Professionals in water!

Solutions and systems within the potable water, waste water and process water industry.

RWB differentiates itself by supplying standard systems on the one hand and by developing custom made solutions on the other hand. By keeping all disciplines, like engineering, process management, assembly, commissioning and maintenance in-house and also because of a 24/7 service, RWB can offer a complete package in water treatment. That is our added value!

Our Services

- Process technology
- Engineering
- System realization
- Service

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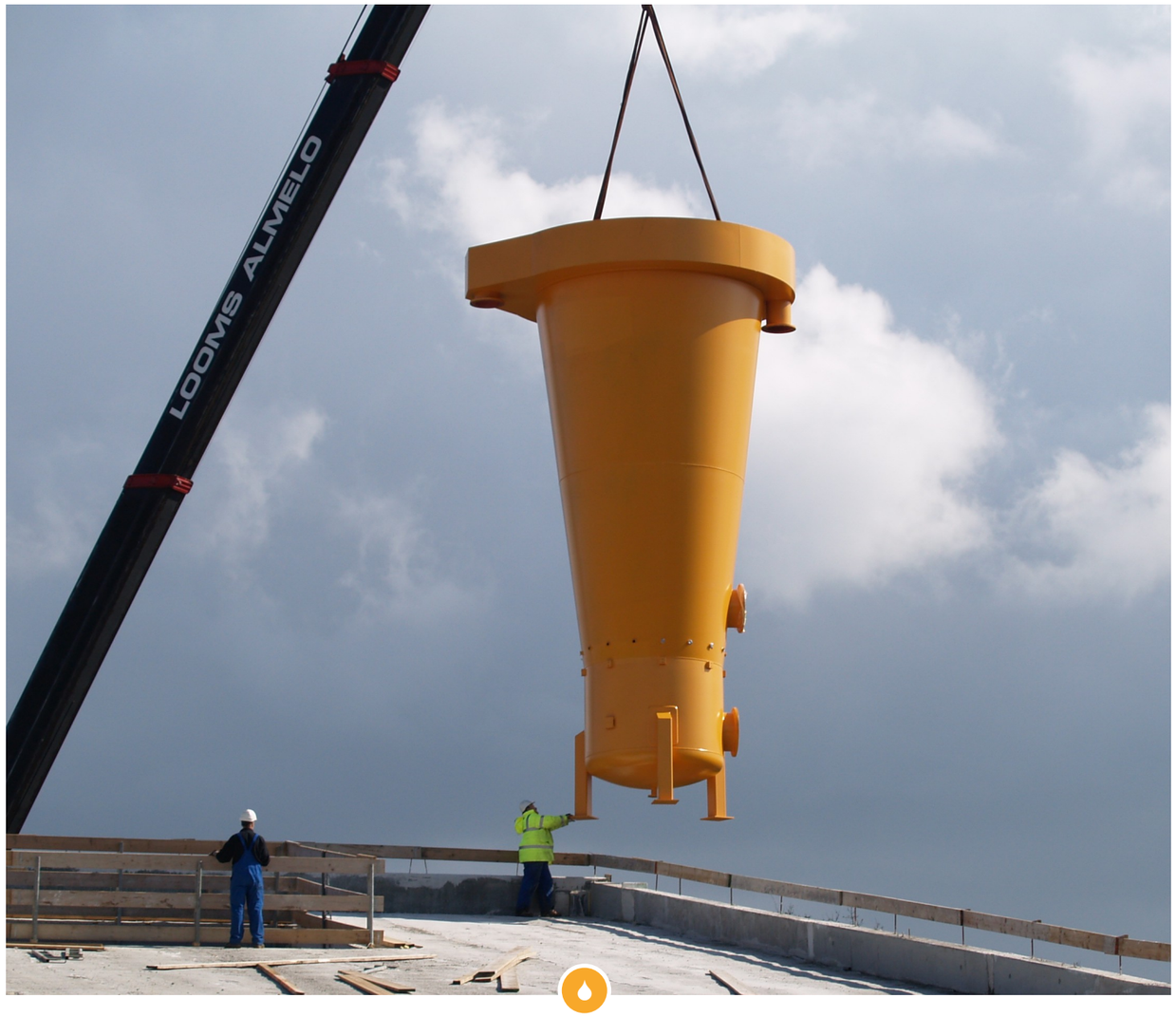
PELLET REACTORS

Plug & Play solutions for centralized softening



Pellet reactors

Plug & Play solutions for centralized softening

Hardness is a major problem in drinking water, with centralized water softening we can solve several problems:

Health

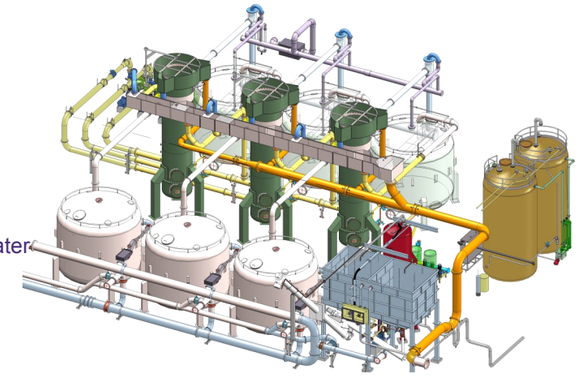
- Less heavy metals (Pb, Cu, Zn) in distribution network
- Less fouling and bacteriological risks

Environment

- Less heavy metals in sewerage treatment sludge
- Lower use of detergent and lower phosphate content in sewer water

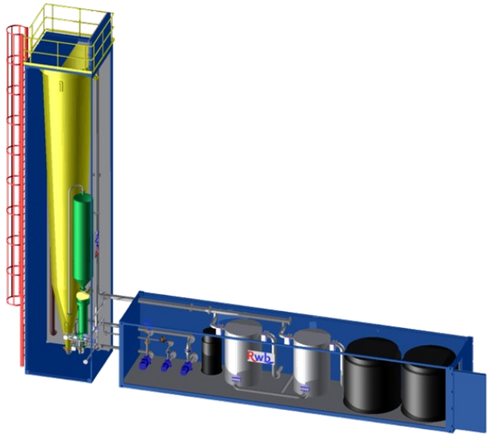
Economy

- Lowering of energy consumption of heating machines / boilers
- No scaling



A pellet reactor is an effective technology for reduction of water hardness which is a major problem in most drinking water sources. Central part of the installation is the fluidized bed reactor which measures approximately 11 meter in height. The feed water enters the reactor from the bottom together with a caustic solution (or lime or soda ash). The caustic will raise the pH of the water, which will cause the formation of carbonate in the water. The saturation product of calcium carbonate will be exceeded and calcium carbonate will come out of solution.

Calcium carbonate is a crystalline solid, which will precipitate on solid surfaces. The reactor contains sand, garnet or other which will function as a particle for the crystallization process. These particles will grow due to the crystallization process, which takes place on the outer surface of the particle. The small particles will turn into calcium carbonate pellets.



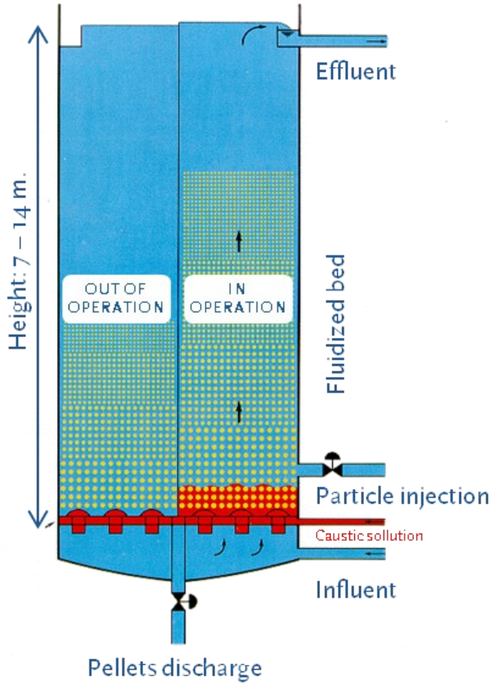
The pellets in the reactor are fluidized by the upward velocity of the water. This fluidization is important in order to avoid the possibility of pellets crystallizing to each other or to the walls of the reactor. During normal operation of the reactor the particles will grow to a full grown pellet. In order to keep the reactor fluidized there is a maximum pellet size which can be allowed (approximately 1 mm) in order to keep the bed fluidized. To keep the average pellet size under control, a certain amount of pellets is discharged from the reactor from time to time. Due to this discharge the number of pellets decreases. This loss of pellets is counter acted by adding new particles to the reactor.

Competing technologies for central softening are the following:

Ion exchange. This process is not considered a feasible alternative, because of the production of relatively large volumes of salty waste liquid, the strong increase in sodium content of the water and the relatively high costs

Membrane filtration. The use of membrane filtration solely for the removal of hardness is not considered a feasible alternative as well. Membrane filtration may be an interesting alternative if color and/or micro pollutants are to be removed as well.

The use of processes based on dosing **chemicals** can be divided into precipitation (sludge) processes and crystallization (pellet) processes. The precipitation process is characterized by the production of large quantities of sludge, which need to be disposed.



Benefits

- Reusable waste
- Compact footprint
- Reliable process
- Flexible operation
- Simple operation
- No post softening needed