

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

PhaseWatcher flowmeters win approval from regulatory authority and improve accuracy of deepwater well testing in Campos basin

## 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\* multiphase well testing 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, 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 an 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 provided cost-effective, real-time high-resolution well flow measurements from the three fields targeted in the deepwater Parque das Conchas project offshore Brazil.

### Vx technology provided continuous monitoring

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

Before using the flowmeter, the operator needed to obtain authorization from the regulator, Agência Nacional do Petróleo (ANP). The approval process—the first of its kind in Brazil—involved obtaining authorization to

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

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

### Operator improved field economics and production

Less topside equipment reduced the number of risers required, saving the operator USD 10 million. Additionally, eliminating the need for a test separator saved an additional USD 2 million and reduced the deck footprint. The continuous, high-resolution well flow measurements provided in real time by the PhaseWatcher subsea flowmeters were superior to the data obtained from conventional well test equipment, such as test lines, manifolds, and separators. The improved monitoring helped increase production by 1,000 bbl/d and enhanced overall recovery. Pleased with the results, the operator decided to also use the flowmeters in subsequent stages of the project. A total of 21 PhaseWatcher flowmeters were installed, resulting in further savings and production gain.



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