Scientific Cooperation:

4H FerryBox

Automatic and remote-controlled measurements for Ships of opportunity, with special aspects to antifouling and data quality

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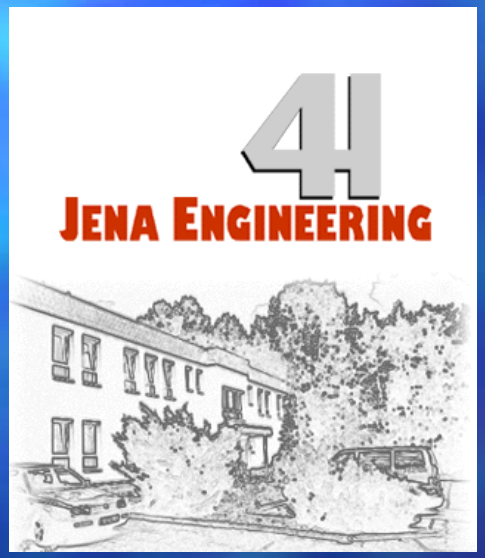
Company profile

Windtunnel techniques

Optical inspection techniques



Optical devices

Marine measuring techniques

Marine measuring techniques

4H-FerryBox

- flow through measuring systems
- long-term in situ monitoring of rivers, estuaries, coastal zones and open sea

4H-FerryBox I
Galathea expedition

4H-FerryBox II
Ferry Funny Girl

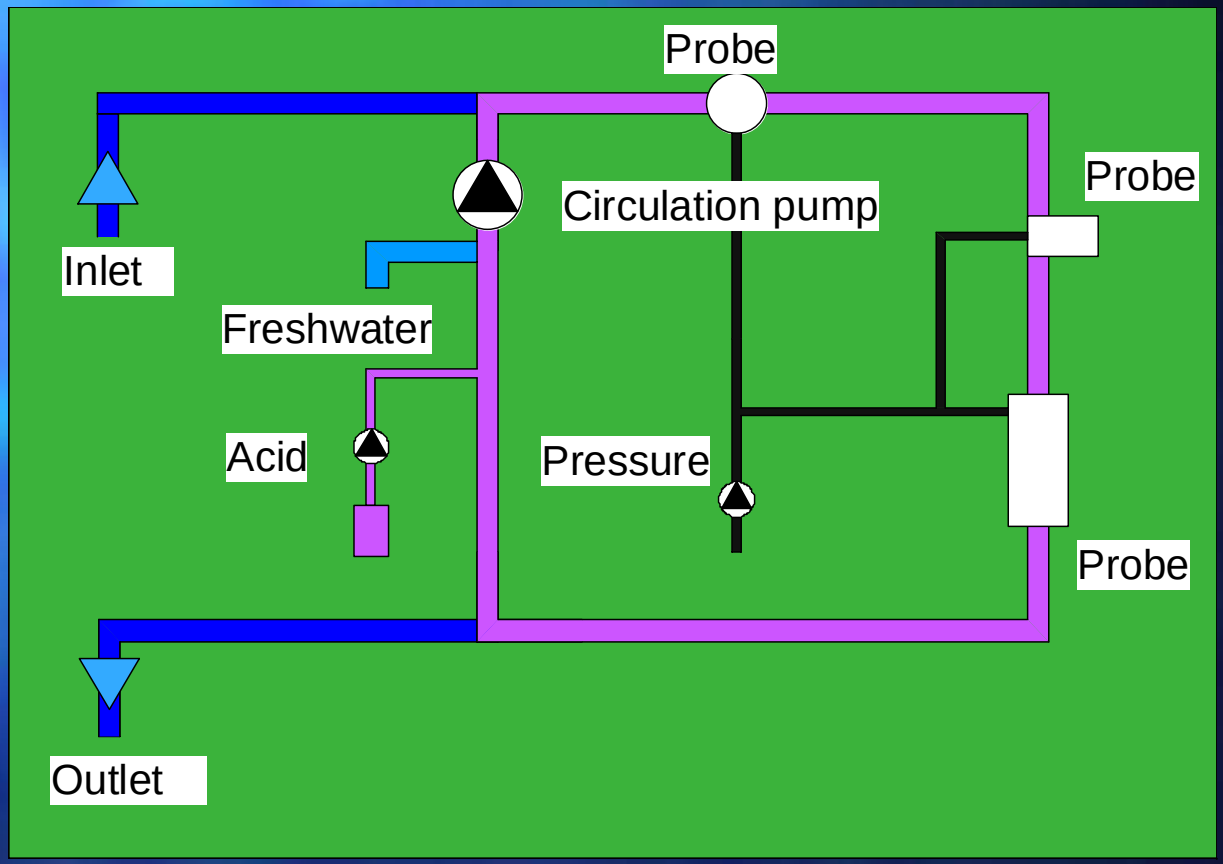
Concept of the 4H FerryBox

- Antifouling concept
- Modular and expandable
- Process controlled water system
- Data
  - Visualization
  - Transmission
  - Quality

Antifouling concept

Principle of the water system
Antifouling:

1. Freshwater
2. Acid
3. High pressure
4. Chlor
5. Back Flash

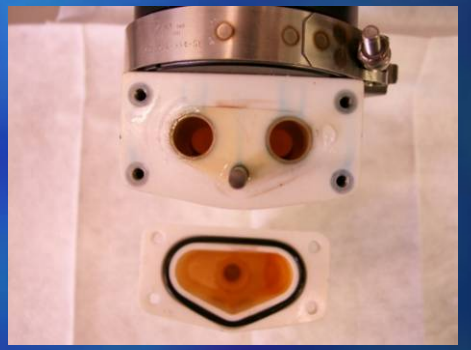


Cleaning results

Debubbler after 2 years
without manual cleaning

© BAH/AWI

Iron impurities
Cleaning with oxalic acid



© Rijkswaterstaat

Modular and Expandable

Parameters:

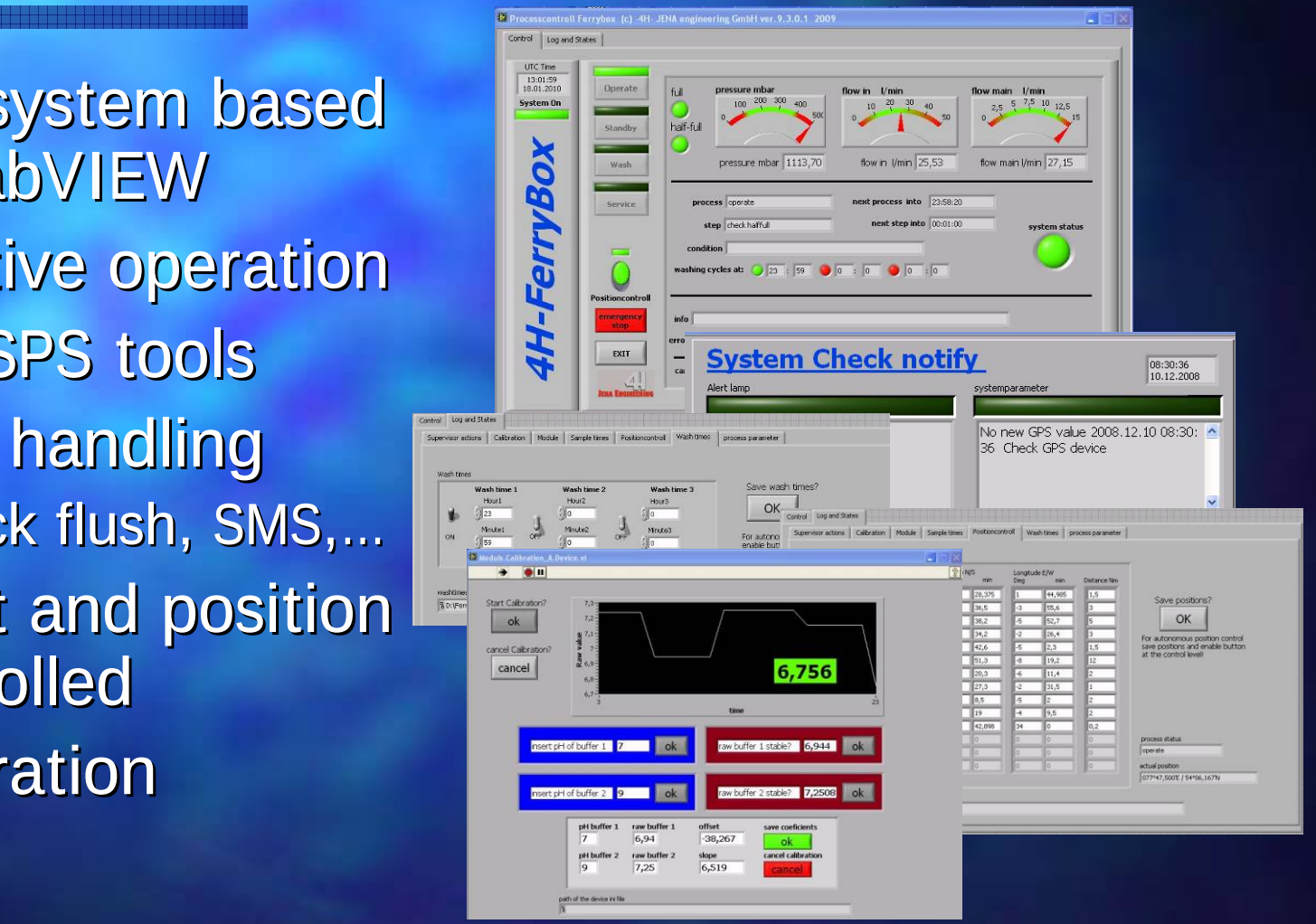
- Temperature
- Salinity
- DO
- pH
- Algae classes
- Chlorophyll-a fluorescence
- Turbidity
- Nutriens
- pCO2, ...

New Interfaces of devices

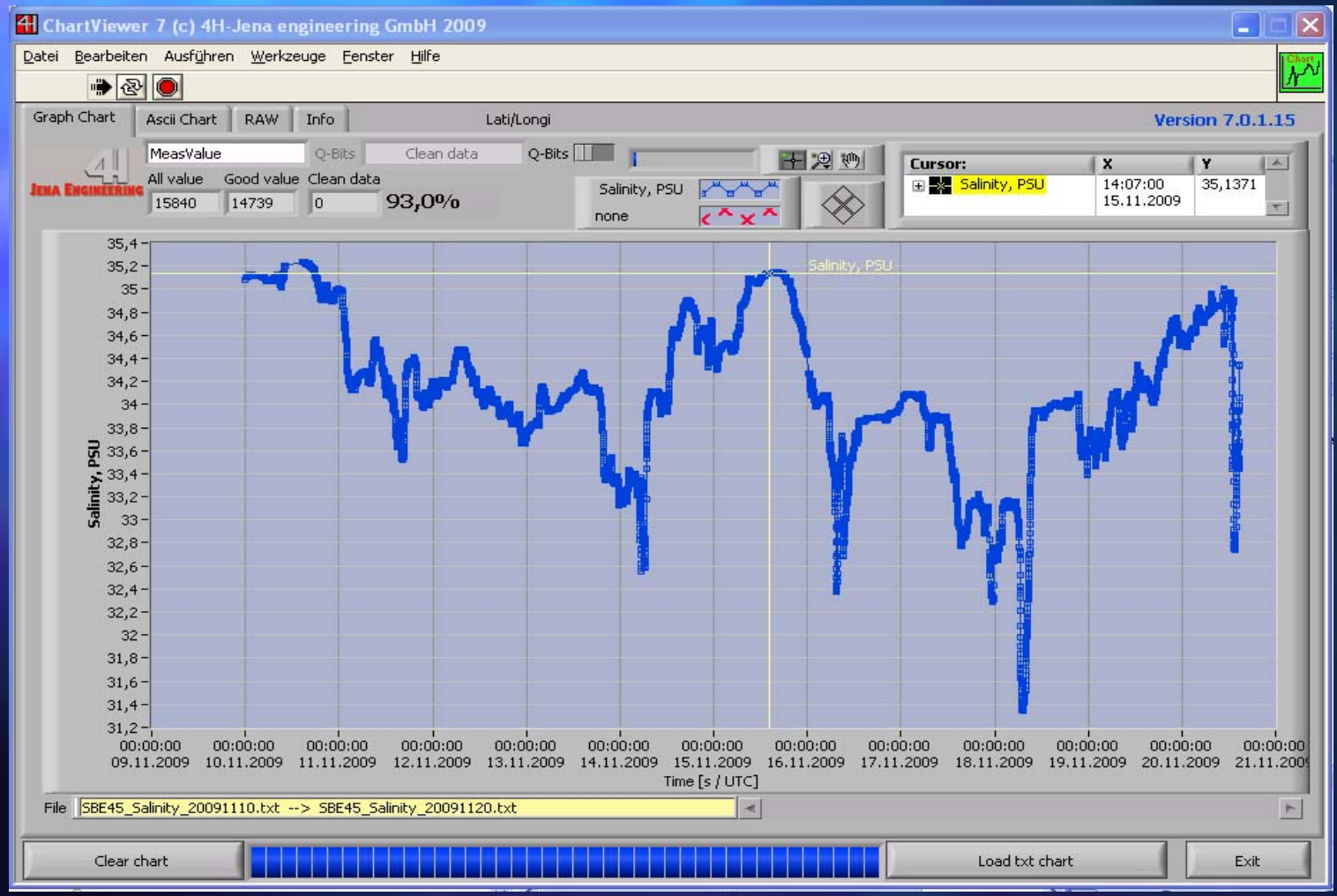
- RS232
- RS484
- Analoge (V, 4-20mA)
- IEEE
- Paralell Bus
- CAN, Profibus, ..
- USB (2, 3, ..)
- LAN (1000, 10000)
- WLAN
- ??

Process controlled Water system

- Datasystem based on LabVIEW
- Intuitive operation
- Soft SPS tools
- Error handling
  - Back flush, SMS,...
- Event and position controlled
- Calibration

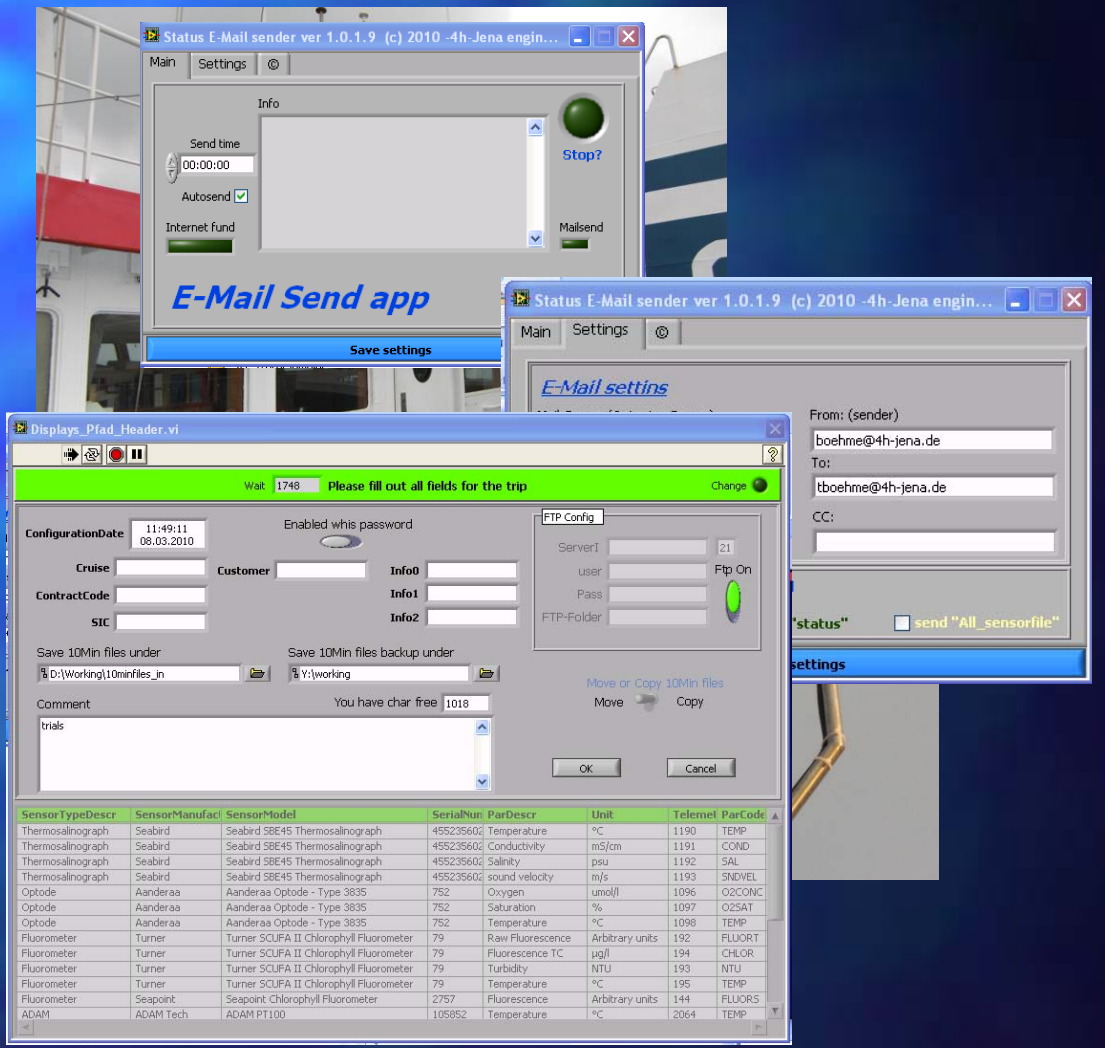


Data Visualization



Data Transmission

- Telemetry
  - UMTS/G3
  - Iridium
  - WLAN
- Email
- FTP
- Remote control



Data quality and Database exchange

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$11; Latitude, Deg; Float										
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The 4H-Ferrybox family

Standard FerryBox I

FerryBox II

Pocket FerryBox

JENA ENGINEERING

Stationary ocean-monitoring

Continues measurements
of metrological, oceanographic
and biological parameters
in of the Bay of Paranaguá

Parameter:
T, S, DO, pH, Chl-a,Turbidity,
Inlet Temperature, Pressure, Global Radiation

Stationary ocean-monitoring

Continuous measurements
of chemical, oceanographic
and biological parameters
in the German Bight.
(Biological Institute Helgoland,
BAH/AWI, Germany)

Parameter:
T, S, DO, pH, Chl-a, Algae classes,
Turbidity, Nutriens (NH_4^+, P, NO_3^-/NO_2^- , Si_xO_y)

JENA ENGINEERING

Mobile ocean-monitoring

FerryBox as standard monitoring equipment on the Cost guard research vessels RF Zirfaea (Photo.: Rijkswaterstaat, Netherlands)

Parameter:
T, S, DO, pH, Chl-a,Turbidity, inlet temperature, watersampler

JENA ENGINEERING

Mobile ocean-monitoring

FerryBox as monitoring equipment on the Container Vessel Trans Carrier

(Rijkswaterstaat)

Parameter:
T, S, DO, pH, Chl-a,Turbidity, inlet temperature, watersampler

JENA ENGINEERING

Mobile ocean-monitoring

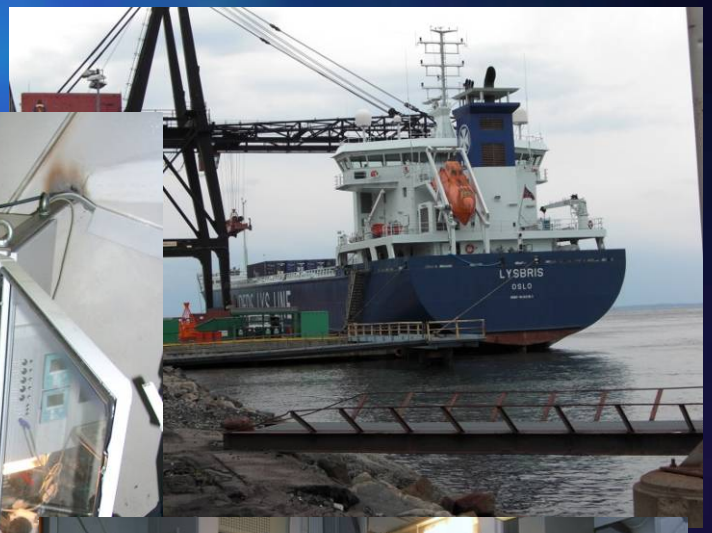
FerryBox as
scientific equipment
on the Polarstern
Email as Data export

Parameter:
T, S, DO, DCO2, pH, Chl-a,Turbidity,
inlet temperature, watersampler,
Nutrients (NH_4^+, P, NO_3^-/NO_2^- , Si_xO_y)

JENA ENGINEERING

Mobile ocean-monitoring

FerryBox as standard monitoring equipment of the institute for coastal research at the GKSS



Parameter:
T, S, DO, pH, Chl-a, Algae classes,
Turbidity, Nutrients (NH_4^+, P, NO_3^-/NO_2^-, Si_xO_y)
Water sampler

JENA ENGINEERING

Mobile ocean-monitoring

FerryBox as standard monitoring equipment of the Estonian marine institute Tallinn.

Parameter:
T, S, Chl-a,Turbidity,
Inlet Temperature, Nutrients (NO3-/NO2-)
Water sampler

JENA ENGINEERING

Mobile ocean-monitoring

FerryBox as a standard monitoring equipment of the research vessel Endeavour

(marine observation at Cefas)

Parameter:
T, S, DO, Chl-a, Algea activity, Turbidity, pH, Insitu Temperature, Water sampler, debubbler

JENA ENGINEERING

Mobile ocean-monitoring

FerryBox as a enviromental monitoring equipment on the ferry Mv-Caledonian-Isles

(marine observation at SEPA)

Parameter:
T, S, DO, Chl-a,Turbidity,
Water sampler

New Projects:

FerryBoxes for the research Institutes IFREMER and Roscoff

Installation:
End of March

Parameter:
T, S, DO, Chl-a, CDOM, Turbidity, pH,
Inlet Temperature, Water sampler

Summary

- The 4H-FerryBox provides solutions to most of the problems associated with long-term in-situ monitoring of rivers, estuaries, coastal zones and open sea.
- The modular flow-through system combines high flexibility in the choice of sensor-types and –methods with a fully integrated antifouling concept and the possibility for automatic and remote-controlled operation.

Thank you very much
for your attention