WATERPRO

Water flow and quality monitoring info card
Monitoring network in Central Finland

Jyväskylä University of Applied Sciences: Automatic water quality measurement from field ditches in Saarijärvi area

Photos: Lahtela

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- The first on-line measuring system in Central Finland mainly examines the effect of diffuse loading from agriculture on water quality.
- The objective of the automatic water quality monitoring is to study the agricultural loads from different kind of catchment areas. The stations also investigates the effectiveness of water protection measures, such as constructed wetlands.
- Measurements use to happen usually in two point before and after sphere of influence to finding out the influence of the area.
- Data from measuring probes is first saved in to dataloggers and then transferred in to the server e.g. every hour via gsm data link.

Measurements

- Measuring devices: S::can UV-VIS and YSI optical probes
- Flow measurement: V-measuring weir + pressure sensor Starflow Ultrasonic Doppler Instrument Model 6526

Measurable variables:

- oxygen,
- electrical conductivity,
- temperature,
- turbidity,
- nitrate,
- organic carbon compounds (TOC + DOC)

- Electricity is taken from the grid or from solar panels and batteries
- Measurements all year round
- Measuring in water (water is not pumped to the beach)

Landbúnaðarháskóli Íslands
Agricultural University of Iceland
SAVONIA UNIVERSITY OF APPLIED SCIENCES
afbi Agri-Food and Biosciences Institute
HERIOT WATT UNIVERSITY
LOUGH NEAGH PARTNERSHIP
búnaðarstovan
LULEÅ UNIVERSITY OF TECHNOLOGY
GTK
Comhairle Contae Dhún na nGall
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Equipment maintenance

- Measuring probes includes usually automatic cleaning properties, mechanical or pressurized. This is normally not enough in Finnish circumstances and probes should be cleaned also manually regularly to avoid incorrect measuring results.
- Appropriate length of the cleaning interval is case-specific and can vary between one week and one month in field ditches. Cleaning interval is too long if measuring results changes after cleaning.
- If measuring station is located outside electricity grid, the electricity sufficiency should be ensure and batteries changed regularly, such as pressurized air bottles. In winter circumstances, ice can be cause some challenges for the measuring.

Quality assurance

- It is important to control results of on-line measuring and use the limit values, which the measured data should not exceed. In this case, the quality controller will be notified of any measurement exceeding or below the limit value and the reason for deviation can be find out.
- Quality controller should have enough experience and knowledge about relationship between different hydrological parameters to ensure that right data is saved and incorrect data is deleted.
- To obtain reliable and verified results with online measurements, traditional water samples analyzed regularly in the laboratory are needed. Water samples needed for quality assurance must be taken close up the measuring probes.

MORE INFORMATION
Tarja Stenman, JAMK University of Applied Sciences, Saarijärvi
Email: tarja.stenman@jamk.fi
https://www.jamk.fi/en/Contacts/institute-of-bioeconomy/

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