



GEFA - DOMINO Knife gate valves

Series SD (AT...)

Sample applications

Main areas of applications



Sewage plant, Waste water treatment

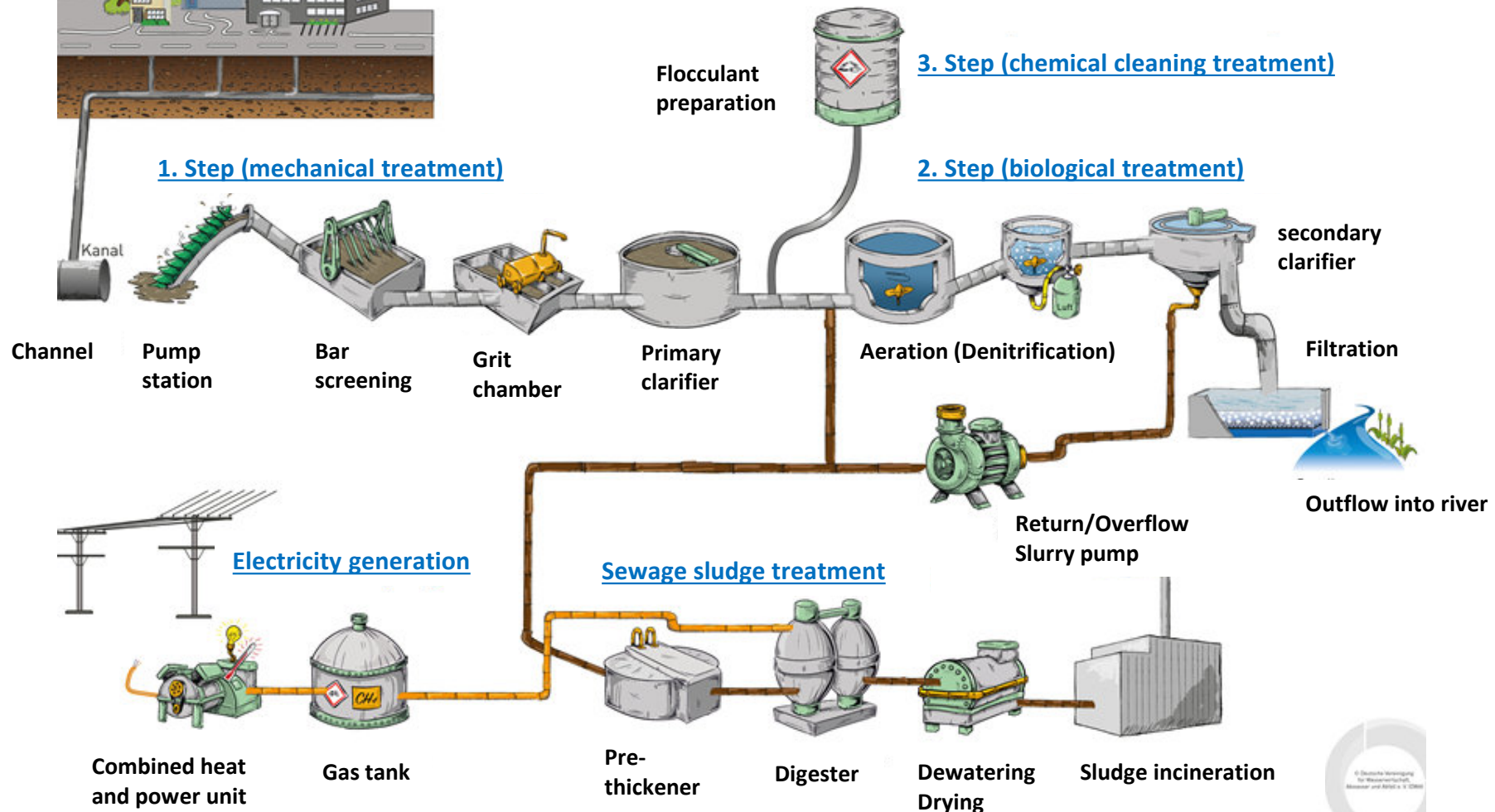
- Sewage sludge, waste water, dewatered sludge
- SD1 (AT100), SD5 (AT150), SD7 (AT200),
- SD3 (AT300), SD75 (AT750)



Sewage plant, Aeration basin

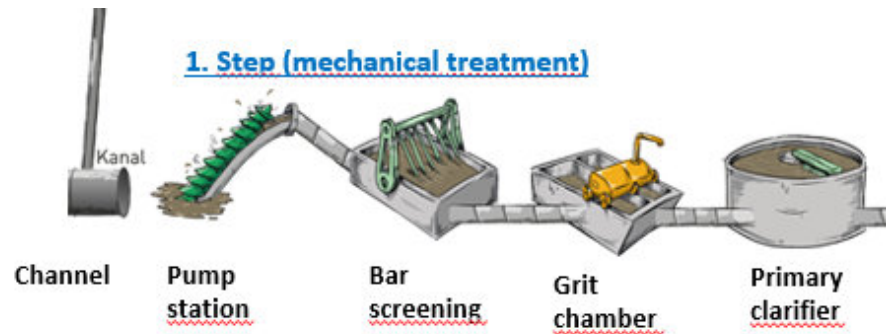
- Air
- SDR (AT200R)

Principle waste water treatment plant

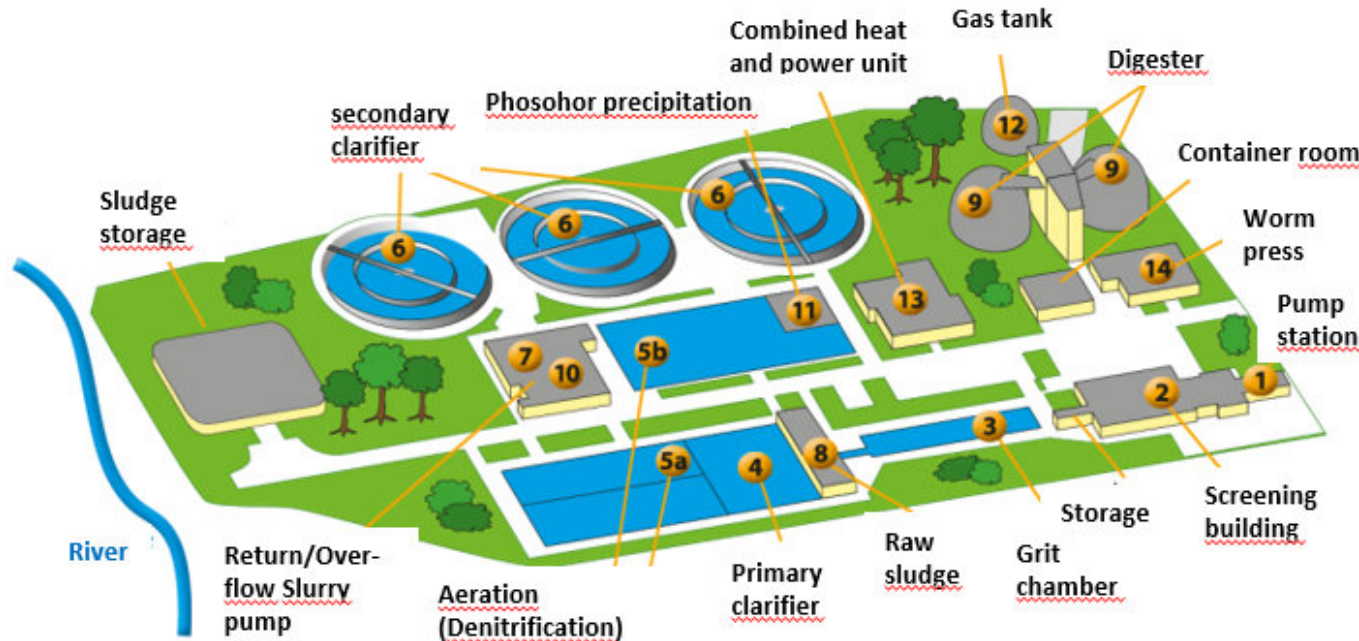


Future expansion to 4th treatment stage: filtering out trace substances, micropollutants such as medication residues, e.g. through activated carbon filtration, membrane filtration, ozonisation (previously only up to 70%)

Principle waste water treatment plant



1. Pump station – Increase to plant system level
2. Screening – Rough cleaning
3. Grit chamber – Sedimentation for heavy materials such as sand
4. Primary clarifier – Sedimentation raw and primary sludge



e.g. DOMINO knife-gate-valve type SD7 (AT200)
Screening plant waste water treatment Köhlbrandhöft Hamburg

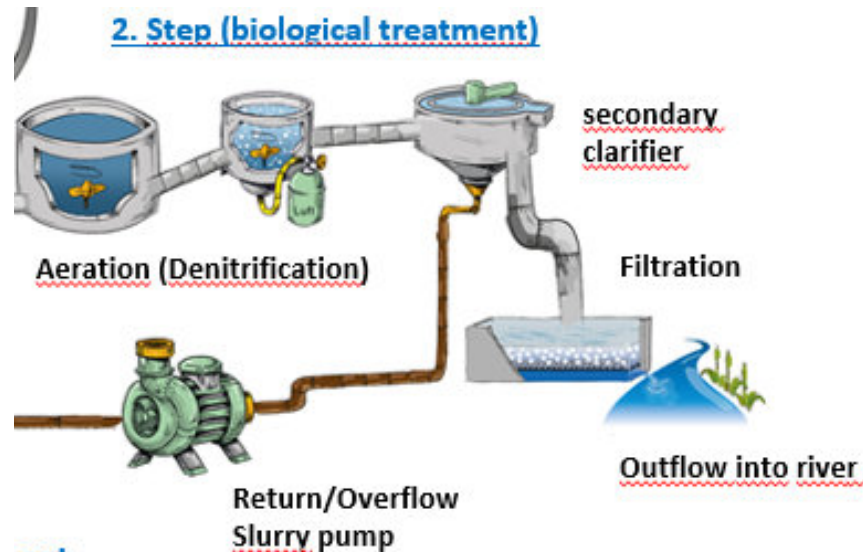


Screening of primary sludge, primary treatment
Köhlbrandhöft north
Starting up 2004
DOMINO knife-gate-valve SD7 (AT200)
size DN 250 - DN 400
Placed with the actuator down
Installation by Hans Huber AG, Berching



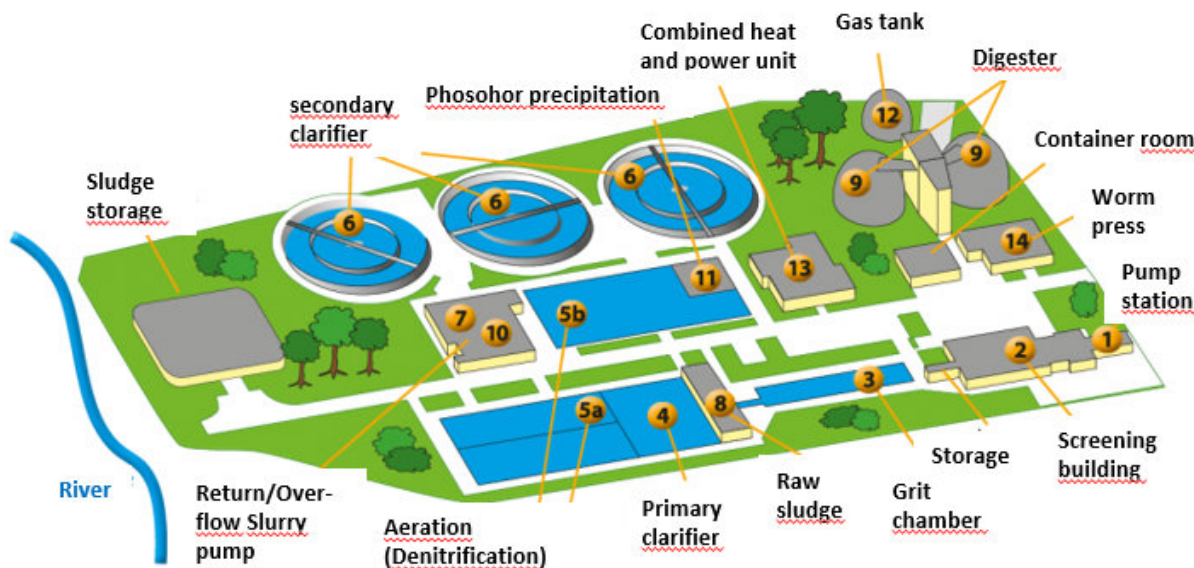
Principle waste water treatment plant

2. Step (biological treatment)



5. Microorganisms and bacteria remove the organic components of the wastewater in aerated aeration tanks (nitrification)

6. The sludge/bacteria mixture is separated from the treated wastewater in the secondary clarifier



Aeration waste water treatment Mainz

Modification of valve technology at the aeration basins from hand operated butterfly valves to electric operated control valves with special regulation port.

Construction period: 2010/2011



Planning: Engineering consultant office Weber (Pforzheim),
 Plant construction: Klawa Anlagenbau GmbH (Gudensberg)

20 valves DN 200, 10 valves DN 150 each with electric-operated multiturn actuator type SAR 07.5 fabricate AUMA

fluid: air, temperature: 50°C, system pressure: 1.6 bar abs.

Flow rate: 2300 Nm³/h (DN 200), 1500 Nm³/h (DN 150)

Pressure drop at the valve: 3,46 mbar (100% open valve) DN 200, 1,75 mbar DN 150



Savings on energy costs using DOMINO control slides SDR (AT200R) as a replacement for butterfly valves on aeration tanks in sewage treatment plants



Customer: Municipal sewage treatment plant in Frankfurt

Fluid: Air, 70°C, pressure from blower: 1,65 bar abs.,
Flow capacity: 3700 Nm³/h

Task:

- Improvement of the control characteristics of the previously used manually operated butterfly valves.
- Automation of the system control
- Reduction of energy consumption through the use of low pressure loss valves

Solution: Installation of electrically actuated GEFA-DOMINO control slides DN 250 with optimized special control geometry instead of the used butterfly valves DN 300 with a pressure loss of approx. 1.98 mbar with fully opened valve and max. flow.

Result: Savings on energy costs, amortization of the investment in the amount of approx. € 50,000 after approx. 1 year of operation after commissioning.



Reduction of operating costs by using maintenance-free DOMINO control gate valve SDR (AT200R)



Customer: Municipal wastewater treatment plant on the Parthe (Saxony near Leipzig)

Fluid: Aeration air

Task:

Reduction of operating costs at the aeration basins, due to the high maintenance intensity caused by the cleaning effort of the used Iris diaphragm control valves.

Solution: Removal of the existing 4 control gate valves and installation of GEFA-DOMINO control gate valves SDR (AT200R) DN 150 with optimized special control port.

Result: Since the modification in 2011, the operation has been running without any further maintenance. What's more: The use of the DOMINO control valve also enables tight closing of the line.



Reduction of operating costs by using maintenance-free DOMINO control gate valve SDR (AT200R)



When modifying, please note that the overall length of the DOMINO gate valve according to EN 558-1 Series 20 (56mm for DN 150) is shorter than that of the Iris gate valve - adaptation required on site

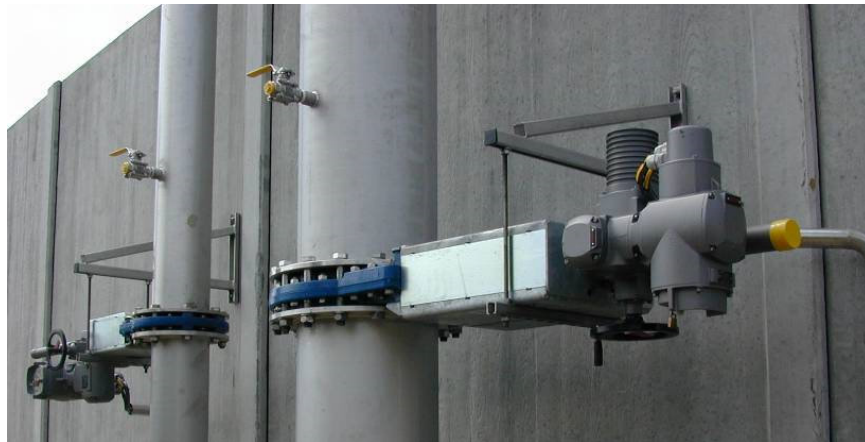
The additional shut-off valve (usually a butterfly valve) required with the Iris gate valve is not necessary when using a DOMINO gate valve, because unlike the Iris gate valve, the DOMINO gate valve is tight-closing.

The AUMA Multi-turn actuator used on the Iris gate valve can be used for the DOMINO valve. Supplemented only the output drive - output drive type A/F07 with drilled threaded bush (TR24x5 lgg) and the stem protection tube, furthermore the hollow shaft was exchanged. Urgently required: New adjustment of the limit and torque switches. Attention to the speed at the output (recommendation 8-22 rpm) Acceptance of the existing drive must be checked in each individual case.



Aeration waste water treatment Hengelo / NL

Samson Appendages



DOMINO – regulation valve SDR (AT200R) DN 1000 and DN 1200 with stem extension and AUMA-Multiturn actuator (controlled water drain)



Valves type
 SDR (AT200R) DN 250 – DN 400
 Pressure aeration with compressor
 fabricate HV-Turbo

Around 80 % of all waste water treatments in the Netherlands are equipped with DOMINO-control valves on the recommendation of HV Turbo (now Siemens)

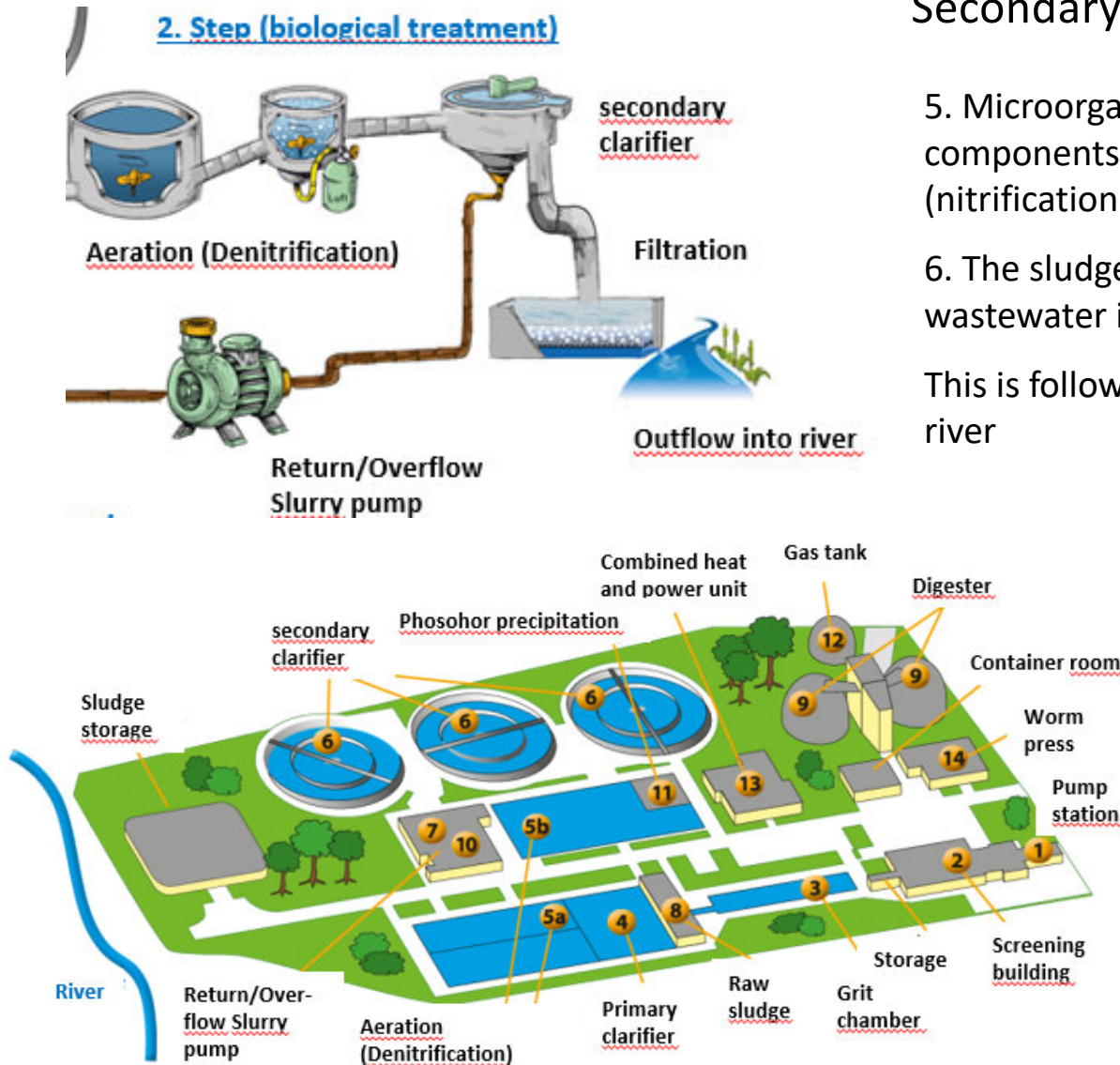
Commissioning: 2001



Principle waste water treatment plant

Secondary clarifier and Filtration

- 5. Microorganisms and bacteria remove the organic components of the wastewater in aerated aeration tanks (nitrification)
 - 6. The sludge/bacteria mixture is separated from the treated wastewater in the secondary clarifier
- This is followed by filtration and discharge into the nearby river



Filtration waste water treatment Düsseldorf Süd

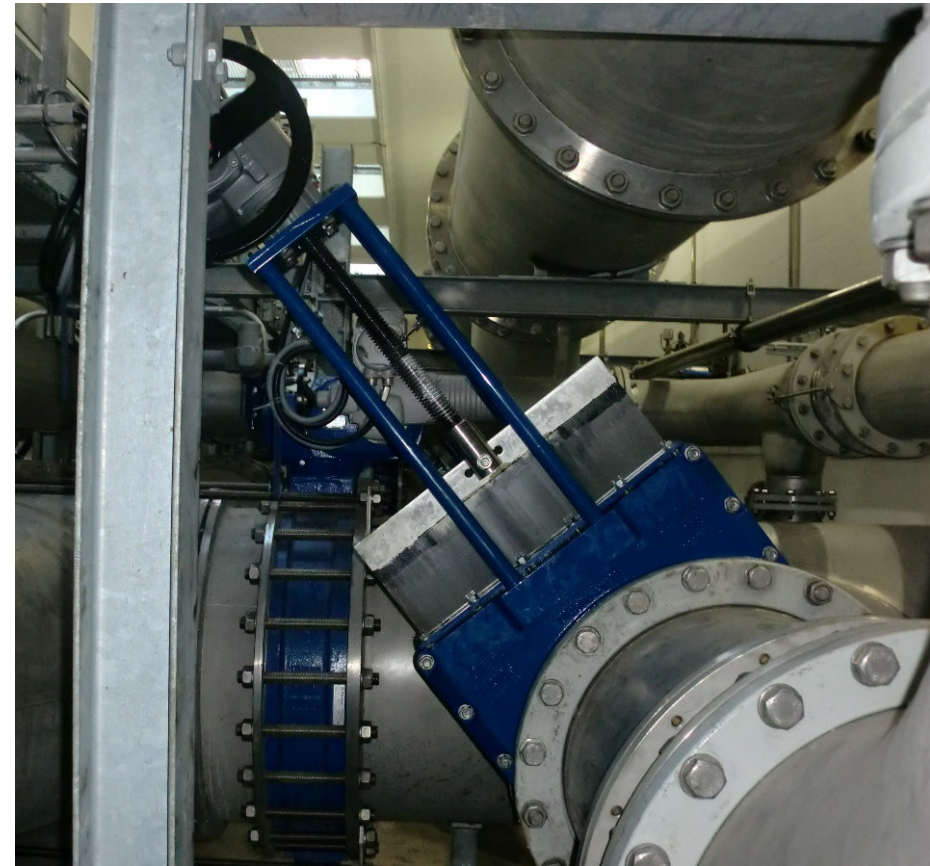


The levels in the sand filters are controlled by the 18 DOMINO AT200R DN 600 control valves with 60 degree control orifice. The sand filters are the last treatment stage before the clarified wastewater is released into the Rhine and always require a certain fill level. The knife gate valves are therefore always in intermediate positions and are only closed during inspections.

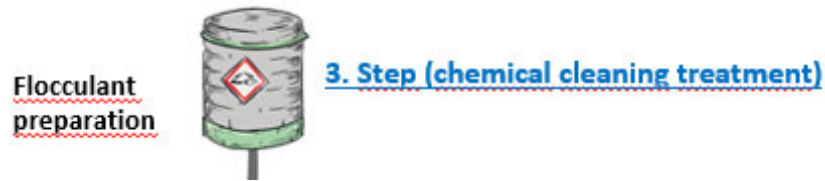


Installation: 2013

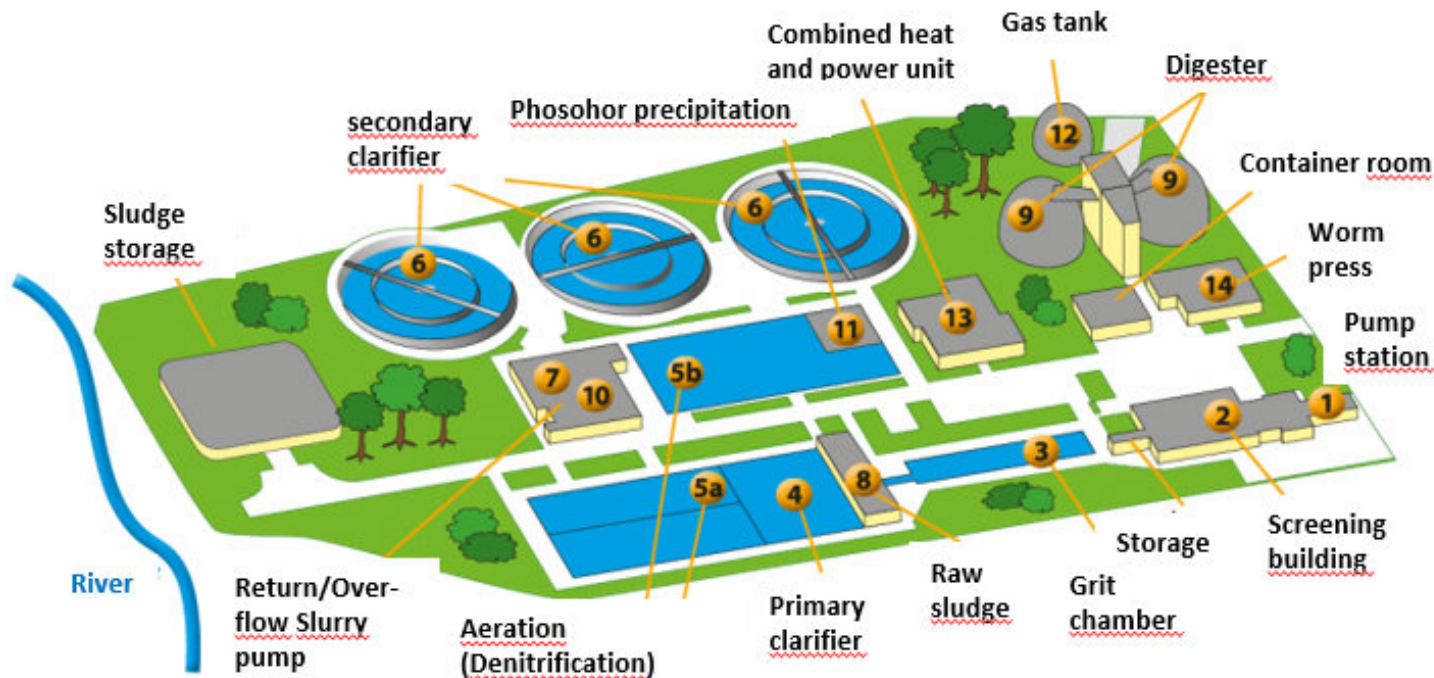
Special control orifice
60 degrees as a copy
of previously installed
Geier gate valves



Principle waste water treatment plant



11. e.g. phosphate precipitation (detergent additives, fertilisers) due to input of e.g. iron (III) chloride (flocculant, very aggressive)



GEFA DOMINO Knife-gate-valves SD7 (AT200) in use with iron (III) chloride in sewage treatment plants



Customer: Sewage plant
Gümmerwald Hannover

Fluid: Iron(III)-chloride, Flocculants
Use for precipitation of phosphate in wastewater

Task: Inconsistency of all stainless steels to iron (III) chloride
Corrosion on slide plates made of stainless steel

Solution: Plastic coating ECTFE of the housing parts and the slide plate

**Use in the sewage plant
Gümmerwald:**

3x GEFA-DOMINO knife-gate-valve SD7 (AT200) – DN 150 with AUMA-Multiturn-actuator

Body: ductil iron, ECTFE coated
Gate: AISI 316Ti, ECTFE coated
Seals: NBR

Installation: Beginning of 2018

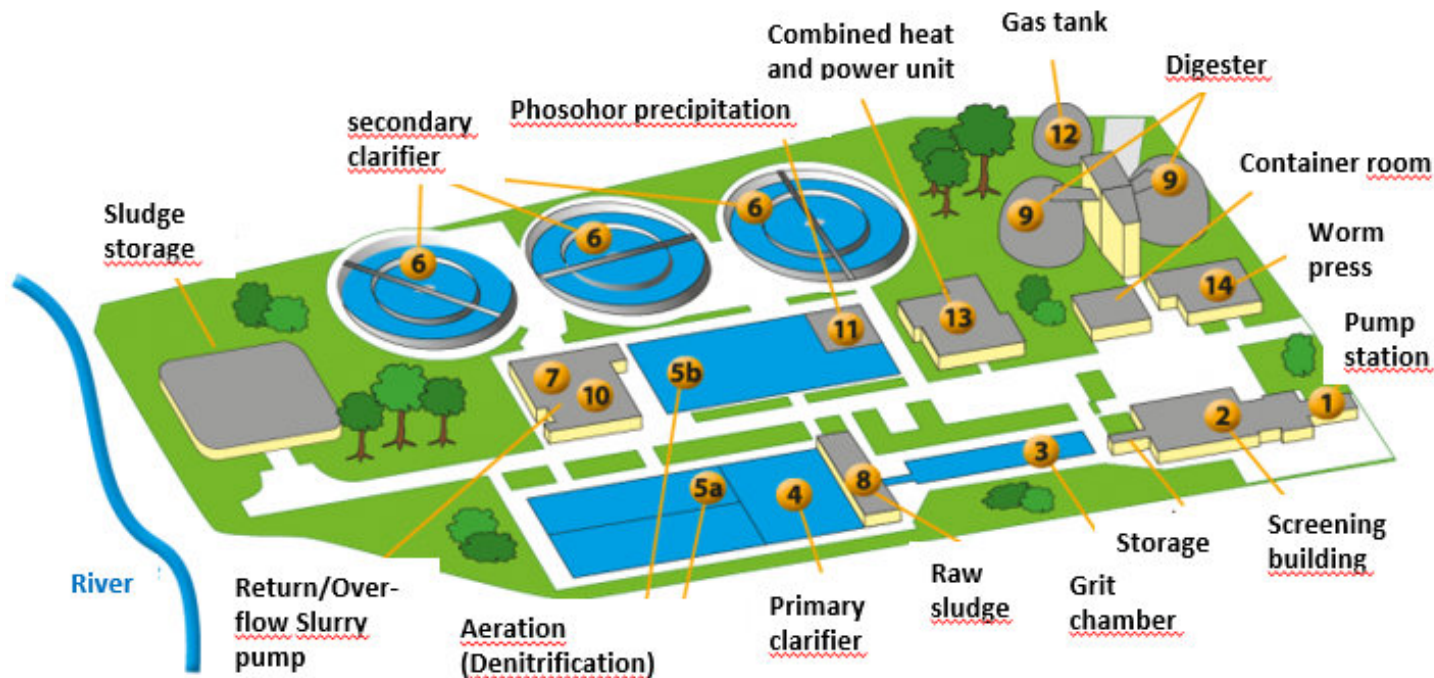
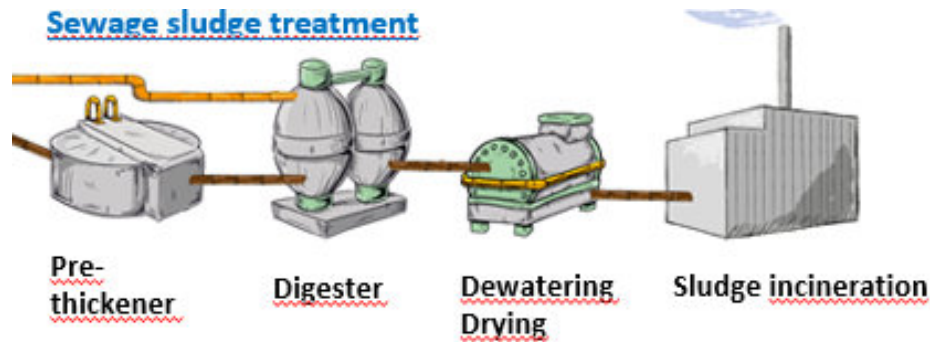


Principle waste water treatment plant

7. Pre-thickener



9. Digester – Gas formation with the help of bacteria - Power generation

14. sludge dewatering for sludge incineration, for example in waste-to-energy plants



Operating life optimization when using DOMINO slide valves SD75 (AT750) as a replacement for ball valves PN 100 in sewage sludge drying



Current installation of the slide. 
 Previous installation of the ball valves. 

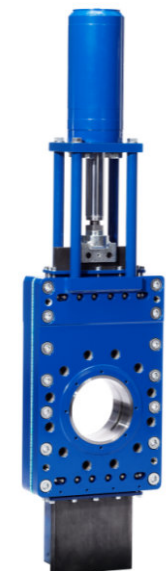
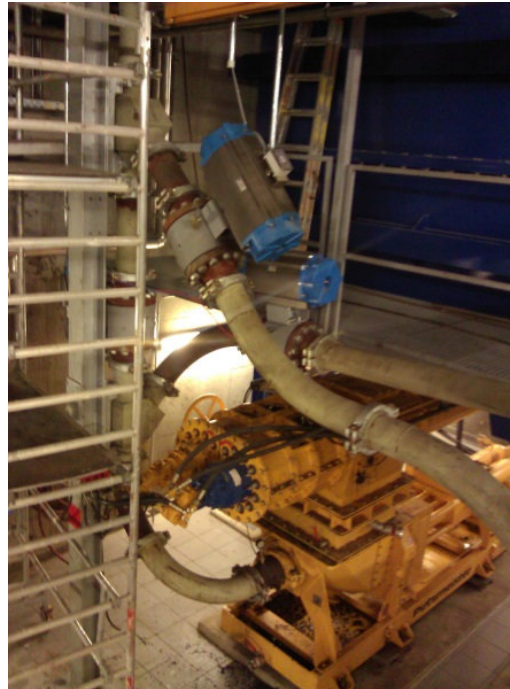
Customer: waste water treatment in Neu-Ulm (Germany)

Fluid: Dewatered sewage sludge from sewage sludge drying, approx. 25-28% DS, operating pressure approx. 50 bar (pump PN 100), Temperature = 20 ° C

Task: Increase the service life of the previously used ball valves.

Disadvantages when using ball valves:

- High wear of the seals due to deposits on the ball surface
- After a few switching operations, the valve is blocked by sludge entering the dead spaces. This produce shutdown of the production due to replacement and cleaning, e.g. Revision of the valve.



Solution: Exchange of the valves in DOMINO Slider SD75 (AT750) DN 150, PN 100. Commissioning: 2014.

Result: Trouble-free operation even with low switching frequency. Max. 10x / a

Further use of DOMINO valves SD75 (AT750) for dewatered sewage sludge in sewage sludge drying



Customer: Waste water treatment in Sindelfingen (Germany)
Medium: Dewatered sewage sludge from sewage sludge drying, 30% DS, operating pressure approx. 35 bar (pump PN 63), T=20°C

Installation: 2017

4x SD75 (AT750) DN 200 PN 63 K4
with Festo pneumatic cylinder Ø 400mm

Installation: Pressure line Saxlund pump PN 63

Operating frequency: 2-5 / week (Operating without pressure)



Further use of DOMINO Gate Valves SD75 (AT750) for dehydrated sewage sludge in sewage sludge drying



Customer: Industrial wastewater treatment plant in
Leppersdorf near Dresden

Fluid: Dehydrated sewage sludge from the sewage sludge
drying process, Thick sludge, operating pressure approx. 32
bar

Installation: 2017

4x SD75 (AT750) DN 300 PN 40 with AUMA bevel gearbox

Installation location: solids pipe thick sludge / silo



Further use of DOMINO sliders SD75 (AT 750) with dewatered sewage sludge in sewage sludge drying

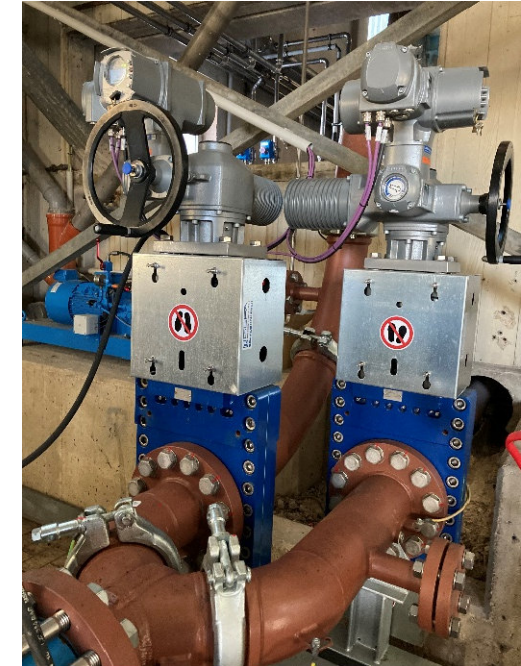


Customer: waste water treatment „Kassel Wasser“
Fluid: Dewatered sewage sludge from sewage sludge drying (centrifuge),
Sewage sludge 30% DS, operating pressure approx. 50 bar

Installation: 2020
2x SD75 (AT750) DN 150 PN 100 with AUMA bevel gearboxes
Installation location: sewage sludge pipeline to silo / Huber plant



Further use of DOMINO Gate Valves SD75 (AT750) for dehydrated sewage sludge in sewage sludge drying



Kunde: Waste water treatment plant in
Düren

Fluid: Dewatered sewage sludge from
sewage sludge drying before own sewage
sludge incineration. Dry substance
content approx. 20-30%, operating
pressure max. 100 bar

Installation: 2022
8x SD75 (AT750) DN 150 PN 100
with AUMA electric multi-turn
actuator, controls AC01.2
Installation location: pressure
pipes after the decanter, before
incineration

Use of DOMINO gate valve SD3 (AT300) thick sludge



Customer: Wastewater treatment plant Leipzig Rosental
Client: Schachtbau Nordhausen
Fluid: Thick sludge from centrifuges
Operating pressure: max. 36 bar, Temperature: ambient



Installation: 2021
3x SD3 (AT300) DN 250 PN 25 AUMA electric multiturn actuator

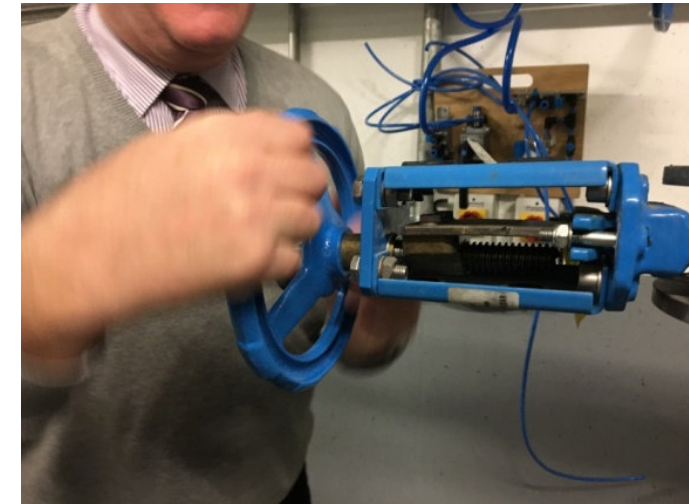
Installation location: renewal of thick sludge pumping station
Centrifuge discharge via eccentric screw pump
Make Wangen



Use of DOMINO valve as a substitute for blocked competition valve



Customer: Waste water treatment plant Sindelfingen
Fluid: Process water from sludge dewatering, 3 bar, 10°C-30°C
Task: Precipitation of lime and MAP (magnesium, ammonium and phosphate) leads to encrustations which lead to blocking and functional failure in the competitor's product after approx. 6-8 weeks despite daily use.
Solution: A test use of a GEFA-DOMINO slide valve SD7 (AT200) DN100 for about one year showed a smooth operation without any problem.
Result: Conversion of the complete system to GEFA DOMINO knife-gate-valves SD7 (AT200).

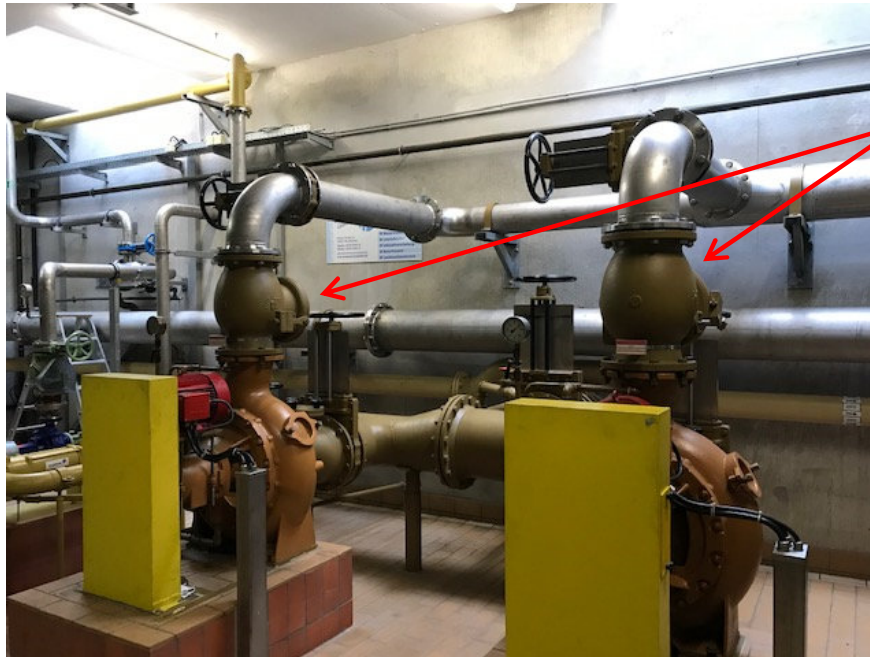


Blockage and functional failure of the competitive product

by incrustations in the sealing area



Energy cost savings using DOMINO valves as a replacement for check valves in pumping stations



Previous installation situation
Check valves on the pressure side

Replacement of the check valves by fitting pieces



And installation of DOMINO knife gate valves SD7 (AT200) DN 200 into the pressure line above.



Customer: Wastewater treatment plant in Nuremberg

Medium: return sludge from secondary clarifier

Task: The use of the check valves on the pressure side of the pumps produces:

- **High pressure loss** (approx. 60 mbar) – high energy cost
- **Malfunction** due to clogging on the disc (fibers)
- **Leaks** at the shaft passage
- **Pressure surges** due to rapid closing, thus high load on the mechanical seals on the pumps

Solution: Removal of the non-return valves, use of pneumatically actuated DOMINO slide SD7 (AT200) DN 200. Commissioning: 2017

Result: Savings on energy costs through the use of low-pressure loss valves: approx. € 1,300 / a - Amortization after approx. 2-3 years. Conversion of further pumping stations will follow

Valve type SD3 (AT300) PN 25, dry sludge loading, Waste water treatment Houthalen/Belgium



Fluid: Drained Sludge for Sewage
sludge incineration,
around. 35 % dry substance,
Working pressure:
around 20 bars

