



Major US industrial services OEM celebrates 15 years of Wanner Hydra-Cell® pumps without a single breakdown

A major US industrial services supplier, operating in some of the harshest environments on the planet, is celebrating 15 years of Wanner pumps without a single breakdown.

Selection of the right pump in enhanced oil recovery is key to achieving economic success, especially in today's markets. The General Manager of the company said:

"We evaluated several pumps for metering high pressure hydrated polymer solutions for our enhanced oil recovery operations. Hydrated polymer is prone to shear when pumped, especially in plunger, gear and centrifugal technologies, and this can make the operation uneconomic. The pump is critical to ensuring this does not happen."

For every 3% shear in the polymer mother solution an extra 10% polymer is used. How much could that mean financially? Consider an injection rate of 100m³/day and a 10 injection well plant. Assuming a cost of \$1.80 per kg for polymer, this equates to an additional annual cost of almost half a million dollars in polymer alone, which could be the difference between an economically viable and unviable field.

This is addressed by the Hydra-Cell due to the gentle pumping action so that shear sensitive liquids, especially polymers, can be pumped without breaking down the long chain structures within the liquids.

Shear is imparted into a fluid when you have a difference in velocity throughout the fluid. The larger the difference in velocity, the larger the shear. Any pump which has one part which moves over another, like a plunger pump or gear pump, will impart higher shear, and thereby higher costs. The Hydra-Cell has no moving parts sliding over each other.

So, choosing the right pump technology can be key to making an oil field profitable – or not. Oil companies will need to:

- Minimise the shearing of the polymer in order to optimise polymer usage;
- Handle aggressive liquids without heavy maintenance;
- Eliminate leaking polymer causing excessive use and environmental issues;
- Minimise the hydraulic pulsation in the system to reduce pipe strain, minimise pulsation damper use and size, and minimise acceleration head issues.

The General Manager continues: “We looked at a number of criteria, mainly reliability, lifetime and cost of ownership. Time and time again, Wanner’s Hydra-Cell was most favourable due to the shear, for smaller metering. We started this testing 15 years ago and have been using them ever since. In that time, we have never had a major failure. Wanner pumps deliver high reliability day in day out.”

Wanner’s metering and dosing pumps deliver a virtually pulse-free linear flow, which in turn eliminates the need for expensive pulsation dampeners, reduces acceleration head and friction losses, reduces noise levels as it reduces metal to metal contact, shock loading and equipment vibration and therefore also reduces metal fines.

The lack of pulsation also puts less strain on the pipes, minimising maintenance costs and pump down-time whilst maintaining health and safety within the workplace.

“For example, we have 32 Hydra-Cell H25s and D35s in a row operating 24/7. We have carried out very little maintenance and haven’t needed to; we have never had a breakdown. They’re also used in other applications.

“The cost of running makes it a simple decision to choose the Hydra-Cell as the equation on capex vs opex is straight-forward. Wanner are exceptionally easy to work with, are adaptable and have overcome every challenge we threw at them.”

For more information on Wanner International, visit: www.hydra-cell.co.uk

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Notes to editors

All of the challenges of pumping polymer are addressed by the Hydra-Cell:

Challenge	Solution
Shear sensitive gel structures which can be broken down easily.	Low shear pumping action.

High viscosity.	Unique spring-loaded check valves for reliable pumping action.
Abrasive, contains soda ash.	Seal-less pump chamber and unique spring-loaded check valves allows reliable pumping of liquids with suspended solids.
Responsive accurate control of flow rate.	Virtually pulseless flow gives responsive control with accuracy exceeding API 675 performance criteria

Enhanced Oil Recovery (EOR) pumps recovered water, usually with a high brine content, into an oil reservoir. Often chemicals such as polymers are injected to change the mobility and viscosity of the displacing solution, along with surfactants or alkalis. Surfactants lower interfacial tension, thus improving the wettability of porous rocks.

What are we trying to achieve by injecting polymers? To improve the mobility of oil in the formation by

- Improving the efficiency of pressurisation of the formation by using an injected liquid which is a similar viscosity of the oil
- Stability of polymer viscosity is very important. Studies have shown for every 3% in degradation of mother solution 10% more polymer is required.
- By injecting chemical laden polymers, surfactants, which alter surface tensions increasing mobility - chemicals tend to be heavily alkaline, pH 14

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