



Early warning system – prepare for future events

PREACT supplies forecasts of the hydraulic load on the basis of the weather forecast and/or data from a weather radar. PREACT is suitable for pumping stations, basins or inlet to wastewater treatment plants.

PREACT forecasts the hydraulic load of rain up to two days ahead and makes it possible for the system in question to take the necessary precautions.

PREACT can be implemented in all online controls and provides a better utilisation of the existing wastewater treatment system. The forecasts can also be transmitted directly to PLC/SCADA in which they can be used for a simple control or as visual information.

Minimise overflows by PREACT

Wastewater treatment plant

If the predictions are applied in the online control at a wastewater treatment plant, it is possible to adjust the system for wet weather operation. In this way, the wastewater treatment plant is ready for the higher inlet of rain before it begins. The early adjustment minimises the risk of sludge escape as well as overflow in the first phase of the rain runoff in which period the substance concentration is at its highest. This is especially beneficial to the

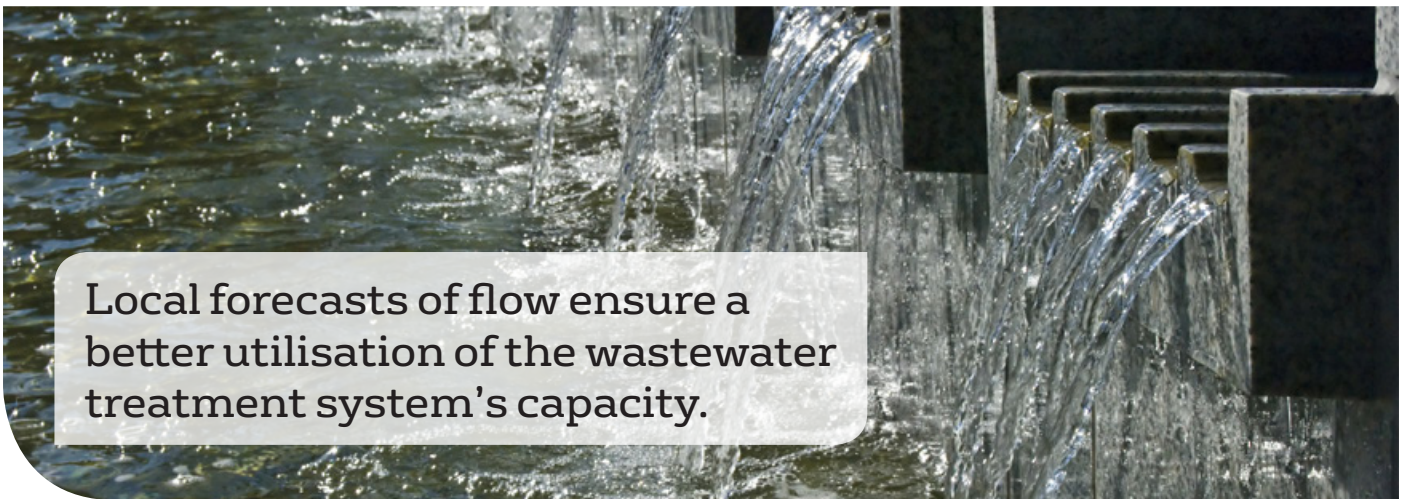
aquatic environment. Furthermore, PREACT will be able to evaluate whether it is worthwhile to remain in this mode of operation, if another rain event is forecasted.

Sewer systems

PREACT in sewer systems can be used to establish the most optimum capacity in the system as possible. PREACT will forecast an increased flow and contribute to minimise the size of the overflow.

If PREACT is applied, it is possible to:

- **Limit overflow** through pro-active control of sewer systems and wastewater treatment plants.
- **Apply resources and efforts in the correct places** in the wastewater system, with local forecast of flow based on radar and/or weather models.
- **Optimise the operation of the wastewater treatment plant and save costs through** an early adjustment of the wastewater treatment plant to wet weather operation.
- **Ensure a flexible and optimised utilisation of the wastewater treatment system** and reduce the strain on the environment on the basis of a 48-hour flow forecast.



Local forecasts of flow ensure a better utilisation of the wastewater treatment system's capacity.

How does PRACT act:

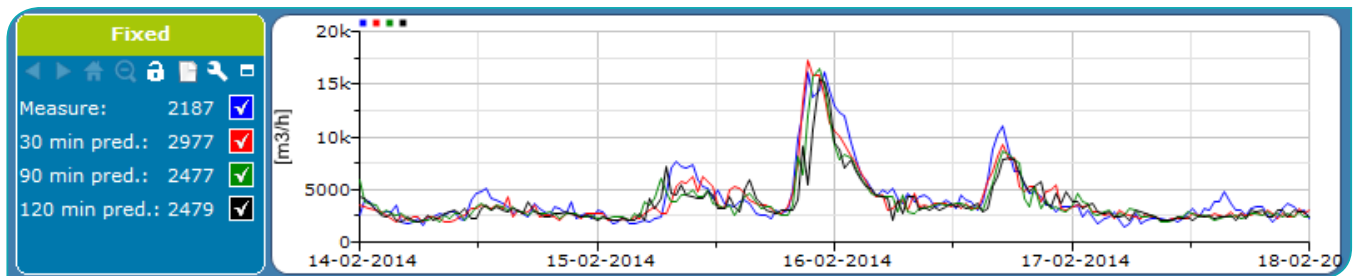
PRACT produces prognoses in real time for e.g. flow in the wastewater system. They are made in three steps:

1. First, weather forecast data are collected continuously over a set period. Either from weather models and/or weather radar.
2. Calculations with online runoff models that are calibrated automatically and continuously in relation to the actual situation in the wastewater system before the future flow is forecasted.
3. The forecasts are supplied with probabilities of whether the future flow will be obtained.

Krüger's online control system (WWM-Control) for sewer systems and wastewater treatment plants are fully compatible with PRACT and can advantageously be used together.

PRACT is supplied with a built-in quality assurance that informs of the data basis of the forecasts and whether the basis is sufficient or lacking in data.

Case: Lynetten Wastewater Treatment Plant



At the Lynetten WWTP in Copenhagen PRACT is used for proactive, change-over to wet weather operation. In this way the plant is prepared for a higher inlet flow so that the hydraulic capacity is optimal. The figure shows how the measured flow (blue line) is forecasted up to 120 minutes ahead (black).

More specifically, it has turned out that the number and amount of overflow have been reduced. In this way, more 'first flush' is treated instead of being discharged untreated to the recipient.

**For further information,
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