



Co-operation with Waste Water Treatment Plants

Experiences of Valio Ltd

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Valio Ltd and Waste Water Treatment

- Valio has all together industrial 12 sites in Finland, they vary a lot from their production and size point of view
- The surroundings of their location vary also a lot
 - From the Metropolitan area to small parish
- All the sites are connected to the municipal waste water treatment due to
 - historical reasons
 - in Finland there are long distances and dairies were located within the community
 - The Finnish dairy field met the first centralization wave during the 1970's when the efficient waste water treatment really began in the major parts of Finland
 - practical reasons
 - Finland is a small country with limited resources why build double capacity
 - nutrition balance in waste water



Some Facts about Valio And Waste Water

- **Amount of waste water**
 - Totally 5,2 million m³ in 2017
 - Amount of waste water was 2,8 liter per liter of raw milk
 - Continuous monitoring on 24/7/365- basis in all sites
- **Waste water load**
 - Continuous flow proportional 24/7/365 sampling in all sites
 - Monitoring of COD on daily basis
 - Other parameters (BOD/TOC/total N/total P/ uspended solids/ fat) according to the waste water contracts and permits
 - Our daily BOD- load equals to city of about 240 000 inhabitants
 - For us waste water load is first and foremost **LOST SALES**
- **Relatively high waste water amounts and loads are due to**
 - High hygienic standards
 - Large product selection (Finland is in the top 3 country in the world in milk consumption per capita)



”The Relationship”

- Our relationship with the waterworks and their waste water treatment plants is unique compared with the relationships we have with other rawmaterial and service suppliers
 - We are totally dependent on their services
 - They work a bit different way than the others
- There two basic options how to take care of business partners
 - a) Tough attitude, hard and well defined contract terms
 - Responsible: Purchasing department, lawyers
 - b) Cooperation, focus on thinking before and problem solving
 - Responsible: Operational staff, experts



Contracts for waste water treatment

All sites have a contract for industrial waste water treatment made with local Water Works

- Load and flow limits according to the local requirements and conditions
- Tax based on different kind of applications of Mogde equation
 - Adjusted to the local situations to meet the polluter pays principle, shall be acceptable for both sides
 - When the dairy is a customer of relatively small water works we prefer load based application of equation in order to limit the business risk of water works
- The contract aims to cooperation, contract is not a risk management tool
 - Equal responsibilities for both parties
 - Limited amount of exact problem solutions, more basis how the possible problems can be solved
 - Regular meetings



Participation in Investments

- Valio has directly participated in the waste water treatment investments
 - Typical situation for smaller places where resources and abilities to carry economical risks are smaller
 - For larger places the Mogde Equation in the tax does the job reasonable well
- The need to participate appears in the negotiations
- Standard procedure:
 - Both parties define their capacity reservation
 - Investment costs are shared according capacity reservations and using matching principle, typically with assistance of a neutral party (consult)
 - The process itself according to capacity reservations
 - Possible dairy waste water pretreatment etc. according to the matching principle
- The plant is fully owned by the water works, Valio has immaterial right in it's balance
- Paying terms according to the needs



Emergency Basins at the WWTP

- For catching possible major leaks from dairy before they get to the process of WWTP
- Originally idea from Haapavesi, where one old relatively good condition old basin was left for this purpose during rebuilding of the WWTP
- Idea has been developed further and automation increased little by little
 - remote control of valves from Valio site was possible for a while
 - on – line TOC- analysator installed in Lapinlahti
- Practical experience: 20 min delay between our site and WWTP is too short
- Due to good experiences similar kind of systems have been built to two other sites (the most recent here in Riihimäki)
- Requires direct good condition pipeline to the WWTP and good co- operation abilities from both parties



Participation in the Administration

- Local circumstances can lead situations where Valio even participates somehow in the administration of the WWTP or water works
 - On one site joint venture company own's the WWTP and the joint venture is owned by the city, Valio and a third party (Kemira Plc)
 - On one site the representative of Valio has been invited to the board of directors of local municipal water works, another case is just in progress
 - Issue to be solved: Recuse issues



The Excel- based communication tool

- Was originally developed for Valio Haapavesi to standardize the communication between Valio and WWTP in case of severe leak
 - Afterwards distributed to most of the Valio sites
 - Shall be adjusted according to the local needs and circumstances
- Very simple tool which gives clear situation dependent instructions for the operator in Valio and "translates" the leak to "the language" the WWTP operator understands
 - Requires certain level of cooperation between Valio and WWTP



Regular meetings

- The point is to make sure that the essential people familiarize and meet also when there are no problems to be solved
- Can we learn from the past, is there something we can think before doing?
- With fixed agenda make sure that there are as little surprises as possible
 - Minutes of the last meeting
 - How things have gone since the last meeting?
 - Flows, loads, other contract terms, investments, possible technical problems etc...
 - What kind of plans for the future we both have?
 - Tax issues
 - Checking of contact information for emergency situations
 - Possible maintenance stoppings or need for them (matching the schedules)
 - Next meeting



Rakkaudesta suomalaiseseen maitoon

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