

# Subsea Multiphase Flowmeters Save Deepwater Operator USD 12 Million and Enable Higher Production

PhaseWatcher flowmeters win approval from Brazilian regulatory authority and improve accuracy of deepwater well testing

## CHALLENGE

Improve production well testing economics while meeting stringent regulatory requirements in the deepwater Campos basin offshore Brazil.

## SOLUTION

Deploy PhaseWatcher\* subsea multiphase flowmeters with Vx\* technology instead of conventional well test equipment.

## RESULTS

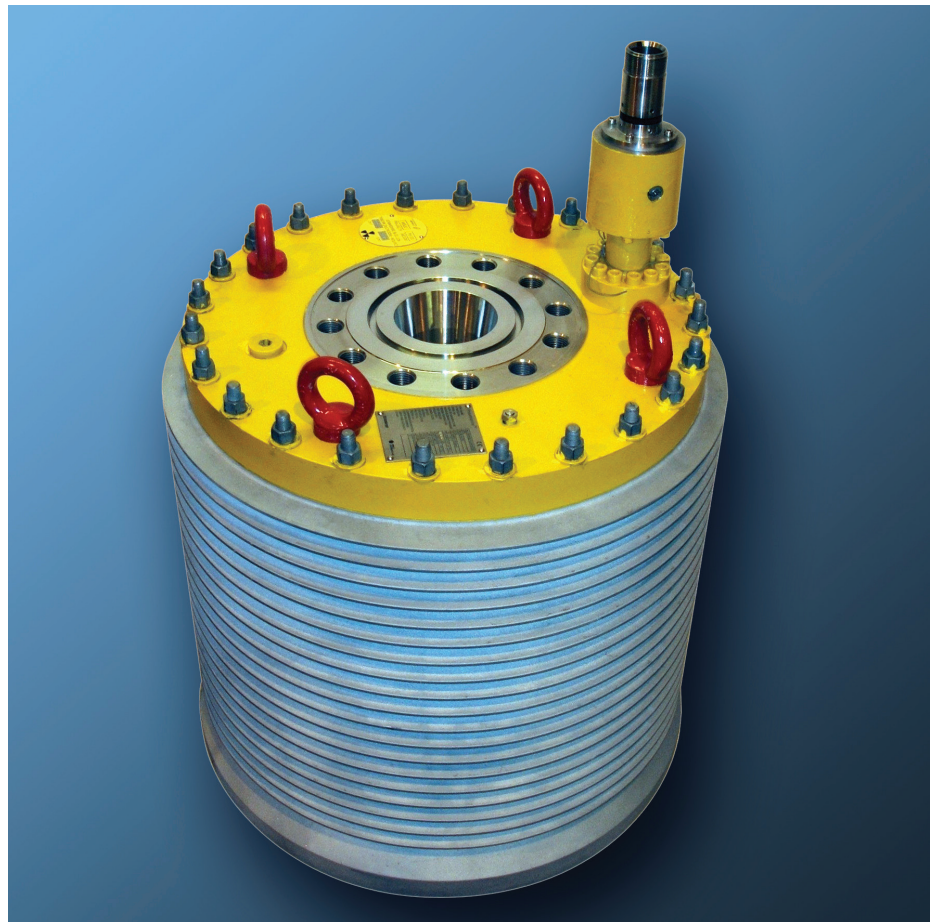
- Saved operator USD 12 million in equipment costs.
- Increased production by 1,000 bbl/d.
- Improved data quality by replacing periodic well tests with continuous monitoring.
- Satisfied all regulatory requirements.



## Deepwater development required cost-effective but accurate well testing

The Parque das Conchas (BC-10) fields lie in water depths ranging from about 5,000 ft to 6,500 ft in the Campos basin offshore Brazil. The subsea fields are tied back to a floating production, storage, and offloading (FPSO) vessel, which has a processing capacity of 100,000 bbl of oil equivalent per day. Constant swells and hostile conditions at the seabed create significant technical challenges for operations.

Brazilian regulatory requirements mandate periodic well tests during production. Traditionally, deepwater well testing requires complicated infrastructure both subsea and topside, which not only makes the field development more complicated but also increases project installation time, risk, and cost. The operator required a reliable, cost-effective solution that would enable real-time well monitoring while satisfying the stringent regulations.



*21 PhaseWatcher subsea multiphase flowmeters provide continuous, high-resolution well flow measurements, cost-effectively and in real time, from the three fields that constitute the deepwater Parque das Conchas project offshore Brazil.*

### **Vx multiphase well testing technology provided continuous monitoring**

The PhaseWatcher subsea multiphase flowmeter with Vx technology is specifically designed to provide critical well diagnostic information without the complexity of conventional testing operations. The compact device can measure individual fluid phases in real time without separation and provide flow rate measurements throughout the life of the field.

Before using the technology, it was necessary to obtain authorization from the regulator, Agência Nacional do Petróleo (ANP). The approval process—the first of its kind in Brazil—involved two stages:

- Obtain authorization to commercialize the multiphase flowmeter in the Brazilian market.
- Obtain authorization to use the multiphase flowmeter in lieu of conventional periodic well testing for production allocation.

The operator and OneSubsea worked in close cooperation to present the case to ANP and succeeded in obtaining authorization. In the first phase of the project, eight PhaseWatcher flowmeters were configured and successfully installed, one per well, in retrievable arrangements on the subsea Christmas trees.

### **Operator improved field economics and production**

Less topside equipment led to a reduction in the number of risers, saving the operator USD 10 million. Eliminating the need for a test separator saved an additional USD 2 million; it also reduced the deck space required.

The continuous, high-resolution well flow measurements provided by the subsea flowmeters in real time were far superior to the data from conventional well test equipment (test lines, manifolds, separators). The improved monitoring helped increase production by 1,000 bbl/d and enhanced overall recovery. Pleased with the results, the operator decided to use the flowmeters in subsequent stages of the project as well. A total of 21 PhaseWatcher flowmeters were installed, resulting in further savings and production gain for the operator.



*At the OneSubsea facility in Horsøy, Norway, PhaseWatcher flowmeters undergo rigorous testing at pressures exceeding the expected pressure on the seabed.*

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