

# Production of Hot Tap Water in residential buildings, Poland

Financed by: Danish Energy Agency

Contractors: RAMBØLL, B.A.P.E.,

Danish Technological Institute

## Focus areas:

- Corrosion
- Balancing of recirculation systems
- Sizing of pipes and HTW production units
- Flow metering
- Tariffs

## Corrosion-proof pipe systems:

- stainless steel pipe
- PEX pipe
- Alupex pipe
- internally tin-plated copper pipe ("Copatin")

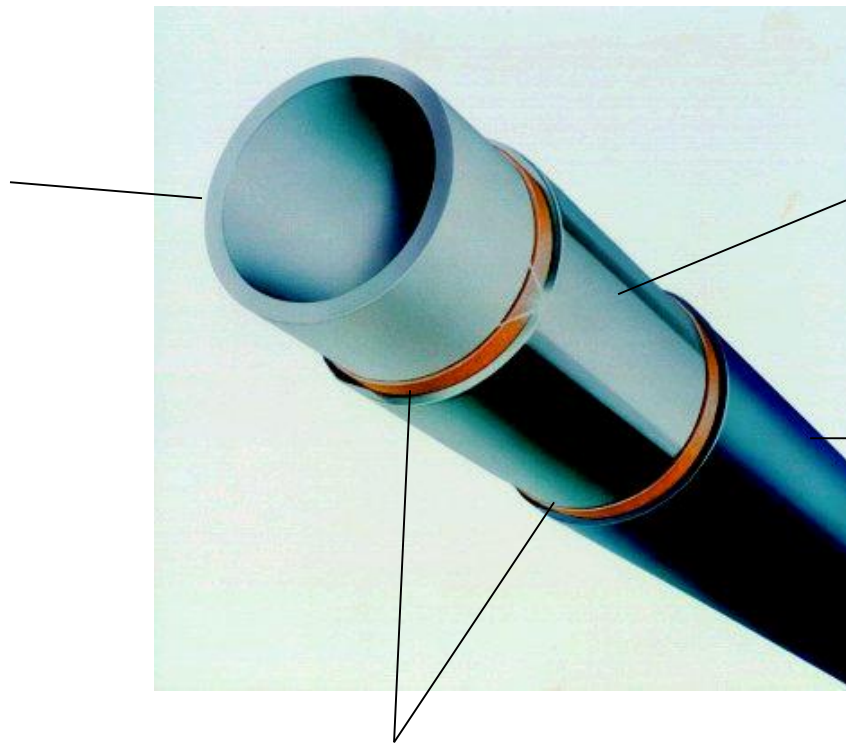
Common feature: connection with press fittings

# Pipe connection with press fittings



# Alupex pipes

Inner PEX  
layer

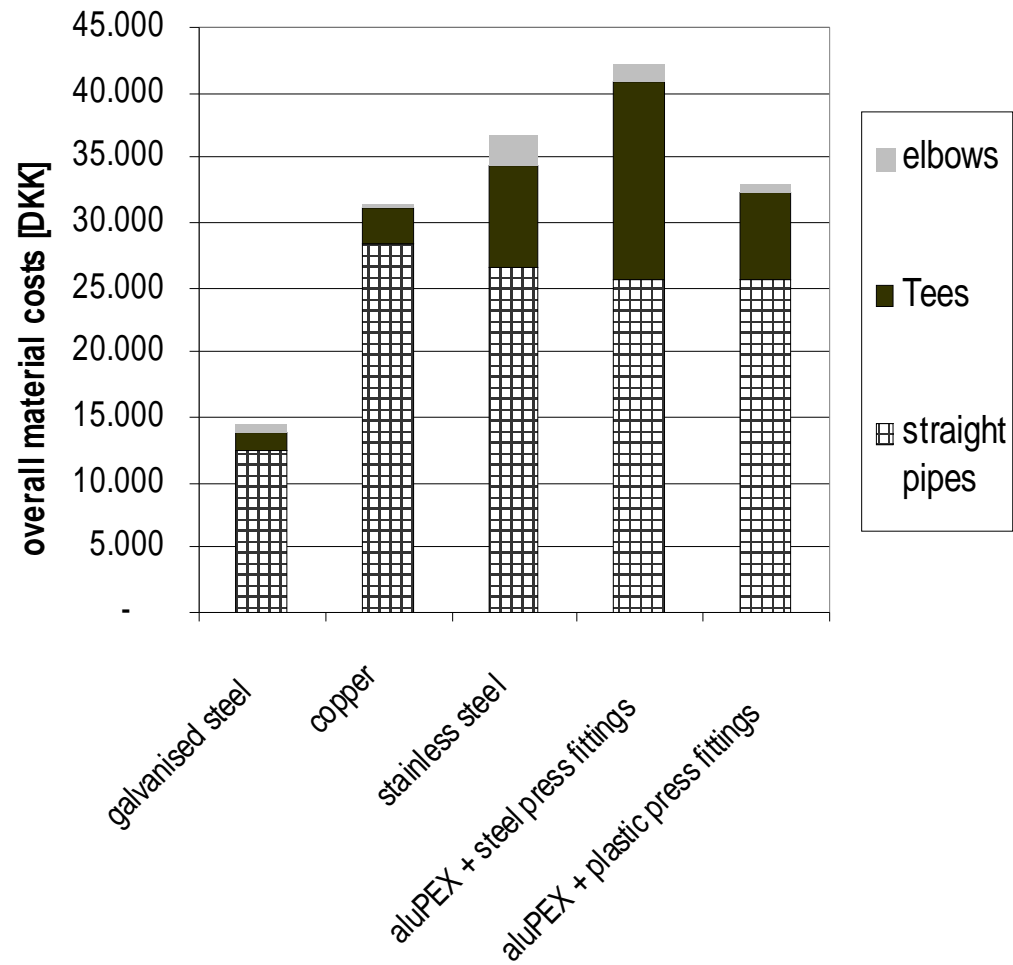


Aluminium  
layer

Outer PE layer

Bonding

Comparison of costs of pipe material for apartment block with 64 flats



# Electrolytic Protection

without  
protection



with  
protection

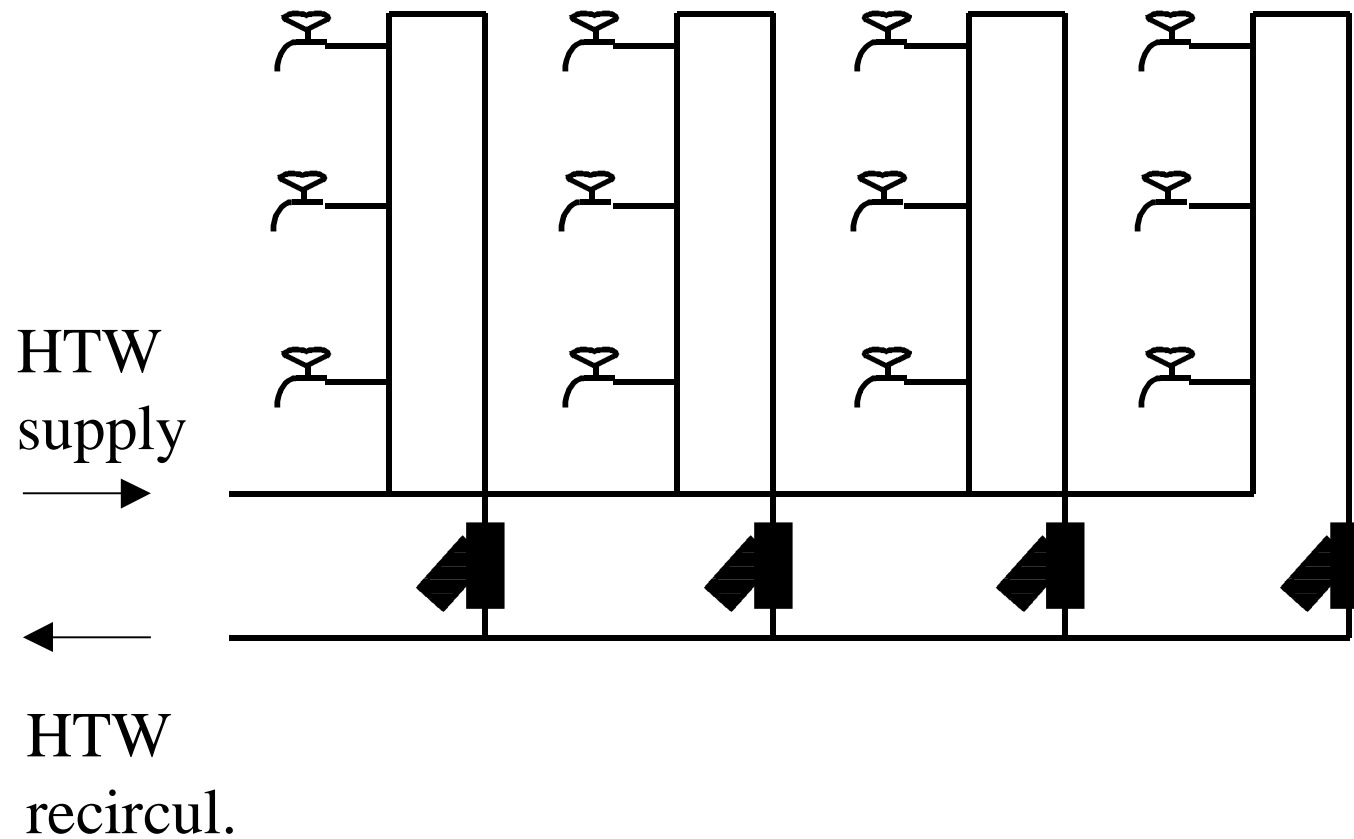


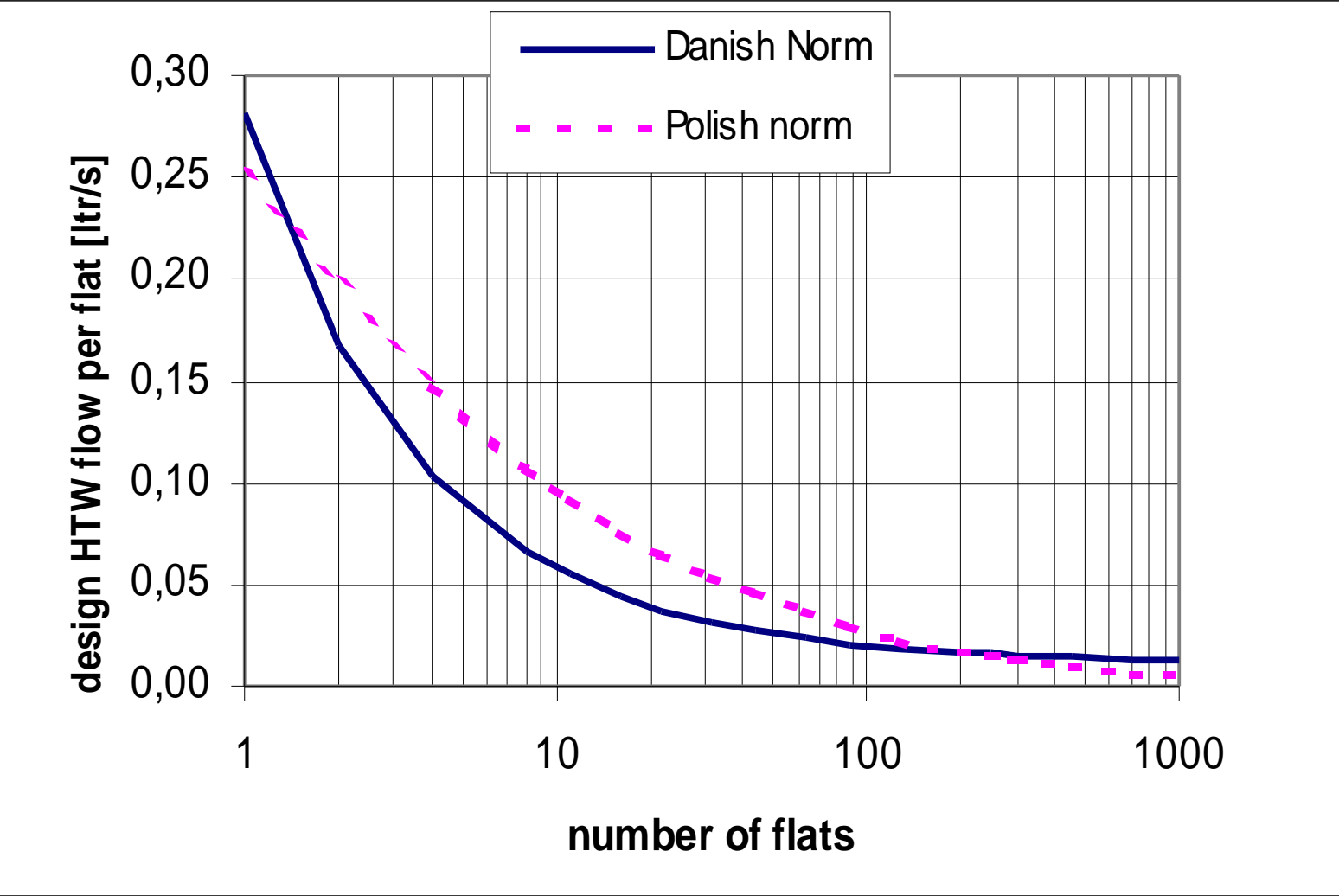
# Thermostatic recirculation valves





# Thermostatic recirculation valves: Installation scheme

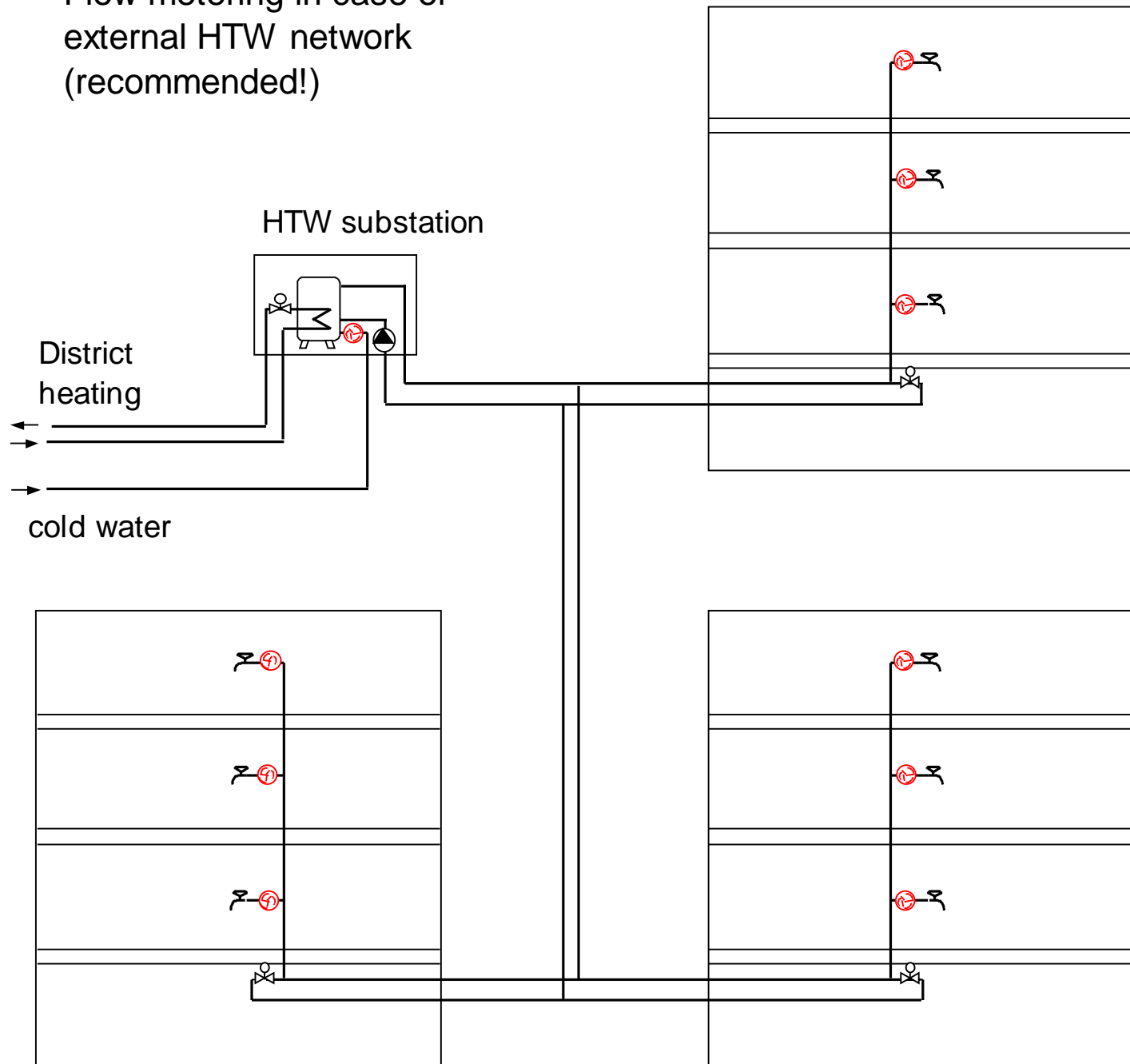




# Disadvantages of oversized pipe systems

- excessive investment costs
- excessive heat losses
- long interval of water exchange in pipes => can aggravate water quality problems
- excessive temperature drop

Flow metering in case of  
external HTW network  
(recommended!)



## Flow metering in case of external HTW network (not recommended!)

