

# JŪRKALNE

Optimising the pollution capacity of the biological wastewater treatment plant in the village of Jūrkalne

**Type of pilot measure:**

Nanobubble technology

**Location:**

Jūrkalne, Latvia

**Site:**

BIO M-30 biological wastewater treatment plant

**Applied solution:**

Nanobubble generator supporting the existing aeration system

**Designed treatment capacity:**

up to 30 m<sup>3</sup>/day

**Utilisation:**

Intensification of biological wastewater treatment

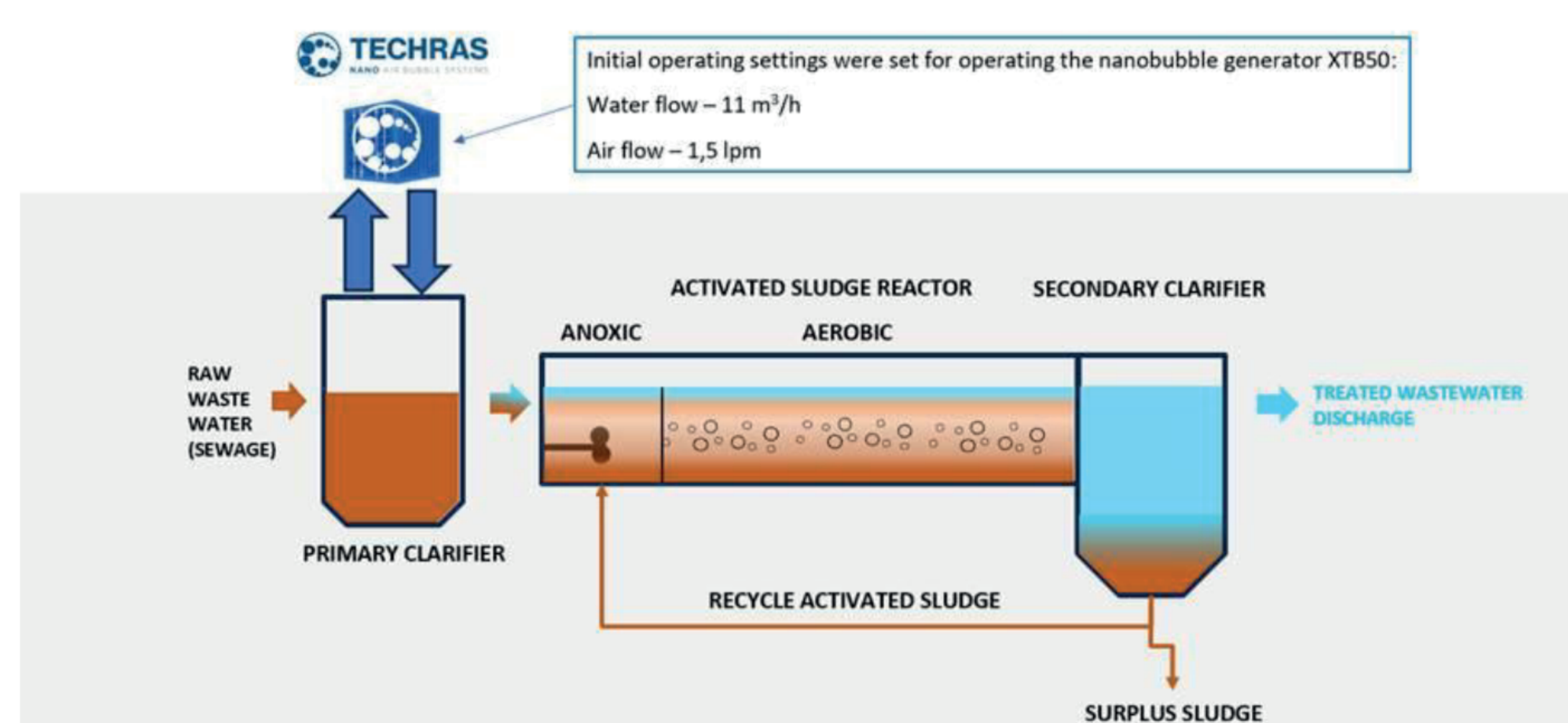
**Responsible:** VNK Serviss



Jūrkalne is a coastal village in Ventspils Municipality, visited by many tourists during the summer season. The local BIO M-30 wastewater treatment plant serves around 150 permanent residents, but seasonal increases in wastewater and pollutant loads can exceed its design capacity. Additional loads come from wastewater transported from households and guest houses that are not connected to the centralised sewerage system.

Instead of building an additional treatment unit that would operate for only a few months each year, a nanobubble generator was installed in May 2024 to support the existing aeration system. The solution aims to intensify biological wastewater treatment by improving the delivery of dissolved oxygen to the microorganisms responsible for removing pollutants.

The pilot demonstrated highly efficient oxygen transfer, with near-complete conversion of ammonium nitrogen to nitrate nitrogen and a noticeable reduction in chemical oxygen demand (COD). The results also indicate potential for optimising energy consumption: the effects of nanobubbles may persist in the system for 30–60 days, suggesting that continuous operation of the generator may not be necessary.



Solution for improvement with the nanobubble generator (TECHRAS technology, VNK Serviss)

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