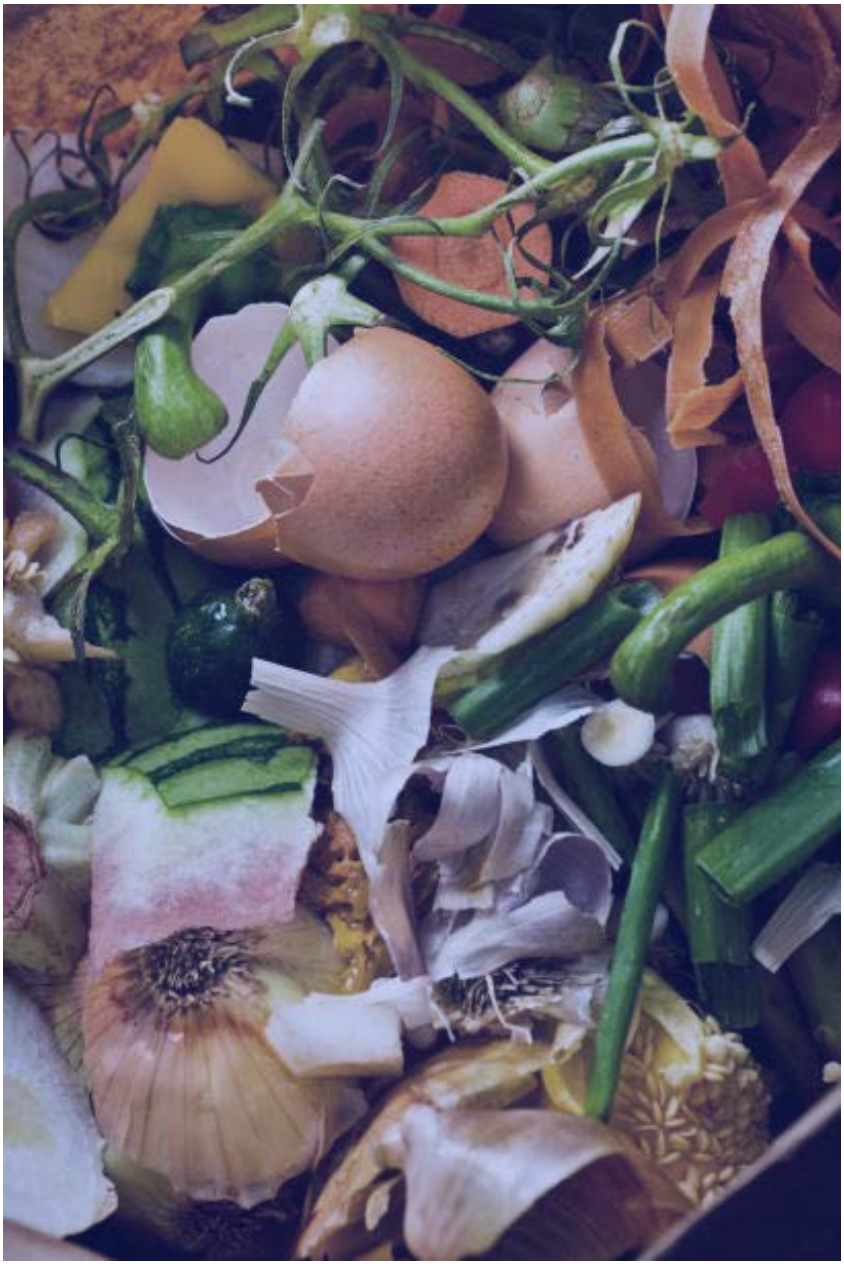
Cellwood Machinery

Grubbens Bioenergy

Grubbens

Recycling equipment for paper and organic waste.



Grubbens Bioenergy

The cleanest solution available

For the bioenergy industry, Cellwood offers solutions for pre-treatment of organic waste – transforming it into a slurry. The organic material comes from the food and agricultural industries, or from household waste collected by municipalities. After pre-treatment, the slurry can be digested into biogas – which is converted into electricity or used as fuel for vehicles.

Our solution can take care of incoming waste that includes packaging material and other non-organic contaminants – such as plastics, metals, sand and glass. The reject is efficiently removed, resulting in the cleanest substrate on the market. Our concept is based on four different treatment steps: dissolving, screening, separation and disintegration. They can be combined into a full process or installed as stand-alone upgrades in existing plants.

Advantages with the Cellwood pre-treatment concept

- Municipal handling of organic household waste can be sorted into plastic bags, as our process removes the plastics efficiently.
- Supermarket waste including high amounts of packaging material is efficiently cleaned.
- Sand and glass is separated from the substrate and prevented from accumulating in tanks and digesters.
- A disintegrated material increases the gas potential.
- As the substrate from our process has a low reject content, the digestate fulfills law requirements for use as agricultural fertilizer.

Grubbens **HC Pulper**

Dissolving is the first step in Cellwood's system concept for pre-treatment of household waste.

The pulper offers a gentle treatment of the incoming waste. Non-organic material such as plastics remains relatively intact, while the organic contents are dissolved into very fine particles. This makes separation easy in the following process step, which is the reject separator. The gentle treatment achieved with the dissolving principle means a pulper based process offers the cleanest possible substrate on the market.

The pulper operates batchwise / semi-continuous with an operating consistency up to 22%. With few moving parts, the pulper has a low service need.

Grubbens **Reject Separator**

The reject separator is used for removal of plastics and metals from pre-treated slurry. The slurry is pumped through a Ø6 mm screen where the reject is separated from the organic material.

The reject separator efficiently removes contaminants and offers a very clean slurry, also when the incoming material includes high amounts of plastics. This allows for a process with incoming supermarket waste including high amounts of packaging material. It also enables municipal waste handling based on organic material sorted into plastic bags. A substrate treated in a reject separator is clean enough to be accepted for use as fertilizer without any additional cleaning after the digester.

The reject separator is normally installed at the outlet of a pulper. There are also successful applications where the reject separator has been installed as a stand-alone upgrade to an existing wet hammer mill process.

Grubbens **High Density Cleaner**

The high-density cleaner is used for removal of grit from biogas slurry/substrate. Incoming organic waste includes particles from sand and glass which remain as contaminants in the processed slurry/substrate. The high-density cleaner uses the vortex principle to continuously remove those particles.

With the grit removed, the overall service needs on other machinery in the process is reduced. Pumps are subject to less wear, and less load is put on agitators in tanks.

But most importantly, the removal of grit means it is prevented from accumulating in storage tanks and digesters as sediment. This frees a considerable amount of space, optimizing the biogas production, and preventing the need for costly maintenance stops for cleaning tanks and digesters manually.

Grubbens **Deflaker**

A deflaker offers mechanical disintegration of organic material, with the purpose of achieving an increased biogas yield.

A disintegrated material has a larger area for the bacteria to operate on, something that will shorten retention time in the digester. Expected result is up to 50% shorter digestion time, and 10–30% increased gas potential from the same material.

Typical raw material suited for deflaker treatment is silage from lea and maize; manure from pig, cow and chicken; sewage sludge; draff; as well as organic substrate.

The deflaker can easily be retrofitted into existing systems to provide a significant increase in biogas production.

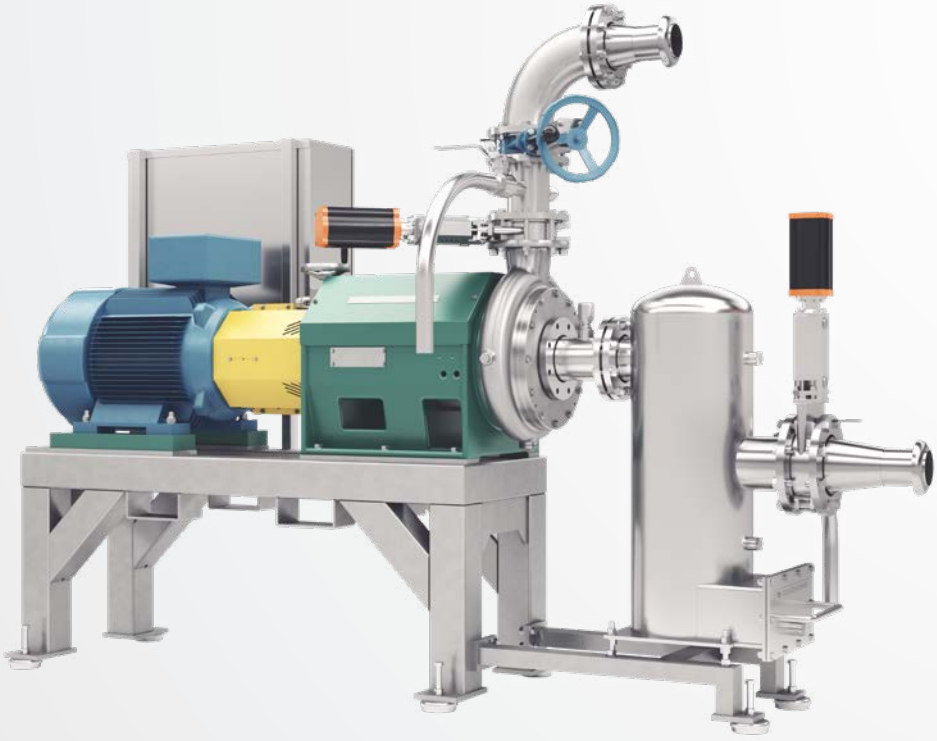
Grubbens
Plug & Play Test Units

Try our equipment!
More and more customers choose to test our equipment on-site by renting our test units. The equipment is delivered as a complete Plug & Play unit for easy installation.

Cellwood offers rental of high-density cleaner and deflaker test units.

Test unit Deflaker with stone trap
For mechanical size reduction by dispersion.

In the deflaker the organic waste is mechanically treated by deflaker disc, to reduce particle sizes. A dispersed substrate becomes more homogenized which leads to increased biogas yield.



Grubbens
Plug & Play
Test Units

Test unit HDC with sand dewaterer
For separation of high-density reject such as sand, glass, etc.

The principle of operation is based on recirculation, which means that the same slurry/substrate passes through the cyclone several times.

At each passage, through the cyclone, a limited amount of reject is separated. Increased recirculation results therefore in a cleaner slurry /substrate.

High-density rejects, separated by the HDC, is drained into a sand trap where its sediments and is further transported by a screw conveyor to a container.

To us, waste is a natural resource.

Sustainability has always been a natural part of Cellwood's business. Our early focus on recycling has in the pulp and paper industry made us a world leader in dispersion of wastepaper.

In the bioenergy sector, our pre-treatment systems deliver substrate with very low reject content.
As such the digestate fulfill law requirements and becomes useable as agricultural fertilizer.

Cellwood always strive to act in the best interest of the environment and our society. We also conduct extensive research and development - the ongoing challenge is to find new ways to recycle materials and resources even more efficiently.

BY REBUILDING AND
RE-USING WHAT ALREADY
EXISTS, WE CAN SAVE ENERGY
AND INCREASE THE OUTPUT.

Recycling equipment for paper and organic waste.

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