CHALLENGE

In many cases, the human factor is one of the main reasons for poor process performance in the wastewater treatment process, and thus the competence of the operator is decisive for successful plant control. Misjudgements in process control decisions can lead to unwanted conditions in WWTPs. For instance, in order to reduce effluent phosphorous, too much of some chemicals are added, which favours bulking.

For more info
Kõrgmaa, V. et al. 2016 Evaluation of treatment efficiency of wastewater treatment plants, constructed and reconstructed in 2004-2014, https://www.envir.ee/sites/default/files/aruanne.pdf
Project BEST- Better Efficiency for Industrial Sewage Treatment, www.bestbalticproject.eu

SOLUTION: TRAINING

To increase the level of competence in plant operating, a special two-year study program for operators was launched in Järvamaa Vocational Training Centre (JKHK) in September 2017. The study program was prepared jointly by the Estonian Water Works Association (EVEL) and JKHK. Over this two-year period, the students have over ten different lecturers. During the training period, students receive a comprehensive overview of the principles of water purification as well as wastewater treatment. Process control and O&M (operation and maintenance) principles are fully covered. The studies culminate in a vocational examination, and those who successfully pass this exam receive a professional certificate that meets European professional standards.

STUDY ON WWTP OPERATORS COMPETENCE VS. PLANT PERFORMANCE

Good operation and maintenance practice as well as the operator's competence play a crucial role in successful process control. In Estonia, the competence of the operator was evaluated during the data collection for performance evaluation of municipal WWTPs in 2014 [1]. The results showed that bigger waterworks had a higher level of competency than smaller ones. The results indicate that bigger companies have more resources for specialisation (an operator can focus on process control without having other responsibilities such as accounting, etc.) and that operators in bigger companies were more educated on the field of wastewater treatment. The results also showed that competent operators can overcome mistakes in the design and construction of the WWTP and achieve better effluent quality in difficult conditions.

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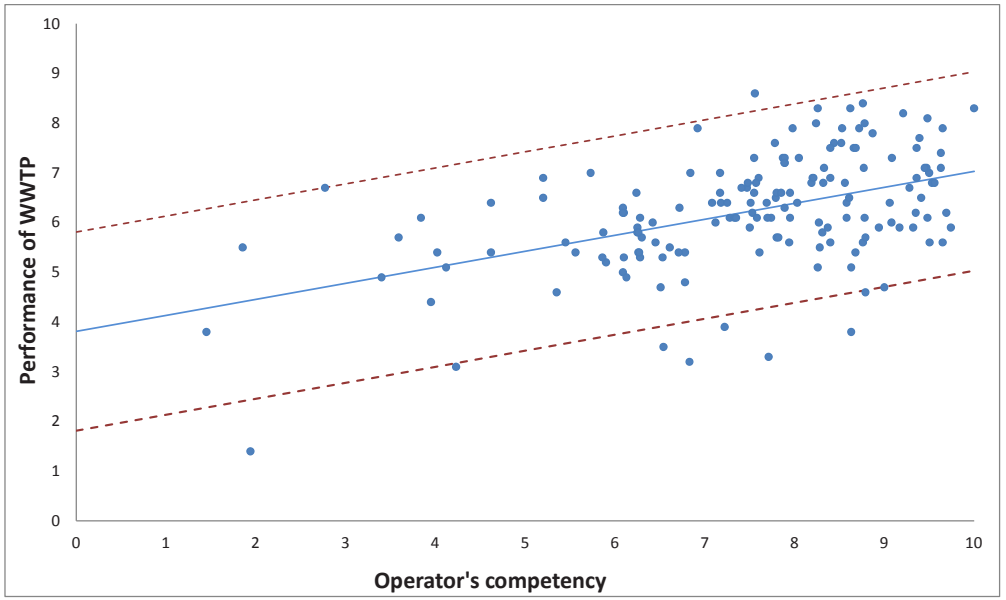
FIGURE: OPERATORS COMPETENCE VS. PLANT PERFORMANCE

The competence of the WWTP operator was evaluated in a hidden test on a scale of 10 points. The average result was 7.18 and the minimum result was 1.14. Operators in small waterworks (less than 2000 clients) had an average competency of 6.23, while bigger waterworks had an average competency of 7.56.

- **In activated sludge plants, the operator's competency significantly correlated with the plant's performance.**
- **Operational parameters that significantly effected the performance of the plant were SRT (Solids Retention Time), sludge loading, the condition of the aeration units, and the frequency of maintenance.**
- **The quality of the effluent was mostly influenced by maintenance actions such as cleaning the weirs of the final clarifier, avoiding the escape of floating scum, and correct adjustment of sludge loading in the final clarifier.**



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