Streamlining Gas Wellhead Servicing Operations

IMPROVING SAFETY AND EFFICIENCY OF ROUTINE WELLHEAD MAINTENANCE

Gas Well Operation

Coal seam gas (CSG) production plants operate within Australia to supply natural gas to customers for a range of domestic and commercial applications.

As part of the coal seam gas extraction process, a series of wells are drilled to tap into the coal seam gas source. Each well is fitted with a wellhead at ground level, providing an interface for the drilling and production equipment.

Wellhead Maintenance

On the top of each gas wellhead there is an electric motor that rotates a long steel rod called a stringer. The stringer extends to the bottom of the well — often several hundred metres deep — where it connects to an impeller that forces the gas and water up to the earth's surface.

As part of routine maintenance and servicing of each wellhead, the electric motor must be disconnected from the stringer. If the stringer is not properly secured prior to disconnection, it can collapse into the bore of the well. In this event, the top of the stringer *can* be recovered and reused, however the process is extremely time consuming and therefore expensive.

To prevent this, there is an integrated double rod lock system consisting of two bolts on opposite sides of the wellhead. Prior to disconnecting the electric motor or ancillary equipment for servicing, the two bolts must be torqued to a value of 875 lbf.ft in order to securely hold the stringer, preventing it from falling into the bore.

The torquing task was physically strenuous and often at an awkward height, meaning there was a higher risk of slipping or repetitive strain injury (RSI) due to the repeated manual movements.

Image: Norbar torque wrench, HandTorque™ multiplier, and the telescoping SPL404 reaction arm being used by a technician to torque up the rod lock bolts on a gas wellhead.

Ergonomic and Safety Concerns

The task was carried out using a large manual torque wrench that was applied to each of the two bolts in three incremental stages: 350, 625 and 875 lbf.ft. Whilst the final torque application was reasonably accurate, it was identified that there were some ergonomic concerns.

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Some technicians did not have the physical strength needed to apply a manual force of 875 lbf.ft.

Norbar Complete Solution

Norbar conducted an on-site assessment of the application and proposed a solution to directly address both the torque and ergonomic requirements of the client. The complete solution comprised:

- **100 Nm professional wrench** combined with a **HandTorque™ Compact Series Torque Multiplier 2000 Nm** to accurately achieve the required torque of 875 lbf.ft with minimal physical effort.
- A custom-designed **telescoping reaction arm (SPL404)** with swivel foot that extends to the height of the rod lock bolts. Used with a reaction adapter, it supports the wrench and multiplier and provides a safe and convenient reaction point.

Key Outcomes and Benefits

Guaranteed accuracy — The Norbar Torque Wrench 20–100 Nm with the HandTorque™ the Compact Series Torque Multiplier 2000 Nm provide guaranteed repeatable accuracy of ± 4%.

Safe & Ergonomic — RSI, slip and strain injuries have been eliminated. The supplied reaction arm makes use of available nearby surfaces (including the ground) to provide a safe reaction point, so minimal physical strength is required. This means that a wider demographic of personnel can comfortably complete the maintenance task.

Lightweight and portable — The previous large torque wrenches often did not fit into the vehicle-mounted toolbox and so would be left in the open weather on the vehicle tray.

The Norbar solution is considerably more compact when broken down into components, making it easier to transport from site-to-site.

GUARANTEED ACCURACY

SAFE & ERGONOMIC

LIGHTWEIGHT & PORTABLE

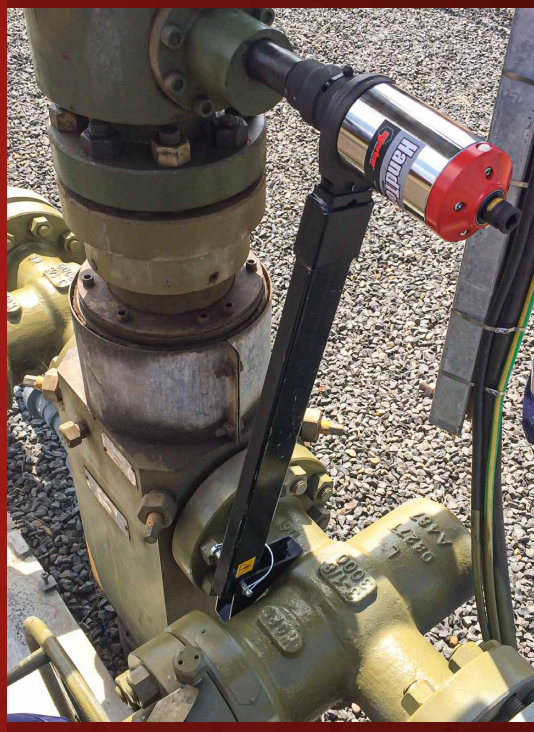

Image: The SPL404 reaction arm extended to react upon the body of a wellhead. It can be extended to use a nearby surface as a reaction surface.

Find out more about these products:

- Norbar Torque Wrench 20–100 Nm
- HandTorque™ Compact Series Torque Multiplier 2000 Nm

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