ARAANI
VISION ON SAFETY

CASE STUDY

Araani's video smoke detection technology ensures fire safety at the world's largest nitrogen plant.

ABOUT LINDE GROUP

The Planta de Nitrógeno de Cantarell in Mexico is the largest nitrogen plant in the world. In that plant, a complex and highly energy-intensive process is going on to **produce nitrogen, a gas that is essential in the extraction of oil and gas** from our natural reserves. And now recently, this **highly critical environment** has been equipped with video smoke detection technology from Araani.

Oil and gas extraction from our natural reserves is a complex process that requires advanced technology. However, regardless of the geology of a gas or oil field, it is never possible to extract the full quantity of oil or gas from a reservoir, because the natural pressure of these reservoirs decreases as the extraction progresses. Nitrogen is an important instrument here.

It is being injected into these reservoirs deep under the surface of the earth, in order to increase the pressure, and as a result increase the yield.

THE AIR SEPARATION PROCESS

Nitrogen is produced in air separation plants, through a process that separates atmospheric air into its primary components, typically nitrogen and oxygen. This is called **cryogenic air separation:** air is cooled first until it liquefies, and then the required components are selectively distilled at various boiling temperatures, a process that is **highly energy-intensive**.

A textbook example of an air separation plant is the Planta Nitrógeno de Cantarell in Mexico. In fact, this is an understatement, because it is the largest nitrogen plant in the world. The nitrogen that is produced there is sent offshore via a pipeline for injection into the oil reservoirs nearby. The plant's nitrogen production is about 1,200 billion standard cubic feet a day.

The Planta Nitrógeno de Cantarell consists of five production lines, each housing an air separation unit, and is part of the German Linde Group, a company that practically invented the air separation process in the 19th century.

BRIEFING

HIGH SAFETY STANDARDS

According to Linde Group, the company complies to **the highest safety standards,** which is a must in such a critical and energy-intensive process like air separation. **Nitrogen is indeed a highly combustible gas,** and therefore, **smoke propagation or even fire outbreaks need to be avoided and kept under control at all cost.**

These high safety standards are first and foremost a matter of **offering the Linde Group company staff a safe environment to work in.** But it is also important to guarantee superior plant availability and to avoid costly production stops eating away the company's bottom line.

FIRE PREVENTION AND SAFETY

Up to recently, the fire safety at Planta Nitrógeno de Cantarell was handled by **a sprinkler system which was activated by heat.** In addition, **a visual CCTV system was in place,** so control room operators could have an overview of the plant's situation at all times.

Although this approach has served the company's safety needs for many years, there were a number of issues to be dealt with. First and foremost, the operational environment at the Planta Nitrógeno de Cantarell is typically one of **very high temperatures.** This of course has to do with the nitrogen production environment and with the **highly energy-intensive process** that is going on there.
As a result, the sprinkler system's detection mechanism needed to be adjusted in order not generate false alarms as a result of the high temperatures. This made the system very inefficient.

Secondly, the CCTV system was not equipped with any video analysis or intelligence whatsoever, making it very hard for control room operators to intervene in time or to have a 24/7 overview of possible incidents.

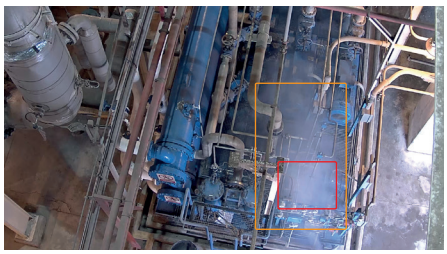
FIRE SAFETY UPGRADE

When the CCTV system was scheduled for a refit, the Linde Group management started extensive market research, and ultimately turned to DeliCenter Bridge Solutions, a Mexican specialist in the field of fibre-optic networks and CCTV systems, with more than 32 years of experience.

"Linde Group's requirements were very stringent," according to Miguel Camacho, engineer at DeliCenter Bridge Solutions. "Every production stop at the Planta Nitrógeno de Cantarell is a very costly one, and therefore **it was essential that the fire detection system be fast, reliable and with lowest possible false alarm rate.**"

SOLUTION

SMOKECATCHER VIDEO SMOKE DETECTION



"I learned about Araani's SmokeCatcher solution in early 2016 and also completed the company's extensive integrator training," says Miguel Camacho. "So, when Linde Group contacted me for a fire detection solution for the plant in Cantarell, there was no doubt in my mind that **SmokeCatcher was exactly the solution Linde Group needed."** Linde Group selected Araani's SmokeCatcher video smoke detection analytics, integrated on temperature-resistant Axis P1357-E video surveillance cameras for installation across the five different compressor line locations. In case a fire or smoke propagation is detected, then an alert is sent to the control room, both via the Milestone video management software and via the fire panel, providing control room operators with **a reliable, redundant early warning system.**

RESULT

SUPERFAST SMOKE DETECTION

"The SmokeCatcher's time of response is very fast: you would have a reliable detection within 10 to 20 seconds, depending on the type of smoke propagation," says Miguel Camacho.

"Control room operators at the Cantarell site also value **the visual detection and verification** of the Araani solution. This is **an invaluable asset, when it comes to excluding false alerts** and thus avoiding costly production stops."

The SmokeCatcher solution does not need to make actual physical contact with the smoke. **The smart camera system can see starting smoke fumes from large distances. This saves many valuable seconds,** which can be used to take action before a major accident happens.
"Unlike many other detection solutions, **SmokeCatcher is very cost-effective,** and was also very **easy to install and maintain,"** says Miguel Camacho. "Whenever I needed any type of support during the installation process, the response time from the Araani staff was truly amazing. **SmokeCatcher at the Planta Nitrógeno de Cantarell will keep the company safe for many years to come** and I'm sure the solution would be a great fit for other parts of the plant too."

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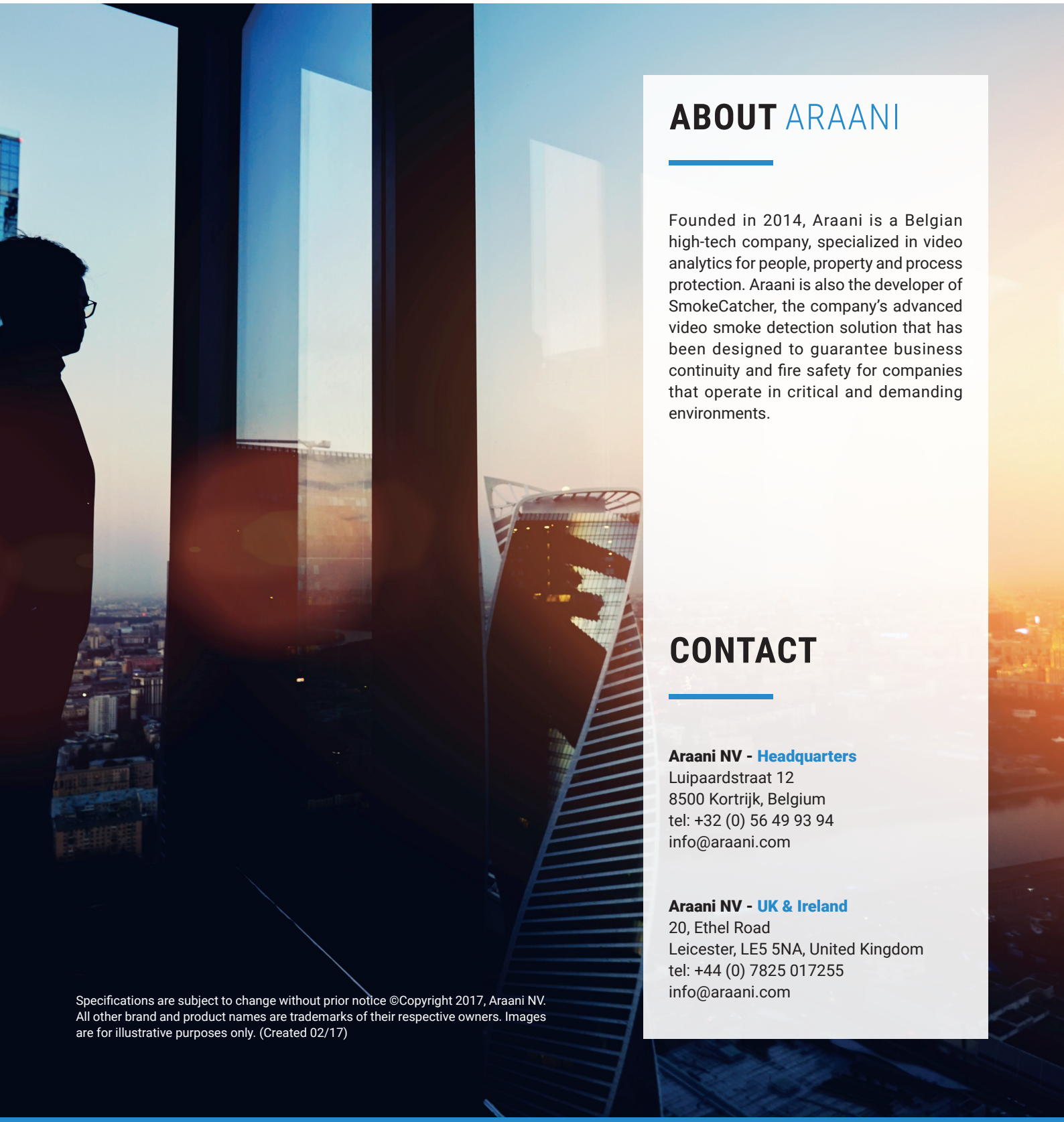

ABOUT ARAANI

Founded in 2014, Araani is a Belgian high-tech company, specialized in video analytics for people, property and process protection. Araani is also the developer of SmokeCatcher, the company's advanced video smoke detection solution that has been designed to guarantee business continuity and fire safety for companies that operate in critical and demanding environments.

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