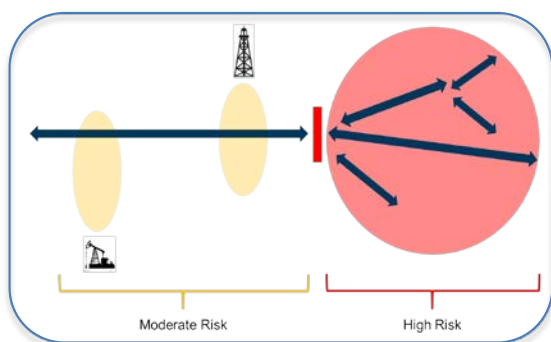


Innovative Vehicles Ensure Safety While Transiting Through Red Zones

Red zones are high-risk areas, usually encountered where oil and gas from high-pressure or highly sour wells are being produced.

These areas offer increased likelihood of an atmosphere that is immediately dangerous to life and health (IDLH) because of the presence of toxic or flammable gases. Some of the criteria used to define a red zone are probability or severity of toxic or flammable gas releases, how much gas can be released in a defined amount of time, and location of the site in terms of adjacent work and proximity to local communities overlaid with projected dispersion pattern of the potential release.



Covering vast areas while transiting through high-risk zones.

Red zones have much tighter safety criteria than the remainder of the work site. While each facility's parameters for setting or defining red zone's may be slightly different, it is becoming common policy in H₂S red zones that personnel must be under air continuously (made difficult by the fact that these can be vast areas), tools must be explosion proof, and entry is highly controlled.

Despite these strict safety requirements, operations in red zones must go on, and standard or emergency maintenance must be carried out from time to time. In addition, the potential for accidents and personnel emergencies also exists, so significant challenges also exist around executing timely evacuations or rescues.

A major challenge is ensuring that people transiting through or working in these red zones remain safe at all times.

The first solution is gas detection. Equipment has evolved substantially in the past 20 years, and there are currently very accurate means of detecting most toxic gasses before they reach IDLH levels. Early detection is intended to allow personnel time to react to impending IDLH conditions and evacuate or protect themselves accordingly.

When safe evacuation is not possible, the alternative is protection by providing breathing air. Despite numerous improvements in the equipment, cascade system tethered air has limited range, while self-contained air is bulky and has limited capacity and range.

As the industry matures and health, safety, and environment regulations tighten, solutions must evolve through innovation, becoming more agile, accurate, and reliable and allowing for a quicker safety response in any situation that may present itself.

One such innovation is the concept car Air Qruise™ Rover, launched by United Safety at the 2014 International Petroleum Technology Conference (IPTC), in Doha, Qatar. It uses the same technology of the Air Qruise™ Trooper, the first vehicle of the Air Qruise™ family launched at the 2013 Abu Dhabi International Exhibition and Conference. The Trooper is designed to transport people through low- and medium-risk areas, detect hazardous atmospheres, warn the occupants, and provide sufficient air supply for a swift evacuation.

The Air Qruise™ Rover, however, takes this technology to a new level. It is powered by compressed air and designed to operate safely and reliably in potentially toxic and explosive atmospheres. Equipped with the latest in environmental monitoring, it can track a multitude of sensor inputs, including wind speed, wind direction, location using global positioning satellites, toxic gas levels, vehicle status, and operator biometrics. Information can be transmitted to offsite facilities for monitoring and analysis. The Rover can provide long hours of breathing air without compromising mobility, which is ideal for situations when work needs to be carried out inside red zones.

Another feature that grabbed the attention of IPTC visitors was that the Rover is adapted to carry the Air Qruise™ Solo, a compact personal transport system that has onboard gas detection, integrated breathing air, and storage space. The Solo is highly maneuverable and ideal for constricted spaces the Rover cannot access.



The Air Qruise Rover, left, and Solo were introduced at the 2014 International Petroleum Technology Conference in Doha, Qatar.

The Air Qruise™ line of mobile air safety solutions fills a critical gap in worker safety in IDLH environments because, up until now, there was no optimal way of protecting staff while in transit or inside vast red zones. Elie Daher, executive vice president of United Safety, said, "The technology is highly flexible and can be adapted to an array of vehicles and configuration requirements in terms of breathing air time, sensor types, and range. It considerably increases the protection of workforce inside and near red zones, and we hope it will encourage the development of a new safety standard in the industry."

[Read more about the Air Qruise Rover here \(PDF\).](#)

[Read more about the Air Qruise Solo here \(PDF\).](#)