

# Inflating inwards down under

Inflatable Packers International (IPI), a manufacturer of downhole products and specialist in inflatable-packer technology, has a little known sideline that is expanding – inwards

**“Most people are familiar with inflatables in the downhole sectors of the resources industries”**

**B**ased in Perth, Western Australia, IPI is mainly an exporter of inflatable packers for the world’s resources industry; 81% of its sales were shipped overseas last year. The manufacturer’s commonly known products are ones that inflate outwards, including casing packers, ‘frac’ packers and permeability-testing systems.

Managing director and principal engineer Clem Rowe explains: “Most people are familiar with inflatables in the down-

hole sectors of the resources industries. There are various ways a packer can be reinforced for the high pressures that are needed for most applications, but the wire reinforcement we use is also suitable for inflating inwards. It is achieving the same objective of being an annular seal, except that it is working from what is generally the static surface – sealing inwards onto the moving surface, once that has stopped.

“Incidentally, we can also use our reinforcement system to make packers that inflate as a special shape – e.g. ‘tear drop’ shape, which is good for flow-control applications, or even to lock at a certain inflated diameter, which inhibits accidental bursting.”

Products made as inward-inflating seals are

not normally called ‘inflatable packers’ – with established applications such as annular bags, which work as part of blowout preventers (BOPs) and diverter inserts for diverting the results of a gas ‘kick’ away under a drill floor, suggesting that most use is on the well-integrity and control side of applications.

“But we get other applications, not all of which we can talk about,” adds Rowe.

## **FIT FOR PURPOSE**

Supplying different sectors of the resources industries globally results in a lot of cross-pollination of ideas and technology.

Rowe recounts that in 2014 IPI had an established client which suddenly needed BOPs for mineral-mining equipment, working on a geothermal project.

“Because of the high temperatures involved, they could not use a natural rubber product but needed a synthetic elastomer product, above the temperatures that mineral-mining equipment is made for. Oilfield equipment was available, but somewhat blew the budget,” he says.

The results were IPI BOPs made with hydrogenated nitrile (HNBR) annular bags that worked with H and P drilling systems.

“We’ve got another that we are working on at present and that ships out shortly. Like the geothermal BOP, it is about making something fit for purpose. Here we have the space and handling restrictions faced in underground drilling environments, and just as important was price, when compared with conventional equipment available off the shelf.

“This application called for the

*High-temperature blowout preventer for mineral-coring systems using inward-inflating HNBR packer element*

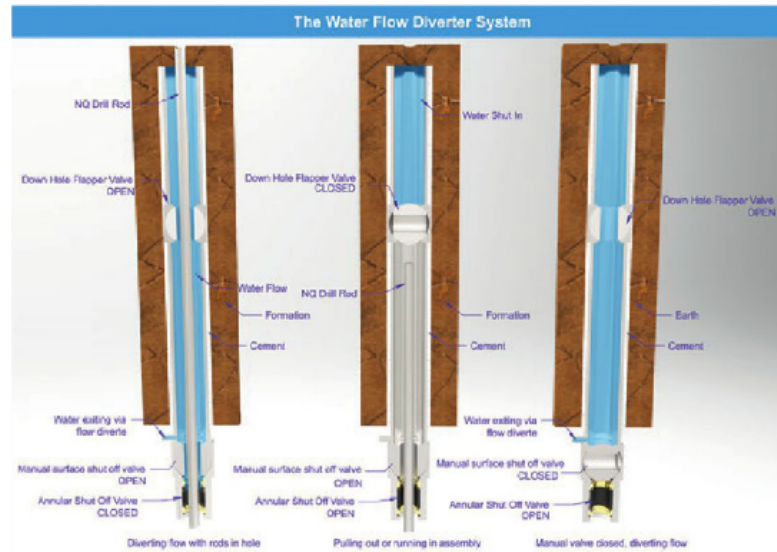
*Photo: IPI*



functions of a conventional BOP, but specifically dealing with water flow in an underground scenario. Our clients need a system that can quickly seal off the borehole if they pierce a high-pressure underground aquifer, and then maybe plug and abandon that well.”

The water-flow diverter system consists of an annular shut-off valve – an inward-inflating packer to seal around the drill string. This works in tandem with a downhole flapper valve and a manual surface shut-off valve. The system enables the driller to safely trip in and out and facilitate water shut-off operations. The downhole flapper valve and annular shut-off valve are both controlled using a dedicated hydraulic control unit.

In addition, to facilitate water shut-off, IPI has provided an independently inflated dual-packer cement retainer (a type of inflatable bridge plug), which



was customised to suit the client’s requirements. All of this is to ensure safe flow diversion and shut-off operations.

“We expect to continue to receive novel enquiries for inward-inflating technology. Some examples include an inward-inflating centraliser for

spud cylinders on dredging vessels, ‘hand over hand’ pipe-handling systems, down-hole slip-over seals and more, which have come from a wide range of industries in recent months. Not all get made, but a good proportion does,” Rowe confirms. ▼

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