

Generating energy with anaerobic wastewater purification

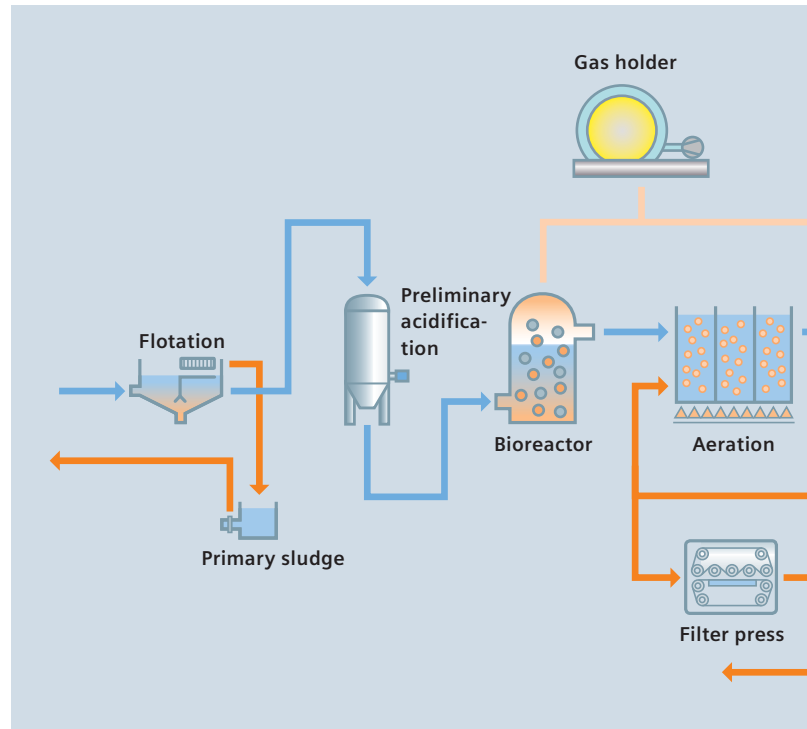
SIPAPER^{CIS} Water – Intelligent water concepts

Industrial Technologies

SIEMENS

Anaerobic water treatment: Energy from pollutants

Save energy with the anaerobic water treatment system from the SIPAPER^{CIS} Water product group. This technology makes it possible to purify wastewater economically and with minimal harm to the environment while at the same time producing biogas.



Your requirements: Efficient production

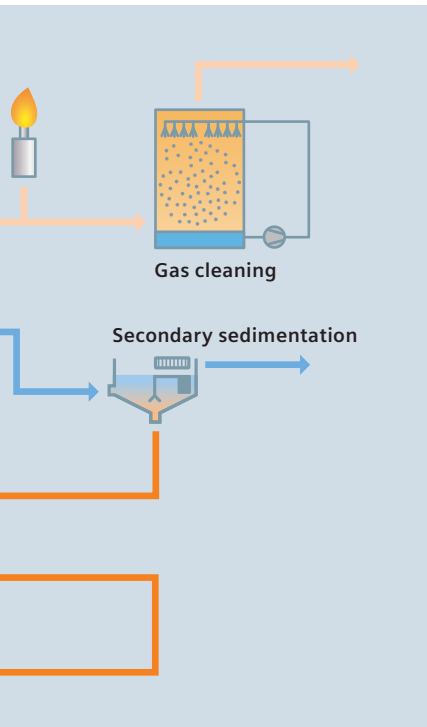
Despite attempts to limit water consumption by means of recirculation, production processes in the paper and pulp industry still consume high amounts of water and energy. The consequent restriction of water circulation and increased production capacities result in polluted wastewater.

On top of that, energy prices will continue to rise. More than ever, saving of resources and energy-efficiency will become the two defining parameters for the paper and pulp industry. Siemens has a ready solution for the problem of an efficient cleaning method in the form of the anaerobic water treatment system from its SIPAPER^{CIS} Water product group.

Our solution: Anaerobic water treatment

Anaerobic water treatment from SIPAPER^{CIS} Water is a high-performance system that purifies wastewater and generates energy as well. It is based on an established process that has been optimized to meet the difficult requirements of the paper industry. The process significantly reduces the pollution of your wastewater and produces biogas in addition. Make productive use of your wastewater and enjoy the benefits. Often what you gain in energy covers the operating costs of the entire purification plant. We provide you with a complete solution with all the product and service modules that your new system requires. We offer you a turnkey total package covering everything from the bioreactor, gas piping, gas cleaning and gas storage to energy and electricity generation.





Your advantages

- Efficient means of generating energy
- Extraction of CO₂-neutral biogas as a cheap alternative to natural gas
- Space-saving cleaning system that can be integrated in existing systems
- No energy consumption for aeration (as opposed to aerobic systems)
- Reduction in the quantity of sludge by 75 % compared with aerobic systems



Performance features of anaerobic water treatment

Flexible in use

The anaerobic purification system features a high degree of flexibility. It can be integrated in new systems or in existing wastewater purification plants. Generally it functions as the initial biological stage of a water treatment system.

Preliminary cleaning

Before the wastewater is purified it should be free of solids and fibers. We will be glad to help you achieve this water quality with further products from Siemens Water Technologies (such as the preliminary gravity table or flotation) suitable for your plant and your specific requirements.

Anaerobic reactor – technically perfected processes

In the anaerobic purification process the water passes first through a so-called preliminary acidification stage. Here the pollutants in the wastewater, generally in the form of hydrocarbons, are transformed into fatty acids by means of bacterial conversion. In the next stage, the anaerobic reactor, the wastewater flows through the biomass (sludge pellets). A special inlet system ensures that water comes into contact with the pellets as effectively as possible.

Useful “side effect”: biogas

Methane gas is produced by the decomposition of fatty acids and is taken up at the boundary surfaces of the pellets. Because of the difference in density, the small biomass particles rise to the surface. The biogas is then separated from the pellets in a two-stage separation system and the pellets sink back down again. This mechanism ensures thorough inter-mixing of the anaerobic reactor so that no further energy is needed for mixers.

Comprehensive complete package

Before you can use the biogas produced it has to be cleaned. We help you with the gas treatment process by supplying all the equipment required, from gas flares and gas holders to compressors and biogas cleaner. By the time the water leaves the anaerobic reactor, the CSB load has been reduced by 60–90 % depending on your production process and converted into biogas. This allows you to flexibly utilize the biogas in your production process.

In contrast to fossil fuels, the use of biogas results in a reduction in CO₂ emission and provides an environmentally benign method of energy production. For this reason, this type of energy generation is promoted at government level. (CHP or EEC)

Compelling figures

Anaerobic wastewater treatment is an effective means of generating energy. Typically, about 3000 Nm³ of biogas can be produced from a pollutant load of 10,000 kg CSB/day, sufficient to operate a boiler with a firing capacity of 900 kW.

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All Rights Reserved
Order No.: E10001-T480-A160-V1-7600
Printed in Germany
Dispo No.: 21646 K No.: 37500
TH 080223 C-ISEP5208M06 PA 07081.
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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.