xylem
Let's Solve Water

APP NOTE 107 February 2018

Aquaculture Pens, Tasmania, Australia

SEASTATE CONDITION MONITORING

Background

Salmon farming commenced in Tasmania in the mid-1980s after a report to the Tasmanian Fisheries Development Authority concluded that a salmon farming industry could be successfully developed in Tasmania. Fertilised Atlantic salmon eggs were purchased in 1984 from stock originally imported in the 1960s from Nova Scotia, Canada. A sea farm was established at Dover in the south of Tasmania and a hatchery was developed at Wayatinah in the central highlands.

The first commercial harvest of 53 tonnes was in the summer of 1986/87 with the Tasmanian industry now producing almost 55,000 tonnes per annum. Tasmania prides itself on its clean, green environment, and it is in the crystal clear waters which has Tasmanian Salmon synonymous with fine seafood around the world.

System Solution

With increasing production comes increasing pressure to manage the stock and the surrounding environment for continuing sustainable production. Xylem Analytics was engaged to provide a monitoring solution that provided a comprehensive measurement of:

- *Seastate conditions*
- *Health of the production waters*
- *A better understanding of weather and ocean influences*
- *A survey marker for the production lease.*

Xylem Analytics solution was a complete in-house turnkey configuration drawn from our Tideland, Aanderaa and YSI manufacturing facilities and integrated at our Brisbane Regional Integration Centre.

Key components were as follows:

- Tideland SB138-P Buoy
- YSI EXO Water Quality Sonde
- Aanderaa MOTUS sensor (Wave Profiler)
- Aanderaa DCPS5400 (Current Profiler)

Client: Huon Aquaculture
Completion: 2017
Xylem's role: Integrator
Xylem scope: Design, manufacture, delivery, installation and commissioning of the MOTUS Buoy that incorporates the real-time measurement of Wave Height and Direction, Current Speed and Direction, Water Quality and Weather parameters.

Xylem also provided the Web Based portal for viewing and management of the collected data that allows planning and management of the Lease operations.

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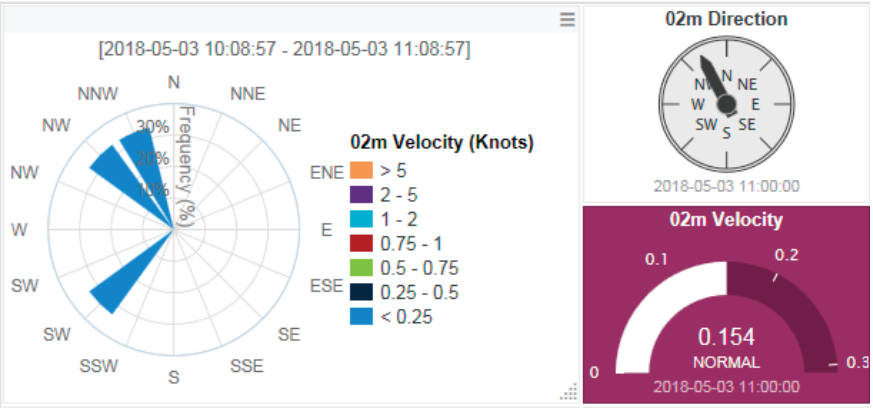


Real-time data streaming in a format that is easily discernable. Here from DCPS5400 is represented at the 2 meter interval below the sensor – 02m.

Left: Accumulated data for an hour, mostly from the NNW but also with a period from the SW.

Right: Accumulated data for the 11am timestamp. The timestamp data shows the current coming from the NNW direction – approx. 310°C.

Xylem Solution

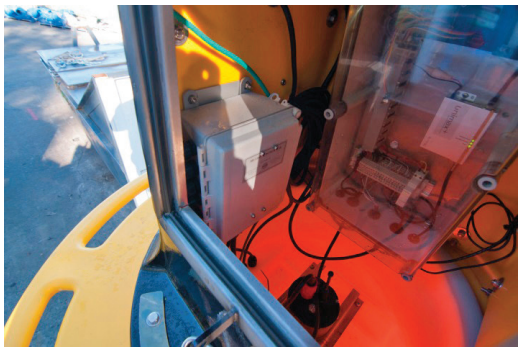
Xylem's proprietary solution provides a significant advantage whereby we are able to carry a greater payload, enabling Huon to get a multi-functional device in the one supply.

Located internally within the SB138-P, the MOTUS sensor allows for the measurement of Wave Height and Direction along with the additional statistical and period data associated with Ocean Surface Waters. This SeaState information is critical in the design of the Aquaculture Pens and provides forewarning for operators that are planning maintenance activities.

The DCPS5400 Current Profiler is contained within a Moonpool located in the base of the Buoy for protection and allows for the Current to be measured typically in 1 metre intervals through the vertical for Speed and Direction. This data provides a good knowledge base on where the fish stock will be located in the vertical for management purposes.

The EXO Sonde provides Water Quality data that is correlated to the health of the water directly influencing the stock within the Pen. Dissolved Oxygen and Algae parameters are critical to the growth and health of the stock.

The Real-time data stream allows for operational decisions to be planned according to Weather conditions and Fish management practices to ensure safety needs and Stock health and sustainability.



Instrumentation Bay in the top cavity of the Buoy, showing the MOTUS sensor below.

Result

A comprehensive supply and installation of a purpose built Buoy solution to meet a customer requirement which would normally have been previously delivered in multiple components, resulting in a unique, cost-effective and functional solution.

For more information and questions please contact us at aanderaa@xyleminc.com.

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