Smart Buoys for on-line monitoring

New generation buoy to supersede conventional AtoNs

Smart Buoy is the new generation buoy which is connected to network and capable for interactivity. It improves both the navigation safety and fairway maintenance. Buoys are available in all IALA colors.

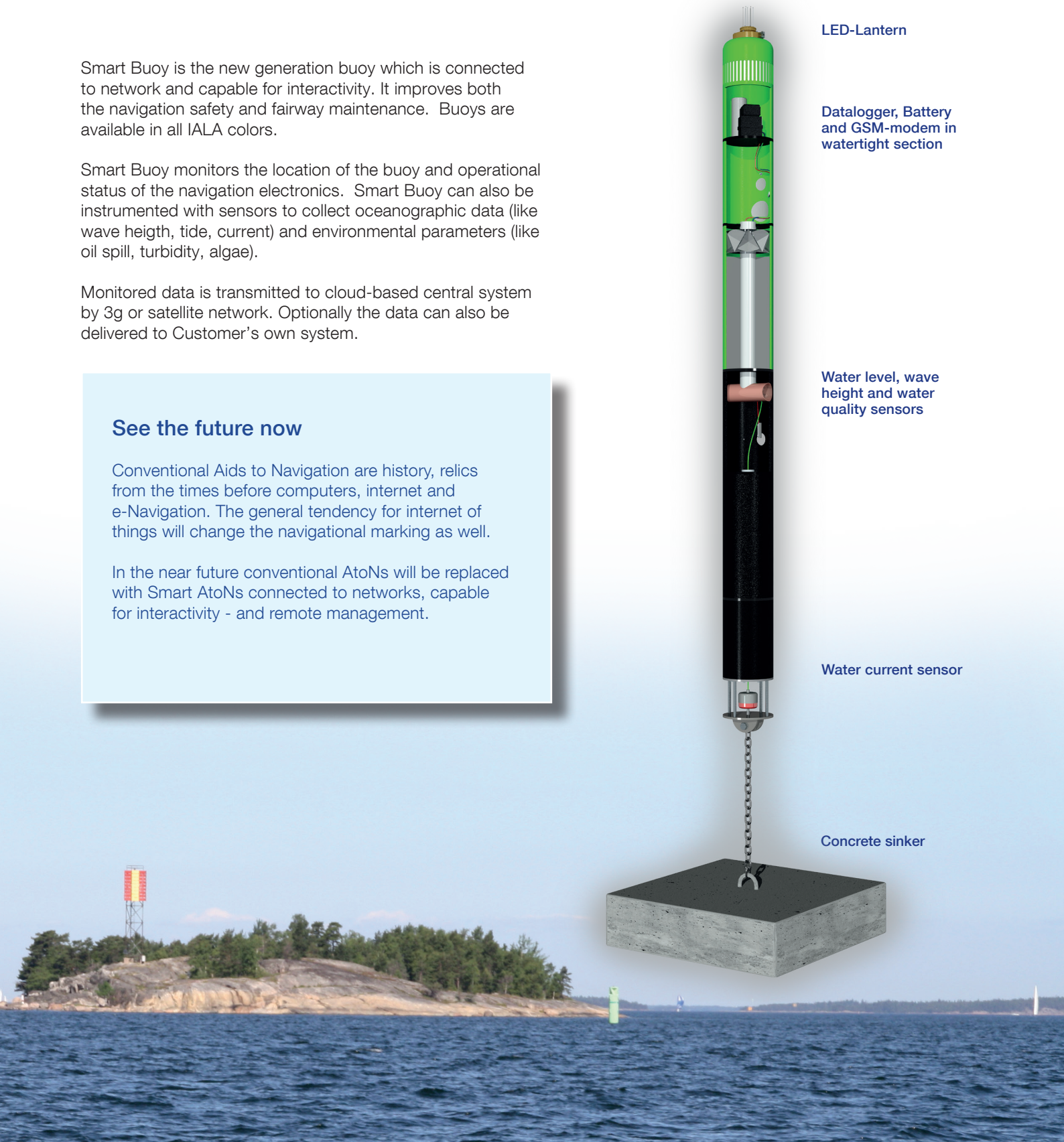
Smart Buoy monitors the location of the buoy and operational status of the navigation electronics. Smart Buoy can also be instrumented with sensors to collect oceanographic data (like wave heigth, tide, current) and environmental parameters (like oil spill, turbidity, algae).

Monitored data is transmitted to cloud-based central system by 3g or satellite network. Optionally the data can also be delivered to Customer's own system.

See the future now

Conventional Aids to Navigation are history, relics from the times before computers, internet and e-Navigation. The general tendency for internet of things will change the navigational marking as well.

In the near future conventional AtoNs will be replaced with Smart AtoNs connected to networks, capable for interactivity - and remote management.



Real-time data to Mariners

While weather conditions can be forecast and also observed on board a vessel, many physical attributes of the sea are well-nigh impossible without proper on-site monitoring.

Wave height, water level and currents play an important role in safe navigation. Mariners know that these factors can vary significantly depending on wind direction, archipelago, shape of the coast line as well as the topography of the sea bottom.

Smart Buoys used along the fairway can provide critical navigation data continuously. Dynamic data can be transmitted to the desktop of port operators, ship brokers or maritime authorities. Dynamic real-time data can also be transmitted to Vessel Traffic Service Centers (VTS) and even direct to vessels through the VTS+ route.

Real-time environmental data

The protection of sensitive marine environment requires regular monitoring that can provide dynamic, up-to-date and accurate data. Accurate and dynamic up-to-date data is essential for marine research, legislative requirements, dredging and marine based construction.

For marine based infrastructure developments, Meritaito Intelligent Solutions can provide remote sensor monitoring for the entire project lifecycle. On-site monitoring can start from pre-construction through all the phases of a construction project and continuing to post project monitoring as required.

Also leasing of the equipment is possible for temporare installations.

Sensors available for Smart Buoys

Parameter	Sensor	Range	Resolution	Accuracy
Temperature I	YSI	-5..+50°C	0.01°C	+0.15°C
Temperature II	Aanderaa	0..+36°C	0.001	+0.4°C
Temperature III	Aanderaa	-10..+43°C	0.05	+0.1°C
Conductivity	YSI	0..100 mS/cm	0.001 mS/cm	+0.5%
Salinity	YSI	0..70 ppt	0.01 ppt	+-1%
Dissolved Oxygen	YSI	0..50 mg/l	0.01 mg/l	+-2%
Turbidity	YSI	0..1000 NTU	0.1 NTU	+-2% or 0.3 NTU
Algae chl-a	YSI	0..400 µg/l	0.1 µg/l	-
Algae Cyanobacterial	YSI	0..280 000 cells/ml	1 cell/ml	-
Height of Tide	Aanderaa	0..30 m	<0.0001%	+-0.02%
Wave height	Aanderaa	0..30 m	<0.0001%	+-0.02%
Current speed	Aanderaa	0..300 cm/s	0.1 %	1% or +-0.15 cm/s
Current direction	Aanderaa	0..360°	+-0.35°	+-5°