



EHP ENVIRONMENT LTD

Jarmo Lohilahti, Sales Manager

EHP ENVIRONMENT LTD

- Environmental monitoring and reporting for 15 years
- A system integrator and problem solver operating with companies and environmental authorities.
- Own production, installation, service teams and certified field sample collectors. Partner with accredited laboratories
- Customer segments: pulp&paper, mining, energy, water administrator, agriculture, ports, civil engineering,...
- 600+ measurement stations in Finland, Sweden, Russia, Norway, Latvia, Estonia, Chile
- Strategy – to have certified quality and environmental procedures, and be the first accredited online environmental measurement service provider in Finland

LINKS

- www.ehpenvironment.com
 - company web page
- www.ehp-data.com
 - data cloud service
 - Username public, password public
- Youtube
 - <https://www.youtube.com/watch?v=WqT5ppT0M4E>
 - <https://www.youtube.com/watch?v=5nytWNT-0SU>

PARAMETERS

- COD, TOC, BOD, DOC
- pH
- Electrical conductivity
- Flow rate
- Suspended solids
- Turbidity
- Nitrate, nitrite
- Ammonium nitrogen
- Phosphorous, by correlation
- Dissolved metals
- Oil-in-water
- Dissolved oxygen
- Dissolved oxygen
- Water level
- Wind speed&direction
- Rain
- Air pressure
- Humidity
- Radiation
- Temperature
- Blue algae
- Chlorophyll-a
- Pore pressure
- Moisture
- Inclination
- Soil movement
- Etc.



ENMONCON CONCEPT

EnMonCon Concept

Operators,
Site's QEHS manager

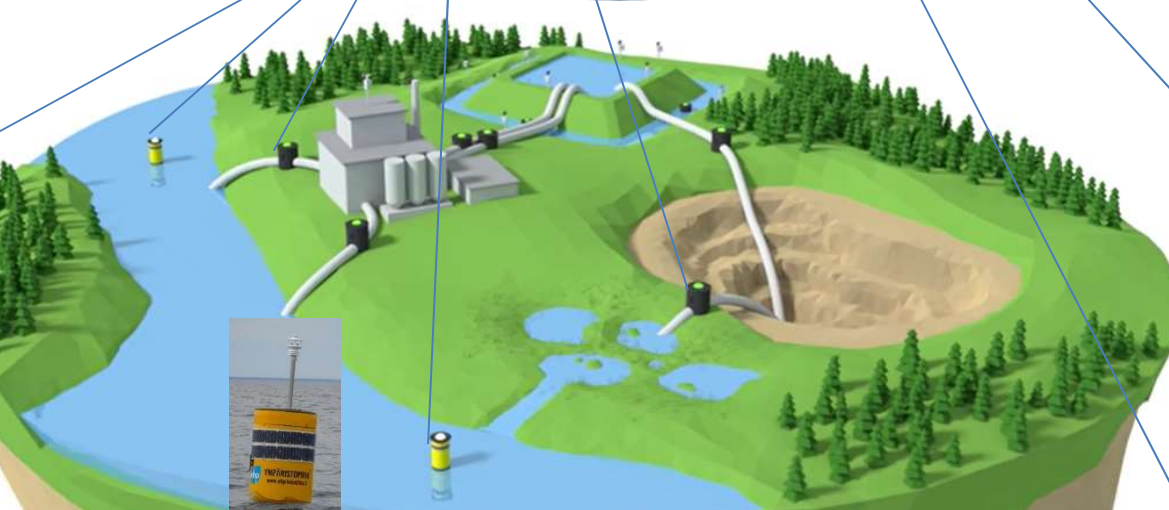
BAT & BEP for environmental monitoring

Environmental
authorities,
stakeholders

Plant & corporate management
reports



Data cloud & automation system



LIMS



Solids, COD, BOD, ...
Metals, oil, pH, flow, conductivity,...



Manual field
measurements

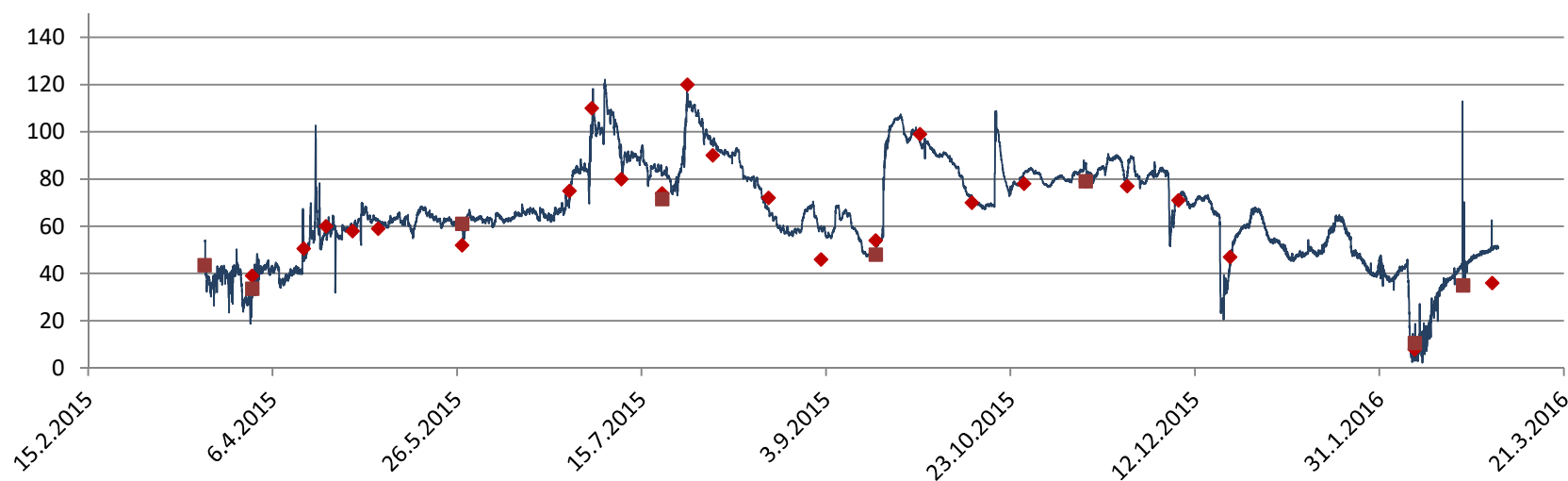




ENVIRONMENTAL MONITORING METHODS

COMPARISON OF ONLINE AND MANUAL MEASUREMENTS

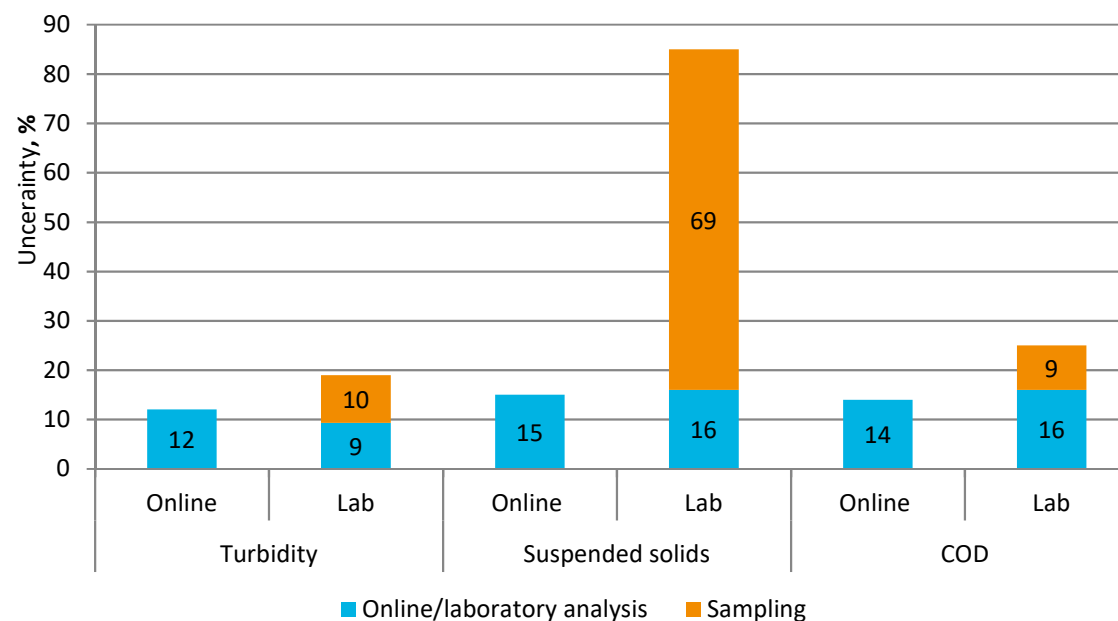
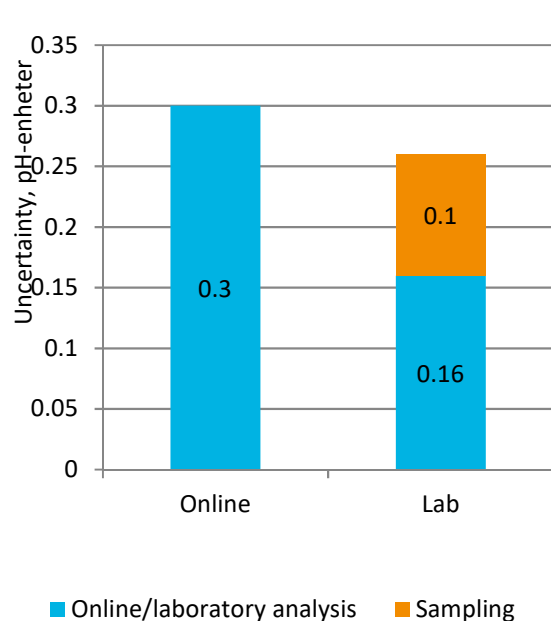
Kerusneva, manual and online COD analysis



Continuous online analysis enables to

- see the changes in the process and do control actions subsequently
- calculate true environmental load

MEASUREMENT UNCERTAINTY = SAMPLING UNCERTAINTY AND ANALYSIS UNCERTAINTY



2U = expanded measuring uncertainty with factor 2 (95% confidence)

Ref. On line monitoring and manual sampling uncertainty. Maija Ojanen-Saloranta 2016, Centre for metrology Mikes, Finland

- Manual sampling increases uncertainty of laboratory analysis.
- Total uncertainty of online measurement is the same or better than laboratory analysis
- Customer applied and got new environmental permit where laboratory analysis were replaced with online measurements. Dnro LSSAVI/4610/2016

MONITORING METHOD COMPARISON

	Laboratory	Online measurements
Maturity	+ Established in environmental monitoring	+ Established in process control, partially in environmental monitoring
Delay	- Hours, day(s), week(s)	+ No delay
Damage prevention	- Not possible	+ Possible
Environmental load	- Environmental load variations unobserved	+ Realistic environmental load observed
Process control	- Not possible	+ Possible, ->OPEX savings
Service	- Laboratory's own service - Manufacturer's service	- Instrument maintenance personel - Manufacturer's service
Sampling	- Sample collection and treatment significant error sources, often unidentified	- No sampling error in <i>In situ</i> -measurements, no operator dependent error
Analyses	+ Several analyses in the same time	+ Most important analyses
Data processing	- Requires often manual data processing	+ Automatic, manual processing minimized



REFERENCES

Outokumpu
ELY

NETWORK

SOME CUSTOMER COMPANIES



SELECTED REFERENCES

EHP-OIL

Stora Enso, Oulu
Discharge water quality of oil separation pond

Arizona Chemicals, Oulu
Distilled water
Clean water

SAPPI Finland Operations, Lohja
Power plant water monitoring

SSAB, Raahe

Outokumpu Stainless, Tornio
Oil removal from waste water by flotation

COD

Boliden
VAPO
Vaskiluodon Voima
Stora Enso, Oulu

EnMonCon

Oulu waste management dept.
Vaasa waste management dept.
Porvoo waste management dept.
Vaskiluodon voima

EHP-METAL

Boliden Kevitsa, Finland (Ni)

Boliden Rönnskär, Sweden (Pb, Zn, Cu, Cd)
Waste stream

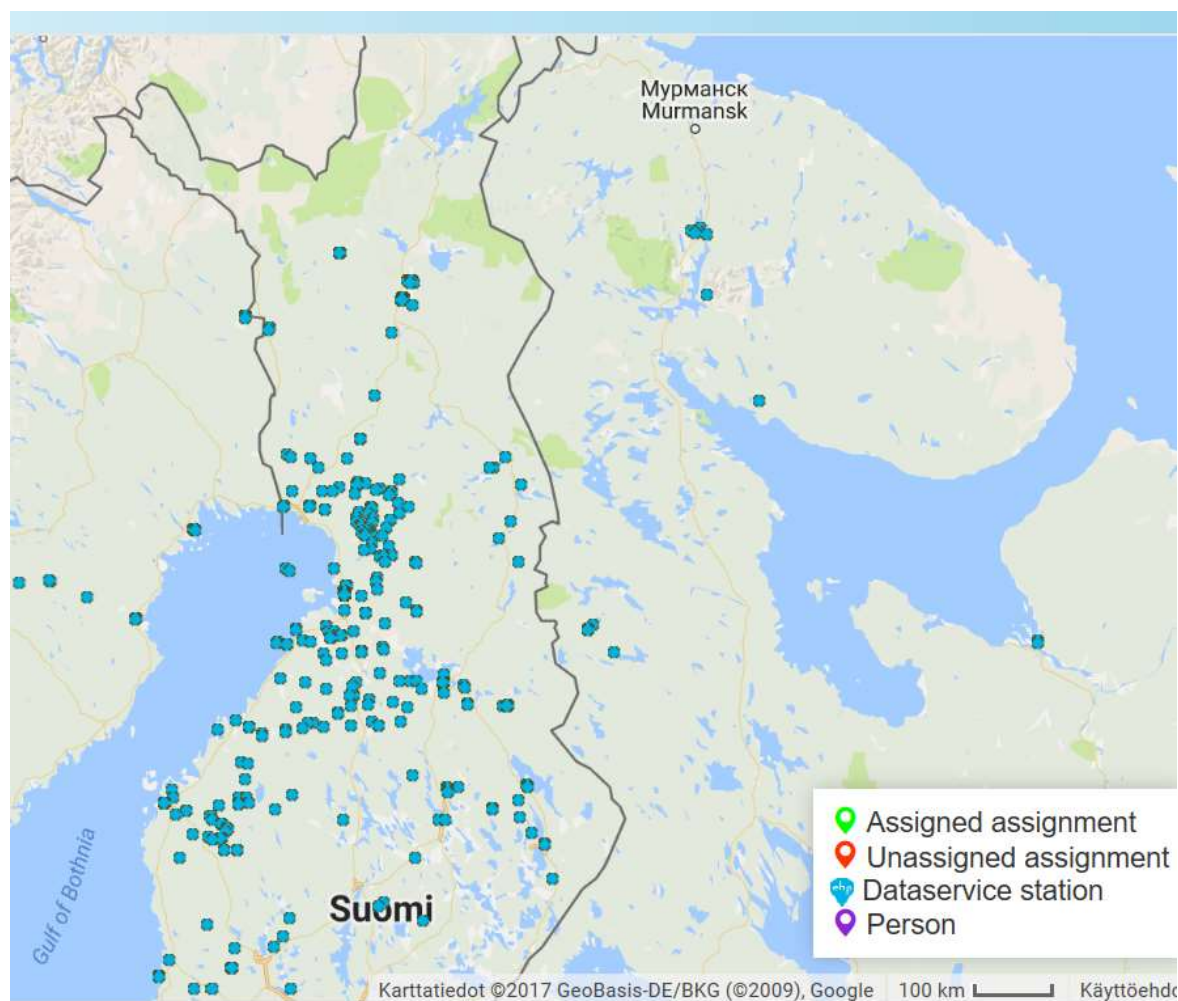
Antofagasta Cuncumen, Chile (Cu)

Elqui, Chile (Cu)



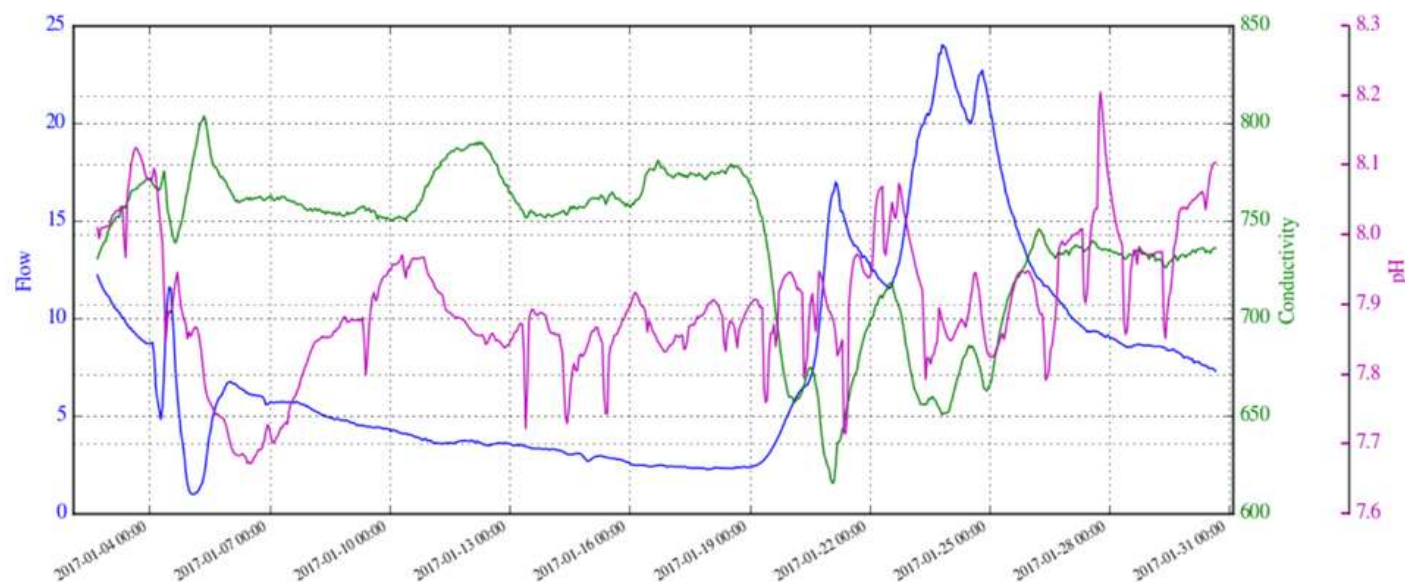
PRODUCTS

EHP-WEB



EHP WEB is a tool for the EHP Service and customer see the status of own measurement stations

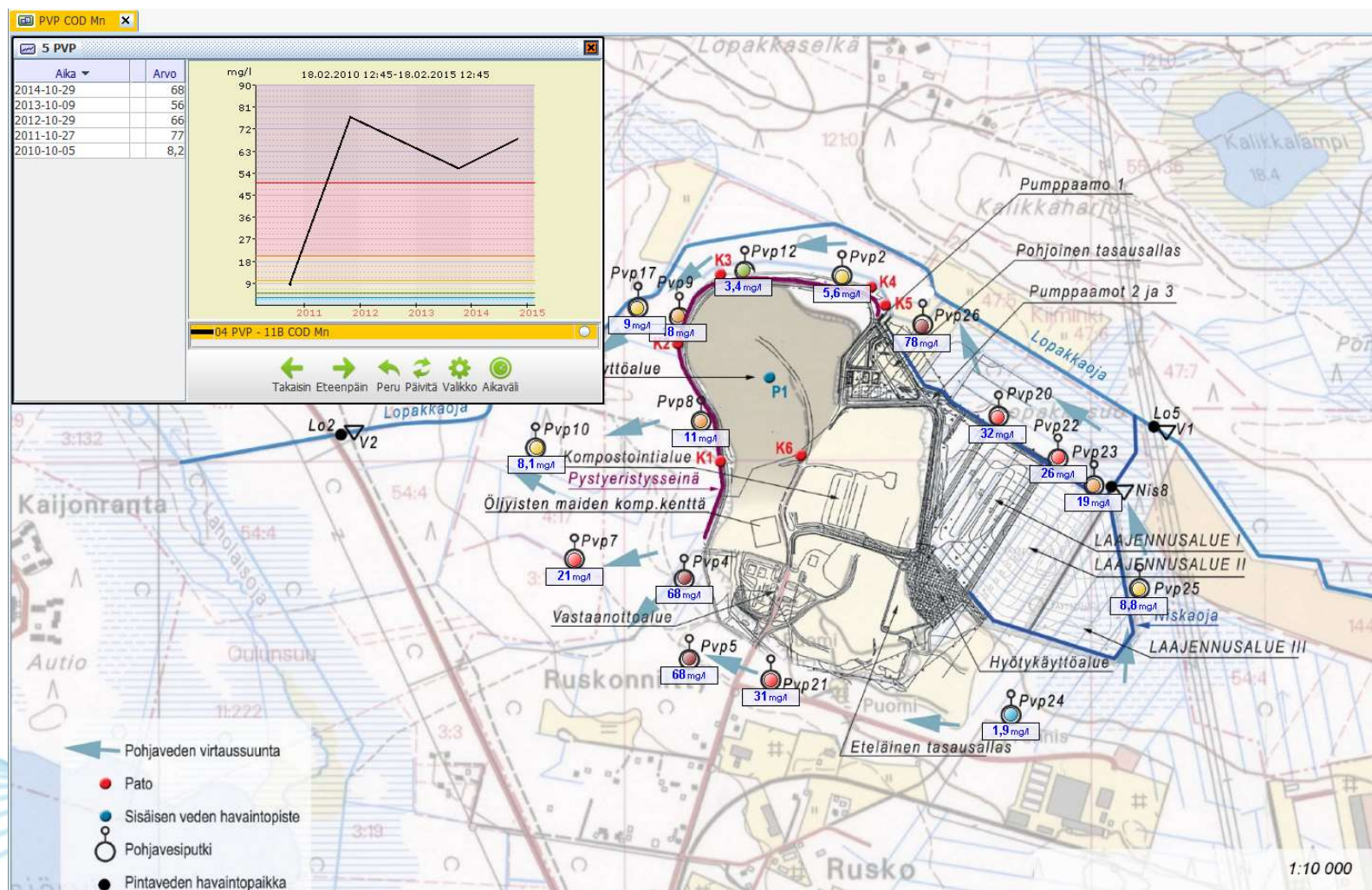
EHP-DATASERVICE



Online data available for process control and early warnings.
 Graphs and tables for environmental reporting easily drawn from the online data
 See: www.ehp-data.com

The screenshot shows the web interface for 'EHP Oulu Weather [50001]'. At the top, there is a navigation bar with the 'ehp' logo and links for 'ehp-data.com', 'Dataloggers', 'EHPWeb', and 'Staff'. Below this is a secondary menu with buttons for 'Graph', 'Reports', 'Info', 'Units', 'Conversion table', 'Formulas', 'Documents', 'Log events', and 'Users'. The main content area displays the title 'EHP Oulu Weather [50001]' and the text 'Measurements available between: 2015-08-12 09:30:00 - 2017-04-04 11:00:00 (Europe/Helsinki)'. Below this, there are input fields for 'Start date and time' (2017-03-28 11:00:00) and 'End date and time' (2017-04-04 11:00:00). At the bottom, there is a section for 'Quick period (Time period before latest measurement 04.04.2017 11:00:00)' with radio button options for 6h, 12h, 1d, 2d, 3d, 1w (selected), 2w, and 4w.

MAP GRAPH



EXAMPLE OF EHP-ORGANICS



Applications:

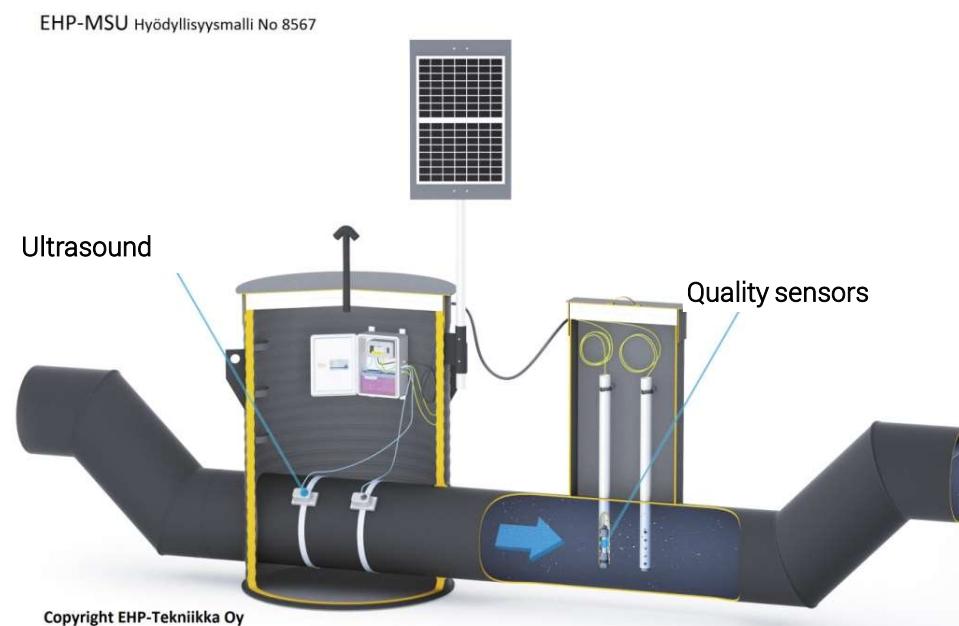
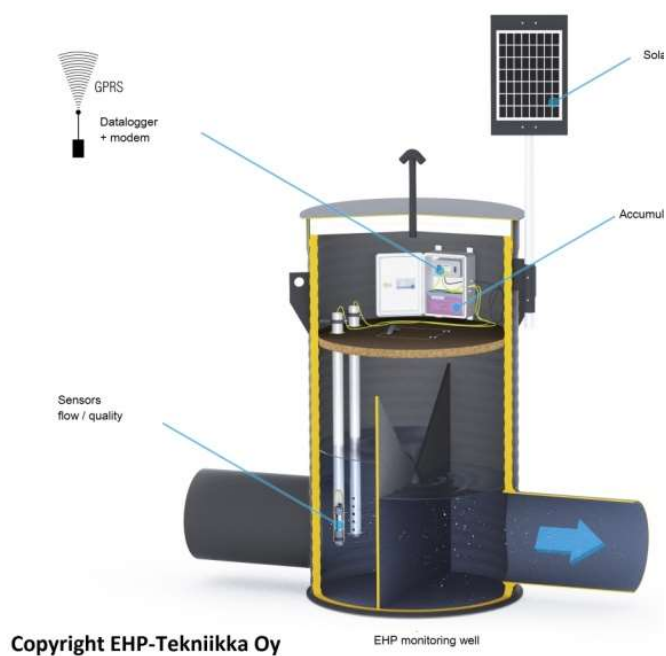
- WWTP
- environmental monitoring
- drinking water monitoring
- control of UV disinfection systems

Dissolved oil (PAH compounds) and COD tests
Ref: Jatkuvatöimisten ympäristömittauslaitteiden
koejakso Stora Ensolla, Pieti Jenni 2014

EHP-METAL MEASUREMENTS ON THE FIELD



MEASUREMENT WELLS



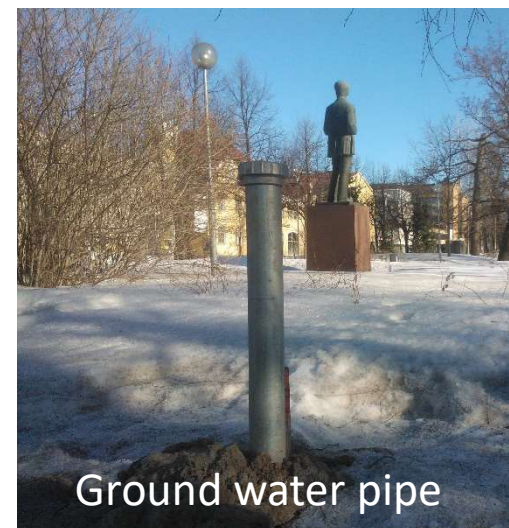
EXAMPLES FROM THE FIELD



Measurement well



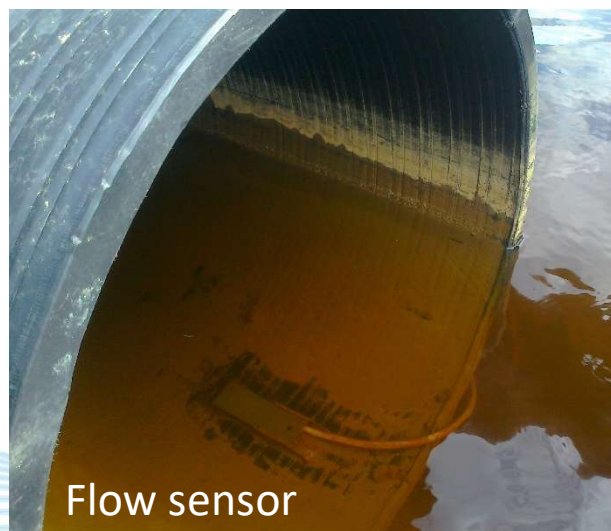
Weather station



Ground water pipe



Measurement well



Flow sensor



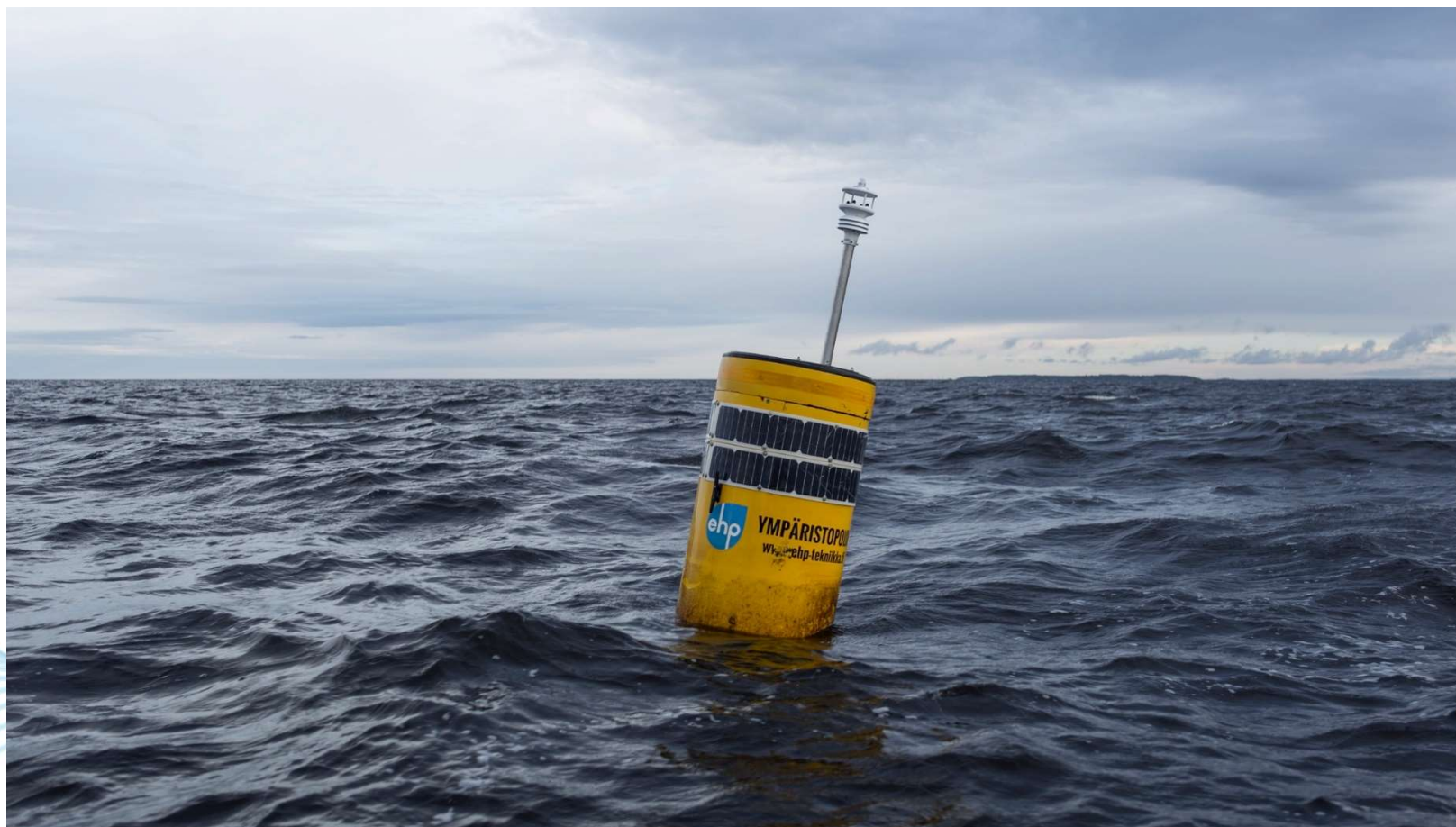
Well on the street

INSTALLATION IN CUSTOMER'S WELL

PUMP WELL, SENSORS CONNECTED TO INSTRUMENT NETWORK AND POWERED BY AC



MEASUREMENT BUOY





environmental solutions.