

# Supporting top-quality marine research

## Case Study



### The client:

Finnish Environment Institute  
(Syke)

### Vaisala solution:

Environmental Monitoring  
System including the Maritime  
Automatic Weather Station

### THE CHALLENGE:

#### Precise measurements for demanding research and navigation

After 30 years of service, Aranda was due for a complete refurbishment including hull shape, deck area, laboratories and instrumentation.

Because it is designed for marine exploration, different Finnish research institutions use Aranda for demanding research projects that require accurate and reliable weather and environmental measurements. Syke, the Finnish Meteorological Institute, Natural Resources Institute Finland and Geological Survey of Finland, for example, are conducting multidisciplinary, year-round marine research in the harsh conditions of the Baltic Sea.

Precise environmental measurements are also necessary for the ship navigation and dynamic positioning system, which help ensure crew safety and keep Aranda precisely in place during sampling at sea.

While Aranda had been equipped with the essential weather and environmental measurement and instrumentation, Syke decided to upgrade the ship to the most up-to-date technology that would stand up to the demands of oceanographic research and the toughest marine environments.

### THE APPROACH:

#### Modern, comprehensive, weatherproof technology

The Vaisala Environmental Monitoring System (EMS) is perfectly suited to Aranda for its high accuracy and reliability in extreme ocean environments.

Consisting of the Vaisala Maritime Automatic Weather Station and selected weather instruments and sensors, the EMS supplies readings every minute for wind speed and direction, air pressure, humidity and temperature, solar radiation, seawater temperature and conductivity to support efficient research and safe navigation.

Two Vaisala WINDCAP® WMT700 Ultrasonic Wind Sensors and a Vaisala Wind Set WA15 wind anemometer measure wind direction and wind speed from the slightest breeze to extremely high gusts.

The Vaisala BAROCAP® Digital Barometer PTB330 measures barometric pressure and helps ship operators to track local and regional weather fronts, generate historical models of high- and low-pressure systems, and monitor developing severe weather for an early warning system.

The Vaisala HUMICAP® Humidity and Temperature Probe HMP155 provides humidity and temperature measurement, and the Vaisala Present Weather Detector PWD22 enables characterization of reduced visibility, precipitation type identification, precipitation accumulation and intensity measurement, and report formats.

The ceiling and base height of cloud layers are accurately measured by the Vaisala Ceilometer CL31 and sea water temperature is measured by the Vaisala DTS12W. Solar radiation sensors measure broadband solar irradiance and solar radiation flux density.

All measurement data is collected and displayed in the ship's navigation system and in a specifically-designed weather application used by onboard researchers.

## THE RESULTS:

### Safe sailing, efficient marine studies

The Environmental Monitoring System is supporting the researchers and crew on Aranda with accurate and reliable environmental measurements. The dependable data helps them make detailed analyses and studies of the oceanic and atmospheric conditions – in the safest weather conditions – leading to a greater scientific understanding of marine ecosystems.

The advanced environmental measurement technology also gives ship operators confidence, knowing they have highly accurate and reliable data to aid the ship navigation and dynamic positioning system.

### Why Vaisala?

Weather and environmental insights are the greatest catalysts for successful maritime operations— from sensors to systems and digital services, Vaisala provides actionable insights that empower stakeholders to confidently meet challenges and harness new opportunities.

Our globally trusted maritime weather solutions enable remarkable efficiency gains, digital transformation, the protection of people and investments while supporting sustainable and responsible operations.

We are scientists and explorers driven by passion, relentless curiosity, and the desire to create a better world. Backed by 85+ years of unmatched scientific leadership, our solutions increase maritime weather awareness and drive innovation.

