

Wastewater treatment in small towns

Case Huittinen WWTP

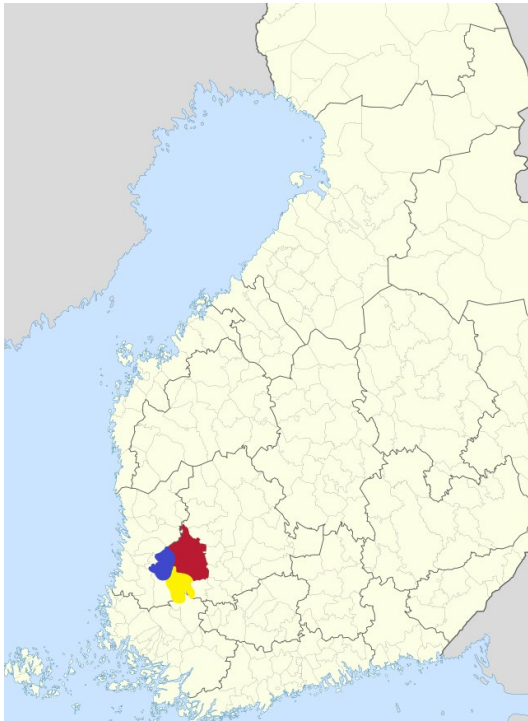


Nearly completed plant in summer 2016

ABOUT WWTP HUITTINEN

WWTP Huittinen

- WWTP Huittinen is owned by Sastamala 47%, Huittinen 48% and Punkalaidun 5%.



- Sastamala (population 26 000)
- Huittinen (population 9 900)
- Punkalaidun (population 2 800)



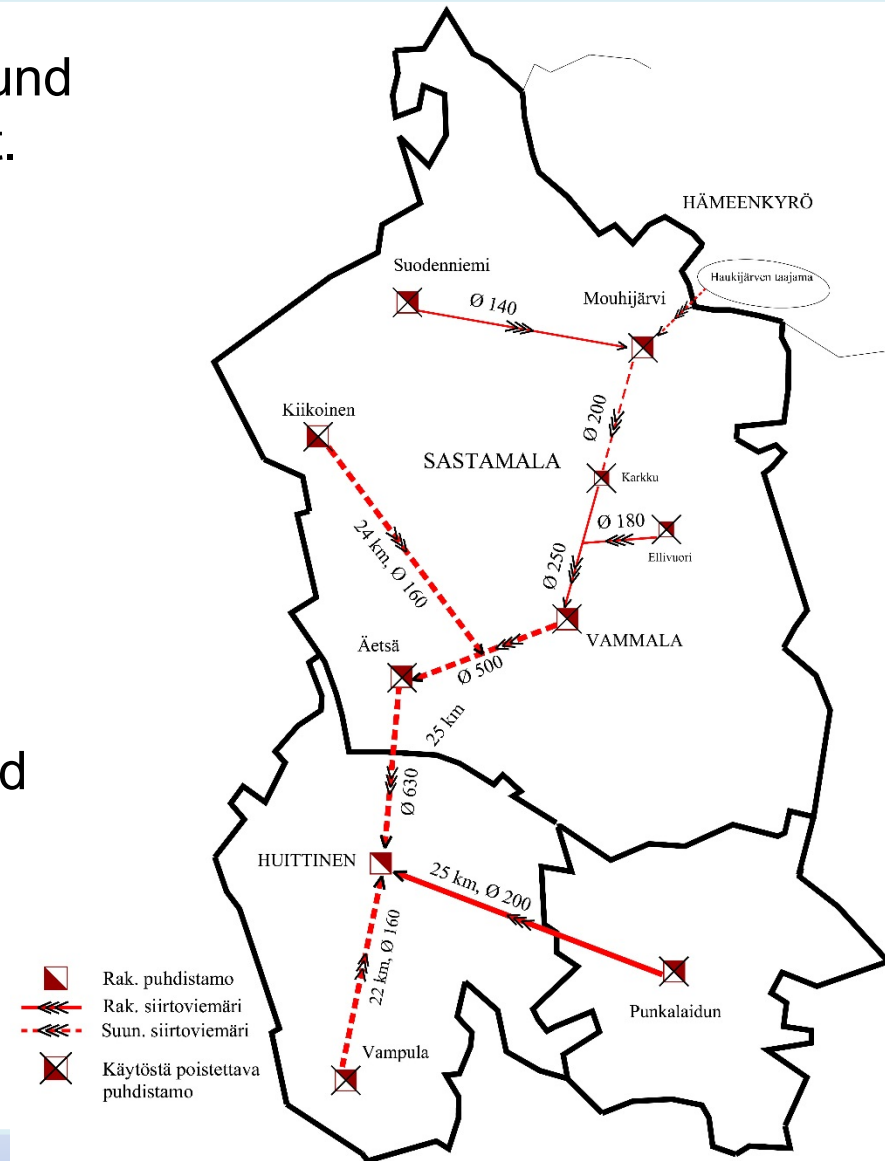
Source:
www.huittinen.fi

WWTP Huittinen

- The company is responsible for the operation of main sewers and treatment plant, with the aim of providing an optimal purification performance.
- Technological and economical benefits are achieved compared to the situation where every commune has their own plant.

Four sewers and the plant

- The company has built the underground infrastructure and the treatment plant.
 - Punkalaidun-Huittinen sewer 2013
 - Vammala-Huittinen sewer 2017
 - Vampula-Huittinen sewer 2017
 - Kiikoinen-Kiikka sewer 2018
- 9 old WWTPs have been closed
- The focus is now on maintenance and purification.



LESSONS LEARNT

1. Regulation

- Carrot vs stick?
- Environmental consciousness vs money
- Regulatory requirements

2. Timing

The infrastructure of the nine old WWTPs was in the end of it's lifecycle.



3. Leadership

- Ability to see things for 40 years
- Strong faith and belief
- Technical director of town Sastamala, M.Sc. Jaakko Erjo was an excellent leader and the father of the idea



4. Finance

- The new plant costed about 28 millions
- The sewers cost about 10 millions
- 4,2 Millions of public financing
- Majority financed by the banking sector with 30 year ROI

5. Process

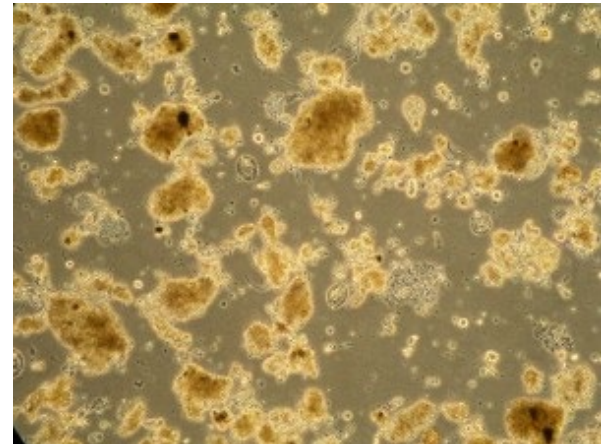
- Mechanical, biological and chemical parts

Pretreatment: Screening removes coarse matter mechanically from wastewater.



Phosphorus is removed as iron- and Al-salts. In our case, also biologically: bioP.

Biological part: Activated sludge consist millions of microbes!



Received wastewater amounts

- Surface runoff vs. used water

	2021				
m ³	January	February	March	April	May
Saarioinen	6 043	5 842	7 286	6 814	6 909
Huittinen	80 552	73 939	98 196	95 517	98 899
Punkalaidun	12 250	9 093	13 240	12 244	13 838
Sastamala	166 647	144 322	217 757	239 235	234 749
Yhteensä	265 492	233 196	336 479	353 809	354 394

2020							
June	July	August	September	October	November	December	Sum
7 144	7 850	6 947	7 478	6 657	7 680	7 820	84 469
54 220	83 515	50 162	49 791	66 875	92 698	106 537	950 901
7 137	8 653	7 107	7 591	9 439	15 170	16 013	131 774
117 081	132 793	102 258	96 939	125 702	180 153	228 714	1 986 350
185 582	232 811	166 474	161 799	208 673	295 701	359 084	3 153 494

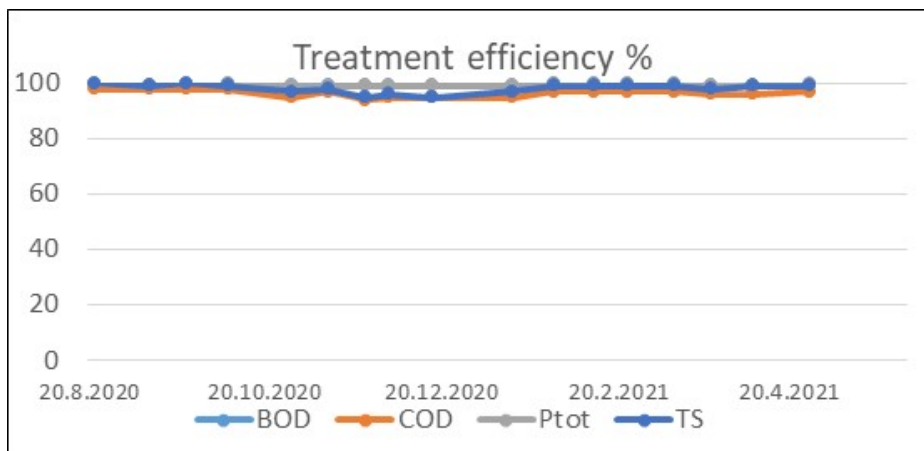


Winter 2020

Source: aamulehti.fi

Treatment efficiencies %

	limit %	24.11.2020	2.12.2020	17.12.2020	14.1.2021	28.1.2021	11.2.2021	23.2.2021	11.3.2021	24.3.2021	7.4.2021	27.4.2021
COD	90	94	95	95	95	97	97	97	97	96	96	97
BOD	95	99	99	99	99	100	100	100	100	99	99	100
Ptot	95	95	96	96	95	99	99	95	99	97	99	99
TS	95	95	96	95	97	99	99	99	99	98	99	99

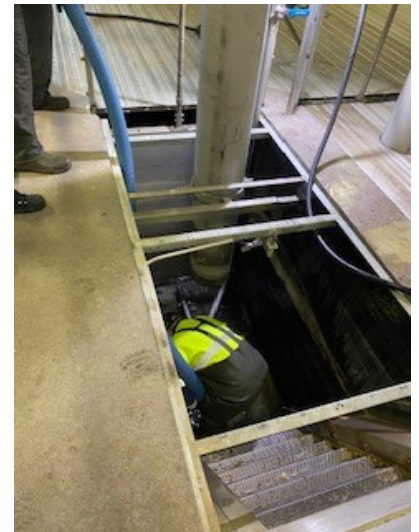


Requirements from the environmental permit for effluent

	mg/l	%
BOD7	15	95
COD	60	90
TS	15	95
Ptot	0,3	95

6. Staff

- Competent
- Skilful
- Motivated
- Sufficient!



7. Co-operation and contractors

- Co-operation
 - Authorities
 - Colleagues
- Without good contractors we would not survive
 - Automation 24/7 support
 - Maintenance 24/7 support

8. Future proofing

- Energy saving booster-line (Downhill: Sastamala-Huittinen)
- Enhanced biological phosphorus removal
- Heat recovery from wastewater
- Solar panels
- H₂S projects



THANK YOU!

Questions?



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