

FOR THOSE WHO WANT TO STAY AHEAD IN ENVIRONMENTAL AND PROCESS ISSUES



OEM EQUIPMENT AND TURNKEY DELIVERIES



**PUMPPU
LOHJA OY**

WatMan
STEEL

Who is Pumplohja?

COMPANY OVERVIEW

Equipment Manufacturing

Pumplohja Corporation (Pumppulohja) is located in Saukkola, Finland. The business idea is to solve the problems related to the transfer, storage and pressure boosting of different liquids.

Pumplohja is a manufacturer of medium heavy metal products, mainly for the water and air treatment and process industry's needs. Pumplohja has production permits for pressure tanks from TÜV, Det Norske Veritas and Lloyds Register. Pumplohja's welding operations comply with the SFS-EN-792-2.

Our expertise in tailor-made products is pressure vessels, tubular heat exchangers, filter tanks, welding of acid-proof steel and equipped units.

Some of Pumplohja's more notable customers include *Metso Paper Corp.*, *Aker-Finnyards Corp.*, *Meyer Werft GmbH*, *Outokumpu Corp.*, *Wärtsilä Corp.*, *Jets AS Norway*, *Andritz GmbH Austria*, *Marioff Corp.*, *Auramarine Corp.*, *Ahlstom Corp.*, *Atlas-Copco Corp.* and *Heider GmbH*.

Some key-figures of Pumplohja:

Established	1991 (1980)
Owner	Privately owned
Personnel	60
Turnover	6 M€
Workshop area	5000 m2

D&B rating



Who is WatMan?

COMPANY OVERVIEW

Water Engineering

OEM-Equipment Manufacturing



Oy Wat Man Ab Water Management (*WatMan*) is a versatile supplier of water and waste water treatment and water recycling projects. As a subsidiary of Pumplohja Corporation, we have the advantage of a wide range of expertise and experience in the production of pressure tanks, pumps and other steel products. We deliver both OEM equipment and turnkey plants mainly to steel and metal industries, process industry, and power plants.

Typical processes that we deliver are chemical treatment and chemical dosing, filtration, clarifying, ion exchange and membrane processes. We find custom engineered solutions, and even retrofit or upgrade existing systems.

Supporting the idea of our parent company to transfer and store liquids, our aim is to solve the problems mainly related to water quality in different parts of any production process.

Some of the key words that best describe our functions are customer-orientation, commitment, teamwork, flexible action, and a mission for constant improvement. We are strongly driven by our goals of preservation and enhancement of our environment and quality of life.

Some of WatMan's more notable customers include *Wärtsilä Corp.*, *Rautaruukki Corp.*, *Outokumpu Corp.*, *IDO Bathrooms— a Sanitec company*, *Flextronics Corp.* and *Botnia Pulp Mills*.

We are confident that we can make you more competitive - both in monetary terms and in terms of environment friendliness.

Some key-figures of WatMan:

Established	1995
Owner	Pumplohja Corporation (100 %)
Personnel	10
Turnover	2 M€
D&B rating	



Industrial Water Treatment

Know Our Customers — Know Us

We are proud to play a role in the following totalities:

Semiconductor Manufacturing

Okmetic Corp., is a Finnish leader in the manufacture of silicon wafers. More than 90% of its production output is exported.

WatMan Delivery: Process wastewater neutralization plant (2 pcs).

Design capacity 2000 m3/day

Turnkey delivery included:

- Design
- Electrics
- Automation, Siemens PLC
- Plumbing
- Start-up and training



Industrial Water Treatment

Know Our Customers — Know Us



Surface Treatment Industry

Hartwall Ltd., is an enterprise in the metal industry with net sales of approximately 20 million euro. The company is well-known for its innovative carriage products used in the transport and storage of goods, especially foodstuffs. *The galvanization plant is one off the biggest in Northern Europe.*

WatMan Delivery: Process wastewater treatment plant.

Design capacity 150 m³/day

Design + key-component delivery included:

- Process
- Key-components
- Start-up and training



Industrial Water Treatment

Know Our Customers — Know Us



Printed Circuit Board Manufacturing

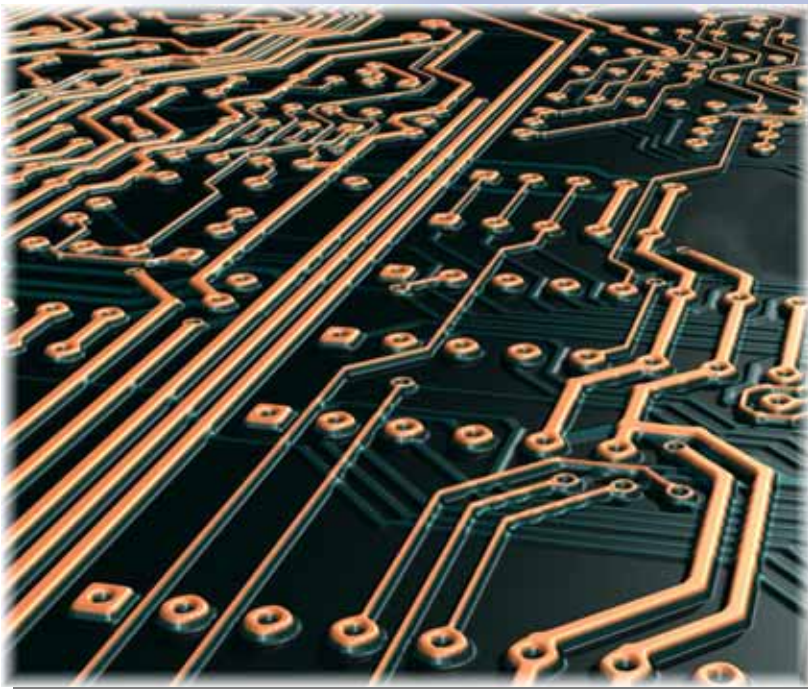
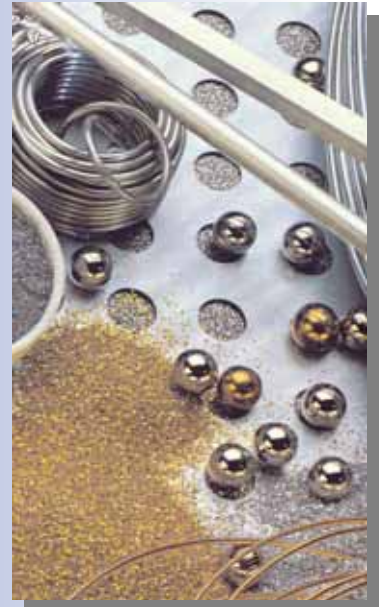
Aspocomp Corp., is a Finnish leader in the manufacture of printed circuit boards (PCB), thick film hybrid circuits and mechanical assemblies for the electronics industry. Its main customers are European manufacturers of electronics equipment.

WatMan delivery: Process wastewater neutralization plant (3 pcs); Water recycling; DI-water treatment.

Design capacity 360 m³/day

Turn-key delivery included:

- Process
- Design
- Electrics
- Automation
- Plumbing
- Start-up and training



Industrial Water Treatment

Know Our Customers — Know Us



Custom Precision Mechanics Components Manufacturing

Ojala Group's (owned by Flextronics Corp.) mission is to build, maintain and develop mutually beneficial long-term partnerships with customers within the telecommunications, electrical and electronics industries as well as the automation and control industries. Ojala Group is committed to constantly satisfying its customers' changing needs thereby adding value to the customers.

WatMan Deliveries: Process wastewater neutralization plant (3 pcs)

Design capacity 360 m³/day

Turn-key delivery included:

- Process
- Design
- Electrics
- Automation
- Plumbing
- Start-up and training



Industrial Water Treatment

Know Our Customers — Know Us



Mild Steel Manufacturing

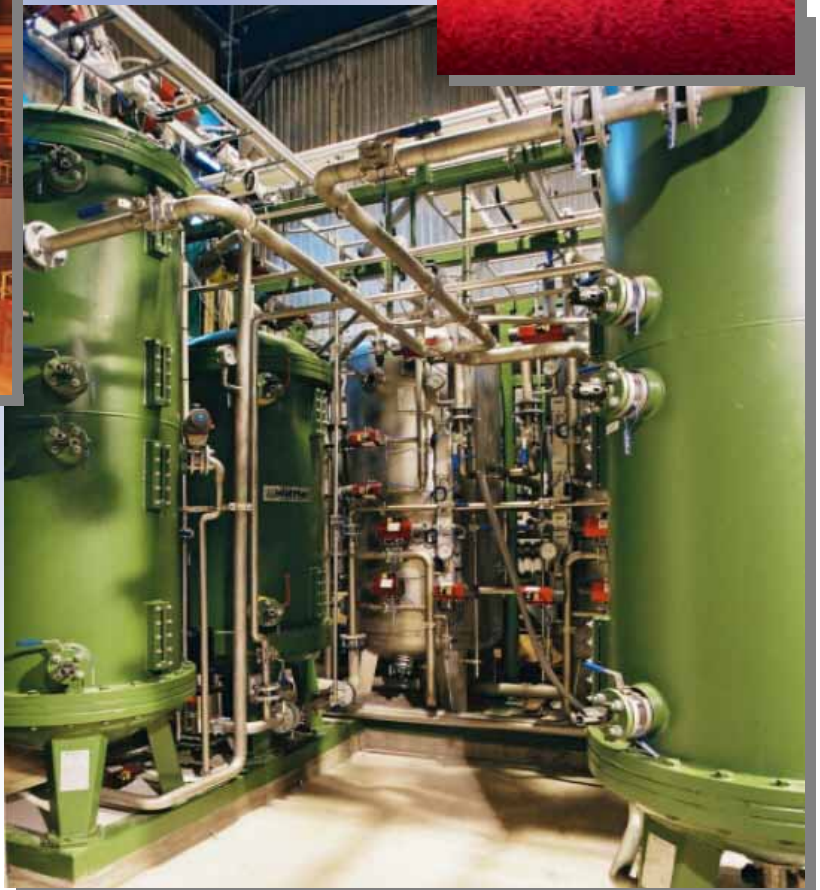
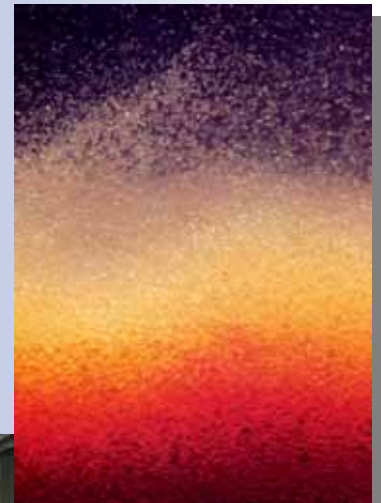
Ruukki supplies metal based components, systems and turnkey deliveries to the construction and mechanical engineering industries. The company has a wide selection of metal products and services. *Ruukki* has operations in 23 countries and employs 12 000 people. [*Ruukki* is a marketing name of *Rautaruukki Corp.*]

WatMan + Pumplohja Deliveries: Deionized water production; Oily-Water Treatment Plant; Heavy Metal Removal Plant

Design capacity 480 m³/day (DI-water)

Turn-key delivery included:

- Process
- Design
- Electrics
- Automation, Allen Bradley
- Plumbing
- Start-up and training



Industrial Water Treatment

Know Our Customers — Know Us



Stainless Steel Manufacturing

Outokumpu Corp. is an international stainless steel and technology company. The vision is to be the undisputed number one in stainless, with success based on operational excellence. Outokumpu operates in some 30 countries and employs 11 000 people. In 2005, the Group's sales were EUR 5.6 billion.

WatMan + Pumplohja Delivery: Oily-Water Emulsion Treatment Plant.

Design capacity 500 m³/day

Turn-key delivery included:

- Process
- Design
- Plumbing
- Start-up and training



Industrial Water Treatment

Know Our Customers — Know Us



Power Plant Design and Operation

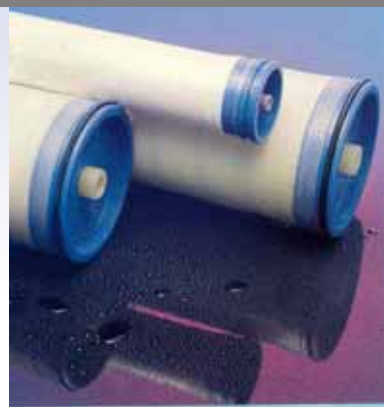
Wärtsilä power plant portfolio includes baseload, cogeneration, load management and gas compression applications – anything from floating barge power stations to decentralised units suitable for urban areas. High efficiency, fuel flexibility and modular design allow for truly competitive power production anywhere in the world. The customers are provided with profitable solutions from a total energy supplier.

WatMan + Pumplohja Deliveries: Heavy Fuel Oil (HFO) Wastewater Treatment Plant; Water Booster Stations (several); Condensate Treatment + Desalination Plants (several).

Design capacity 20...300 m³/day

Turn-key deliveries included:

- Process
- Design
- Electrics
- Automation, PLC Omron, Siemens, Mitsubishi
- Plumbing
- Units skid mounted or containerized
- Start-up and training, if necessary



Industrial Water Treatment

Know Our Customers — Know Us



Cement Manufacturing

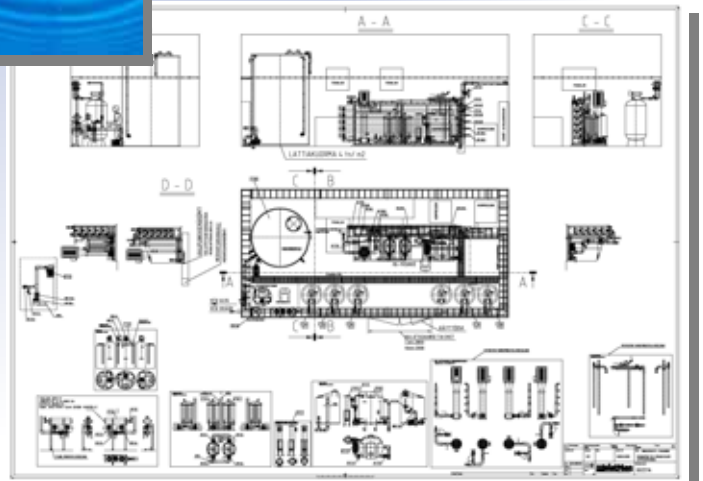
Finnsementti Oy is a Finnish cement manufacturer having produced cement since 1914. The factory in Parainen is capable of yielding 900,000 tons of cement annually. The turnover of Finnsementti in 2005 was 110 million euros and the number of employees 210.

WatMan + Pumplohja Delivery: Desalination Plant

Design capacity 480 + 120 m³/day

Turn-key delivery included:

- Process
- Design
- Electrics
- Automation, PLC Omron
- Plumbing
- Start-up and training



Industrial Water Treatment

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Power Plant Operation

Fortum aims to be leading energy company in the Nordic countries. The core business cover electricity and heat generation, sales and distribution, operation and maintenance services as well as other related services.

WatMan + Pumplohja Deliveries: Reverse Osmosis Plant, Condensate Treatment, Chemical Dosing, Sample Coolers + Analyzers (several cases)

Design capacity 400 m³/day

Turn-key deliveries included:

- Process
- Design
- Electrics
- Automation, PLC Siemens
- Plumbing
- Start-up and training



Industrial Water Treatment

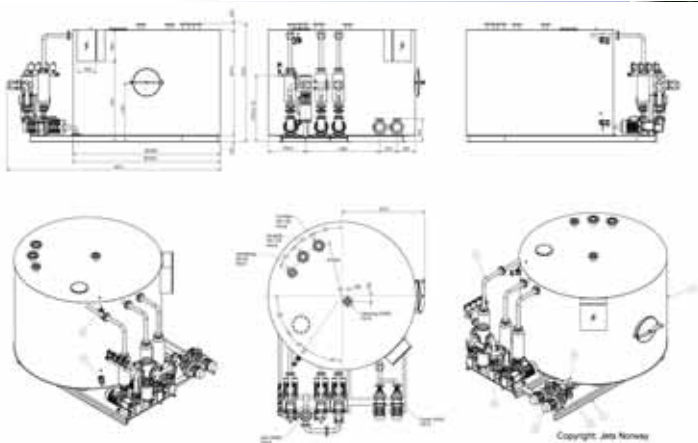
Know Our Customers — Know Us



Shipyards, Shipping Industry

Pumplohja + WatMan Deliveries: Tubular Heat Exchangers, Pressure Boosters, UV-Sterilizers, Water Tanks, Wastewater Treatment Equipment.

Customers: *Aker-Finnyards Corp., Meyer Werft GmbH, Jets AS Norway, Enwa AS Norway, Marioff Corp., Auramarine Corp., Wagenborg Offshore, etc.*



Industrial Water Treatment

Know Our Customers — Know Us



Pulp and Paper and Fiber Industry

Pumplohja + WatMan Deliveries: Tubular Heat Exchangers, Pressure Boosters, Screen Filters, Oil Treatment, Water Tanks, Wastewater Treatment Equipment, Process Tanks, Water Treatment Units.

Customers: *Metso Paper Corp., Andritz Corp., UPM Corp., Metsä-Botnia Corp., Säteri Ltd., Visko Ltd. etc.*



Drinking and Process Water Treatment — Technology



CATALYTIC FILTRATION

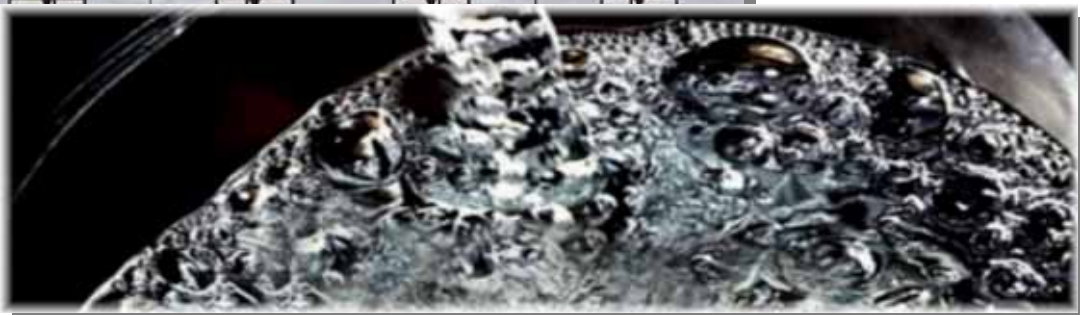
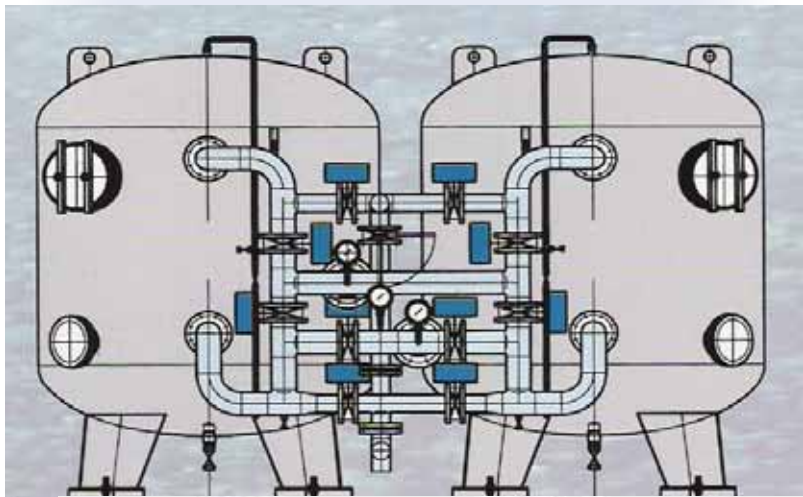
One of the main WatMan ground water treatment deliveries is the iron removal filters delivered to a province in Finland (in *Pieksämäki*). As a result of the fast catalytic reaction, the oxidation of the iron in the filtering media is complete, even though the filtering velocity exceeds 25 m/h. It is important to note that the backwash water velocity is lower than the filtering velocity; this means remarkable savings compared to conventional filters.

WatMan + Pumplohja Delivery: Iron removal filters

Design capacity 1500 m³/day

Turn-key delivery included:

- Process
- Design
- Electrics
- Automation, PLC Mitsubishi
- Plumbing
- Unit skid mounted
- Start-up and training



Drinking and Process Water Treatment — Technology

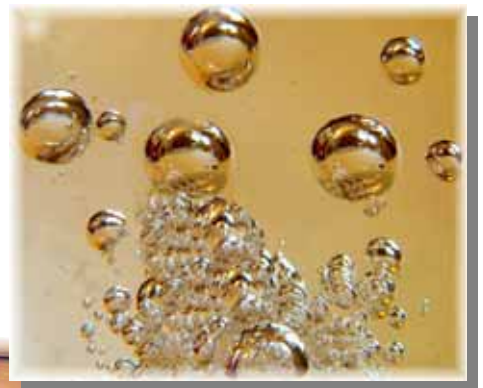
DISSOLVED AIR FLOTATION (DAF) and SAND FILTERS



Dissolved Air Flotation can be employed to remove high inlet levels of organics, suspended solids, oil and grease from industrial water and wastewater. The micro-bubble DAF provides a practical solution to hard-to-handle water treatment problems.

The air/water mixture is held pressurized in a recycling water vessel long enough for the air to dissolve in the water. When flowing through a pressure release valve, tiny, microscopic bubbles develop forming a white cloud of air in the water. The bubbles become attached to the suspended solids, oil and grease in the inlet water. Impurities float to the top of the flotation chamber.

Customers: *Hartwall — a Scottish & Newcastle company; Metsä-Botnia Corp., Outokumpu Corp., Rautaruukki Corp., Wärtsilä Corp., etc.*



Drinking and Process Water Treatment — Technology

LAMELLA CLARIFIER, INCLINED PLATE CLARIFIER

Lamella clarifier separates solids from a carrying liquid by directing the material between a series of inclined plates. Stacking the inclined plates results in a separator having 5 – 10 times the clarification area of a conventional settler having the same floor space. To put it another way, it does the separator job in 1/10th of the space.

The WatMan lamella construction ensures laminar flow conditions, which results in stable hydraulic flow and high effluent quality. It permits great reduction in the space needed for clarification equipment, and allows easy relocation at a later date. Use of a lamella separator reduces maintenance to a minimum. There are no moving parts and its compactness allows it to be easily located.

Customers: *Hartwall Ltd., Okmetic Corp., Aspocomp Corp., Flextronics Corp., Piironen Ltd., Mecapinta Ltd., Mari-Coat Ruukki Ltd., etc.*



Drinking and Process Water Treatment — Technology

CONTINUOUSLY WASHING SAND FILTER

Continuously washing WatMan sand filters will hardly ever get plugged by the suspended solids or need to be taken out of service for the back-wash. The amount of constant wash water needed is 5 – 10 % of the feed, there are no high peak flows to balance.

The extremely tough and simple structure will minimize the need for service and down time, and all the vital parts including the filter chassis are manufactured using chemically pickled stainless steel or plastic. The basic filter has only one moving part, which is the sand washing screw.

The feed water meets the distributor chamber in the lower section of the unit and flows upwards through the sand bed. As the water rises towards the surface, the debris remains in the sand bed. Water flows through the sand bed and leaves the filter unit in the upper part outlet. In the opposite direction to the water, the dirty sand and debris first sink into the bottom of the unit. From the bottom the air lift pump draws and transfers the sand up into the washing screw chamber. The purified sand drops into the filter chamber forming the top filtering layer. The wash water is led into the sewer or onwards for further treatment.

Customers: *Aspocomp Corp., Piironen Ltd., Aurajoki Ltd., Mari-Coat Ruukki Ltd., Perlos Corp., Outokumpu Corp., etc.*



Drinking and Process Water Treatment — Technology

PACKED-BED ION EXCHANGE TECHNOLOGY



The term packed-bed is used if the IX resin bed is compacted against the upper nozzles during either the running sequence or the regeneration sequence. The packed-bed system is simple and compact in design. Counter-current regeneration is always utilized in packed-bed technology and the conventional "fast rinse to sewer" can normally be compensated by a recycling rinse. These attributes mean greater efficiency with less chemicals and less waste.

The feed water first meets the most exhausted resin, then flows towards the best regenerated or almost virgin resin. The regeneration chemical can be introduced from the top or alternatively from the bottom, but always opposite to the water flow. As a product very low conductivity and silica water can be obtained.

Customers: *Rautaruukki Ltd., Metsä-Botnia Corp., Singapore Airlines, Aspocomp Corp., JMC Tools Ltd., etc.*



Drinking and Process Water Treatment — Technology

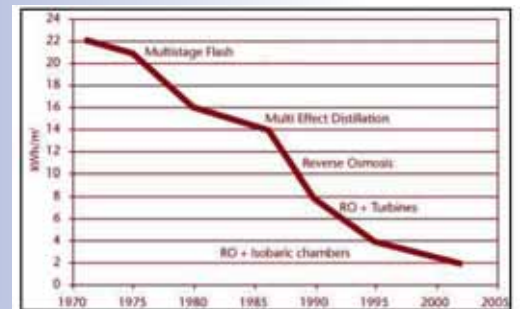


REVERSE OSMOSIS

Reverse Osmosis (RO) rejects typically 97-99% of the minerals in one pass. RO removes all the particles very effectively, but suitable pretreatment must be involved to remove the suspended solids, iron and hardness from the feed water. RO permeate conductivity will be higher by the rising temperature and lowering pressure correspondingly. RO loses up to 20% of the flux (capacity) with a 10 °C temperature decrease.

With low salinity waters, low pressure high-rejection RO membranes working on very low pressure - as low as 5 - 8 bars - remarkably save energy compared to high to medium pressure membranes. The type of the RO unit - especially the type of membranes - must be observed and considered. In large-scale production, energy consumption creates a noticeable expense.

In conventional seawater desalination (SWRO) systems, the typical energy consumption varies from 6 to 10 kWh/m³-fresh water, depending on salinity, temperature and recovery among others. In the state-of-the-art systems the energy consumption can be as low as 2..3 kWh/m³-fresh water.



Evolution of energy consumption for the desalination of seawater over the last 30 years

On the other hand, 1-pass SWRO can produce fresh water of 125..150 mg/l of chloride at its best. These high rejection systems always need an average feed pressure of 65..75 bars. 2-pass SWRO can remove 99.6..99.9 % of the total salinity. These extremely high rejection rates are sometimes needed to spare the metal pipings from corrosion or in special processes, like in power plants.



Customers: Sanoma Corp., Wärtsilä Corp., Fortum Corp., Finnsementti Ltd., City of Laitila, Finnish Defence Forces, etc.



QUALITY



Based on the basic quality definition, we can summarize our company quality more specifically as

- √ satisfaction of customers' needs
- √ suitability for intended use and purpose
- √ performance according to a prescribed specification
- √ no missing or malfunctioning parts or early failures
- √ availability at competitive price, but with profitability
- √ constant upgrading of the quality and the quality levels

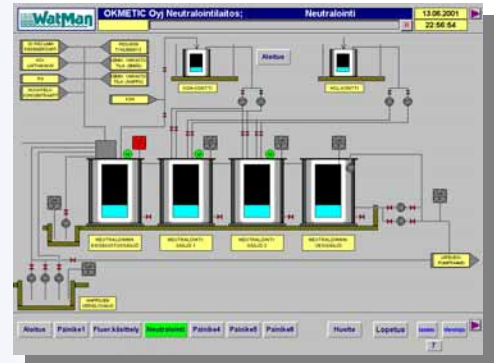
The final goal of quality control is naturally to maintain the promised level. We also understand that loss can mean maintenance and repair costs, operating costs, customer dissatisfaction and/or injuries caused by poor design.

Our aim is for everyone in the organization to understand customer expectations and to meet those expectations every time. To maintain and control a high quality in individual projects, the customer often plays a major role in the quality organisation.

The most important part, however, is to feel personal responsibility for the customer.

We apply ISO 9001 quality system and our quality system for welding according to EN 729-2 is certified.

Challenge us!



Equipment MANUFACTURING and Turnkey deliveries for Demanding PROCESSES

PROCESSES AND EQUIPMENT

- IRON and MANGANESE REMOVAL
- ALKALIZATION AND REMINERALIZATION
- SOFTENING
- DESALINATION
- HEAVY METAL REMOVAL
- OIL and GREASE REMOVAL
- PRESSURIZED FILTRATION
- CONTINUOUS WASHING FILTRATION
- FLOCCULATION
- LAMELLA CLARIFICATION
- FLOTATION (DAF)
- REVERSE OSMOSIS
- ION EXCHANGE
- SOLIDS DRYING (THICKENING, PRESSING)
- CHEMICAL DOSING and STEAM SAMPLING
- STORAGE/REACTION TANKS
- PRESSURE VESSELS
- PUMPS AND PRESSURE BOOSTING
- EQUIPPED TOTALITIES BASED ON MANUFACTURING PARTNERSHIPS

WE SERVE

- THE STEEL INDUSTRY
- THE PROCESS INDUSTRY
- THE ELECTRONICS INDUSTRY
- THE PULP AND PAPER INDUSTRY
- SHIPYARDS AND THE SHIPPING INDUSTRY
- POWER PLANTS
- ANY OTHER STEAM or WATER USERS
- COMMUNITIES and CITIES
- RESEARCH CENTRES and LABORATORIES
- DESIGNERS and CONSULTANTS

WE USE

- LINED STEEL (EPOXY, VINYL, RUBBER)
- GALVANIZED STEEL
- STAINLESS STEEL (304, 316, DUPLEX, SMO)
- PRESSURE BLASTING, ELECTROPOLISHING, PICKLING
- PLASTIC (PVC, PP, PE, GRP)
- SPECIAL PLASTICS (FEP, HALAR)

- PLC's: SIEMENS, OMRON, ALLEN-BRADLEY, MITSUBISHI, ETC.

PCWINDOWS BASED PRODUCTION INTELLIGENCE INCLUDING CONTROL, REMOTE CONTROL AND REPORTING.





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