

**Getac**

 **Windows 10**

# UNLOCKING LNG SUPPLY CHAIN EFFICIENCIES WITH HELP FROM RUGGED DEVICES

Getac recommends Windows 10 Pro for business



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## INTRODUCTION

As global demand for natural gas continues to grow, countries with abundant natural gas resources, such as Australia, need to look at ways to improve their supply chain efficiencies to meet the demand from domestic industries as well as from global consumer markets.

This whitepaper looks at the ways rugged devices can be utilised to enhance operational safety and efficiency at all stages of natural gas production and transport, from drilling on offshore rigs and floating barges through to transmission via domestic pipelines and conversion to liquid natural gas (LNG) for export to overseas markets.

## OVERVIEW

Demand for natural gas has been growing globally over the past decades as countries look to lower their greenhouse emissions. Natural gas as an energy source has significant environmental benefits over both coal and oil in terms of lower greenhouse gas and other emissions.<sup>1</sup> This renders it an attractive fuel for generating electricity, operating heat-intensive manufacturing as well as for residential purposes.

In order to export natural gas overseas, it needs to be converted to liquid natural gas (LNG) and shipped in double-hulled tankers especially designed and constructed to maintain the low temperature of LNG. The gas is cooled to minus 161°C so that it becomes a liquid and in that form it is neither flammable nor explosive. This reduces its volume more than 600 times, making it easier to transport in specially built tankers.

McKinsey expects demand for LNG to increase 3.6 percent per year to 2035, making it the fastest-growing fossil fuel and the only fossil fuel expected to grow beyond 2035.<sup>2</sup>

The spread of affordable small-scale liquefaction facilities is also increasingly opening up new opportunities for LNG as a road fuel. While the pros and cons are broadly similar to those of compressed natural gas (CNG), LNG does have one big advantage, which is that it can hold the same amount of energy as CNG in a tank occupying about one third of the space. That is a benefit for the trucking industry, whose vehicles can hold LNG tanks big enough to travel further using supply routes where the refuelling network may be patchy.<sup>3</sup>

Australia possesses vast onshore and offshore reserves of natural gas. Four gas basins account for almost 90 per cent of Australia's total estimated resources. On- and offshore the West Coast are the Carnarvon and Browse basins; the Bonaparte Basin is in the North and the Gippsland Basin is



in the South East. As well, there are unconventional coal seam gas (CSG) fields in the Surat/Bowen basins on the East Coast.<sup>4</sup>

Over the past decade, Australia has rapidly built up its capacity for LNG export and in 2018, the country briefly surpasses Qatar as the largest global LNG exporter. Australia now has ten LNG projects with a combined capacity of 87.8 million tons (Mt). These include three fully established LNG hubs at Karratha in Western Australia, Gladstone in central Queensland and Darwin in the Northern Territory – home of both the Ichthys and Darwin LNG projects.

Most of Australia's LNG is exported under long-term contracts to three countries: Japan, China, and South Korea. An increasing share of Australia's LNG exports in recent years has been sent to China to serve the country's expansion of gas-fueled power stations. Australia is currently the biggest supplier of LNG to China. In the first quarter of 2020, Australia exported 6.92 million tons of LNG to China, compared with Qatar's 2.33 million tons.<sup>5</sup>



## KEY APPLICATIONS FOR RUGGED DEVICES IN THE LNG TRANSPORT JOURNEY

### 01 ONSHORE-OFFSHORE CONNECTIVITY AND REMOTE SUPPORT

The first step in the LNG export journey is to extract the trapped natural gas from underground reservoirs. With most of the world's natural gas reserves located offshore, communication in real-time between the on-site personnel as well as with the onshore team is critical to the safe and efficient handling of activities. Even where natural gas reserves are located onshore, these are often located in remote areas, posing similar challenges to communication.

With both onshore and offshore gas extraction projects, it is likely that the required expertise is not always available on-site. In such scenarios, it is a lot more efficient for an expert to be able to support the in-field staff remotely than having to sail or fly in person. Using rugged devices facilitate remote support through video conferencing, screen sharing and other applications.

#### CHALLENGES

Poor connectivity at the remote onshore gas reserves and offshore drilling platforms makes communication among the team a challenge and hampers effective remote support where the expertise is not available on-site.

Maritime environments and the exposure to salt is a great challenge to computing devices. Devices used on offshore gas platforms are exposed to high levels of humidity, dust and air-borne debris that threatens to damage the devices.

#### GETAC SOLUTIONS

**GETAC** solutions offer a range of devices with 4G with mobile SIM and Intel® Wi-Fi 6 AX200, 802.11ax connectivity to support video conferences, screen sharing and other applications.

**GETAC** tablets and computers are tested for salt fog resistant in a uniquely rigorous salt fog chamber test, using a 2-cycle 24 hours exposure and drying testing process. Getac's sealed port design prevents salt fog from damaging the system, while the Getac microstructure drainage design protects against corrosive salt fog accumulation on internal components. This helps prevent computer failure, work disruption and additional costs.

## 02 SMART PORT MANAGEMENT

Powerful rugged devices with high processing powers enable port authorities to optimise port management processes through running navigation apps and managing port containers and berth space as well as sharing information in real-time to improve security and get a clear picture of the port's performance.

Rugged devices provide a tool to execute comprehensive strategies for container yard management, optimising terminal capacity and providing complete visibility over performance and maintenance needs. They can also integrate directly with harbour pilot boats to help guide larger vessels to their assigned berths, facilitating smooth logistics and timely loading/unloading of cargo.

### CHALLENGES

Many applications, such as maritime navigation/piloting applications for smart ports, require not only reliable connectivity but also a significant amount of processing power to work smoothly.

Ports are busy places, where accidental damage to the electronic devices are highly likely. The devices used for these applications should be rugged enough to withstand accidental damages.

### GETAC SOLUTIONS

**GETAC** offers devices with powerful Intel® Core™ i7 and i5 processors, which provide the processing power required to run these applications.

**GETAC** solutions are inherently rugged, certified by international third parties up to MIL-STD 810H, and up to IP67 standards. They thrive in a wide range of weather conditions and withstand impacts, vibrations, harsh temperatures, humidity, dust, and drops up to six feet. This ruggedness keeps them operating when faced with challenges that would destroy other devices.

## 03 MAINTAINING PIPELINE INTEGRITY

Transporting natural gas and LNG across the country as well as from purification and processing facilities to storage tanks involves extensive networks of transmission pipeline. Ensuring the integrity of this transmission pipeline through regular maintenance as well as expanding the existing network is a delicate task from safety point of view.

Rugged devices can help operators conduct safe maintenance practices and stay tuned to safety alerts from any impending faults in the transmission pipeline. Rugged devices also bring the operators the power to do on-site surveying, record and analyse data in real-time to make conscious, critical and informed decisions.

### CHALLENGES

Personnel safety should always come first when monitoring gas pipeline and infrastructure. The devices used for the application should meet the safety standards to withstand potential safety hazards.

Visibility is a challenge when conducting surveying or pipeline monitoring in the field. Conventional screens can be hard to read in the strong sunlight of outdoor environments.

### GETAC SOLUTIONS

**GETAC** solutions include intrinsically safe devices with ATEX and IECEx Zone 0/20 and UL913 Class I/II Division 1 certification, with ATEX/IECEx zone 2/22 options available too. Getac also offers devices that are ANSI certified under the certification number ANSI/ISA-12.12.01.

**GETAC'S** LumiBond®2.0 technology delivers improved touch control in the rain, with gloves as well as with a stylus, and is highly readable.

## 04 FLEET MANAGEMENT AND ASSET TRACKING

At the final leg in the LNG export journey, LNG is introduced into specially insulated tankers and transported to the destination country. When LNG is received at the terminals in the destination country, it is turned back into gas for transmission and distribution via the domestic pipeline. Countries are also currently at different stages of experimenting with alternative modes of surface transport, using either rail or trucks to transport LNG in the liquid where a transmission pipeline network is either non-existent or not affordable.<sup>6</sup>

Be it in transporting through special carrier vessels or delivering LNG using trains or trucks, rugged devices play an important role in tracking the cargo at every stage of the transportation journey and monitoring critical safe handling parameters in real-time. Pipeline geographic information system (GIS) software, asset location, process control, and other important functions require solid connectivity and location capabilities.

### CHALLENGES

Tracking cargo in real-time to ensure timely and efficient delivery.

### GETAC SOLUTIONS

**GETAC** rugged tablets offer 4G connectivity with satellite Global Positioning System (GPS) to help locate the devices from anywhere.

**GETAC** solutions help professionals in tasks such as container handling or truck identification by sending and receiving data directly from the port's system. This includes location data, which helps organise cargo pickups.

## GETAC DEVICE MONITORING SYSTEM

In all applications that involve multiple rugged devices, be it a fleet of trucks using tablets for condition monitoring or an organisation with multiple devices, the critical path is to keep all devices optimally operating 24/7/365.

The Getac Device Monitoring System helps you manage and monitor the health of your deployed devices in real time. Proactively spot and manage potential issues while achieving minimum downtime and maximising productivity.

Some of the benefits of deploying Getac Device Monitoring System include:

- Monitor all of your deployed devices from one central dashboard – have your finger on the pulse of all your devices' health from one screen.
- Identify potential problems before they happen – don't get caught off guard by unexpected issues.
- Minimise device downtime and user frustration – by being proactive, you'll maximise device utilisation and productivity.
- Regular reporting – keep your devices in good condition by scheduling Executive Reports of the identified problems that need further action.



## IN SUMMARY

The LNG transport journey, from extraction at offshore or onshore reservoirs to shipping and storage of the LNG at processing facilities and port terminals, requires critical safety monitoring and effective communication between the personnel to achieve maximum efficiency.

Due to the remote location of natural gas processing facilities and pipelines, as well as the criticality of conducting condition monitoring at all stages of the LNG transport journey under harsh environmental conditions, optimum handling of operations are not possible without rugged devices that are fit for purpose.

Getac tablets and laptops offer not only high-level computing capabilities with powerful Intel® Core™ i7 and i5 processors but are also designed with military grade safety specifications to withstand the most rugged and harsh working conditions. Getac solutions facilitate easy connectivity and asset tracking in remote applications with dedicated GPS, 4G LTE WWAN and Intel® Wi-Fi 6 AX200, 802.11ax. Using solutions such as Getac Device Monitoring System helps you know which devices are optimally working and which are not, ensuring seamless operations.

*Written by Molly Hancock.*

#### RESOURCES:

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