

Application

Individual Well Test and Control System to Increase Production and Reduce Lift Cost

Daniel Measurement and Control, has recently released a revolutionary new well test and control system that can help oil and gas operators increase production and reduce lift costs. This system uses the patented GLCC[®] technology developed by the University of Tulsa in a Joint Industry Project with major oil companies and equipment manufacturers. The GLCC concept itself is not new, since there are approximately 350 GLCCs successfully applied worldwide, but Daniel's adaptation of this technology to an Individual Well Test system is fairly unique.

Problem Solved:

The principal advantage of this IWT system is its low installed cost. Because of its small footprint, low volume, and light weight it can be moved to most any location by flatbed truck and set up on an unimproved foundation in a matter of minutes. Compared to conventional test separators requiring expensive manifolds, concrete pads, and large footprints, the IWT has a tremendous advantage. For offshore applications, the small footprint and light weight could translate to huge savings in platform size and buoyancy cost. Using conventional, oil-field-proven components, it is easy to operate and maintain, requiring very low operating expense compared to conventional separators.



Benefits:

What operators really like about these IWT systems are the accurate and reliable well tests. Using Coriolis technology, the IWT takes advantage of the experience of Micro Motion's worldwide installed base of several thousand net oil computer systems to perfect this measurement. Using features in the IWT controller, the oil and water densities are easily and quickly determined, sometimes automatically. The system also takes advantage of a patented feature that electronically ignores occasional gas bubbles passing through the Coriolis sensor. With confidence in their well test numbers, operators can make the serious day-to-day decisions regarding their wells: Shut in, abandon, or work-over? Increase or decrease injection?

Key Features:

- GLCC technology proven in many diverse applications low risk
- Low installed cost, compact size, light weight, versatile, economical
- Accurate and reliable well tests better reservoir management and allocation factors
- Repeatable measurement results-optimize EOR and lift techniques
- Real-time well control-pump off control and gas lift optimization
- Full-time well surveillance faster response to problems, safety shut down

Applications:

Typical applications include long-term performance testing of single wells. One company in California has over 100 units in this application. Other applications are short-term testing following well completion or work-over. Operators have discovered that certain stimulation and completion techniques create more production than others, and these differences are measurable with IWT. They are then able to narrow in on these successful techniques to increase production. By the same method, operators are able to fine-tune their EOR strategies by closer monitoring of the production response to injection procedures.

The end result is lower lift cost by wiser usage of expensive injection media like steam, CO₂, and natural gas. Also, by continuous monitoring of a well's performance, operators can respond quickly to well emergencies like injection channeling and breakthrough, pumping equipment failure, and lost production.

IWTs can also be used to control a well. One of the most valued features is pump-off control for beam pumping units. Using a patented technique, the IWT can detect pumped-off conditions without the use of load cells and position indicators. Optimum Idle Time can be determined using maximum fluid production rather than maximum run time, thus maximizing production and minimizing electrical cost. IWTs can also be used for real-time gas lift optimization. Gas injection can be controlled according to real-time well performance instead of month-old production reports. For electric submersible and progressive cavity pumping units, IWTs can measure excessive gas production and/or low liquid flow, and shut the unit down before burnout can occur. The IWT software also has safety shut down features that will shut a well in based on high/low pressure, leak detection, H₂S-combustible gas detection, etc.

Although the Daniel IWT systems have fairly wide turndown in operation, they are sized for specific applications. The parameters for specifying an IWT are listed below:

	Units	Minimum	Nominal	Maximum
Liquid flow rate				
Gas flow rate				
Water cut				
Pressure				
Temperature				
Oil density/gravity				
Water density				

Other important information :

ANSI rating required	
Piping connection required	
Well lift method	
H ₂ S, CO ₂ , sand, high chlorides?	
Tight emulsions?	
Slug ratio	

The Individual Well Test system from Daniel represents the latest in well testing technology. Using traditional, oil-field-proven components, it is simple to operate and easy to maintain. Call your Daniel representative today, so we can show you how our IWT system can increase your production and lower your lift costs.

ãGLCC, Gas-Liquid Cylindrical Cyclone, Copyright, The University of Tulsa, 1994.

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