

Mohawk in the mix

New kid on the block boasts experienced leaders and a fresh take on expandables

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AFTER a year of low-profile development work a new company has now decided it is time to emerge publicly on the solid expandable tubular scene.

Houston-based Mohawk Energy is tiny in comparison with the well-established and giant Enventure, the main company it will be coming up against.

But Mohawk hopes it has some unique capabilities that will allow it to carve out worthwhile territory for itself.

Certainly it ought to know what it is getting into. At the core of the privately-owned outfit are two experts with a wealth of expandables experience behind them. Company president Dr Andrei Filippov is a former technical adviser at Shell, involved at the inception of the technology there a decade ago.

Mohawk's vice president of technology and engineering is Scott Benzie, who became involved with expandables at Baker Hughes in 1998 and later moved over to Shell as project leader for its monodiameter technology development.

"We have spent our first year developing the product and have finished the engineering phase," says Benzie. "Now we are looking for an operator to collaborate with for our first application in the field."

Mohawk aims to provide both supply of expandable tubular systems, including connectors and lubrication, and their installation.

Two major features distinguish the company's technology, points out Benzie.

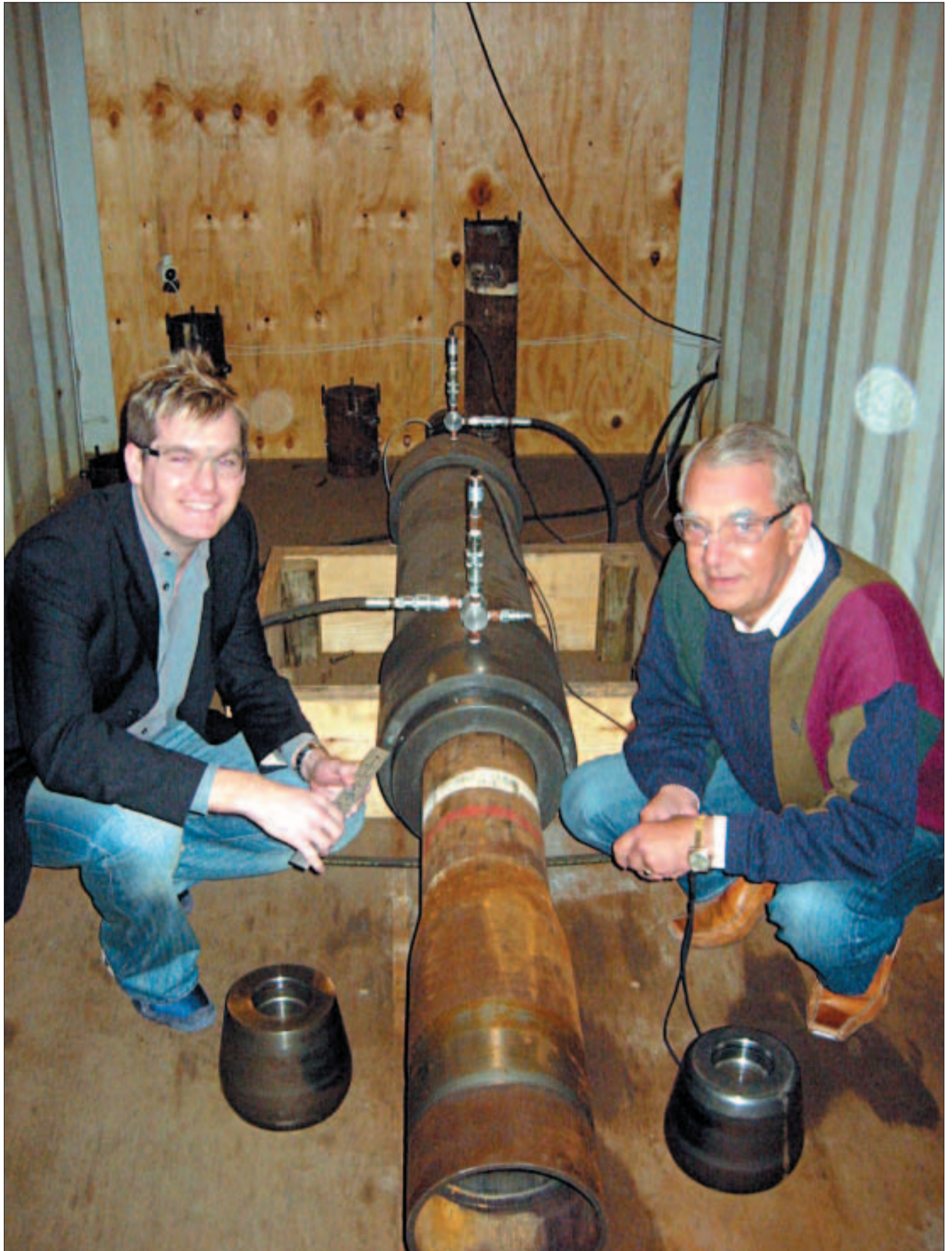
One is the design of the cone that is forced through the bore of the tubular to expand it. The other is the fact that "we don't have an outside annulus of cement in our system, we expand directly against the borehole".

Taking the expansion system first, he explains: "Our cone sits outside the expandable pipe. This means that, unlike other systems, we do not lose any borehole diameter."

Other systems generally run the cone from a so-called launcher to give it something to push against when it starts its expansion run. So they always lose hole diameter equivalent to two wall thicknesses of that launcher when they send the cone.

"We have no launcher," says Benzie, "so when you expand the tubular it will have the same internal diameter as the casing above, which is a huge advantage."

"It means we can run expandable liners in trouble zones at the same diameter as the casing



Core talent: Mohawk Energy president Andrei Filippov (right) and vice president of technology and engineering Scott Benzie with expandable pipe in a test frame at the company's Houston facility

Photo: MOHAWK

above and therefore further drilling can be of the same hole diameter."

It has not been an easy task to come up with a system where the cone sits outside the tubular, Benzie concedes. "It takes a lot of knowledge and engineering, and requires more complicated tooling."

The Mohawk system uses a mechanical tractor with side grippers that crawls along the pipe expanding it at a rate of five to 10 feet per minute. It also allows an undramatic "pop-out" at the end

of an expansion run, reducing dynamic loads in the wellbore when that happens.

The tractor and cone are deployed on the drillstring, but that string is only really needed as an umbilical to provide hydraulic power to the crawler's cylinders, at a pressure that can be provided by standard rig floor equipment.

The expansion tool can drive either top-down or bottom-up. On balance, says Benzie, "we prefer to go top down." This provides a very simple contingency if the tool needs to be removed at any

point during expansion. The other notable aspect of Mohawk's approach is that tubulars are expanded directly against the surrounding formation. This eliminates the need for cement, and may be especially attractive when large washouts make cementation impossible.

"We don't need to drill an oversized hole to allow for cementing," says Benzie. "All this saves time and increases reliability."

Completing its system, Mohawk has developed manufacturing specifications for a family

of different sized tubulars that have been tested to expansion ratios of up to 25%.

It has open hole offerings to deal with problems such as lost circulation or high pressure zones, and a cased hole product for repair and recompletion roles.

Asked what his ideal first application would be, Benzie indicates an open hole operation "where an operator has a wellbore stability issue or a problem with a watered-out zone, and wants to add one or two clads without losing borehole diameter".