METHANE EMISSIONS MANAGEMENT

IMPROVE MEASUREMENT, DATA COLLECTION AND REPORTING OF METHANE EMISSIONS

∃X ROBOTICS

METHANE EMISSIONS MANAGEMENT

INTRODUCTION ↓

Natural gas is a major source of energy today. Methane, the main component of natural gas, is also a major contributor to global warming and climate change. It is a harmful greenhouse gas with an impact 28 times greater than that of carbon dioxide over a 100-year period. Preventing methane leaks in oil and gas production activities is one possible solution to reduce methane emissions. In order to detect and resolve methane leaks, asset owners need a reliable and cost-effective solution to detect small emissions. This paper provides a comprehensive overview of various methods of methane sensing, and management that ExRobotics offers. A handy guide for when you are facing methane emission management. For specialized questions, you can also contact us directly using the contact form on our website.

The methods and management solutions offered by ExRobotics are highlighted in this paper to help clarify and improve measurement, data collection and reporting of methane emissions in your company or industrial plant.
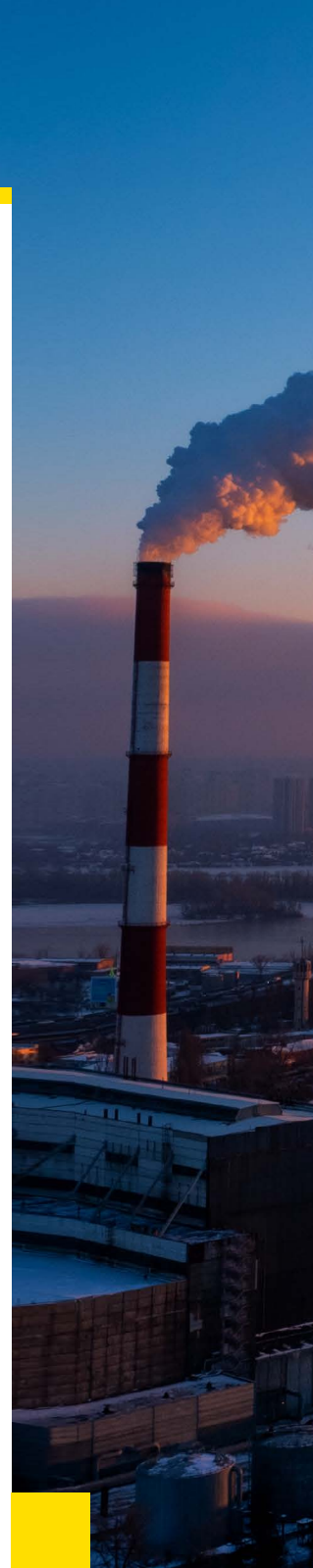
REMOTE-CONTROLLED ROBOTS

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When ExRobotics was founded in 2017 by Iwan de Waard and Ian Peerless, they both had several years of experience developing robots for potentially explosive environments. They have united their knowledge of robotization and remote-controlled robots in ExRobotics. In 2017 and 2018, Iwan and Ian developed the first remote-controlled robot, called ExR-1. This led to the four robots First Responder, Emissions Detector, Co-Operator and Inspector. The robots are built modular and can be equipped with various features and functionalities, such as cameras, gas detectors, infrared detectors and a sound mapping. By building the robots in a modular way, they can be used for various purposes.

CHAPTER 1

WORK REMOTE

When you work in a production facility that produces carbon hydrogen or toxic gases you can have leaks or fugitive emissions, which will harm operators and environment. Creating a safe working environment for your operators and taking care of the environment is key. Normally we do this work by sending operators on the walk around, but with the solutions of ExRobotics there is another option. Our robots are rugged and reliable and can be used for harsh environments that require an ATEX and IECEx Zone 1 certification.

ROBOTICS FOR EX ZONE 1 AREAS

Our robots are the new benchmark for inspecting and surveying potentially explosive facilities. ExRobotics is the one of the few providers in the world that has a unique certification and the only provider which only uses passive Ex protection methods. This allows the robots to drive in explosive factories with an ATEX and IECEx Zone 1 certification. The robots are autonomous or remote-controlled by an operator from the control room. This way the robot can inspect the site for any toxic gases, fugitive emissions and explosion hazard. If the robot detects one of these things, the robot automatically gives a signal to the operator in the control room. Then, the operator can take action and act appropriately to the limit of hazard.

FIND SMALL FIX SMALL, MEET OUR EMISSION DETECTION ROBOT

According to the Environmental Protection Agency (EPA) 10% of all our greenhouse gas emissions are methane. ExRobotics wants to contribute towards solving this worldwide emissions problem. Together with Shell Pernis it has created an out-of-the box solution.

METHANE EMISSIONS WORLDWIDE

The oil & gas industry are the second largest source of methane emissions in the United States and in other places of the world the biggest source. Across the world 25% of methane emissions come from the oil & gas industry. In the United States, fugitive emissions from the oil and gas industry total an estimated 13 million metric tons per year, amounting to $2 billion in lost revenue. Globally, the value of leaking gas is estimated to be $30 billion. As environmental concerns gain traction, sources of methane can easily be detected by satellites. Governments around the world are now pushing asset owners to solve this issue.

DETECTING LOW LEVELS OF GREENHOUSE GASES

The challenge for assets owners is to detect a small emission before it becomes a bigger leak and will be detected by fixed instruments or satellites. In an ideal world you would like to detect emissions at low levels (+/- 1 ppm) and to know the exact location of the leak. After locating the leak, the problem can be scheduled for the next maintenance round and fixed before the levels of emission are visible to satellites or other detectors. Building this kind of detection capability into assets is expensive and entails high maintenance costs. Since the start of ExRobotics, the development of a solution for this global problem has been a priority.

CAN WE DETECT MORE?

Yes, while the robot is on mission to detect potential emissions, they can collect other data than only emissions. At this moment ExRobotics is working with multiple customers to extent the solution with all kinds of AI to do an operator walk around. Based on a study conducted in collaboration with Shell, we need 47 AI's to do a full operator walk around. On this moment already 25 AI's are available and the rest will be delivered by the end of 2022. With this set of 47 AI's, we can check for example: gauge reading, drip counting, find anomalies and compare data over a long period of time.

GAUGE READING
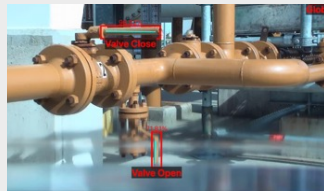
LINE CHECK UP

ANOMALY DETECTION, BOLTS ARE MISSING

OUR SOLUTIONS
CONCLUSION

As environmental concerns gain traction in the oil & gas industry, emissions and leak-detection in combination with operator walk-arounds have become high-profile robotic applications for ExRobotics. The innovative technology of ExRobotics is helping realize this industrial vision. As the robotics industry continues to evolve and innovate, you can be sure that ExRobotics will be at the forefront of these technologies for the future and beyond.

We hope this paper will drive meaningful discussions and helps to accelerate the shift toward a digital future for methane management.

EXROBOTICS: LEADING EXPERT IN DEVELOPING RELIABLE EMISSION DETECTORS

ExRobotics is the leading expert in developing rugged and reliable robots for harsh environments that require an ATEX/IECEx Zone 1 certification. Currently, we mainly focus on customers in the oil and gas industry. All of our industrial inspection robots can be equipped with distinctive features and functionalities, so the robot can be used for different purposes. They are equipped with a range of sensors and cameras that communicate with a driver or operator, who are located in a control room.

QUOTE

AS THE ROBOTICS INDUSTRY CONTINUES TO EVOLVE AND INNOVATE, YOU CAN BE SURE THAT EXROBOTICS WILL BE AT THE FOREFRONT OF THESE TECHNOLOGIES FOR THE FUTURE AND BEYOND.

CONTACT US

Would you like more information about detecting and reducing methane? About methane emissions management in general? Or, about our other emissions detectors? We are happy to provide you with more information. Contact us and we will schedule an introductory meeting. Plus, of course, we can also give you a demo of our methane sniffers.

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