Dryp.

OVERFLOW

Measure Every Drip. Everywhere. In real-time.

We enable a future where the entire water infrastructure can be monitored in real-time using a network of distributed wireless sensors. Dryp is a range of solutions that enable proactive and holistic decision making for water infrastructure.

HARDWARE

- High-resolution water level sensor
- Variable and adaptable measurement frequency
- Long battery life
- Edge processing
- Optimized for the challenging conditions in the water sector

CONNECTIVITY

- Global connectivity
- Secure network infrastructure
- Two-way communication
- Variable and adaptable transmission frequency
- Optimized for the challenging underground transmission conditions

CLOUD

- Data availability and visualization
- Automated data validation
- Data API for full control
- User defined thresholds
- Data integration: GIS, weather and other sources
- Predictive capabilities utilizing machine learning

INSTALLATION AND APPLICATION

- Plug 'n' play installation
- Self-configuration capabilities
- Self-calibration and diagnosis
- Intelligent alarm system
- Device management and automated health monitoring
- Data-driven overview of man-made and natural water systems

In the Box and in the Cloud.

Dryp is an end-to-end solution for distributed monitoring. We provide quality controlled and ready-to-use data as a service. All data is ready for integration in your decision process and 3rd party software. Dryp measurement units are designed and produced in Denmark. Our integrated hardware and software are designed to minimize the total cost of ownership (TCO) for you.

Dryp units are operated as nodes in a monitoring network together with high resolution rainfall data and your existing sensors. We take advantage of pattern recognition and prediction of signals travelling through the network. Hence, offering a combined and coherent solution providing both data and information.

Dryp. **Made by the water sector. For the water sector.**

Monitoring Overflow Structures.

There are different reasons and needs for monitoring overflow structures: regulatory requirements, overflow frequency reporting, discharge and emission estimates, operational management, network real-time control and optimization etc. Reliable and continuous overflow monitoring is challenging and costly. Hence, board monitoring of overflows has been limited.

We have created the **Dryp Overflow** solution to simplify overflow monitoring and provide you with information about the correlation between overflow discharges, rainfall and your sewer system. Dryp's philosophy is to provide cost-effective end-to-end solutions by simplifing and standardizing monitoring to cover most monitoring situations. We acknowledge that our standardized overflow solution might not be sufficient in some cases. Our goal is to find the right solution for you and provide you with real-time information about your infrastructure.

Dryp Overflow is developed to overcome the challenges associated to overflow monitoring and enable broad use of the collected observation data.

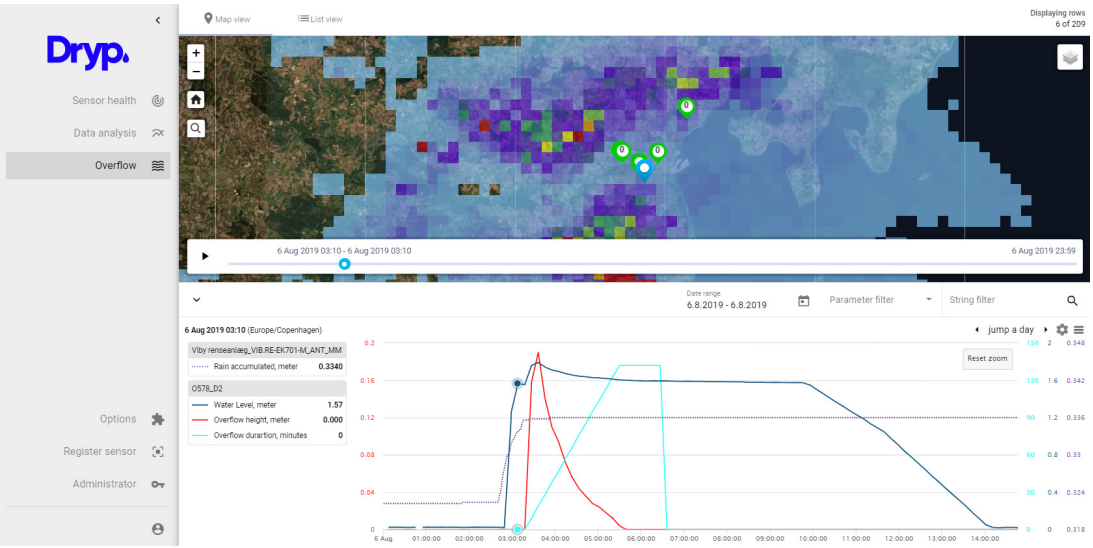
COMMON CHALLENGES	DRYP OVERFLOW SOLUTION
Comprehensive coordination in relation to purchase and configuration of sensor and communication components	Simplified end-to-end solution.
Need of a specialist for setup and calibration.	Guided and automated setup process.
Manual sensor configuration and data integration.	Easy and automated configuration and data integration.
Manual data quality control.	Automatic health system and overview of all sensors.
Scheduled maintenance.	Predictive and just-in-time maintenance recommendation based on health system.

Dryp Overflow solution is provided at four different levels with addition features and increasing accuracy of the emission/discharge flow rate. The achievable application level may be limited by practical conditions. Application level 0 and 1 is standard features. Level 1 require the user to provide structural specifications. Level 2 and 3 are optional features and require additional survey, modelling and configuration.

Level 0	Level 1	Level 2	Level 3
On/off and duration	Estimated discharge based on overflow height and a standard weir equation.	Estimated discharge based on overflow height and a calibrated weir equation.	Estimated discharge based on structure specific CFD estimated Q-h relationship.

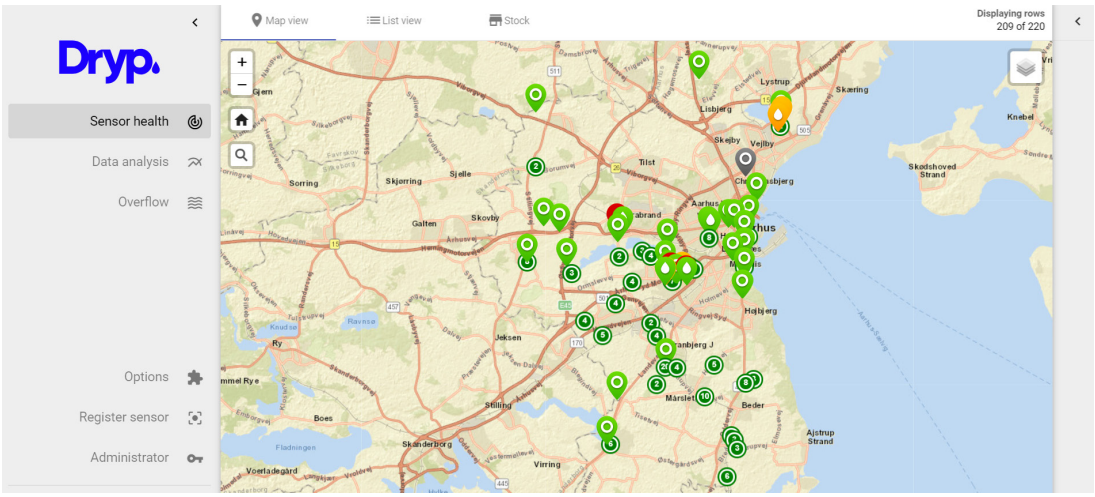
Dryp overflow solution applied in Aarhus, Denmark.

Aarhus Vand wanted to monitor overflow events and to learn about rainfall vs overflow interactions at several overflow structures. The **Dryp Overflow** solution was easily implemented in Aarhus using standard Dryp water level measurement units. The observation data was automatically integrated into the online applications: **Overflow** and **Sensor Health**, and available within minutes.



The **Dryp Overflow** application provides an overview of the monitored overflow structures as a map or list view. All water level observations are easily compared with other data sources. E.g. precipitation, runoff, flow, water quality measurements. The overflow application automatically estimates overflow height, duration and severity based on the water level observations.

The **Dryp Sensor Health** application provides an overview of the health state of all Dryp units and other data sources as a map or list view. The health status is based on the continuous monitoring of data quality, signal and battery. The health application enables Aarhus Vand to only maintain the units when needed instead of traditional scheduled maintenance.

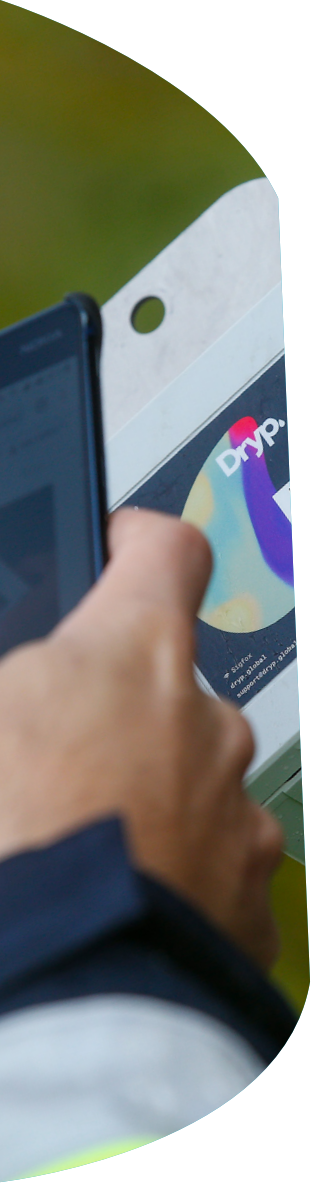


Dryp Overflow enables Aarhus Vand to easily monitor overflow structures and compare these observations with precipitation data. It provides an increased knowledge about the correlation between rainfall and overflow events for each monitored overflow structure. Hence, providing Aarhus Vand with an increased system understanding which is used to optimize investments and minimize the environmental impacts.

Sustainable Development Goals.

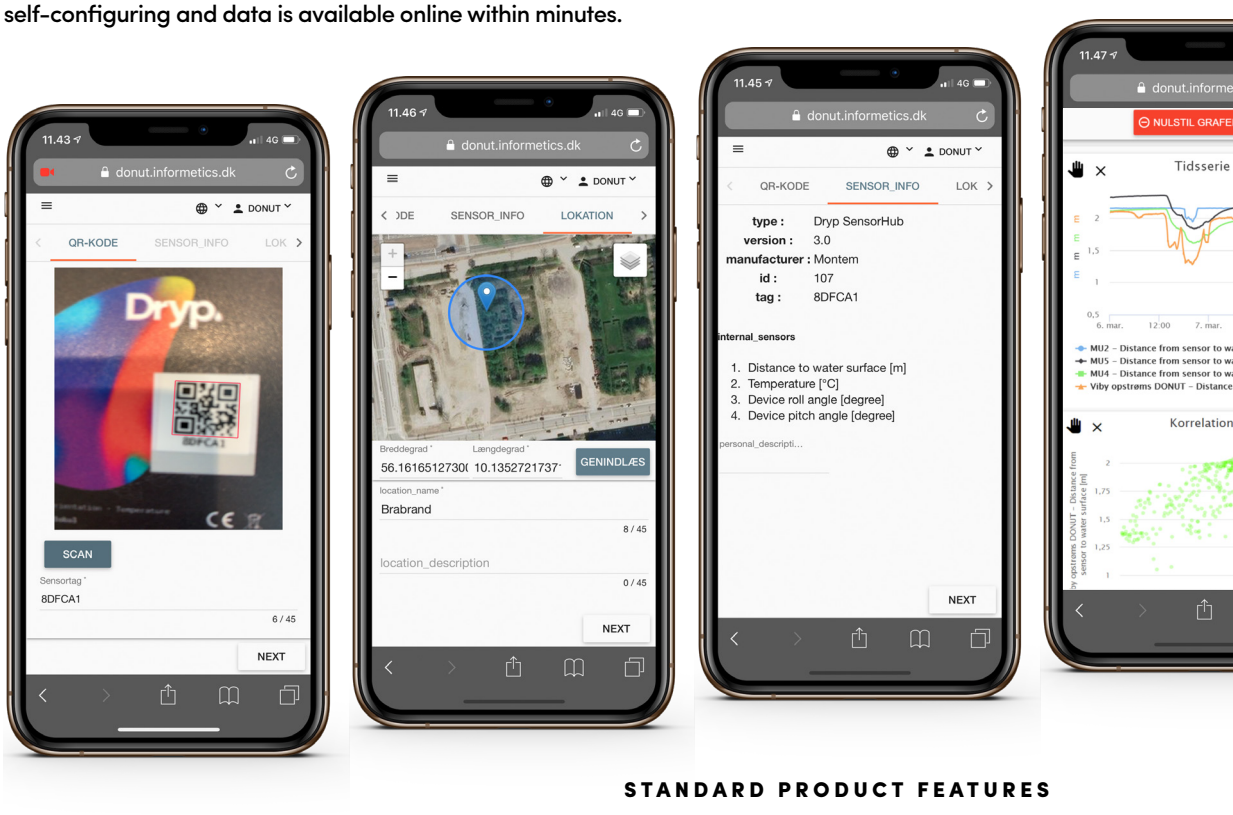
We support the United Nations Sustainable development goals with an increased focus on:

*How we support the goals is described further on **dryp.global***



Installation and Application.

Dryp measurement units are designed for monitoring in urban drainage systems and natural waterways. The plug 'n' play installation takes 5-20 minutes. Each unit is self-configuring and data is available online within minutes.



STANDARD PRODUCT FEATURES

PROTECTION CLASS	IP67
SENSOR TYPE	Ultrasonic
RESOLUTION	1 mm ± 1 mm
MEASUREMENT RANGE	300 mm - 5000 mm
CONNECTIVITY	Two-way Sigfox communication
WEIGHT / DIMENSIONS	~ 0,5 kg 100 mm x 100 mm x 50 mm
UNIT HEALTH	Continuous monitoring of device vitals
BATTERY LIFE	1 - 3 years
MEASUREMENT FREQUENCY	2 minutes
TRANSMISSION FREQUENCY	14 minutes

OPTIONAL FEATURES

SENSOR TYPE	Pressure transducer and other via generic SDI-12 interface
CONNECTIVITY	LoRaWAN / GSM / NB-IoT
MEASUREMENT FREQUENCY	< 1 minute
TRANSMISSION FREQUENCY	< 1 minute

Device Management.

The Dryp Platform includes a device management system with a full health overview and intelligent alarms for your Dryp units and existing sensors. This automated system helps you to keep the manual inspection of data and sensors to a minimum.

Get On Board With a Pilot Project.

Dryp is made by the water sector in Denmark, and we are happy to share our experiences and assist your organization in getting hands-on experiences with IoT, digitalization and machine-learning. We gladly assist you and your consultants finding the best way to integrate these new technologies in your decision process.

We offer a pilot project with five Dryp units for 6 months, and four hands-on meetings to ensure the value creation for your organization. These honds-on meetings range from installation of Dryps units to utilization and integration of data to address the specific challenges in your organization.