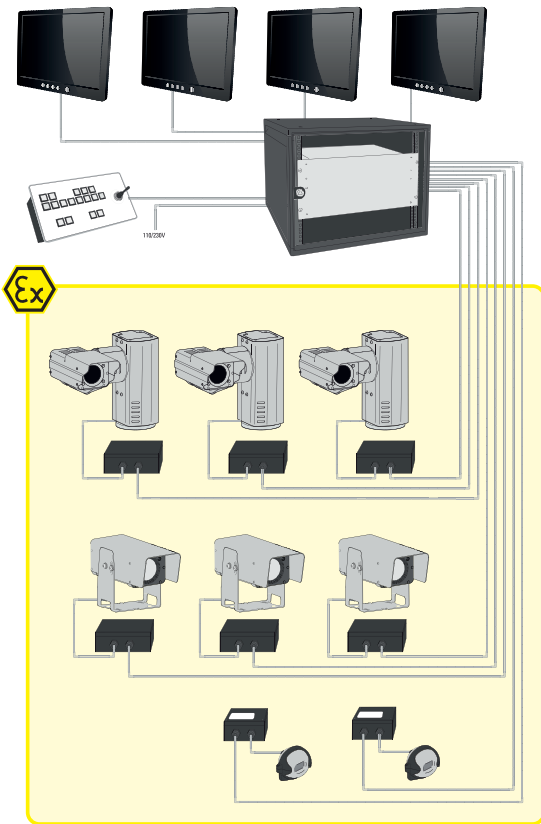


## Crane Application with Zoom Camera on Oil-Damped Bracket

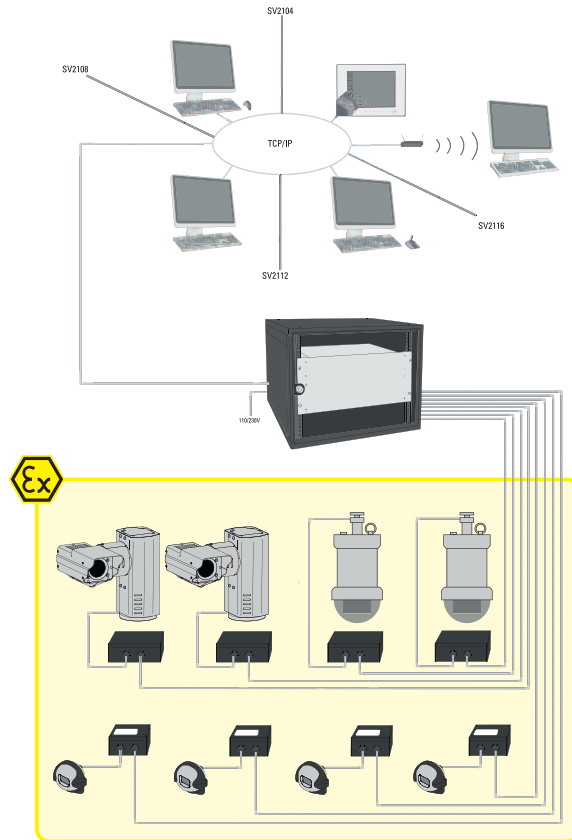




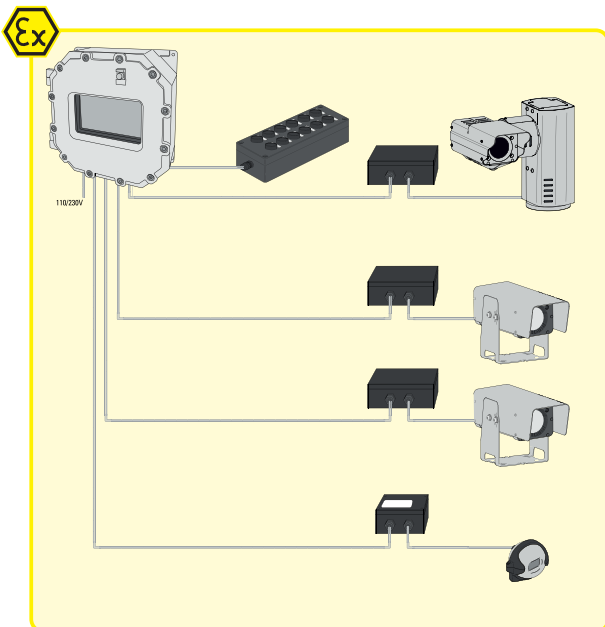
## Analog Video Surveillance with Different Cameras



## IP Video Surveillance with Different Cameras



## Analog Solution Zone 1





### Application Guide





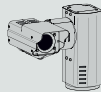



The APPLICATION GUIDE was developed to provide you with a suitable system solution for your plant as quickly as possible. It needs just a few clicks and filling in a few text fields to pin-point your requirements so that the right contact person can provide you with a customized proposal.

[www.stahl-camera.de/en/application-guide-en](http://www.stahl-camera.de/en/application-guide-en)

# Accessories

Our innovative cameras come with state-of-the-art, application-specific accessories to further increase on-site functionality. The overview table below lists the camera accessories we have available.

This range of accessories is constantly expanded. Special custom-made camera accessories can be manufactured upon request—please do not hesitate to contact us.

	Process Cameras			Security Cameras		
	 EC-710	 EC-740-AFZ	 EC-740-PTZ	 EC-750 Dome	 EC-800-TIC	 EC-800-PTT
Terminal box	+	+	+	+	+	+
Video encoder	+	+	+	+	+	+
Monitors	+	+	+	+	+	+
Video management systems incl. control	+	+	+	+	+	+
Software for network solutions	+	+	+	+	+	+
Multicable	+	+	+	+	+	+
Ex wireless	+	+	+	+	+	+
Plug	+	+	+	+	+	+
Mounting plate for quick replacement of existing models		+	+		+	+
Oil damper		+			+	
Sight glass holder	+					
Quick connect	+					
Shock absorber	+					
Protective cap	+					
Wash & Wiper			+			
10-litre water tank			+			
Explosion-proof, empty enclosure	The certified empty enclosure allows easy integration of existing camera types in the plant—enclosure heating optional					