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## NORBAR VALVING MACHINE PROVIDES TORQUEING SOLUTION FOR BOC GASES

In a joint effort between BOC Gases and Norbar Torque Tools Australia, a cylinder valving machine has been developed and installed in eight sites around Australia.

Using the latest in torque measuring technology, Norbar Torque Tools Australia have built a valving machine to overcome the problem of over-torqueing valves into aluminium cylinders. According to BOC Gases, the over-torqueing of taper threads into aluminium cylinders has contributed to the development and propagation of neck cracks in the cylinders.

The machine is extremely versatile and allows up to 6 different torque settings to be programmed into the machine.

### How it works.

The Norbar Valving machine consists of a 2.2kW electric motor/gearbox combination and a mounting bracket. The control system for the machine is housed inside of an industrial steel enclosure which is lockable. The difference between this unit and other valving machines is the utilisation of a Norbar 1000 N.m annular transducer which is situated between the mounting plate and the motor frame.



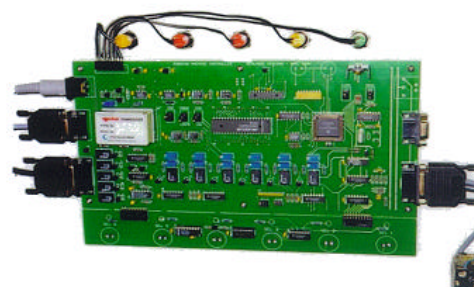
BOC/Norbar Valving Machine.

The transducer measures the reaction torque which is produced between the motor frame and the mounting baseplate during the valving operation from start to finish.

A specially designed printed circuit board accepts the transducer signal and displays the measured torque value on an LCD which is visible on the front door of the control cabinet.

The PCB has 6 programmable dual limit detectors and control relays. The high and low limits signal the control relays and provide the logic for the motor controller. The motor controller is used to control the speed and also to start and stop the motor.

The valving machine can be programmed to run at full speed up to 90% of the target torque and then at very slow speed until the target torque is achieved. By applying the final torque at a much slower speed, the accuracy of the reading is greatly increased.



Specially designed Printed Circuit Board

Both steel and aluminium cylinders are valved on the machine with the steel cylinders having a higher target torque value than the aluminium ones.

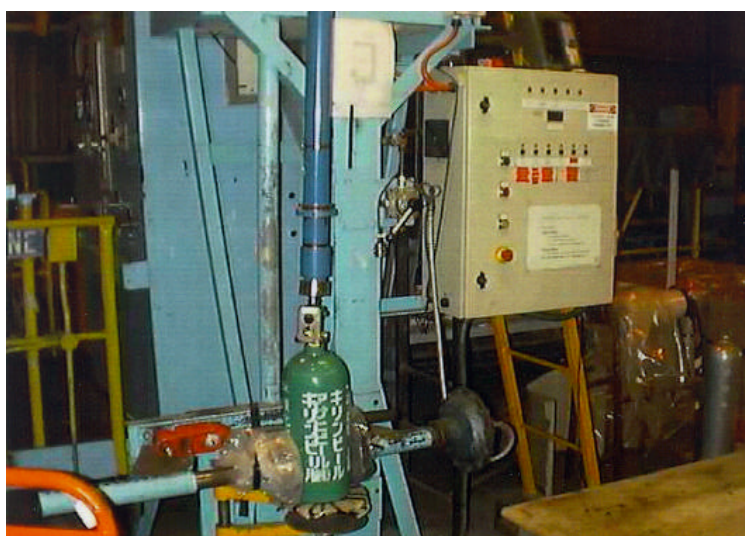
The machine can detect an aluminium cylinder via a sensor which locks out any of the steel settings when there is an aluminium cylinder in the machine. This protects the aluminium cylinder from being torqued to the higher steel torque values.

### **Benefits Gained**

The most significant feature of the Norbar valving machine is its versatility. Not only is it used to tighten the valves but it is also used to unscrew the valve from the cylinder called devalving.

It is capable of up to six different torque settings and each setting can be easily adjusted within the range of the transducer.

BOC Project Engineer, Marnie Widdop said “Prior to the installation of the Norbar Valving machines, significant numbers of aluminium cylinders had been condemned due to neck cracks which were caused by



Industrial Steel Enclosure containing the Control System and Operator Interface

over tightening of the valves. The machine allows the different types of valves to be tightened to the correct torque, thus saving money in reducing the number of condemned cylinders”.

Previously the parallel threaded aluminium cylinders were tightened manually with a torque wrench. This was identified as a significant manual handling hazard by BOC which needed to be addressed because there had been many injuries sustained due to this practice.

Marnie reported that “since the installation of the new machines it has alleviated the manual handling hazard associated with manually torquing the valves”.