



Nedre Romerike Avløpselskap IKS

Treatment of storm water, the OREA treatment plant, 17.06.19

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Main WWTP at NRA IKS

- Mechanical, biological (MBBR) and chemical treatment
- Hydraulic maximum capacity at 1400 l/s (5040 m³/h)
- Wastewater flow > 1400 l/s has gone directly to recipient (traditionally)
- Removal efficiency and requirements:

Wastewater NRA	
Parameter	Requirements of removal
P	93 %
N	70 %
BOD	70-90 % (<25 mg O ₂ /l)
COD	75 % (<125 mg O ₂ /l)



Main WWTP at NRA IKS

- WWTP has lower biological and chemical treatment capacity than 1400 l/s
- The biological and chemical treatment has (as today) a maximum capacity of appr. 1000 l/s to obtain the treatment requirements for removal of P and N (based on one-week sampling)
- NRA IKS and the municipality owners have adopted the EU Water Framework Directive and have decided through the main strategy plan 2040 to accept no overflow of non-treated wastewater to Nitelva.



In need of increased capacity at NRA IKS

To handle:

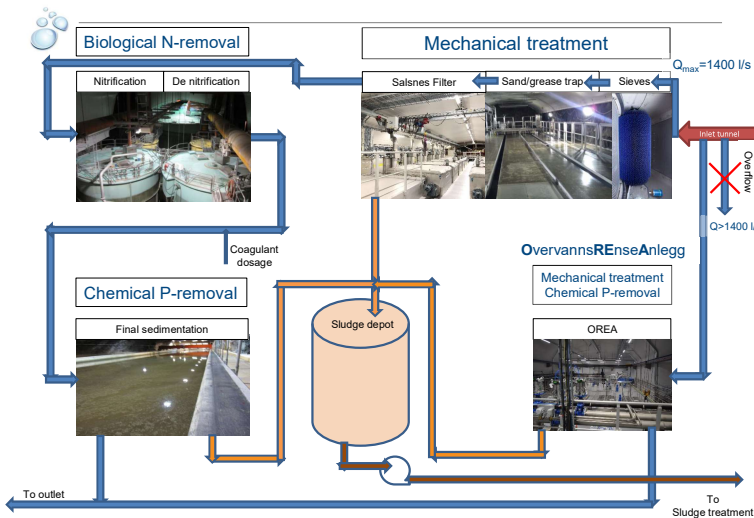
- Rapid increase in volume inlet flow due to heavy rain and increased temperature during snow melting period.

Solution:

- A process with quick response time and normally in "stand-by"
- Compact and space effective removal of SS and P.
- A process which is compatible with running the main WWTP simultaneously.

Other criterias:

- Investment and operational costs

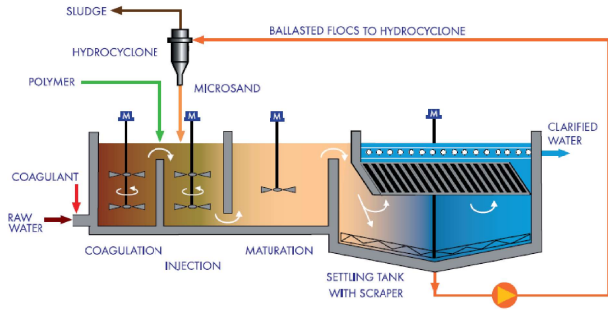


OREA (OvervannsREnseAnlegg)

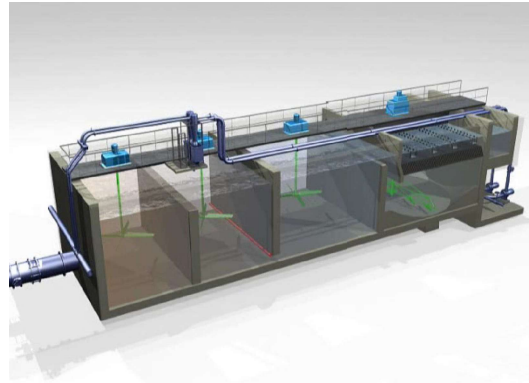
- Sieves - mechanical treatment
- Actiflo® - chemical P removal with «high-speed» flocculation and sedimentation by adding coagulant, microsand and polymer
- ActiDyn® - effective sludge thickening by adding coagulant and polymer



Actiflo® Process

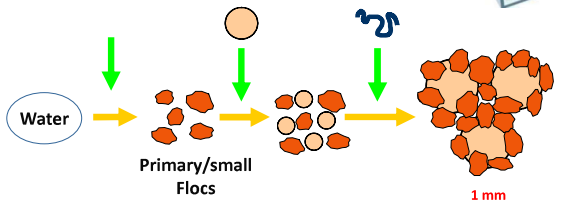
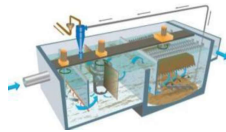


Actiflo® Process

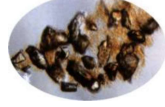


Actiflo®

Coagulant Microsand Polymer



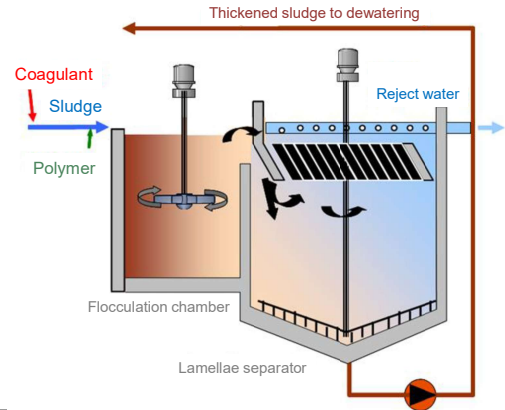
Microsand is used as « Seed » and Ballast for the Formation of High-Density Flocs (« Flocs on the Rock »)



Microsand Ballasted Flocs



ActiDyn®



Questions ???

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Thanks for your attention !

