

INTERACTIVE WATER MANAGEMENT: INTRODUCTION TO THE IWAMA PROJECT AND THE CONCEPT BEHIND IT

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Abstract

In WWT, singular solutions do not suffice anymore for improving the nutrient removal. Instead, a comprehensive approach to WWT processes is necessary when the goal is to continue nutrient reductions for meeting the stringent HELCOM recommendations. Approaching WWT in BSR from the wider perspective, two urgent challenges arise: insufficient sludge management and the need to improve energy efficiency.

Efficient municipal WWT produces vast amounts of sewage sludge. In the countries located in the Baltic Sea watershed the amount of sludge generated is about 3.5 mln t of d/s annually – this is expected to increase to almost 4 mln t by 2020. The sludge concentrates nutrients, heavy metals and poorly biodegradable trace organic compounds as well as potentially pathogenic organisms present in wastewaters. Meanwhile there are no common technological solutions for the sludge treatment and disposal in the region because of different national legislations and varying sizes of the plants. Moreover, WWT operators have often difficulties in choosing technology and operating sludge treatment facilities and in evaluating their efficiency in relation to removal of hazardous substances and nutrients.

Water utilities are typically the largest consumers of energy in municipalities, often accounting for 30-40% of total energy consumed. Pursuing energy efficiency of the water sector systems can significantly reduce operating costs. All steps of WWT and sludge disposal consume massive amount of energy for pumping, mixing and aeration of water, wastewater or sludge. At the same time, energy is becoming a very important cost factor in WWT given its increasing costs in the recent years. Despite sector's high energy consumption, smart energy management is not applied. There is 15-30% potential to save energy while simultaneously improving the nutrient removal. It can be estimated that improved control leads to 5-10% higher degree of efficiency. The importance of energy consumption optimisation, energy recovery processes, efficiency of equipment and technology operations are vastly growing in the field of WWT as the energy demand of the sector will rise in time due to population growth, increasing requirements for effluent quality and residual water reuse.

IWAMA project aims at improving wastewater management in the Baltic Sea Region by capacity development of the operators and implementing pilot investments to increase the energy efficiency and advance the sludge handling.