ERBAS 紧急呼吸装置

CASE STUDY: North Sea Operator

7.2 应用案例介绍-英国北海壳牌项目：

EXTENDED REACH BREATHING APPARATUS SYSTEM

Workscope

Stork was approached by a major Operator to supply a complete breathing system for work required inside the platform leg on a North Sea asset.

The workscope included the supply of a breathing apparatus (BA) system to allow four NASA operatives to work at the bottom of the leg while they performed cell mapping operations. Operations required access to live cell pipes which could involve a potential
gas release. Furthermore, this was more challenging as the operatives had no previous BA experience.

Solution

Stork deployed its specialist leg entry kit which for the first time included the Extended Reach Breathing Apparatus System (ERBAS). ERBAS greatly simplified the leg entry operations with is compact design and easy single hand use.

All NASA leg entry personnel where given BA training by Stork's BA specialists to ensure they were fully competent working with the new equipment. The equipment was also commissioned, maintained and monitored daily by two experienced Stork BA technicians.

Results & benefits

Essentially, ERBAS is easier to use and quicker to operate ensuring a safer and more efficient method of refilling essential air supplies.

ERBAS proved to be quick to deploy and easy to use. Evacuation was greatly improved with its ease and speed.
Airline trip hazards were eliminated when moving between floors and the deployment of the equipment was safer with all cylinders being protected in a robust protective case.

Once in place, there was no requirement to remove cylinders for refilling unlike traditional exchange systems which involve winching equipment. This improved safety and saved time on the workscope.
Costs were also reduced with minimal maintenance requirements.

During this very successful deployment, several areas for improvements were identified which has resulted in further development of the system, including a major breakthrough in reducing the refill time from 60 to 20 seconds making the system even faster.

Project overview:

- **Where:**
  North Sea Asset
- **When:** December 2013 – May 2014
- **Safety:** Project delivered safely with no lost time incidents (LTIs)

RESEARCH AND **DEVELOPMENT**

7.3 ERBAS紧急逃生呼吸装置 - 研究和发展

Extended Reach Breathing Apparatus System (ERBAS)

Stork continually develops its product and service offering to include new innovations that improve the health, safety and performance of the company, its operatives and its clients' operations.

Stork currently has the largest number of confined space operations in the North Sea and over the last two years we have actively sought to improve and support these operations by initially creating our own dedicated in-house breathing apparatus and gas detection department.

Stork is proud to develop a unique soltuion to an industry wide challenge; Extended Reach Breathing Apparatus System (ERBAS). This system would be used for operations beyond the range of the 10 mnutes escape cylinder, predominately platform legs and FPSO tanks where an escape can take considerably longer than 10 minutes.

Using a newly designed and developed cylinder High Pressure (HP) connector, ERBAS solves the industry challenge of awkward and difficult cylinder changes and is easily deployed in the work area. ERBAS quite simply refills the Air cylinder with one connection in under 60 seconds.

• 高压、快速连接、紧急空气罐重充系统，适合在平台支撑腿工作时配备（需要爬升100m到安全区），或在FPSO内。

Benefits include:

- Improved safety
- Ease of use, one hand operation while gloved
- Eliminates cylinder change
  Compact design for rapid deployment
- Cylinder refilled in under 60 seconds
  Entry to vessel now possible on cylinder, eliminating airline trip hazards
- Minimal daily maintenance

- Above left: Extended Reach Breathing Apparatus System (ERBAS), **a high pressure, quick-connect emergency air cylinder refill system**. Offshore, ERBAS is typically used for platform leg workscopes, where the operatives may have to climb 100 meters (328 feet) up vertical ladders and stairs to a safe area. ERBAS can also be used **inside FPSO tanks,** where the distance travelled may compromise their escape cylinder contents. Likewise, the system can be deployed up flare stacks, where the distance to safety may be 100 meters (328 feet) down.

RESEARCH AND **DEVELOPMENT**

7.4 ERBAS紧急逃生呼吸装置 –详细介绍和疑问解答

Full research, development, trialling and testing with major North Sea Operators is currently underway by our experienced in-house Breathing Apparatus (BA) team; to improve the system and deliver an innovative approach to confined space entry.

ERBAS addresses several safety concerns:

- Compared to other cylinder exchange systems, which involve winching substantially more equipment into the confined space which is both time consuming and dangerous, Stork's ERBAS refill stations are very compact and have everything protected within a rugged case making it faster, easier and safer to deploy
- ERBAS significantly reduces cost to the client and requires almost no maintenance, whereas the old system required constant refills after each safety drill. This would be an operation that could take an entire shift to perform and can even involve winching the cylinder out to refill them
- ERBAS is simple to operate whilst wearing all appropriate PPE in difficult working conditions
- The system is much faster than the conventional method and will result in shorter evacuation times and ultimately may save lives

ERBAS consists of the following components 呼吸装置包括以下部件:

One high pressure air bank unit capable of delivering air at 220 bar continuously

- One hose reel of 200m HP airline with connection points for the refill units every 20m
- Multiple refill stations, with refill panel and 6 backup 2ltr cylinders

ERBAS refill operation: 呼吸装置运行:

一旦主空气管无法供气, 则立即切换到逃生空气罐。

In the event of the main airline failing the BA operative immediately switches on their escape cylinder. The operative would then disconnect the failed airline from their BA set and begin their escape up the platform leg, after 6-7 minutes or cylinder gauge showing half full, the operative will locate the nearest refill station, remove the rubber cap from this cylinder connection, pull the nozzle out of its holder and push it onto the cylinder connection.

The air will flow into the cylinder and after approximately 40 seconds the gauge will register full. The nozzle can now be pulled off to disconnect it from the cylinder and returned to its holder. The BA operative can now continue their escape up the leg.

Essentially, the system is easier to use and quicker to operate. In turn, this ensures a safer and a more efficient method of refilling essential air supplies.

ERBAS常见疑问解答

What is the Extended Reach Breathing Apparatus System (ERBAS)?

The Extended Reach Breathing Apparatus System (ERBAS) is a high pressure, quick-connect, emergency air cylinder refill system.

When is ERBAS used? 何时使用?

ERBAS is designed for use during operations which require personnel to use full Breathing Apparatus (BA) while at a work site, which is at greater distance from the designated safe area than the duration of the emergency air cylinder allows.

Where is ERBAS typically used? 哪里使用?

Offshore, ERBAS is typically used for platform leg workscopes where the operatives may have to climb 100 metres up vertical ladders and stairs to a safe area. ERBAS can also be used inside FPSO tanks where the distance travelled may compromise their escape cylinder contents. Likewise, the system can be deployed up flare stacks where the distance may be 100 metres down to safety.

How versatile is the system?

Stork's specialist Breathing Apparatus (BA) team can adapt the system to suit any job or location. The standard High Pressure line package installed provides T pieces every 20 metres, which can be used to supply an ERBAS Station, or be blanked off. Prior to installation, the BA team can carry out a site survey to assess the worksite and determine the locations for the stations.

with a Gross Weight of 1800Kg. The Tempest is 1.35m(w) x 2.1m(l) x 1.9m(h) with a Gross Weight of 2500Kg.

What are the system's servicing requirements?

The system requires an annual pressure test on the block, lines and fittings, and daily checks are carried out whilst it is in use. ERBAS needs little maintenance, the only tests it must undergo are a leak test, function test and backup cylinder contents check.

What operational support is available?

Stork provides a dedicated team of onshore and offshore technicians to support ERBAS operations. In addition, Stork also offers ERBAS Operator training alongside full Breathing Apparatus User training and Face Fit Testing, which can be delivered both on and offshore, depending on client requirement.

What equipment support is available?

As part of any ERBAS workscope, all equipment is prepared, inspected, maintained and certified by Stork's Breathing Apparatus department. Stork's specialist Shipping department, based in Aberdeen, also provide full logistics support throughout the delivery of all ERBAS workscopes.

What is the average setup time for a system?

Depending on the location of the equipment, worksite and permits, ERBAS can be installed, leak tested and commissioned in a matter of hours.

How much deck space will be taken up for the equipment required?

The equipment required in a laydown area is an HP Compressor and Tempest Cascade Unit or Air Quad. The compressor's footprint is 1.08m(w) x 1.97m(l) x 1.3m(h)

ERBAS emergency cylinders. *紧急空气罐*

Stork's ERBAS Refill stations. *空气再充装置*