

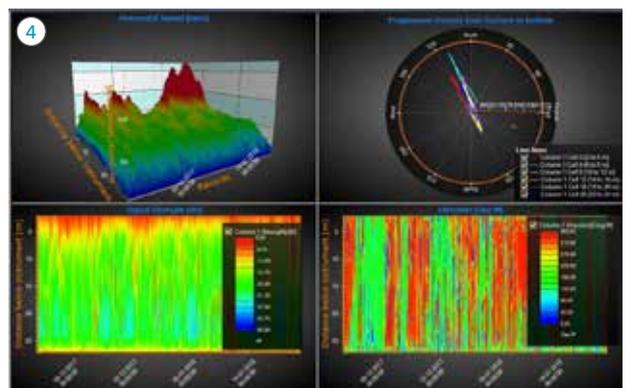
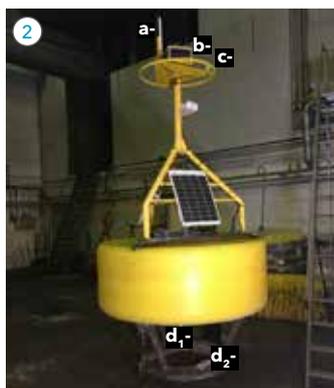
Navigational Buoy serving a dual purpose: NAVIGATIONAL SAFETY AND WATER EXCHANGE DATA BETWEEN TWO SEAS

After almost three years in the water, the "current measuring buoy" of [the port of Helsingborg](#) in Sweden was recently serviced. It took one day to complete the cleaning and system check, add new sacrificial anodes, change a GSM modem, upgrade the [SmartGuard](#) logger software, and replace a lantern with a [Solamax-65](#) lantern with stronger light and better energy capacity.

The buoy reports temperature and currents every 10 minutes from the surface to 18 meters and internally

records currents, acoustic backscatter and other useful information from the surface to the bottom at approximately 30 meters depth.

Real-time data are [openly available](#) and reported directly to the electronic charts on-board ships over AIS. The stored data are downloaded separately and contain information about the water exchange between the Baltic Sea and the North Sea through the straight, the mixing in the water column, the migration of zooplankton, quality control and more.



1. Screenshot from ViVa application. Arrows are prevailing winds. Orange points are ViVa stations.
2. Buoy serviced and ready for redeployment.
 - a-** GSM antenna **b-** Solamax-65 lantern
 - c-** External compass **d₁-** and **d₂-** Large zink anodes
3. Cleaning of sensors, placed in PVC tube for mechanical and bio-fouling protection.
 - a-** Doppler Current Profiling Sensor (DCPS) measures currents from three meters below the surface to the bottom. "Autobeam" function automatically compensates if buoy anchoring chain disturbs.

4. Example of data, December 2017-January 2018, 60 days out of 825.
 - Data top left:** Up to three knots (150cm/s) currents in the top 10-15m. variations are rapid and will have significant effects on ships.
 - Data top right:** In this period, the main transport is out from the Baltic sea.
 - Data bottom right:** Green towards Baltic Sea, red towards N. Sea.

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