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Thermal infrared cameras and video analytics for oil and gas installations and fire detection

Issue

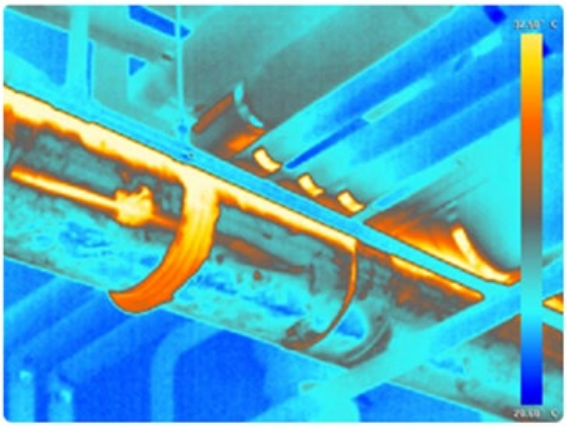
Oil or gas leaks are often invisible or tough to detect, and such an event can sometimes last for several hours before being noticed. The risk of fire or worse is huge, so an early detection of it is a must in the industry. Ecological damages are usually significant which cost the industry several million Euros in cleaning and penalties.

Solution

Security monitoring of the oil and gas and industry plants is crucial because of its hazardous environment. In joint partnership, Acal BFi and EVITECH (video analytics) are proposing a dedicated imaging solution based on thermal cameras which can automatically detect oil and gas leaks and fire starts. We have installed several thermal infrared cameras in oil plants, refineries, oil ports and thermal plants, which provide 24/7 security surveillance acting as watchdogs.

Acal BFi thermal cameras provide crisp and clear images in full day time or in total darkness, light fog or smoke conditions. They give real time thermography videos of the observed scene in resolution 384 x 288 pixels with an accuracy of ±2°C from -20°C to +650°C.

Example of boiler pipes (thermography)



Example of boiler pipes (visible)

(Images courtesy of COX)

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Acal BFi thermal cameras allow measurement and monitoring of cold and hot zones simultaneously inside the same scene. They can allocate different temperature alarm thresholds for each zone and colourise the pixels which go beyond the alarm points.

See here an example of a thermal image. The hot spots above the temperature threshold are marked in red.

(Image courtesy of EVITECH)

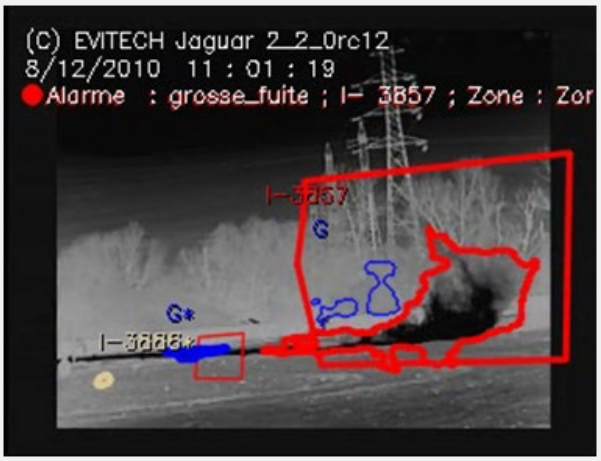
All the thermal cameras can be controlled in real time and over IP by a central EVITECH video analytics server called Jaguar. The EVITECH software analyses and detects in real time any change in the thermal images. In case of any suspected issue, security alarms will be instantaneously reported locally to the process monitoring units, or will be coupled with a ringing alarm system or a sprinklers automatic activation, and a remote alarm will be sent to firemen or rescue services.

Due to its exceptional sensitivity, which makes it possible to detect a change in temperature as small as one pixel, Jaguar can detect almost all events happening around the pipes like a small leak on the side, a leak on the ground, or the appearance of vapor or condensation around the pipe.

Example of oil leak detected automatically by Jaguar

(Image courtesy of TOTAL)

Example of gas leak detected automatically by Jaguar



(Image courtesy of GdF-Suez)

Example of fire start detected automatically by Jaguar (recycling industry)

(Image courtesy of EVITECH)

Along the years, EVITECH have developed dedicated software solutions to reinforce the security of oil and gas installations. Having deployed several installations in Europe, EVITECH are able to advise and study new projects with the appropriate methodology and agreements (ATEX, SEVESO security agreements).

Additional security services

While their main use is oil and gas leak or fire detection, Acal BFi's thermal cameras connected to EVITECH video analytics software can also be used for security purposes, such as detection of intruders inside the perimeter of the plant, monitoring the speed of vehicles around or inside the plant, or detection of people at non-working hours.

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