



## **Five Ways Hazards are Being Combated in the Oil & Gas Industry**

***The oil & gas industry is turning to new technologies and better education to improve its safety performance.***

**By Henry Berry**

The oil industry has always been one which, to put it mildly, has been prone to risks and hazards. Even the most cursory of online searches will reveal countless industry disasters and sobering statistics. Whether it be onshore or offshore, oil production traditionally has been fraught with danger.

Over the past decade or so, however, things have begun to change. More stringent regulations have been introduced, more accountable and transparent legal frameworks have been put in place, and significant

technological advancements have been made. All of which sees the industry in the safest position it's ever been.

There's no room for complacency, however. After all, the Deepwater Horizon disaster was only 10 years ago and while annual fatalities are indeed showing a downward trend, those are lives lost, not just some statistics. With that in mind, let's look at how the industry is making proactive steps towards a safer future.



## 1. Drones

One of the greatest additions made to the oil industry over the past few years has been the advancement and implementation of drone technologies. Whether fixed-wing or rotary-based, these now relatively commonplace aerial vehicles have a wide range of applications within the sector. From surveillance through to routine inspection work, their efficacy is perhaps most demonstrable in terms of safety improvements.

Their benefits in this regard are two-fold. First, they're used for the predictive maintenance of critical rig infrastructure, meaning that problems can be spotted before they become problems. This invariably helps the development of various hazards, from explosion risks to general machinery wear and tear (which, if left unchecked, can lead to serious personal injury).

Second, they're being used for the more dangerous inspection processes: the examination of flare towers, for instance, or confined storage spaces. These highly versatile drones can be fitted with a whole host of different sensors (including ultrasonic, thermal and LiDar, as well as high-resolution photographic cameras), meaning that the "picture" they paint is as comprehensive, if not more so, than that which a manual inspection could provide, with the added benefit of not having to put workers in potentially hazardous situations.

## 2. Education

While perhaps not as eye-catching as state-of-the-art drone technology, there's no getting around the fact that better industry education can (and does) save lives within the sector. This means education across all facets of the industry—from extraction through to logistics and delivery.

Let's first look at the dangers posed by driving fatigued. Drivers transporting oil must cover huge stretches of terrain on a regular basis, expanses of road which may offer little variety, and be quiet for long periods. The monotony of such drives (when paired with the ob-

jectively large distances) places drivers at real risk of falling asleep at the wheel. If not that, then they certainly run the risk of having their awareness/judgment impaired by their weariness.

Better education is one of the best ways in which drivers may be better protected against the dangers of driving tired. Even a basic awareness of the importance of adequate rest (and the risks associated with a lack thereof) can have a big positive impact, whether it be full-blown training courses, fact sheets or something in between.

Moreover, the better-informed industry workers are, the less likely they are to cut corners. Traditionally, the oil sector was one in which workers played somewhat fast and loose when it came to rules and regulations. It is perhaps unsurprising, therefore, that over the years the industry has had as tumultuous a relationship with safety as it has.

## 3. The Internet of Things and GPS

The oil industry can be a lonely place at times, one in which working remotely, and alone, is by no means uncommon. Should lone workers have an accident while they're working on a pump jack, let's say, then there's every chance nobody would know about it; at its worst, this can lead to fatalities. Recently, there have been large advances in the Internet of Things (IoT)—a term used to describe not just the internet, but anything that could conceivably connect with it: wearable tech and smart home sensors, for instance, but also connecting entire environments and large-scale processes.

What this means for the oil industry, from a safety perspective, is that near real-time GPS data is now becoming a reality. And what that means is that accurate data pertaining to a lone worker's positioning is much more readily available, and much more accurate. Not only that, but other data can be communicated to a worker's safety manager, such as physiological metrics; for example, their heart rate being detected by a smart-watch. So, should anything go wrong, or seem out of



the ordinary, the worker can be reached as quickly and accurately as possible. So, though these remote workers may often be in pretty much as isolated a location as is possible, they're now arguably more connected than ever before.

#### 4. PPE and Testing Equipment

Recent events have brought the importance of personal protective equipment (PPE) into a keener focus. However, PPE serves a wider purpose than solely in the protection against global viruses (crucial though that is). The oil industry employs a plethora of different protective equipment to better protect its workers, ranging from the basic ear and eye protection, to more heavy-duty flame-resistant clothing.

A particular industry hazard is the threat posed by hydrogen sulfide. This highly toxic, fast-acting gas can cause symptoms ranging from headaches and nausea, all the way through to death upon high levels of exposure. To combat this, many rig and well workers are given, and trained on the use of, portable hydrogen sulfide monitors, so that they can regularly test the gas level.

#### 5. Robotics

Undisputedly the coolest of the lot, developments in the field of robotics has seen it progressively make more of a mark within the industry, over the past

decade or so. You need only look at the ARGOS Challenge, run by Total S.A. between 2013 and 2017, to see how excited leading industry players are by these machines. The potential applications of robotics brought to light by the ARGOS (which stands for Autonomous Robot for Oil and Gas Sites) challenge are manifold.

Particular interest is being paid to how robotics may improve standards of industry health and safety, both onshore and offshore. Robots such as the ARGOS, and more recent counterparts such as the ANYmal, have been designed to work in harsh and severe environments, as well as potentially explosive environments. It's been programmed to carry out inspection tasks (in a similar way to drones).

It's clear, then, that improvements are indeed being made. Encouraging though this may be, the one thing the industry cannot do is rest on its laurels. Until there are consistently no deaths, year-on-year, then the oil industry has significant work to do. Whether this be in terms of technology, education or more rigorous legislation, there's always room for innovation when it comes to protecting people. While danger will never entirely be mitigated from the industry—as there's always going to be an element of risk when working with heavy machinery—it can be removed as much as possible.

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