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New jet pump hydraulic artificial lift for lowest cost of lifting a barrel of fluid

Wanner International Limited has launched its new Hydra-Cell® Jet Pump Hydraulic Artificial Lift Solution that offers the lowest cost of lifting a barrel of fluid, reducing costs in oil and gas production, generating huge savings over the lifetime of a well. The seal-free, no packing API 674 system is suitable for mainstream oil and gas production. It does not require a workover rig, pulling unit or slick line unit for servicing or well production optimisation.

For over 40 years, Wanner has been designing, manufacturing and selling Hydra-Cell API 674, seal-less and packing-less positive displacement, hydraulically balanced diaphragm pumps for the oil and gas industry; a unique solution as a power fluid surface pump combined with downhole jet pump technology for a controllable and reliable production solution and optimisation.

Wanner's unique design of their seal-less, no packing Hydra-Cell Surface Power Fluid Pump enables 25+ year life and dramatically reduces servicing and maintenance costs compared to plunger pumps, and greatly lowers energy costs compared to multistage centrifugal pumps.

The lifetime costs of this new artificial lift solution are lower than any other hydraulic artificial lift methods:

- **Energy saving** – when combined with the 90% efficient Hydra-Cell seal-less surface pumps, jet pumps have the best overall total process efficiency, in barrel per day produced per horsepower consumed.
- **Maintenance and servicing saving** - no workover rig needed - forward and reverse flow mode for easy retrieval of the jet pump for easy servicing and maintenance. The seal-less, packing-less design of the API 674 Hydra-Cell pump results means no sperate lubricators, or site services for lubricators, no seal flushing and no fine filtration needed.

With production rates of 10 BPD to 10K BPD, typical applications of the Wanner Hydra-Cell Jet Pump Hydraulic Artificial Lift Solution include: conventional oil and gas production, high volume frac fluid unloading, gas well dewatering, well tests, and wells with bad casing. As well as standard production, the solution maximises production from a range of well types, including deviated or horizontal wells, or those with damage casing.

Paul Davis, Managing Director of Wanner International, said: "The Wanner Hydra-Cell Jet Pump Hydraulic Artificial Lift Solution can be installed at a significantly lower cost over the lifetime of the well. There are no downhole movable parts and the surface high pressure power fluid injection units can be operated by natural gas, diesel or electric powered drivers."

On the surface, the positive displacement Hydra-Cell seal-less hydraulically balanced diaphragm pump has a minimum suction pressure of approximately -ve 0.2 barg and maximum suction pressure of 34 barg. The pumps have a flow rate controllable available to meet to API 675 performance standards to provide ultimate optimisation of Jet Pump production and up to 90% significant energy savings.

The key benefits of Wanner's new jet pump hydraulic artificial lift technology includes its controllability and high efficiency, which is achieved through its design. The jet pump design delivers increased efficiency due to larger inflow and outflow areas. The flow areas, direct fluid delivery to the draw down point, coupled with EDM machined (patent pending) outlet sub gives the jet pump a marked advantage over other types of hydraulic artificial lift.

Energy saving

A significant cost of lifting a barrel of fluid from a well is the energy used. In a Wanner Hydra-Cell Jet Pump Hydraulic Artificial Lift Solutions, energy is used to drive the surface power fluid pump. Therefore, the overall efficiency of the power fluid pump is very important. The Hydra-Cell Seal-less, no packing, API 674 positive displacement pumps have efficiencies of over 90%.

with Wanner Hydra-Cell's jet pump solution, an energy saving of $230,000 could be achieved over three years when compared to multistage centrifugal pumps, assuming production is running 24

hours per day, 365 days per year, with the power fluid pump running at 3,500 psi at 4,500 bpd and a cost of electricity of $0.11 per kwh.

Maintenance and servicing saving

80% of pump maintenance is created by dynamic seals operating in the pumped liquid. The seal-less, no packing design of the API674 Hydra-Cell reciprocating pump results in very low servicing costs, and more importantly unscheduled maintenance.

Hydra-Cell's ability to pump liquids with suspended solids of 0 to 800 microns up to 10% (100,000 ppm) reliably, and the ability of the pump to run dry, infinitely without damage, helps to keep unscheduled maintenance extremely low; lower than any other pump technology. These attributes also help to keep installation simple and costs low: no separate lubricators, or site services for lubricators, no seal flushing and no fine filtration needed. $21,000 in maintenance costs could be saved over 3 years compared to traditional plunger pumps.

Other benefits of the jet pump include heavy-duty materials to ensure long life even in harsh environments and no moving parts within the well that could be damaged or wear. The patented diaphragm position control protects the diaphragm under suction vacuum conditions, such as a blocked suction line. This results in lower lifetime costs for the operator and reliable and optimised production.

Wanner downhole jet pumps can be easily retrieved hydraulically and circulated to the surface by reversing the flow of the power fluid; the jet pump can be retrieved without pulling the tubing. This ensures easy maintenance and a longer service life; no change out at total completion, no work-over or pulling rig needed, greatly saving costs on servicing equipment.

The jet pump technology is further optimised through the Wanner Pump Analyser™ software, which enables the engineer to create simulations to optimise production based on specific well conditions.

With multiple combinations for nozzle and throat sizes to suit surface and sub surface conditions, the Wanner Pump Analyser™ enables the selection and recommendation of a solution designed to optimise to each plant's oil and gas well production.

The pump analyser has ground up review of hydraulic mathematical models for better optimisation and can track well performance over time. Furthermore, the ability to supply custom profiles to fit customers' existing completions enables lower cost of implementation and greater ease to switch from other forms of artificial lift.

For more information on Wanner International's Jet Pump Hydraulic Artificial Lift Solutions, visit https://wanner-hydraulic-lift.com/.

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