

# IWPM – INTEGRATED WASTEWATER PURIFICATION MANAGEMENT

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## Abstract

The inter-connection between wastewater plants through a connection pipe and remote control can be very advantageous, if peak loads are divided and plant capacities are combined. The total effluent quality can be improved, and the overall costs can be optimised.

## Keywords

Wastewater treatment, connection pipe, remote control

## Introduction

Under the reference no. ENV/D/000478 – IWPM, the European Union has granted an EU-funded project entitled "Integrated Wastewater Purification Management". The overall objective of the Project is to demonstrate how wastewater management and treatment technologies can be improved through an innovative system, increasing the quality of effluent and reducing costs. The specific objective of the Project is to integrate wastewater purification through a new combination of electronic link (→ remote control) and physical connection (→ biologically activated pipe) of selected sewage treatment plants (STP), in order to integrate their technical capacities and to enhance wastewater purification (as a result of equalised inflow peaks and full utilisation of all existing plant capacities at any time).

## Methods

Based on a preliminary feasibility study, two STPs have been selected. STP1 shall demonstrate IWPM with modified innovative technologies, STP2 with conventional technologies. Three technological components have been classified as innovative:

### I **PCC** = **P**ipe **C**onnection and **C**ontrol System

A **biologically activated** and bi-directional **pipe** – **BAP**, connecting the two selected STPs. The STPs shall be linked with an intelligent remote control system, steering an optimal distribution of wastewater flows and contaminants between the two STPs to minimise the overall discharged load.

### II **MWP** = **M**odifications of the **W**astewater **P**urification Process Components

Once PCC is in place, advanced purification technologies become applicable and shall be installed at STP1, such as activated pre-settlement plus a new type **MSBR**, **multi-functional sequencing batch reactor**.

### III **EST** = **E**nhanced **S**ludge **T**reatment

Via PCC, liquid sludge can be transferred from STP2 to STP1. Operating at better economies of scale, it becomes feasible to apply more ambitious technologies. Among others, a separate N-reduction of sludge-liquors, using a new type **FBR**, floating biodisc reactor, and a high rate anaerobic digestion with biogas driven power generator shall be installed.

## Results and Discussion

Figure 1 describes the situation without integrated purification, i. e. that the two wastewater treatment plants STP1 and STP2 operate separately. Figure 2 describes the situation after installing pipe connection and remote control, allowing the two wastewater plants to operate interlinked with each other (integrated wastewater purification). Figure 3 indicates the stages and IWPM-components of STP1, the wastewater plant in Bad Essen.

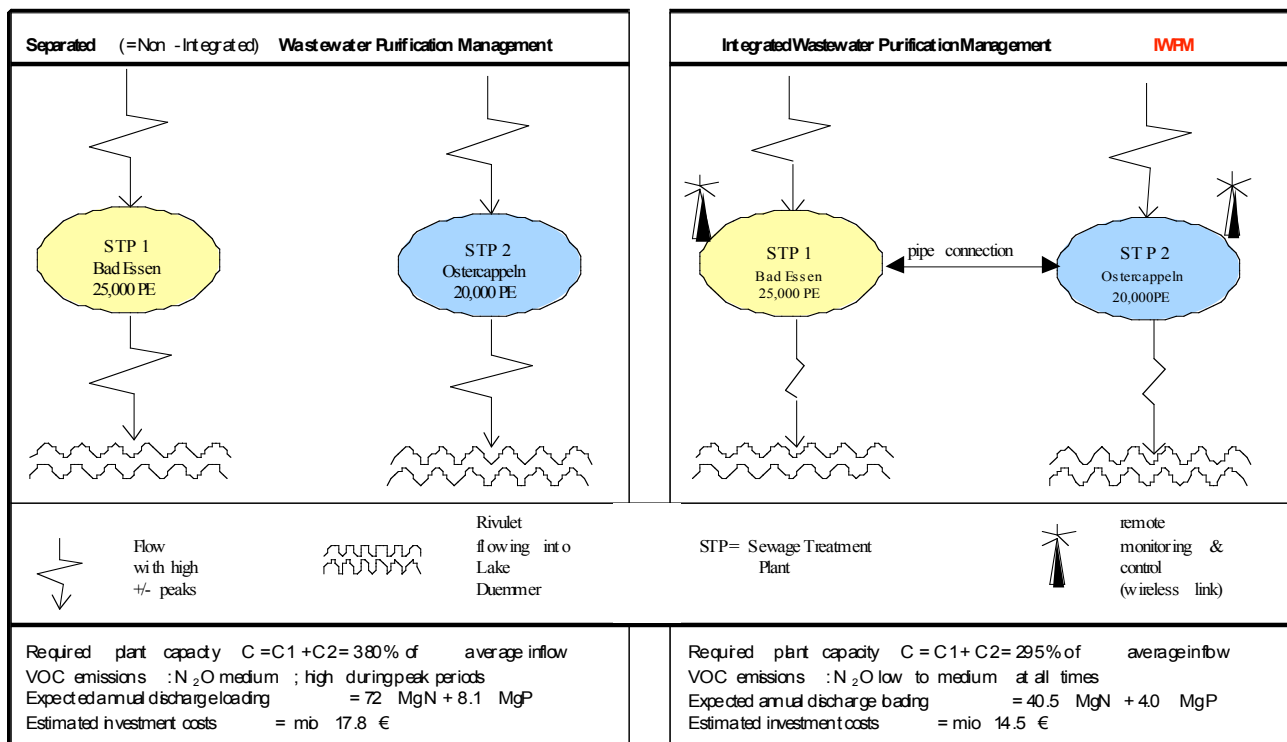


Figure 1

Figure 2

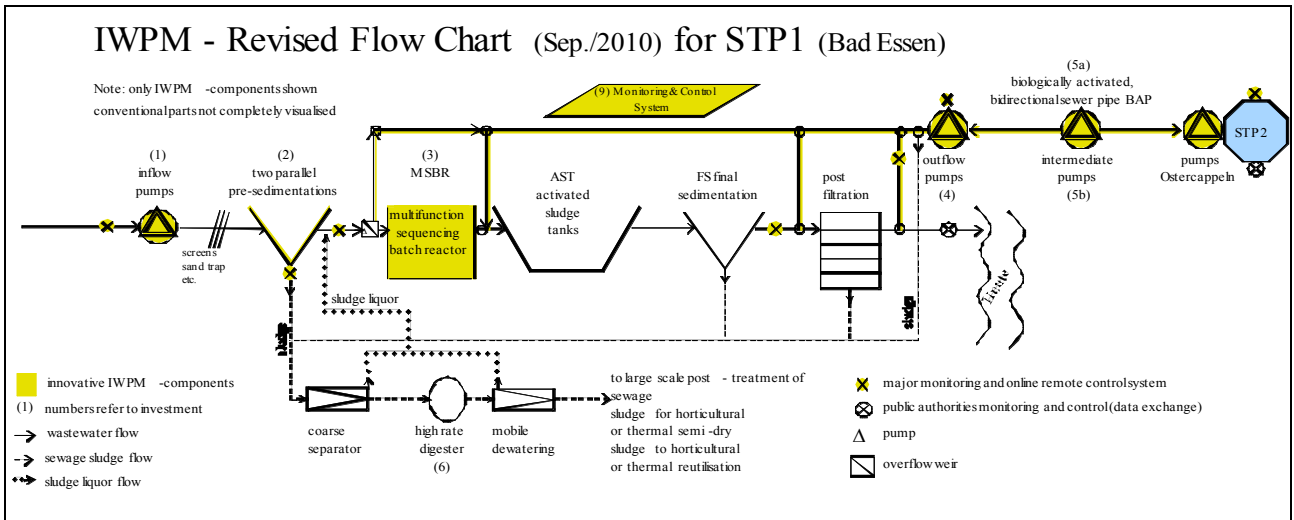


Figure 3

## Conclusions

Currently, all constructions and installations have been completed. All components have been tested in function. First operational results verify the general advantage of the system, under the site-specific working conditions in the pilot region (an EU-classified ecological sensitive area, under the Flora-, Fauna-, Habitat-protection).

The paper describes technical and economic details of the IWPM-scheme. A perspective for replication of the scheme is provided, indicating, under which site-specific working conditions IWPM might be feasible to save money and improve environmental protection through wastewater treatment plants.

## References

*[www.eu-life-iwpm.de](http://www.eu-life-iwpm.de)*