4H-Jena engineering GmbH

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-4H- JENA engineering GmbH

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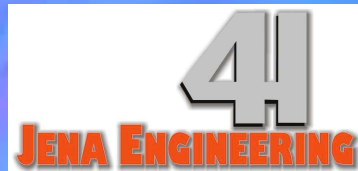
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Scientific Cooperation:

4H Ferrybox
Automatic and remote-controlled measurements for environmental tasks with some aspects of new software tools and device interfaces.

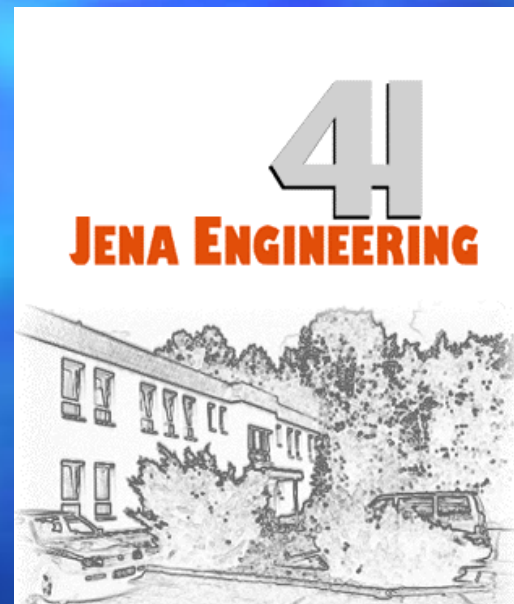Tobias Boehme
-4H- JENA engineering GmbH

Contents

- Company profile
- 4H-FerryBox
    - Concept
    - New data system
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- Summary

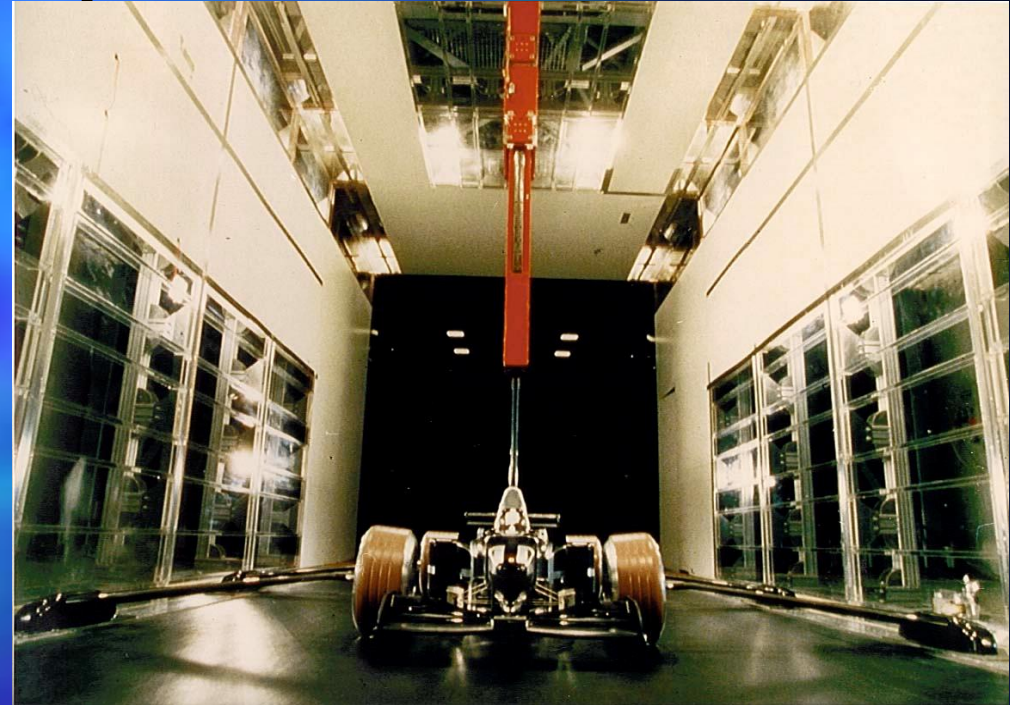# Company profile
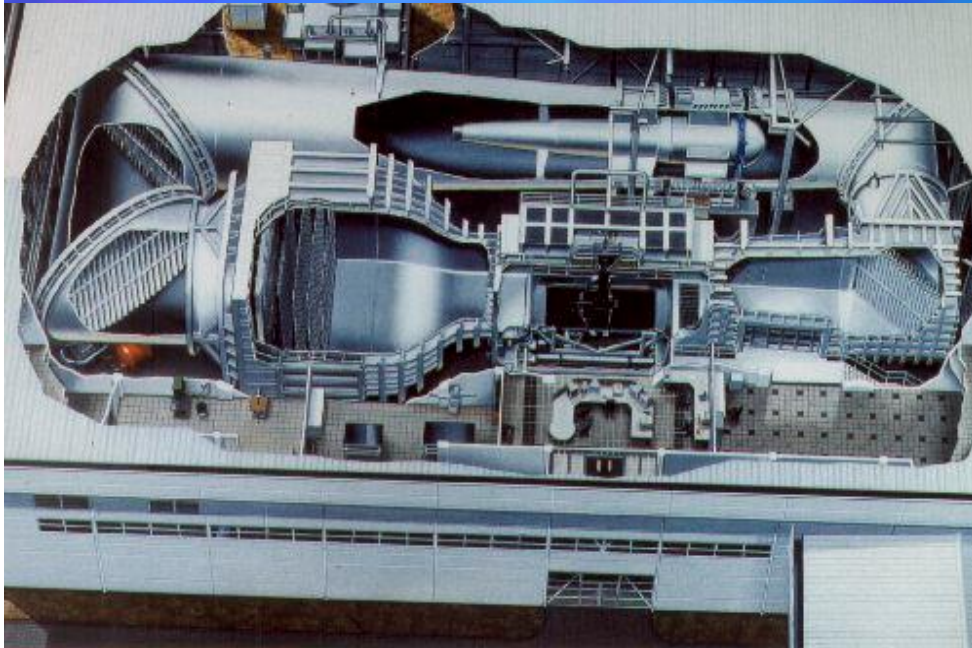
Windtunnel techniques

Optical inspection techniques

Optical devices

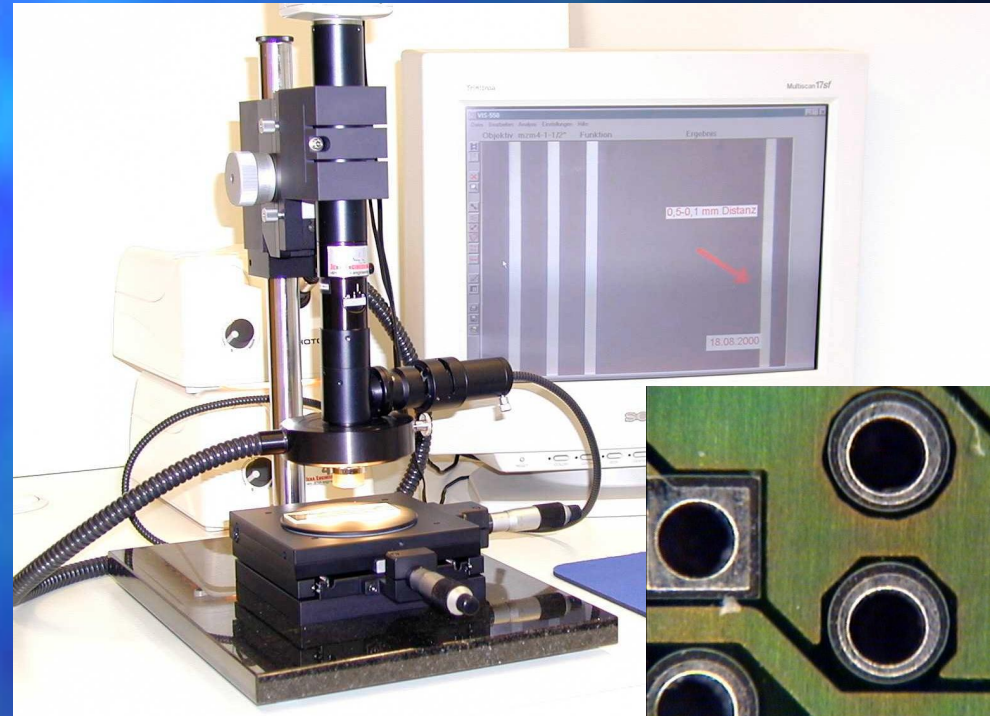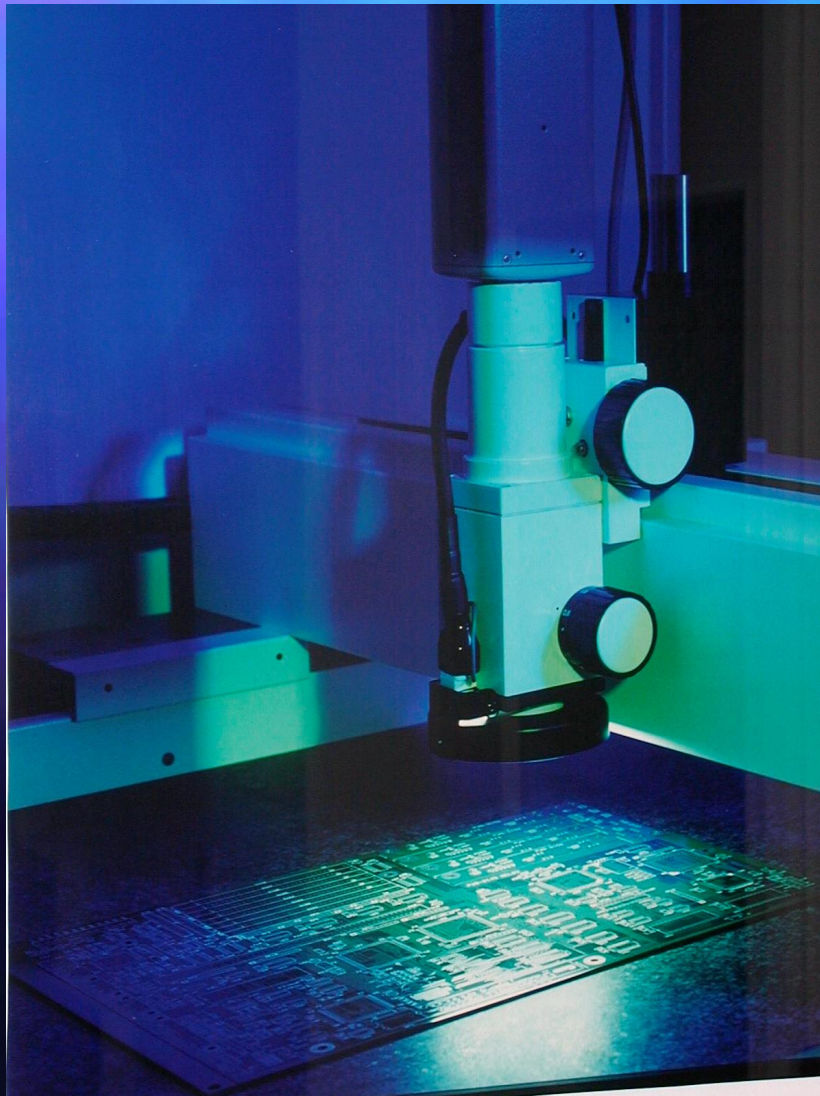**Marine measuring techniques**

Windtunnel techniques

Windtunnel Renault
Oxford England

-Sauber-Petronas Schweiz
-Behr Stuttgart
-Uni Lüttich
-Uni Kassel
-Toyota Köln
-Ariolos München
-BMW München

Optical inspection techniques

Three coordinate measuring device

Optical devices
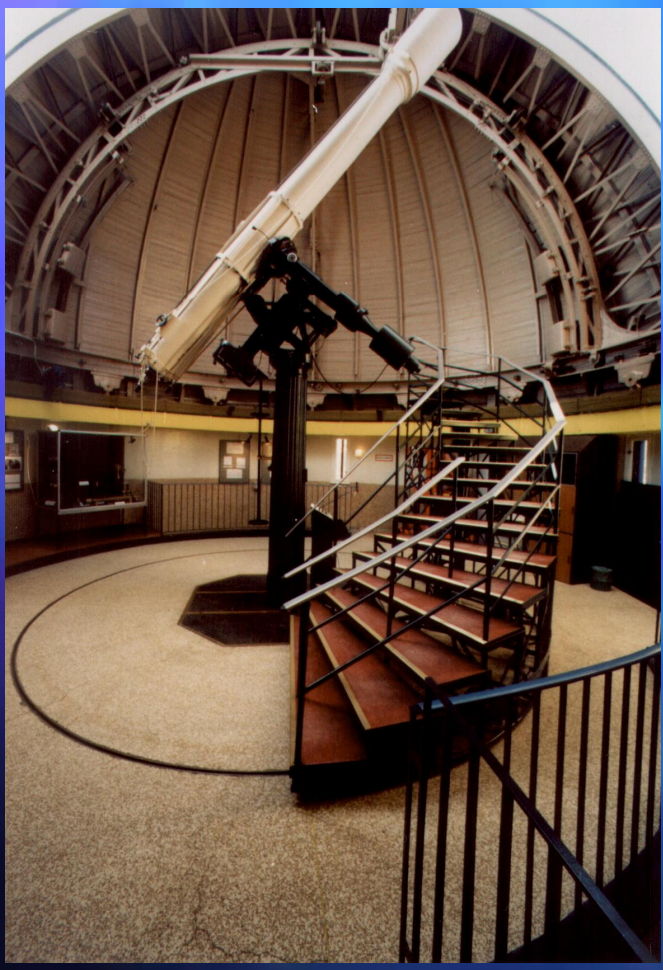
Bamberg Refractor Berlin
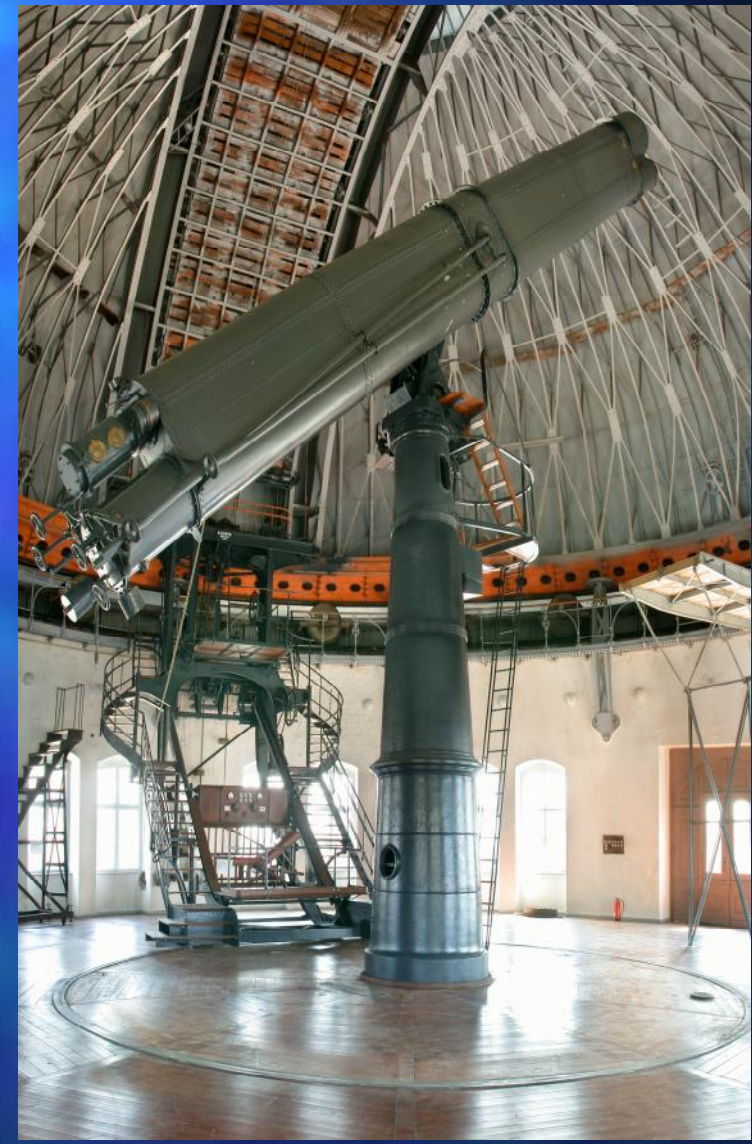
Albert Einstein Refractor

Marine measuring techniques
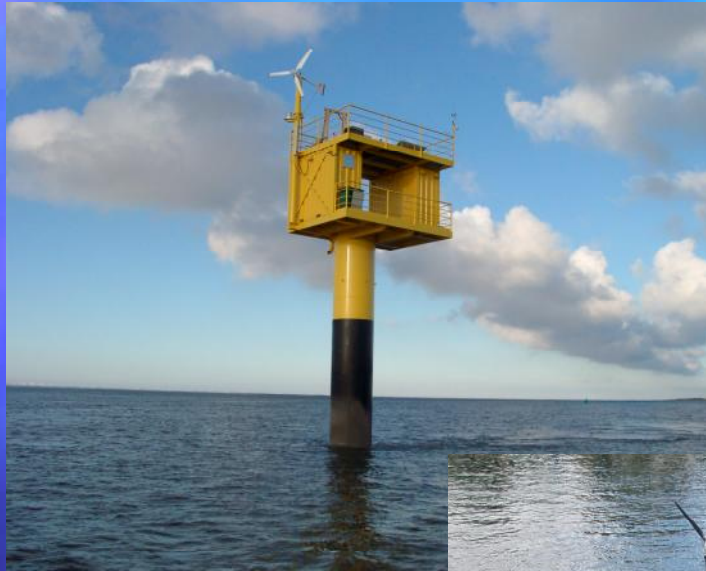
4H-FerryBox

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

4H-FerryBox I on the RV Prandtl

4H-FerryBox II on the RV Meteor

Concept of the 4H FerryBox

- Antifouling concept
- Modular and expandable
- New datasystem
- Data visualisation
- Data quality

Antifouling Concept

Principle of the water system

Antifouling:

1. Fresh water

2. Acid

3. High pressure

4. Chlorine
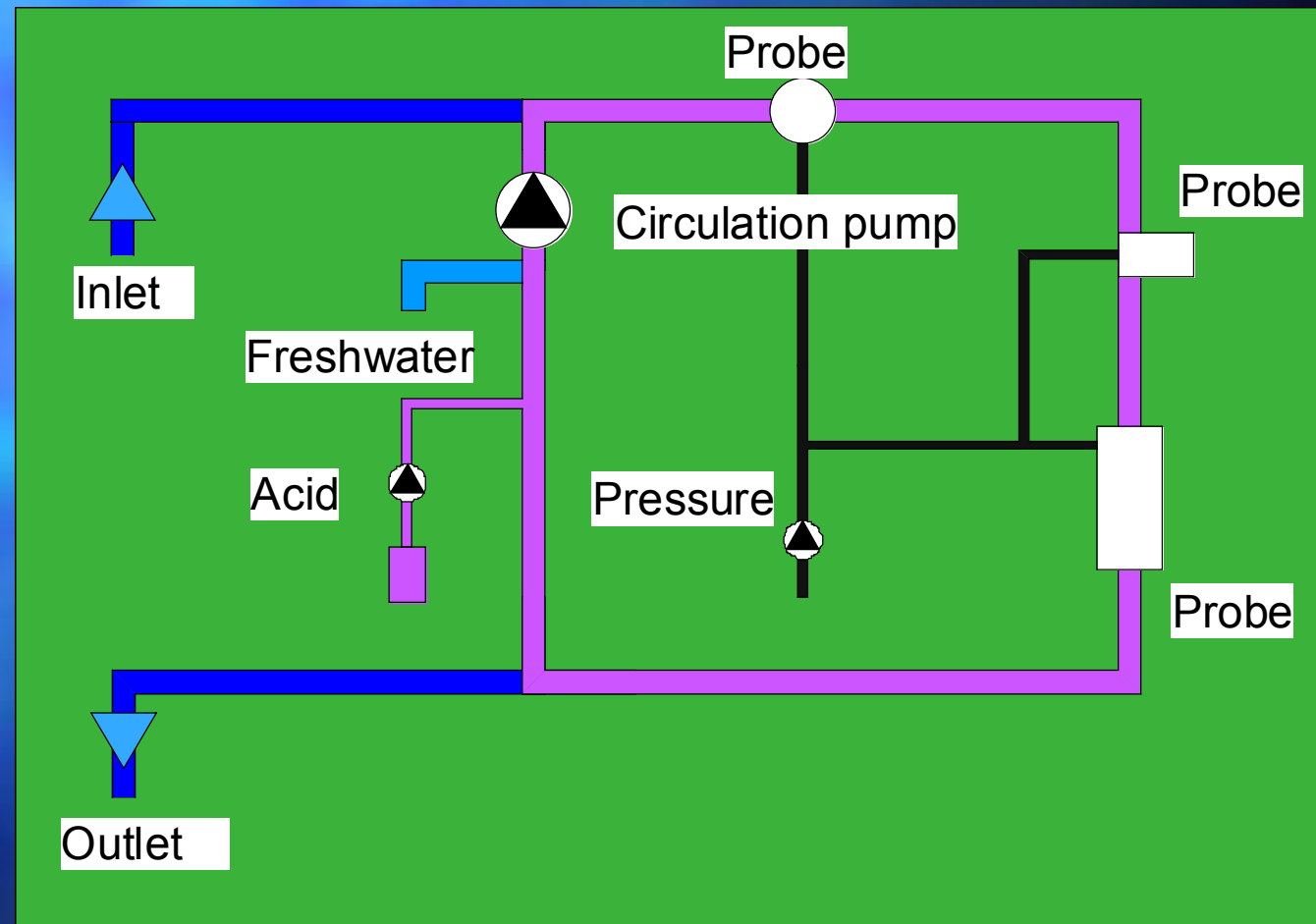
Cleaning Results

Debubbler after 2 years without manual cleaning

© BAH/AWI

Iron impurities
Cleaning with oxalic acid
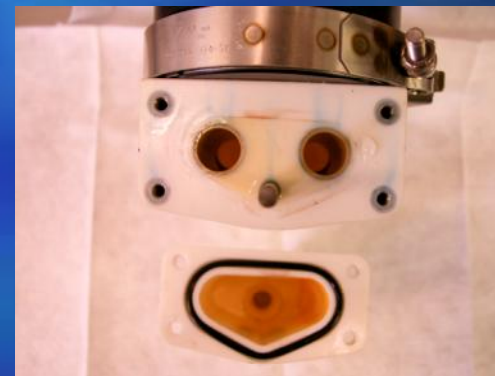
© Rijkswaterstaat

Modular and Expandable

Parameters:
- Temperature
- Salinity
- DO
- pH
- Algae classes
- Chlorophyll-a fluorescence
- Turbidity
- Nutriens
- ……

New Data System

- Data system based on LabVIEW
- Intuitive operation
- Soft SPS tools
- Error handling
  - Backflush, SMS,...
- Event and position controlled
- Telemetry
- Remote control

Quickview of the Data

Data Quality and Database Exchange

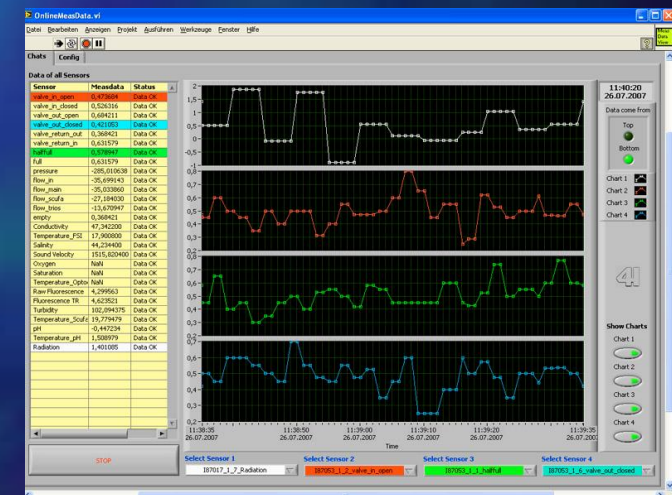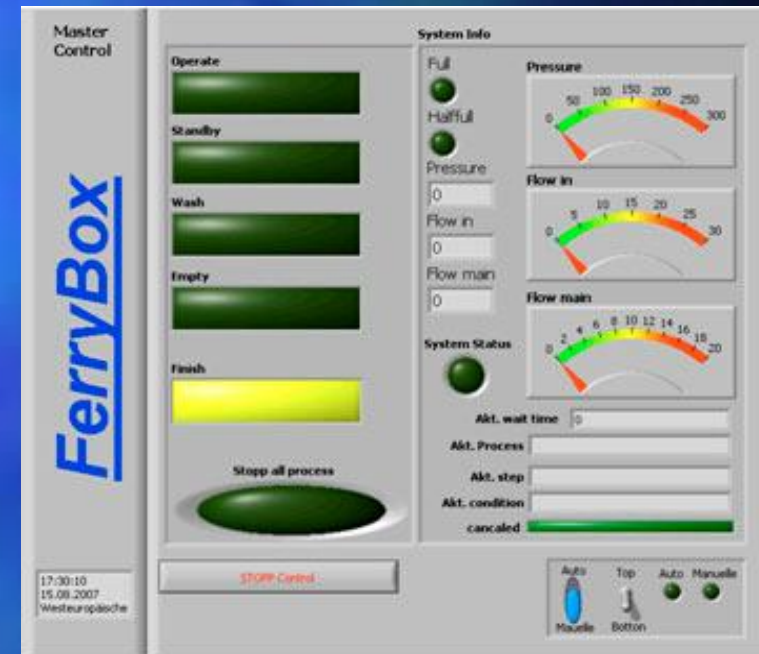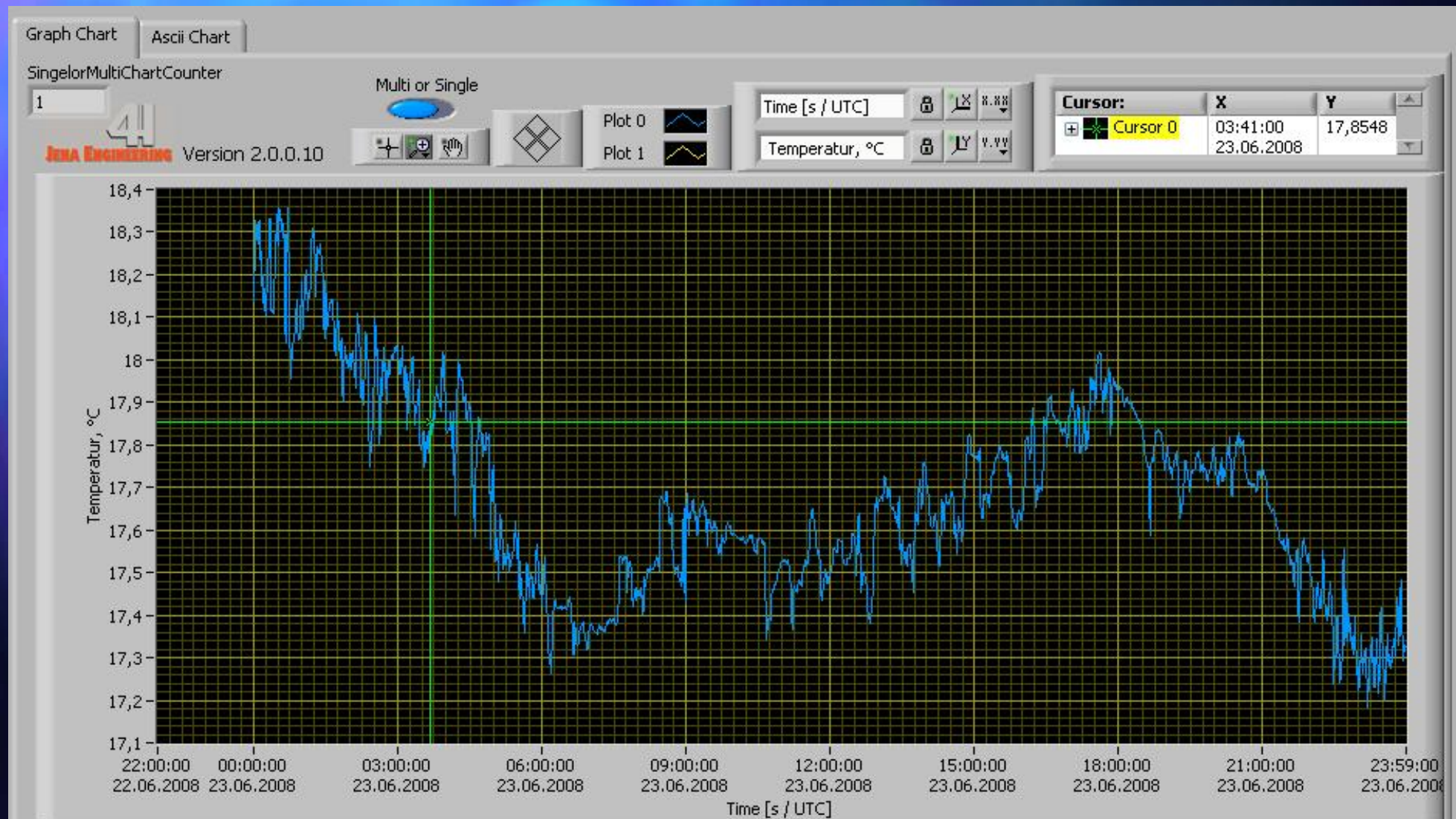| $Filename; CDT90_1_Temperatur_20080605.txt										
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New Interfaces of Devices

- RS232
- RS484
- Analoge (V, 4-20mA)
- IEEE
- Parallel Bus
- CAN, Profibus, ..

- USB (2, 3, ..)
- LAN (1000, 10000)
- ??

The 4H-Ferrybox Family

Standard FerryBox I

New: Pocket FerryBox

FerryBox II

Stationary Ocean-Monitoring

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

Parameters:
T, S, DO, pH, Chl-a, turbidity,
inlet temperature, pressure, global radiation

Stationary River-Monitoring

Continuous monitoring
of the inflow of chemical
and biological substances
into the Elbe estuary.
(GKSS Research Center)

Parameters:
T, S, DO, pH, Chl-a, algae classes,
turbidity, nutrients (NH_4^+, P, NO_3^-/NO_2^-, Si_xO_y)

Mobile Ocean-Monitoring

FerryBox as standard
monitoring equipment
on the Costguard research
vessels RF Zirfaea, Container
Vessel Trans Carrier
(Photo.: Rijkswaterstaat,
Netherlands)

Parameters:
T, S, DO, pH, Chl-a, turbidity,
inlet temperature, water sampler

Mobile Ocean-Monitoring

FerryBox
monitoring equipment
on the Galathea 3
expedition Denmark.
Special tool:
NMEA Data export

Parameters:
T, S, DO, pH, Chl-a, turbidity,
inlet temperature, water sampler

Mobile Ocean-Monitoring

FerryBox as standard monitoring equipment of the Institut for Coastal Research at the GKSS

....

(GKSS Research Center)

Parameters:
T, S, DO, pH, Chl-a, algae classes, turbidity, nutrients (NH_4^+, P, NO_3^-/NO_2^-, Si_xO_y)

Mobile Ocean-Monitoring

FerryBox as standard
monitoring equipment
of the Estonian Marine
Institute in Tallinn.

Parameter:
T, S, Chl-a, turbidity,
inlet temperature, nutrients (NO3-/NO2-)
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