

POU and POE

Water treatment at the point of use

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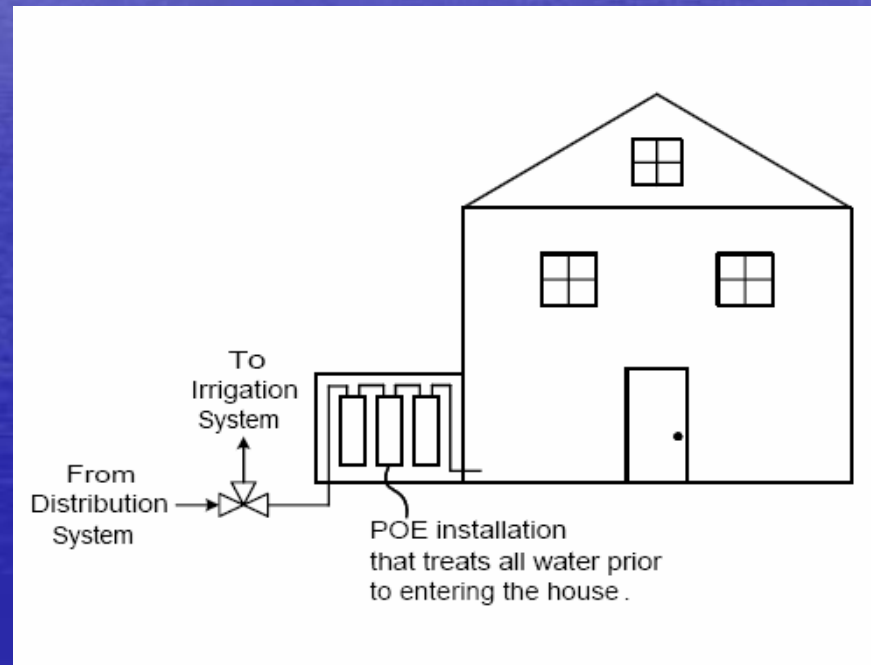
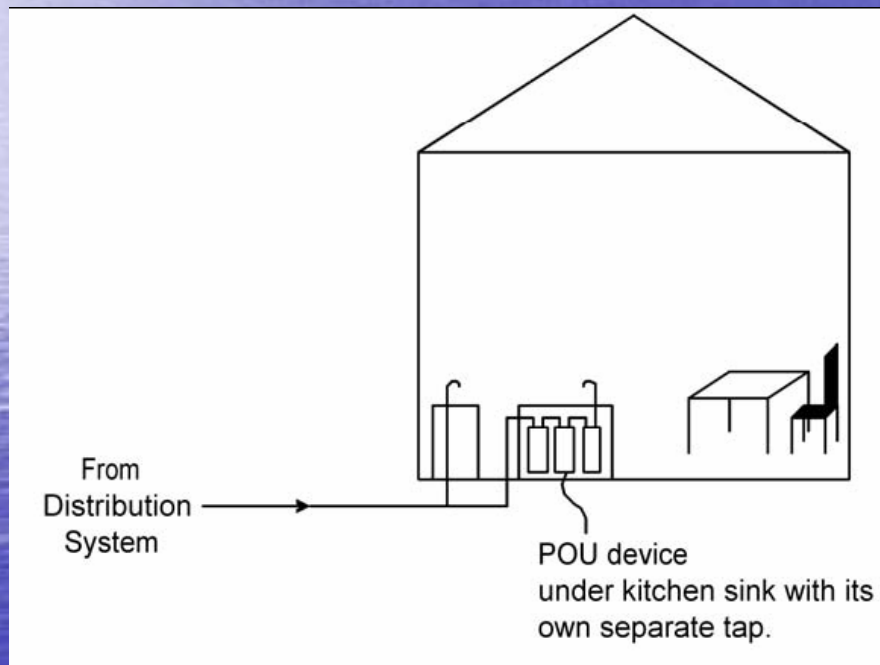
What is POU/POE?

- Drinking water treatment devices of all kinds for household use
- Devices range from small table filters to complex treatment systems for whole households
- Similar technologies as in treatment plants but small scale
- Decentralized Water Treatment

Difference between POU and POE

- Point-of-Use
 - Installed at a single tap
 - Small portion of water in household is treated
 - Under sink installation
 - Faucet units
 - Table filters
- Point-of-Entry
 - Installed in front of the house installation
 - All water is treated

POU / POE



POU / POE Prerequisites

- Professional installation
- Maintenance and control absolutely necessary
- Monitoring
- Waste Disposal

Reasons for POU/POE

- Economical reasons
- Hardness removal
- Corrosion inhibition
- Aesthetical reasons
- Removal of „harmful“ substances
- Microbial contamination
- Wellness and spiritual desires

Economical Reasons

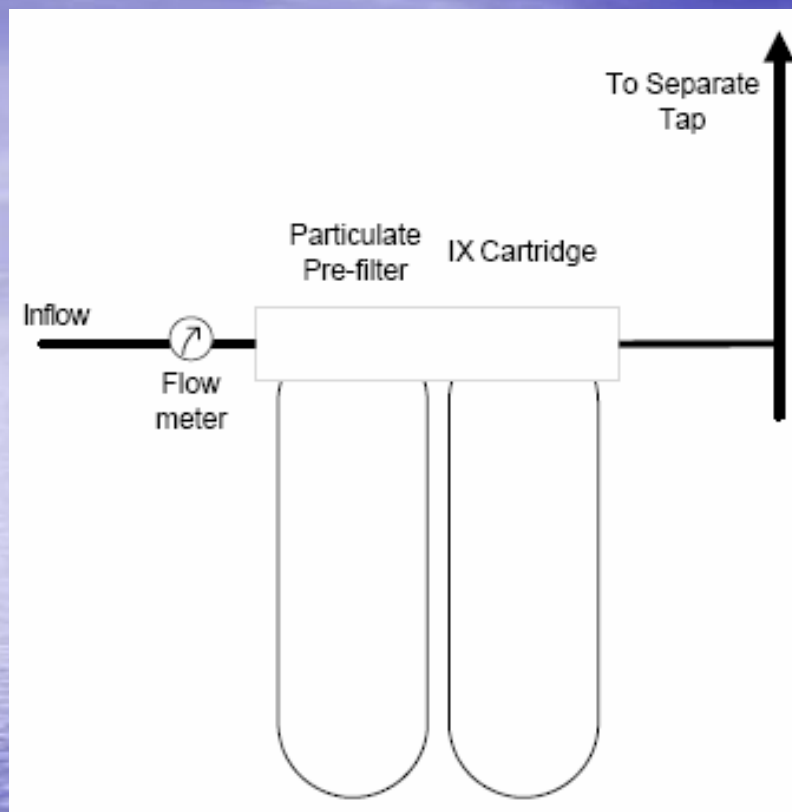
- Useful to provide small communities or remote colonies with safe drinking water
- If water quality is not sufficient according to local drinking water guidelines it can be more economic for a water company to install POU devices in the households, than to upscale a whole treatment plant

Hardness removal

- High degree of water hardness is unwanted
- Limestone precipitation can damage house installations
- High degree of hardness shortens the lifetime of warm water devices (washing machines, dish washers,...)

Hardness removal

- Most common: Ion exchangers
- Ca^{2+} and Mg^{2+} ions are exchanged with Na^+ ions
- Ion exchanger resins have to be regenerated regularly
- Sodium concentration in drinking water increases



Corrosion inhibition

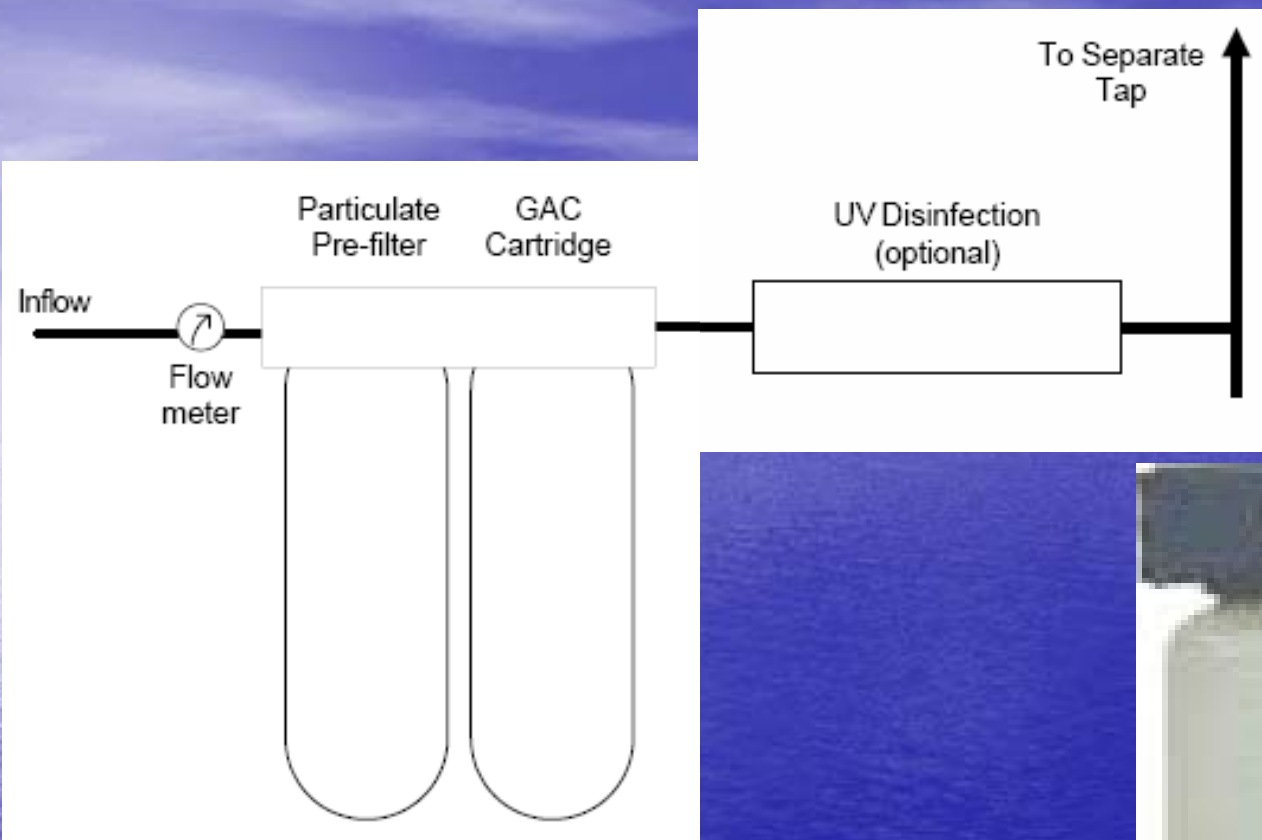
- Dosage of corrosion inhibitors
- Automatical devices
- Ready-to-use chemicals containing Phosphate and Silicates
- pH adjustment

Aesthetical Reasons

- Taste and odour in water can be disturbing
- Unsatisfactory taste of tea, coffee and food
- Possible coloration
- Chlorine

Aesthetical reasons

- Most common: Granular activated carbon filters
- Chlorine and organic micropollutants are adsorbed at the porous surface structure
- Possible habitat for microbail growth
-> re-contamination of water

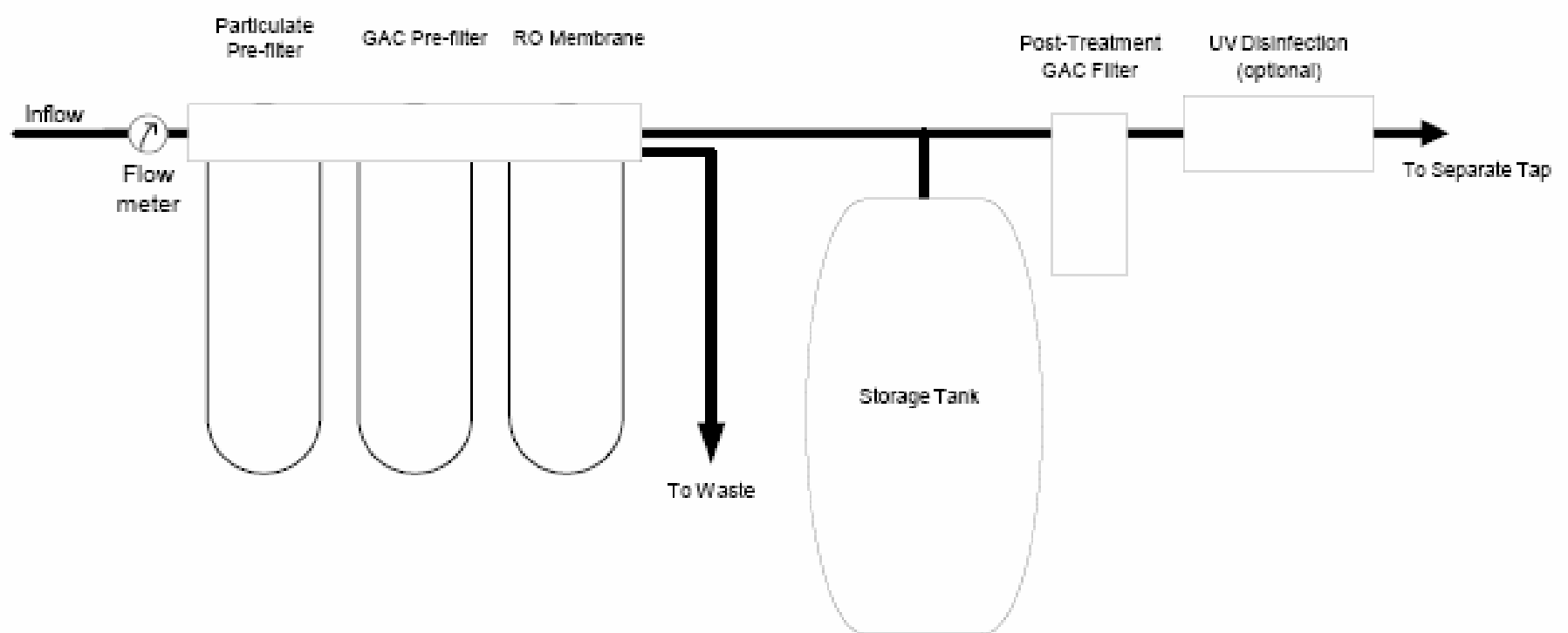


Removal of „harmful“ substances

- Arsenic
- Nitrate
- Heavy metals
- Organics, Pesticides, THM
- Radionuclides
- Pharmaceuticals

Removal of „harmful“ substances

- Almost all solved substances can be removed by reverse osmosis
- Water is pushed through a membrane under high pressure
- RO membranes susceptible to fouling (mineral, organic, biofouling)
- Sensitive to chlorine



Water table filters

- Cartridge system
- Combination of ion exchanger and activated carbon
- Worldwide leading manufacturer located in Germany
- Relatively popular in Germany



Wellness and spiritual desires

- Vitalised water
- Information water
- Energised water
- Achieved for example by rinsing water over crystals or re-ordering of cluster structure
- The treated water should have health promoting properties, which normal drinking water does not have

„Der golden water power stick – Der Einstieg in die Welt der wasserbelebung“

„Wasserbelebung auch für
unterwegs“

„Die in dem golden water
power Stick erzeugten
dauerhaften Frequenzen
werden dabei auf alle
Flüssigkeiten (Tee,
Kaffee, Mineralwasser
usw.) übertragen und
beleben damit das
Wasser“



The Growth Test

- Recommended by the manufacturer to test the effect of vitalised water
- „Sow cress seeds in two different pots and water one with vitalised water and one with common tap water...You will see the difference after a few days!“

We did it...

