



# PREDICTING THE FUTURE

## TO IMPROVE OPERATIONAL PERFORMANCE OF WASTEWATER NETWORKS



[www.detectronic.org/detecanalytics](http://www.detectronic.org/detecanalytics)



# COMBINING DATA COLLECTION AND PROVEN MACHINE LEARNING TECHNIQUES INTO A SCALABLE AI\* POWERED **PREDICTIVE ANALYTICS TOOL** FOR WASTEWATER NETWORKS.

## WHAT IS DETECANALYTICS?

DetecAnalytics is an AI powered predictive analytics tool for wastewater networks. By providing accurate predictions and actionable insights 24 hours a day, DetecAnalytics enables water and sewage companies (WaSC's) to make well informed decisions around the wastewater network.

## HOW DOES IT WORK?

Detectronic flow and level monitors located strategically across the catchment collect flow and level data. That information is transmitted to DetecAnalytics, a secure, reliable cloud platform that displays the received information in easy to use dashboards and reports for analysis.

Using smart algorithms, real time data, historical data sets and information from other sources such as rainfall, data is translated into actionable insights. Machine learning technology makes dry weather flow (DWF) predictions and uses the additional data to predict future flow and identify anomalies in the network.

Detectronic data technicians review the data alongside the predictive analytics software to verify the alarm protocols. The additional human intervention helps identify any existing network issues such as infiltration, and external influences including changes to urban development over time. The combination of AI and human analysis makes DetecAnalytics truly unique.

### FEATURES



#### SEWER EVENT PREDICTION SOFTWARE

Algorithms predict future behaviour based on sewer conditions and weather patterns.



#### COMPLETE SERVICE SOLUTION

Providing the monitoring equipment, the data collection, the analysis and the reporting all under one roof.



#### AUTONOMOUS ANOMALY DETECTION

Machine learning means anomaly detection continually improves throughout the programme.



#### 2BN+ HISTORICAL DATA POINTS

We've added data collected over the years to help the machine learning process.



#### AI/HUMAN HYBRID ANALYSIS

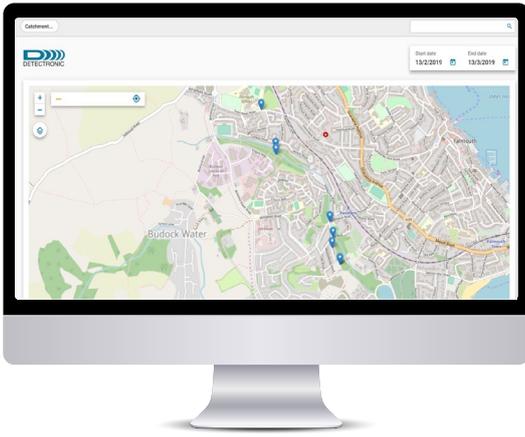
Data technicians work alongside the software to verify the alarms and system performance, detect existing anomalies and external influences.



#### 24HR REAL TIME REPORTING

Understand what is happening in your wastewater network at any time of day or night.

\*Artificial Intelligence

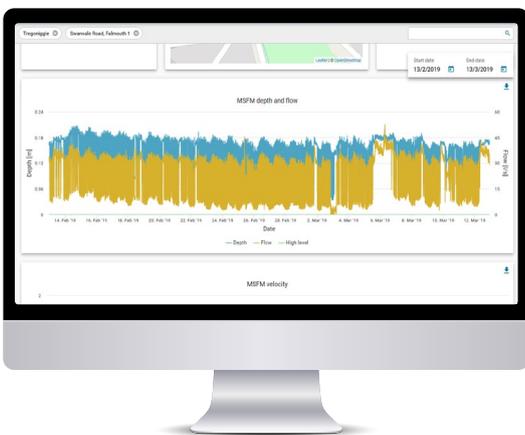
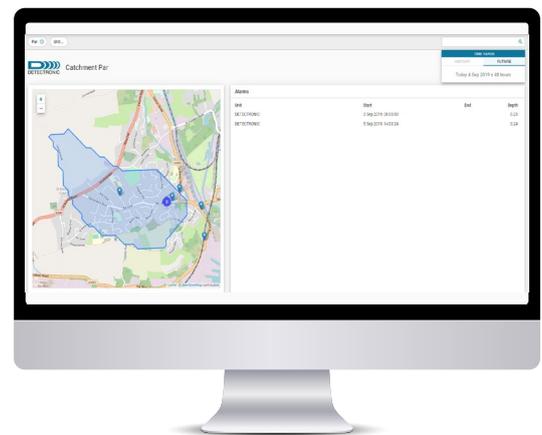


## QUICKLY IDENTIFY PATTERNS, TRENDS AND PROBLEMS IN THE NETWORK

View your entire catchment or zoom into individual assets to see live data from multiple sources and an overview of trends displayed in charts and tables.

## AUTOMATE DAILY OPERATIONS

With the AI powered virtual operator, you can **automate day to day activities** to assist with fault detection, predictive maintenance, and network planning and optimisation, all of which enables operators to make more efficient use of their physical assets.

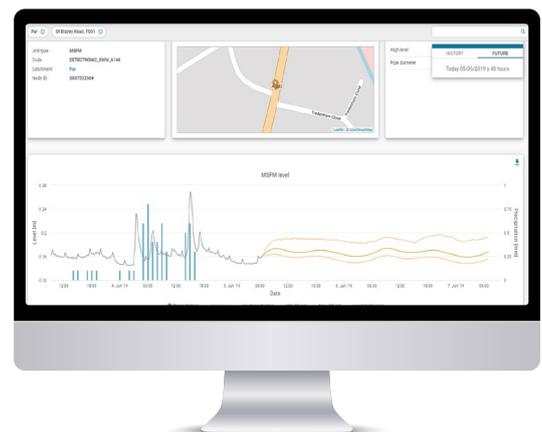


## MAKE INFORMED DECISIONS WITH REAL TIME DATA

DetecAnalytics can detect patterns from a horde of seemingly unrelated data to provide insights in real time. As a result, businesses can make decisions based on more useful information. The real time decision support tools use a wide range of reliable and relevant water data to **provide you with critical information** when you need it.

## ANTICIPATE THE FUTURE

Artificial Intelligence uses machine learning to analyse historical and real time data and **make predictions about future events**. Patterns in water demand, quality, influent and effluent flow and load are uncovered to automatically optimise performance and drive effective decision making.



# SOLUTIONS

## REDUCE CSO OVERFLOWS AND SPILLS

By accessing and interpreting real time data from the monitoring equipment in the sewer network, we have a clear indication of where vulnerabilities in the network may be. Combined sewer overflow events generally occur following periods of heavy rainfall. Our solution combines weather forecasts with processing information to predict pollution events and the implications for the network.

## MANAGING THE WASTEWATER NETWORK

Detectronic flow and level monitoring equipment, or existing assets placed in the sewer network helps to understand the performance and detect anomalies within the network. This could be blockages or high/low volumes for example. Understanding the demand on wastewater treatment works enables decision-making to regulate wastewater, driving optimisation through efficient usage of pumps, reduce pipe friction loss and energy consumption.

## CONTROL THE FLOW INTO THE WwTW

DetecAnalytics can be used to control the hydraulic flow feeding a wastewater treatment works. The system uses knowledge of the storage available within a catchment (in sumps, pipes, etc.) together with predictions of DWF, transit time and rainfall forecast to control the flow into the WwTW.

When rainfall events are short in duration, DetecAnalytics can hold back the flow as it has a confident prediction of future levels. Conversely, if prolonged rainfall is expected it can transport flow early into the WwTW to create maximum storage for the expected flow.

Expanding the system into pumping stations throughout the catchment can create a more balanced flow throughout the network, reducing spills and pollutions.

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