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September 2017



## How the Right Measurement Technology Can Help Chile's Aquaculture Industry Fulfill its Potential

From the early 1990s to 2007, Chile's aquaculture took off, and by 2006 it was producing 38% of the world's salmon. Now, the country produces 1.4 to 1.5 million tons of salmon a year, putting it on a par with the world's biggest producer, Norway. But there is still significant potential for Chile to run its aquaculture operations more efficiently and profitably.

Doppler technology has helped improve safety and efficiency in Chilean ports. Now, the country has the potential to improve the performance of its aquaculture by fully adopting Doppler technology, says Christian Haag, managing director of oceanographic service provider Mariscope Ingenieria SPA in Chile representative of Doppler technology provider Nortek in the Chilean market.

### Reducing Aquaculture Food Loss by up to 20%

Measuring waves and currents helps with issues such



*Above: Thousands of Nortek's Acoustic Waves and Currents (AWAC) Acoustic Doppler Current Profilers (ADCPs) have been deployed to capture the full wave spectrum in combination with current profiles.*



*Reliable and constant measurements of environmental currents and other oceanographic environmental conditions can markedly improve the performance of fish farms in Chile. Photo courtesy of Nortek.*

as calculating the most effective location of the cages' moorings, the shape of those cages, and the position of floating barges. It also helps fish farmers economize on fish fodder. Typically, fishmeal is unnecessarily wasted during the feeding process, as currents draw the pellets through the cages' netting. As an example, constant measuring giving real-time data can be supplied via Nortek's Aquadopp current profiler and the Autonomous Online System (AOS) in addition to other sensors (for oxygen, salinity, and temperature), says Haag.

Data from these systems inform when and from what position food can best be released as well as where and when to position the cameras to reveal when the fish finish feeding. Haag's company, Mariscope Ingenieria SPA, has found that using Doppler technology and real-time data could reduce food loss by up to 20%.

#### Lack of Reliable Data For Informed Decisions

At the moment, many aquaculture sites in Chile still rely on spot measurements, meaning that they don't have enough reliable data to make informed decisions. Meanwhile, in Norway, many fish farmers have installed

permanent measurement systems that supply constant, real-time data and allow for much more informed decisions to be made. Nortek has supplied approximately 300 AOS (or Realfish) systems to Norway's fish farming sites. The Nortek AOS system offers online access data on oxygen, salinity, and temperature as well as ocean currents and wave data from any coastal location.

It does not require significant engineering resources, and, once deployed, the system will be up and running in minutes. It transmits data collected via satellite to a software developed for the aquaculture industry. This system generates daily reports so that fish farms can document that they operate according to standards set out by governmental organizations or non-governmental organizations such as the Aquaculture Stewardship Council (ASC).

As an example, there are least 100 ASC-certified fish farming sites in the Chile, most of which would instantly become more efficient by adopting the AOS system in combination with current profilers, concludes Haag. For more information, visit [www.nortek-as.com](http://www.nortek-as.com).

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