PROCESS

SEMICONDUCTOR
SOLAR
PHARMA
POWER GENERATION
FOOD & BEVERAGE
PULP AND PAPER
CHEMICAL
OIL AND GAS
MINING
AEROSPACE AND TRANSPORT

HAGER+ELSÄSSER

ANAFIT®.AC

The biological wastewater treatment process uses state-of-the-art anaerobic reactors for energy recovery.

ANAFIT®.AC – ecologically clean – economically advisable

Turning Your Wastewater into a Source of Energy

Many wastewaters are rich energy resources. The proven ANAFIT®.AC process converts them back into energy in the form of biogas by using state-of-the-art EGSB reactors which achieve lasting environmental benefits in addition to high economic savings.

Wastewater treatment processes will necessarily vary depending on the industry-specific composition and the degree of contamination of wastewaters. For wastewaters with mainly organic contents, an anaerobic wastewater treatment is often the best solution, since in addition to the cleaning performance the simultaneous energetic benefit is very high here. In a well-managed wastewater treatment plant with careful process control such as that offered by ANAFIT®.AC, the wastewater constituents are converted back into energy. In certain sectors of the food and beverage industry (such as fruit juice production, starch production, breweries, malting plants), but also in the paper industry, as much as 90 percent of waste water constituents can be anaerobically degraded and converted into valuable biogas. In this process, the organic substances are reduced by anaerobic bacteria to methane gas in an oxygen-free environment. The central component of the ANAFIT®.AC method used by us is a two-stage high performance EGSB class reactor.

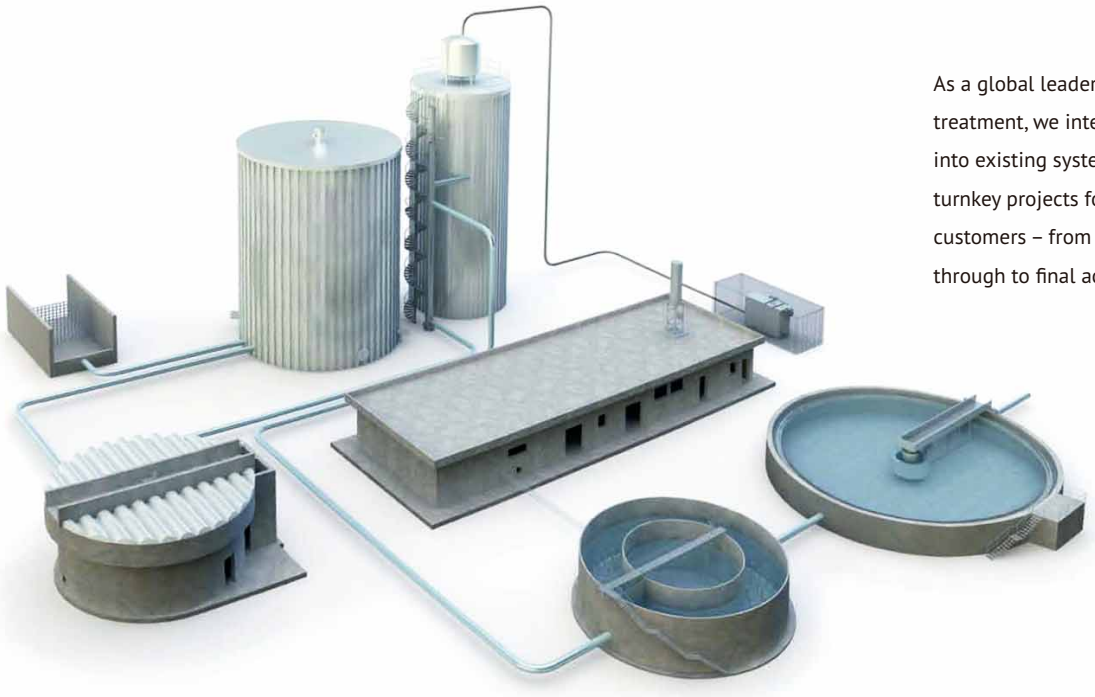
Function of the EGSB Reactor

EGSB" stands for "Expanded Granular Sludge Bed". The **ANAFIT®.AC** *reactor works as an anaerobic reactor with a high content of granules. Its performance makes it particularly ideal for larger amounts of wastewater with high COD loads.*

The **EGSB methane gas reactor** used by H+E operates in two stages. The two buffer stages create a controlled flow throughout the reactor area that is supported by an external recirculation. To set the desired reaction in motion, **methane bacteria** in the form of pellets are used in the reactor.

The wastewater is evenly distributed over the **bottom of the reactor** through an inlet system and then flows through a bed of granular anaerobic biomass. The pellets, with a diameter of two to four millimeters, subsequently develop by themselves. The anaerobic bacteria in the pellets convert the dissolved carbon in the wastewater into **biogas**, and the reactor quickly reaches its full capacity.
The multistage reactor design is specifically adapted to a high content of pellets. This allows for stable removal performance even at peak times. Unpleasant odour emissions are prevented by a closed construction.

The **high efficiency** of the entire process technology results in an abundant discharge of valuable biogas that can be used for energy. In addition, consistently only a small amount of excess sludge accrues – mostly in the form of pellets, which can be sold.



As a global leader in wastewater treatment, we integrate components into existing systems or implement turnkey projects for and with our customers – from the initial sketch through to final acceptance.

Benefits

Compared to conventional anaerobic reactors, the advanced anaerobic systems of H+E such as ANAFIT®.AC offer highest reliability and efficiency with a high volume turnover performance.

Optimised inlet system

Non-clogging gas collection and liquid discharge systems

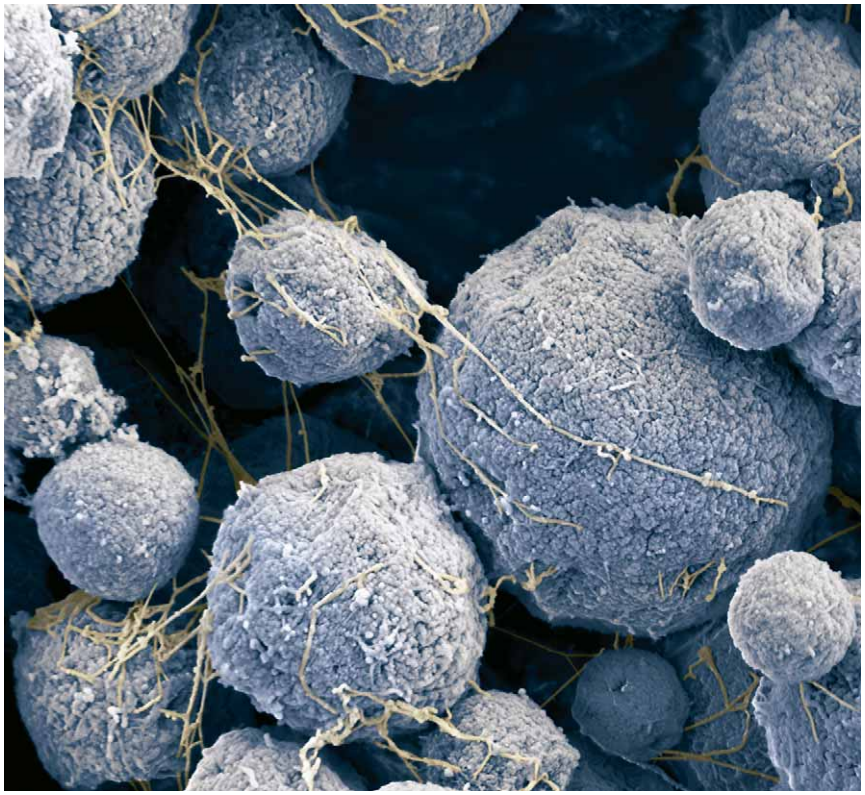
Selective discharge of surplus sludge

Special solutions even for moderately lime-precipitating wastewaters

ANAFIT®.AC accelerates the effective degradation of organic pollution loads even in confined spaces due to minimal space requirement.

Two three-phase separation systems ensure effective separation of waste water, biomass and biogas, and allow the reliable removal and conversion of 80 to 90 percent of the total COD load into high-energy biogas.

Selective recirculation reduces the use of chemicals for neutralisation.



Methane bacteria react with the organic pollutants dissolved in the wastewater and set the process of biogas production in the reactor in motion.

Ecologically Valuable – Economically Advisable

The use of modern anaerobic reactors leads to permanent environmental relief through:

- A saving of 60 to 80 percent of the electricity demand
- Reduction of the biological excess sludge by 70 to 90 percent
- Production of biogas for heat and power generation
- Reduction of pollutant emissions and generation of CO_2 certificates

Take Advantage of Our Consulting Expertise

We always offer our clients the solution which is technologically and economically most viable for them, and which corresponds exactly to their needs. We use the entire know-how of all the used methods at our disposal from more than 30,000 plants built, and that makes us practice-oriented experts in the production processes in our customers' businesses. This is how we make sure that we not only make a sizable contribution to business cost optimisation and economic use of water resources, but also contribute to massive energy cost savings and a significant reduction in emissions in their industry. We deliver optimal economic solutions based on in-house technologies – individually planned and constructed turnkey plants, from the planning of the biological process to the implementation of the process stages starting with the solids inlet filter and ending with the reactor, and even including an integrated biogas cogeneration.

References – ANAFIT®.AC

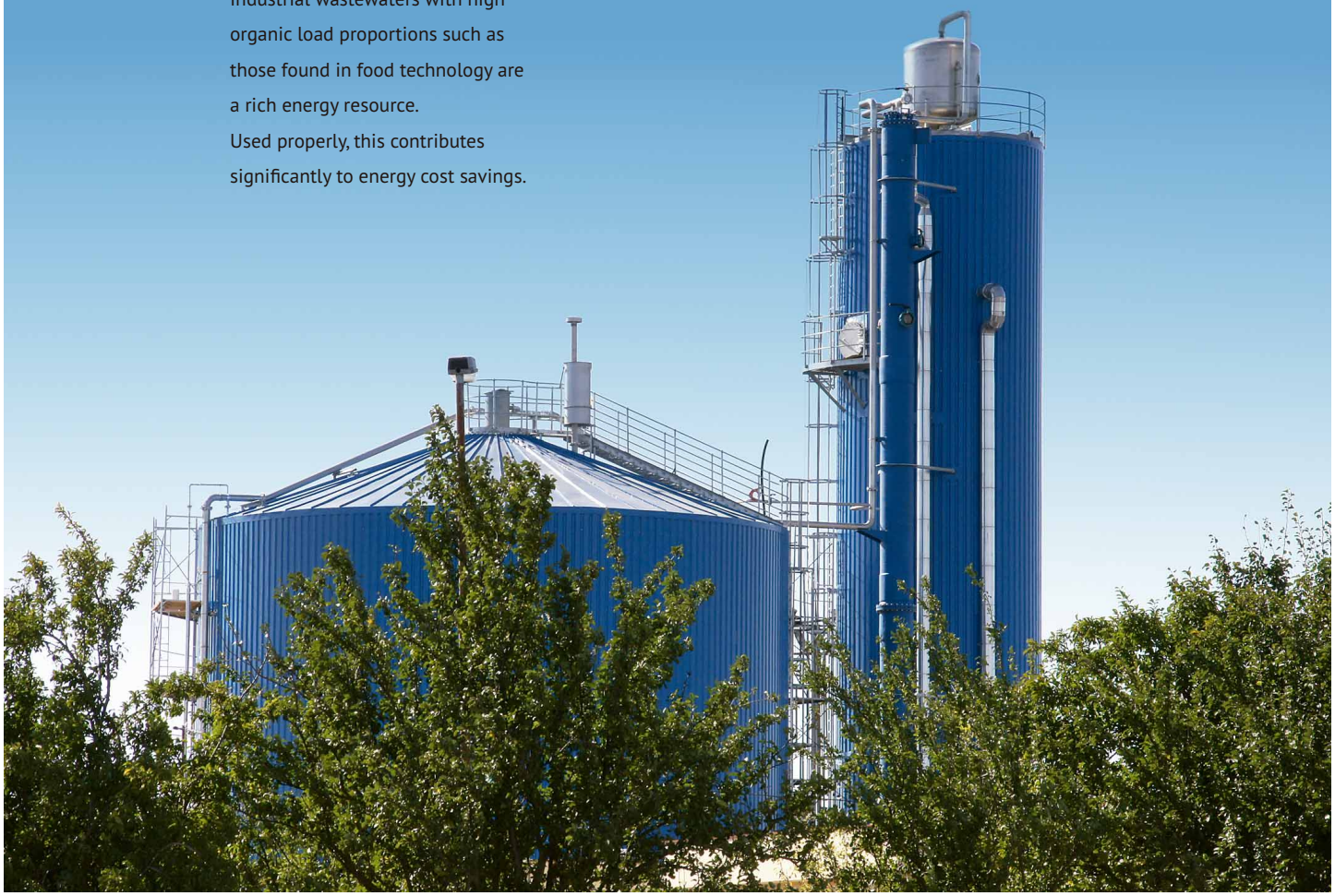
The ANAFIT®.AC process employed by H+E is particularly suitable where effluents contain a high proportion of organic waste. This is primarily the case in the food and beverage industry, especially in breweries and fruit juice production, as well as in fruit and vegetable processing. Valuable biological loads in the effluent also accumulate in the potato-processing industry, as well as in companies that manufacture starch products or yeast.

Here the most important factor is not only the COD concentration, but also the specific content of nutrients, solids, fat, sulphates and toxic residues. This calls for individual solutions.

Taking into account all relevant aspects, we develop the ecologically and economically most appropriate plant. Usually it takes twelve months from the first rough planning of a comprehensive project to the turnkey handover.

Client	Place	Year	t CSB/d
Rauch Fruchtsäfte GmbH	Nüziders, AT	2013	5.8
Farm Frites	Lebork, PL	2011	20.0
Wimm Bill Dann	Timashevsk, RU	2010	8.6
Alltech Fermin	Senta, RS	2009	40.0
SCA	Mainz-Kostheim, DE	2007	14.0

Industrial wastewaters with high organic load proportions such as those found in food technology are a rich energy resource. Used properly, this contributes significantly to energy cost savings.



Further available process technologies

BIOFIT®.N

ANAFIT®.AC wastewater treatment is ideally situated between upstream acidification and downstream BIOFIT®.N treatment for safe removal of nitrogen and the residual organic contaminants by nitrification/denitrification in an aerobic stage.

BIOFIT®.M

BIOFIT®.M membrane bioreactors guarantee reliable wastewater management even under difficult conditions. Their advantages are high operational reliability, for example low flow conditions, and in the extremely compact and space-saving design.

1E240

Contact

H+E UK Ltd
Field Place Estate, Broadbridge Heath, Horsham RH12 3PB, UK

Tel: +44 1403 272772
Fax: +44 1403 272770
E-mail: mike.hutt@he-water.co.uk
Web: www.he-water.co.uk

THE ENVIRONMENT SAYS: THINK BEFORE PRINTING