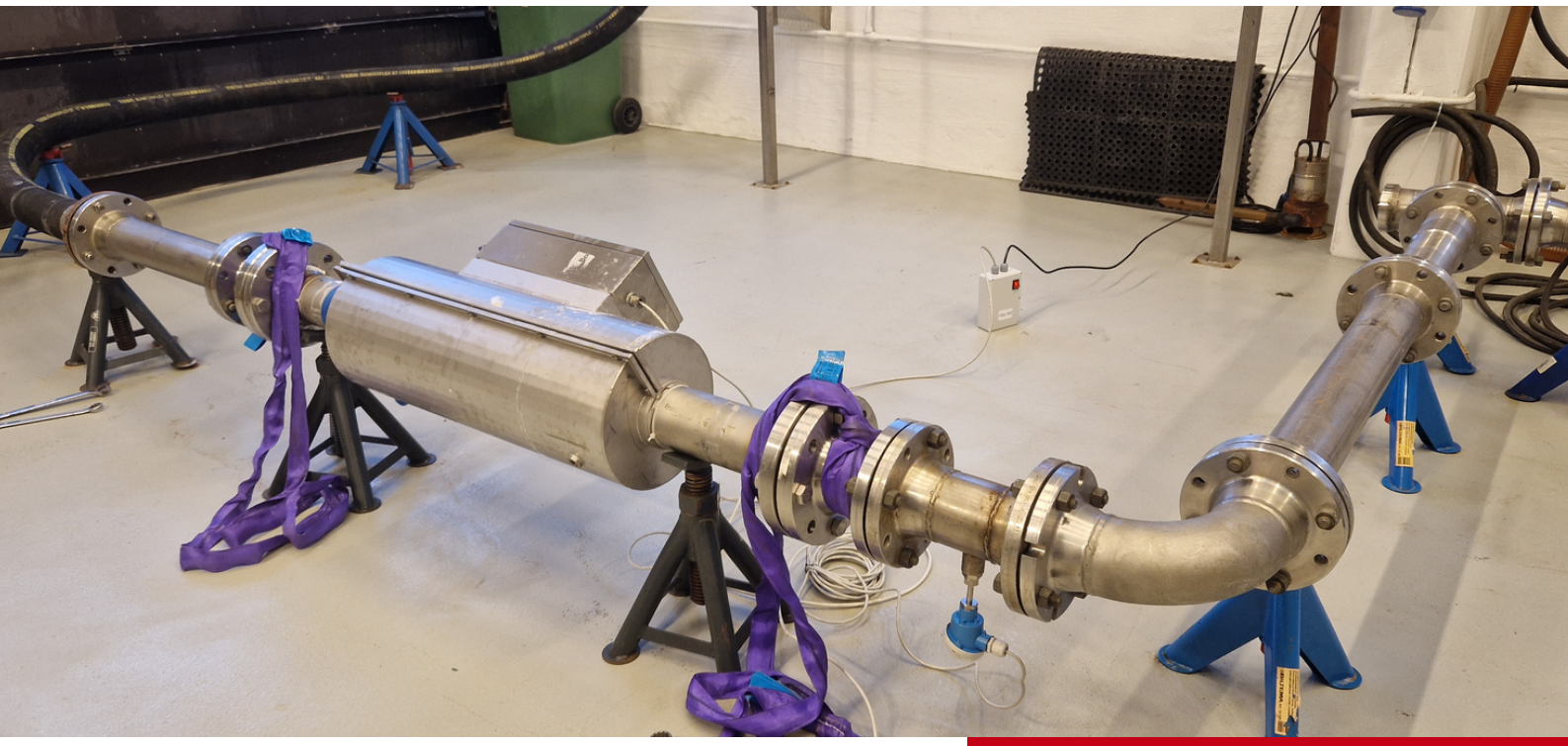
WHITEPAPER - JANUARY 2023

CLAMP-ON WATER CUT MEASUREMENT HOW ACCURATE IS IT?

Official Results of Testing 0-100% Water Cut
at the NORCE Multiphase Flow Loop in Norway



WATER CUT TESTING

Written by: Kenneth Olsvik, Kjell-Rune Toftevåg, Remi Andre Kippersund, Yofri Yaşar

Xsens is proud to have developed, as the first company ever, a **clamp-on water cut meter** that can measure water cut in the whole **range 0-100% with an accuracy of +/-1% absolute**.

A large renowned international oil company requested to test this technology through a blind test at an established independent test facility. The aim was to investigate the water cut capability of the XSENS meter to qualify this for use within the company's projects and field installations.

The NORCE multiphase flow loop was booked for blind testing where authorities from the oil company were present at all times during the testing that took place in November 2022.

WHAT'S INSIDE THIS ISSUE:

Test results of XSENS clamp-on water cut meter showing accuracy +/-1% absolute in the whole range of 0-100% water cut.

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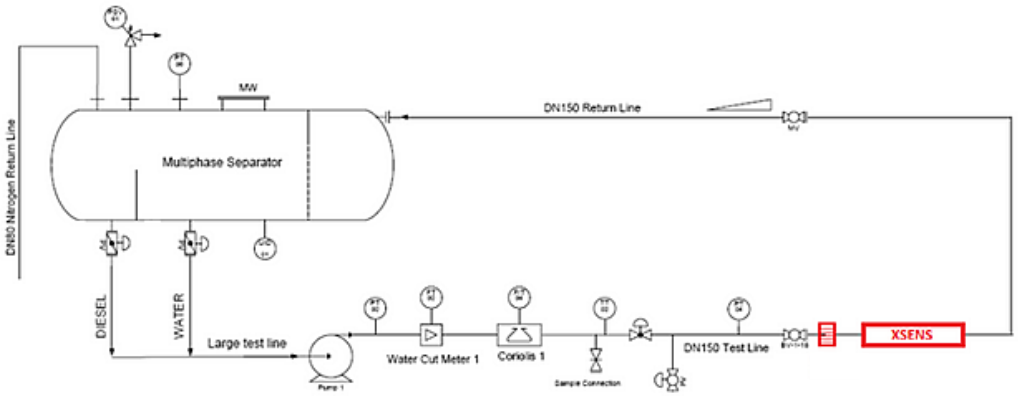
TEST CONFIGURATION

Prior to the testing, the test matrix was established and approved by the oil company to cover the whole range 0-100% water cut and different piping configurations.



References:

- Testing performed at NORCE multiphase loop
- 4” XSENS clamp-on water cut meter installed horizontally.
- Test conducted with three different upstream straight lengths: 10x, 5x and 2.5x pipe diameter.
- Flow rate 60m3/hr.
- Liquids used: Diesel (Oil) and Water (salinity 41.2ppt) without any gas present.
- Water cut measured at 0%, 3%, 10%, 30%, 50%, 90% and 100% in accordance with the approved test matrix.
- Each test point was logged for 8 min at stable conditions

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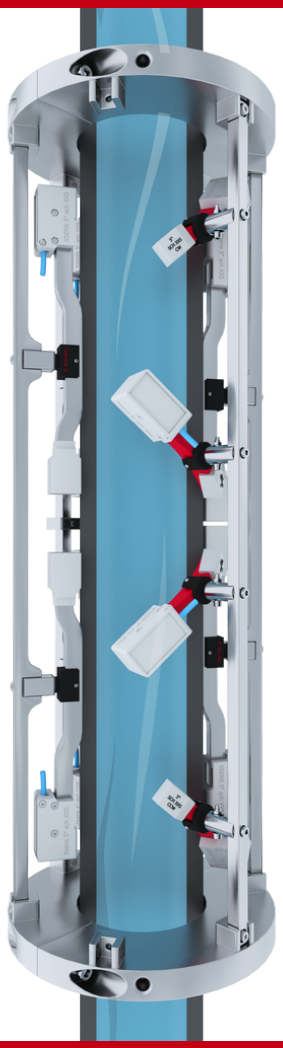
TEST RESULTS



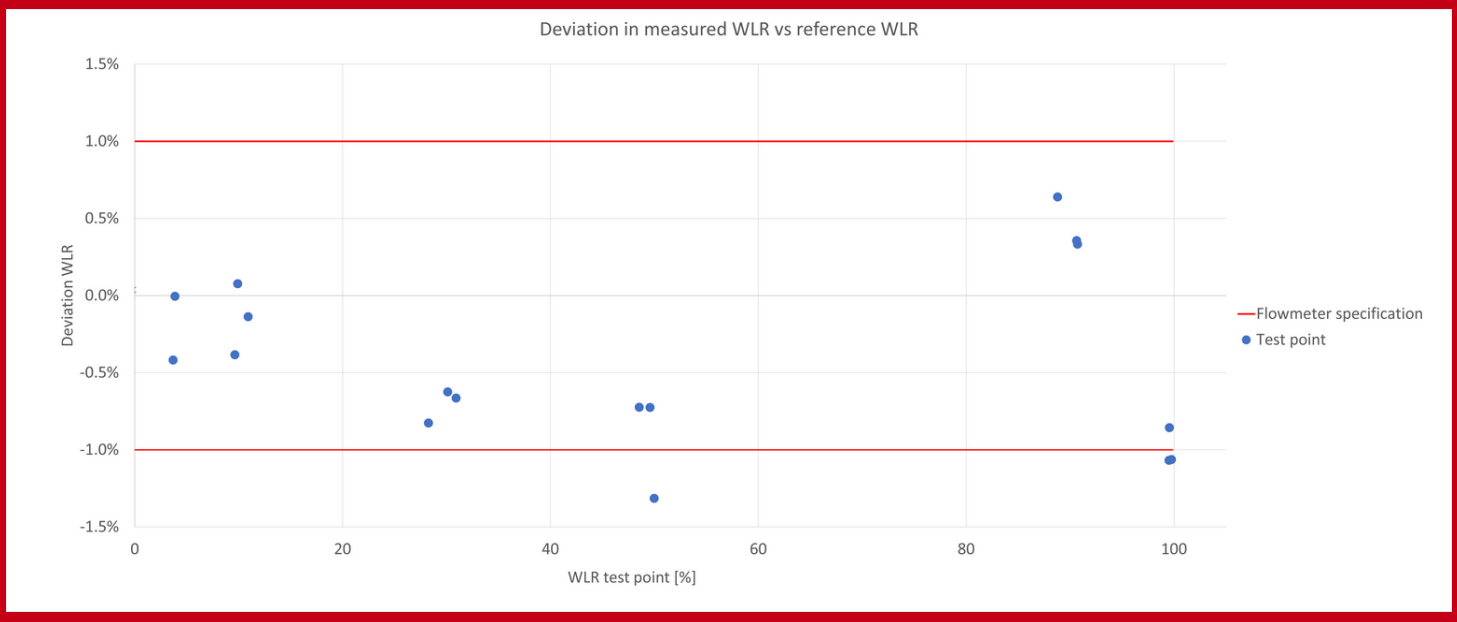
The blind test was a success! For all test points, the average deviations versus the reference WLR meter were:

- -0.6% deviation for 10D installations
- -0.1% deviation for 5D installations
- -0.4% deviation for 2.5D installations

The client praised the technology to be ground-breaking. This is an incredible achievement, not only for Xsens but also for the oil industry. The development of this new clamp-on technology means high accuracy, reliability and easy installation when measuring water cut, which in turn leads to more efficient production processes. This will help reduce costs while improving safety standards throughout the industry.

It is worth noting that this test was done independently by NORCE's multiphase flow loop facility under strict conditions specified by authorities from given oil company and thereby proving how reliable and accurate these measurements are.

XSENS Flow Solutions has taken great strides forward with its new technology. The client has confirmed that the test was successful. Contact XSENS Flow Solutions to learn more about this disruptive technology.



Deviations per test point for all WLR test points from all installation locations. Blue points are test points. Red lines give the accuracy from datasheet of ±1% absolute.

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TEST RESULTS - LOGGED DATA

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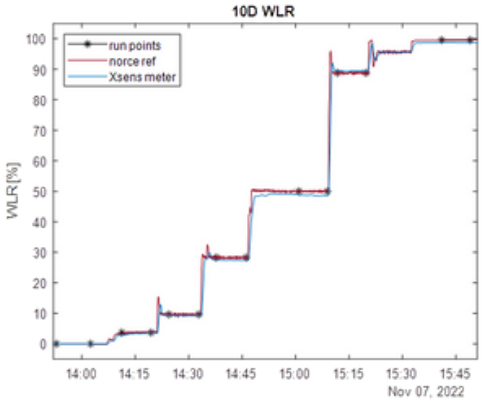
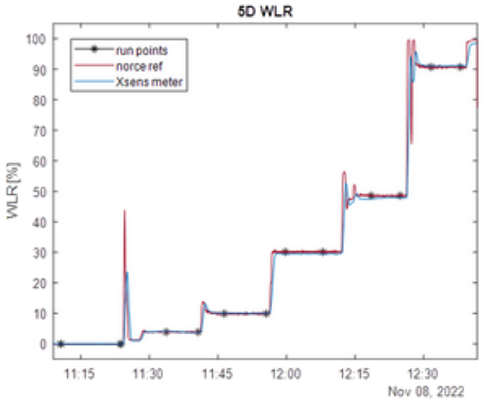
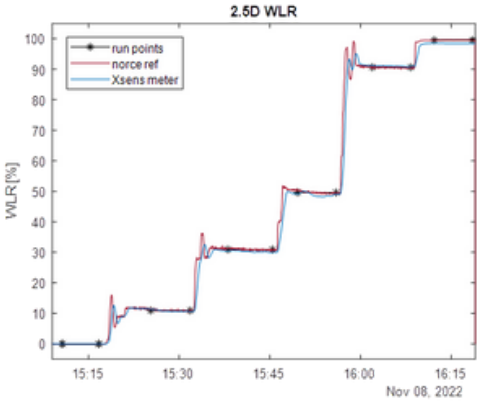
Below graphs show the logged data from water in oil testing for 10D, 5D and 2.5D installations. Logged data from the XSENS water cut meter and reference meter are showed with the period where the test points start and stops per point.







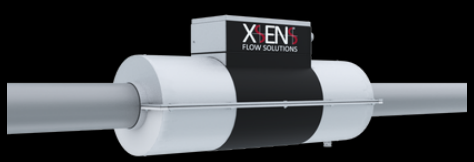
REMI A. KIPPERSUND
XSENS VP R&D

Monitoring test at NORCE Multiphase Flow Loop

CONTACT

XSENS FLOW SOLUTIONS
Godviksvingene 127
5179 Godvik, BERGEN
NORWAY

Phone: +47 55310100
Email: post@xsens.no



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