Wastewater from fish processing industries as carbon source

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Extension of the plant

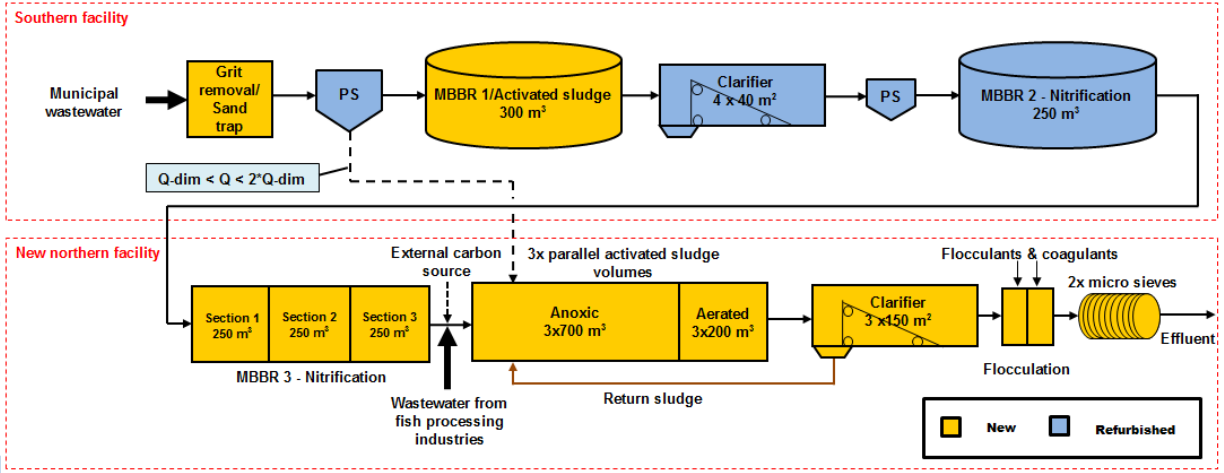
- Centralizing the wastewater treatment of the island of Tjörn, three WWTP will be one
- Increasing load from fish processing industries
- Demand on nitrogen treatment from authorities
- 30 000 PE, design flow: 600 m^3/h

The renovated southern WWTP.

The newly built northern WWTP.

Process

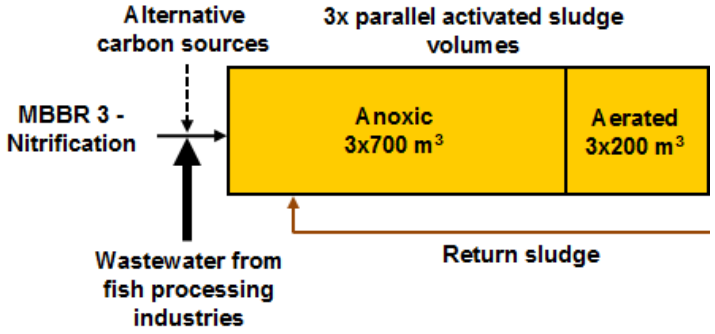
- Post-nitrification & post-denitrification
- Fish processing industry sewage as carbon source



Process scheme of the WWTP of Ängholmen

Fish industry sewage

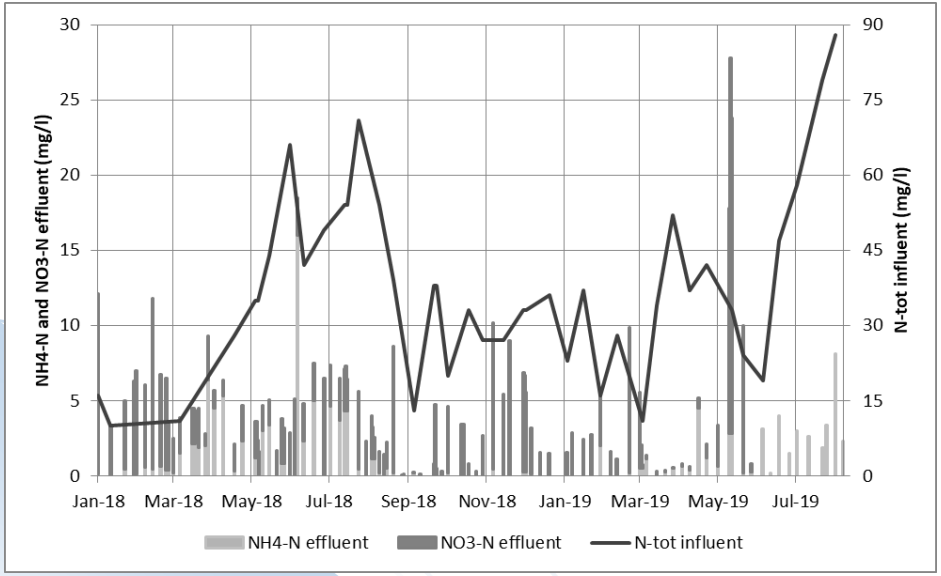
- Introduced after the nitrification process (no disturbance)
- High levels of dissolved organic substances and low levels of nitrogen and phosphorous
- Average inflow of 25 m^3/d. The flow was set to 1 m^3/h during the period.



Point of introduction of fish processing industry sewage as carbon source

Fish processing industry sewage, 2018					
	COD_{tot}	BOD_7	P-tot	N-tot	NH_4-N
mg/L	13 700	8 650	39	365	21
kg/d	350	220	1,0	9,2	0,5

Denitrification



- Low concentrations of total nitrogen in effluent is achieved
- Low effluent concentrations of BOD_7 and ammonium.

Results and conclusions

- Highly efficient and cheap carbon source
- Fish industry sewage does not interfere with the nitrification process
- Eliminates the need for an external carbon source such as ethanol

Results 2018 – before and after DN

	Flow	mg COD/L	kg COD/d	mg NO_3-N/L	kg NO_3-N/d	mg N-tot/L	kg N-tot/d
To AS (municipal)	3 110	56	175	17	54	20	63
To AS (industry)	25	13 700	350	-	-	365	9,2
To AS (mixture)	3 140	167	525	17	54	23	72
Effluent	3 350	30	86	3,1	8,1	4,4	12
$COD_{ind}/NO_3\text{-}N_{mun}$	6,5 kg COD/kg NO_3-N						

Thank you!

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