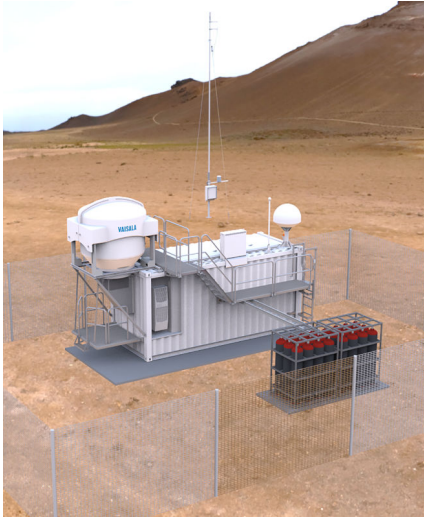




Automatic Sounding Station Vaisala AUTOSONDE® AS41



Vaisala has a long experience of automated soundings, including over 80 delivered systems during the last 25 years and over 700 000 soundings from these systems. This experience is utilized in Vaisala AUTOSONDE® AS41, which is a completely new upper-air observation system for synoptic and adaptive use.

Features

- Completely new upper-air observation system for synoptic and adaptive use
- All benefits of Vaisala Radiosonde RS41 and Vaisala MW41 Sounding System
- Reloading needed once in four weeks
- Safe working environment. The basic rule of Vaisala AUTOSONDE systems has always been that gas lines are never fed inside the container.
- Remote control and configuration on common Vaisala Observation Network platform

High-quality Data

The AUTOSONDE AS41 system uses Vaisala DigiCORA® Sounding System MW41. This system together with the RS41 radiosonde provides world-class sounding data. The same proven algorithms and procedures, such as automatic ground check, are utilized in automated operations as well as in traditional manual operations.

Reliable start reference for the sounding data is created by Vaisala Automatic Weather Station, installed according to WMO requirements and utilizing a 10-meter mast for wind measurements.

High Data Availability

The target rate of successful soundings has been set high. To achieve the target, each individual detail in AS41 has been carefully designed and tested. AS41 is designed to stand even extreme weather conditions around the world. Selection of components and materials together with thoroughly tested automation control guarantees continuous operation without downtimes.

Operational workflow is optimized by ergonomic design and operator errors are minimized by the user-centric design of interfaces.

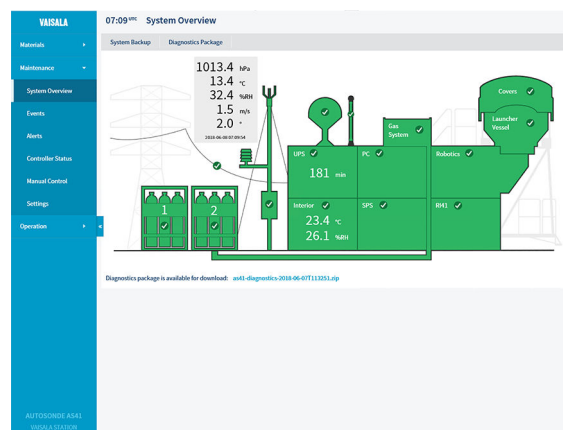
Cost Efficient Operation

Vaisala AUTOSONDE® AS41 offers the longest autonomous sounding capacity on the market. Reloading once every four weeks minimizes the number of necessary site visits. The loading and stocking of radiosondes does not require user expertise, as site operation is easy thanks to the safe working environment and controlled access.

The capability to utilize hydrogen as balloon filling gas presents great savings for the customer, but it also requires disciplined design of compliant system according to tight international Ex standards.

Easy Remote Control and Monitoring

Vaisala Observation Network Manager NM10 is used as a modern Commercial-Off-The-Shelf (COTS) platform for remote controlling and monitoring of AS41. Through secure communication protocol, operators can efficiently control sounding schedule, initiate on-demand sounding, and perform remote diagnostics.



AS41 System Overview

Technical Data

Automatic Sounding Station Vaisala AUTOSONDE® AS41

Radioonde	RS41-SG, RS41-SGP
Sounding workstation	Sounding system software preinstalled Operating system Windows 10 preinstalled AUTOSONDE Control Software preinstalled System recovery tools, including USB drive with recovery image
Vaisala Sounding Processing Subsystem SPS311	
Antennas	Directional UHF antenna GPS antenna
Automatic ground check device	
UPS	
Vaisala Automatic Surface Weather System (AWS) options	Sensors on separate 10-m mast, complies with WMO CIMO guide 8, or sensors on short mast or integrated to container

Electricity

Main electrical cabinet	Inside container Surge arresters, circuit breakers, residual current devices, logic controller, safety controller, servo drives, frequency controllers
Logic controller	Industry standard, microprocessor-based, pre-programmed, analog inputs, digital inputs/outputs, electric motor controls
Input power	
Voltage	230/400 VAC 50 Hz 20 A, 3-phase 230 VAC 50 Hz 60 A, 1-phase
Power consumption	6500 W (max.), under 1000 W (average)
Cabling and wall sockets	Halogen-free cabling, wall socket integrated in the operator desk
Lights	On the ceiling, presence detector Remote-controlled robotics room lights
Heater	750 W with thermostat
Air conditioner with heating functionality	1000 W
UPS	Capacity for completing one ongoing sounding

Mechanics

Launcher vessel tube

Dimensions	Diameter two meters
Construction	Acid-proof steel frame Separate from the container
Cover lids	Two pieces, operated by electric gearmotors
Vessel tube	Laminated fiberglass, inside diameter 2 meters.

Gas flow measurement

Measurement unit	Installed on the container roof Two flexible input gas hoses controlled by magnetic gas valves Connection to gas regulator Output hose to nozzle controlled by magnetic valves
Gas flow meter	With electrical current output Maintenance-free, no moving parts Automatic measurement of gas amount

Balloon filling and size

	Balloon nozzle connected to the balloon during loading, gas-proof balloon nozzle connection
Balloon size	200 - 1200 g
Balloon filling gas	Hydrogen or helium

Container

Physical dimensions

During transportation (l x w x h)	6058 x 2438 x 2896 (as CSC-approved 20-foot HC sea container)
During operational use (l x w x h)	7800 x 3300 x 5100
Access door with window (l x h)	900 x 2100
Total weight with launcher vessel	7.5 tons

Outdoor environment

Operating	-40 °C to +53 °C, 0 to 100 %R.H., condensing, 25 m/s
Storage	-40 °C to +53 °C, 0 to 100 % R.H., condensing
Loading capacity	Sixty radiosondes
Storage capacity for consumables	Four months (two soundings a day)

Certification

CE-marked, including machine safety and Ex-issues
IEC 60079-14 (2013), IEC 60079-10-1 (2015)
Machinery Directive 2006/42/EC

Remote Server

Server	Vaisala Observation Network Manager software NM10 pre-installed Operating system Windows 10, pre-installed System recovery tools including USB drive with recovery image
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