Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

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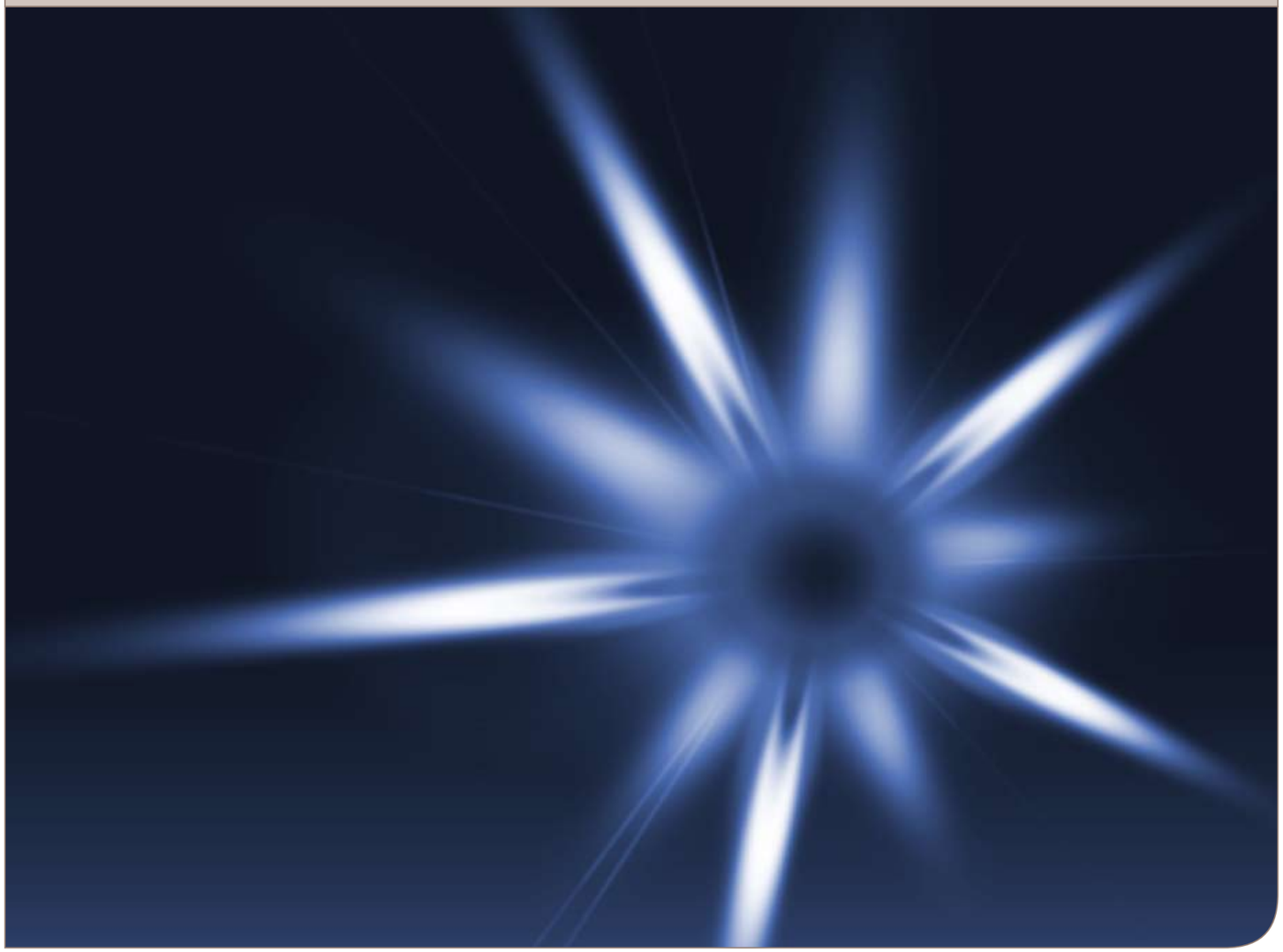
The value of waste.

Alfa Laval solutions for producing biogas.



The biogas promise.

There is growing global concern about the environmental impact of waste handling, energy consumption and global warming.

Solutions are acutely needed to reduce waste volumes, increase energy independence and bring down CO2 emissions.

In this context, biogas – extracted from liquid and solid waste in various forms – is poised to play a crucial role as an endless source of renewable energy.

Riding the tide.

As the world looks for more biogas, you're ready to deliver. So is Alfa Laval.

In 1957, Harold Bates, a British amateur inventor, began fueling his car with biogas he produced from pig manure.

He drove it for 17 years. And demonstrated two things: How simple the biogas production process is. And how easily fossil energy can be replaced with an inexpensive, renewable energy form extracted from organic waste.

Today, biogas is used by millions of households in India. It's fueling cars, trucks and buses – even trains – in Europe. It's heating offices and homes and tap water. It's producing vast amounts of low-cost electricity. The list goes on.

A dual promise.
Mr. Bates' little experiment has become a global tidal wave. Its dual promise of generating green energy and high-quality compost, while sharply reducing waste volumes and greenhouse emissions, has caught on everywhere. Especially as biogas production is cost-effective and environmentally safe.

Small wonder so many waste processing plants, farms and industries with all kinds of organic waste are creating or extending their own biogas production plants. And small wonder so many of them are turning to Alfa Laval for making the production as efficient and reliable as they possibly can.

Alfa Laval's sludge thickening drums reduce pulp volumes, improve digestion and increase the biogas yield. Our spiral heat exchangers make pre-heating and pre-cooling of the pulp more effective and energy-efficient. And our decanter centrifuges make the final production of high-grade compost more efficient by generating a dryer pulp residue.

Half a century ago, Mr. Bates proved that useful biogas can be produced simply and inexpensively. Today, when the biogas tide is rising, Alfa Laval is proving that it can also be produced efficiently and reliably.

We're ready anytime you are.

"We have been very impressed with the performance of our new Alfa Laval decanter centrifuges G2. Due to high capacity and flexibility of operation we can handle more industrial waste from external sources. It improved our overall process economy."

name + company

From solid waste to solid value.

How to make your biogas production more effective, reliable and energy-efficient.

Turning waste into biogas is a multi-stage process through which solid organic material is milled, watered, cleaned, thickened, pasteurized, digested and dewatered.

Digestion is, of course, the critical stage, where the gas is actually extracted and collected by breaking down the pulp with microorganisms.

Making the digestion process as productive and energy-efficient as possible is the basic objective of the other stages. For example:

- by reducing the pulp/sludge volume, to increase retention time and improve the gas yield per cubic meter;
- by heating the pulp using less energy;
- and by dewatering the post-digestion residue for maximum compost recovery.

Alfa Laval offers specialized equipment that meets these objectives in the most effective, cost-efficient and reliable way.

Thickening.
The main benefit of removing the process water from the pulp is to reduce the volume load on the processes downstream – allowing them to utilize smaller, less costly equipment. Plus, the water can be recycled back to the hydropulper.

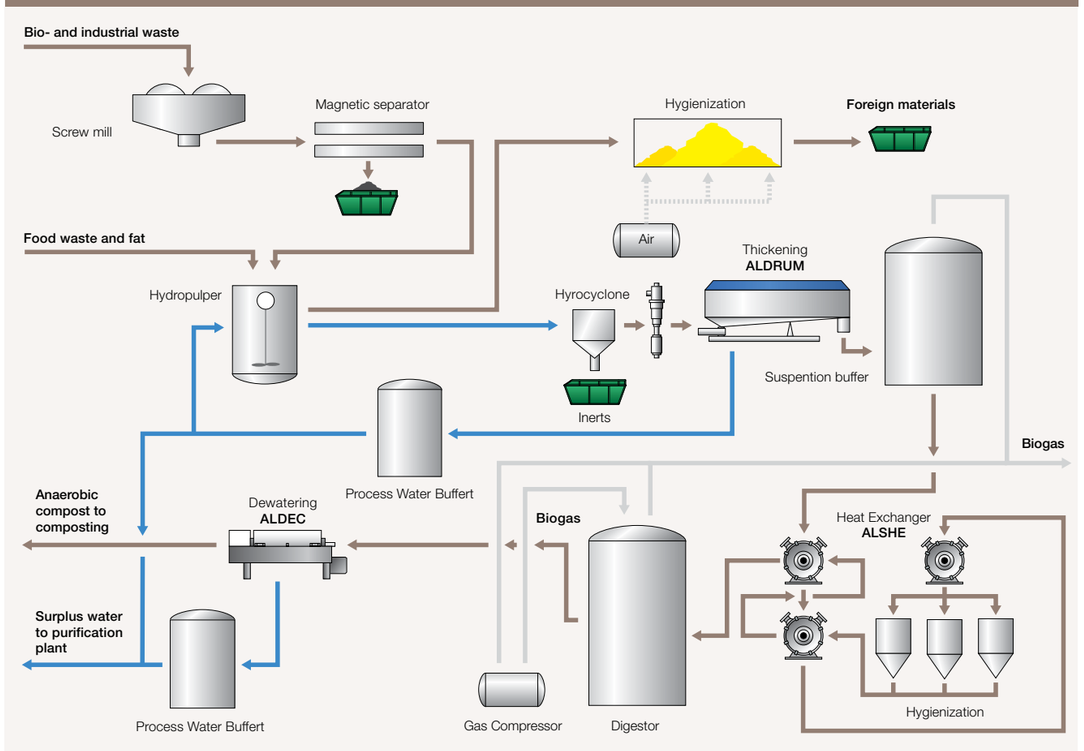
Even if the pulp is quite homogenous – freed of most non-organic contaminants – it still contains highly abrasive particles. This puts heavy requirements on the drum thickener. The solution is to handle the sludge gently and rotating the drum slowly, as this will achieve high recovery without excessive wear.

Hygienization.
Heating the pulp to 70°C or higher for 20-60 minutes – to ensure that it's properly pasteurized – is a very energy-intensive process. Fortunately, it then needs to be cooled again to 30°C, prior to digestion. This means that "free" heat can be recovered from the cooling process and fed back into the heating process.

"Alfa Laval spiral heat exchangers are vital equipment for stable operation of our digester and overall plant economy as it saves a lot of money through heat recovery."

Lars Albak Kristensen,
Plant Manager, Lemvig Biogas Plant,
Lemvig, Denmark

The treatment of sludge from solid waste



A cluster of three spiral heat exchangers will achieve this in an elegant and very energy-efficient way. The first heats the pulp using hot water. The other two cool the pasteurized pulp by pre-heating the "raw" pulp. As a result, a minimum of hot water needs to be added to the process.

Dewatering.
After digestion, the pulp residue needs to be dewatered using a decanter centrifuge that separates the solid matter from as much water as possible. The solid residue, is then fed into an aerobic composting process, which results in high-grade matured compost in the course of six weeks. The water is recycled back as process water to earlier stages.

Because the pulp is still highly abrasive at this stage, the decanter needs good wear protection. This is especially true for the inlet zones and all wet surfaces inside, as they are subject to both mechanical and corrosive wear.

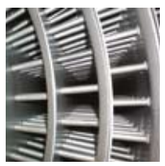
The right stuff.

Premium products for high-grade biogas.

Alfa Laval is one of the world's most experienced suppliers of specialized equipment for sludge treatment in anaerobic digestion processes.

Thanks to Alfa Laval's expertise in heat transfer and separation technologies, we can provide the solutions required to get new biogas plants up and running quickly and cost-efficiently – or to expand existing plants to meet growing demand.

We can also upgrade the biogas process in and of itself, by making the key stages more productive and more reliable. This will help increase revenue and reduce operating costs.



Products that get the job done.
Alfa Laval's decanter centrifuges, drum thickeners and spiral heat exchangers share several important characteristics:

- Their internal process sections are fully sealed to protect the operating staff from exposure to chemical and biological aerosols.
- The equipment takes up a mere fraction of the floor space required for alternative technologies.
- All units are easy to operate, supervise and service – thereby reducing costs and maximizing uptime.
- To withstand abrasive pulp and digestate, all wet or exposed parts of the equipment are made of wear-resistant anti-corrosion materials – including high-alloy stainless steel.

The Alfa Laval advantage
With sales offices and service centres in more than 50 countries on every continent, Alfa Laval's expertise, experience and resources are always close at hand.

The result is a global network of specialists, ready to provide technical support, spare parts and service – around the clock, 365 days a year.

Our obligation to our customers does not stop with delivering the equipment and getting it up and running. The Alfa Laval Parts & Service organization is there to ensure peak performance and a minimum of downtime through the life of the installation.

It's a long-term commitment that Alfa Laval calls Nonstop Performance.

Image: ALDRUM Thickening Installation Italy, Verona
(photo and text from Monia Lombardi). ???

ALDRUM drum thickeners

Alfa Laval drum thickeners provide high-efficiency thickening and dewatering of every organic pulp and feed concentration level. Thanks to their extremely gentle operation and low rotation speeds, they allow exceptionally high recovery of nutritients. Special flocculation reactors optimize the use of polymers, by enhancing the flocculation process.

Typical uses include:
- Sludge thickening prior to transportation.
- Pulp thickening prior to digestion.
- Separation of light contaminants (e.g. plastic particles) in solid waste centrates.

Key benefits:
- Minimal installed power and low energy consumption.
- Flexible operation thanks to a wide range of settings and accessories.
- User-friendly design that makes it easy to monitor the process and collect samples.
- Rapid, low-cost installation.
- Low maintenance needs thanks to high-grade materials.
- Low water consumption contributing to low operating costs.

ALSHE spiral heat exchangers

Alfa Laval spiral heat exchangers provide superior heat transfer between hot and cold pulps prior to digestion. Unobstructed channels provide a smooth flow through the units. High constant velocity makes them virtually self-cleaning with a minimum of fouling. This results in lower maintenance needs and lower lifetime costs.

Typical uses include:
- Pulp pasteurization.
- Digestion pre-heating/pre-cooling.
- Heat recovery.
- Effluent cooling.

Key benefits:
- Small footprint and low installation costs (including pumps, valves and piping).
- Less energy needed for pumping.
- Superior heat-transfer efficiency thanks to a close temperature approach.
- Maximum operating efficiency.

ALDEC G2 decanter centrifuges

Alfa Laval decanter centrifuges provide high-efficiency thickening and dewatering for every kind of organic pulp and feed concentration. They offer a unique combination of high performance, mechanical strength, corrosion resistance, ease of operation and long-term reliability. In wet fermentation processes, they can reduce sludge or pulp volumes by up to 90 percent.

Typical uses include:
- Pulp thickening prior to digestion.
- Digestate dewatering (in single-stage separation).
- Press-water dewatering (in multi-stage separation).

Key benefits:
- Minimal installed power and low energy consumption.
- Optimal balance between cake dryness and centrate clarity.
- Long service life for wear parts, resulting in increased equipment uptime.
- Low installation and maintenance costs thanks to compact design and fewer parts.