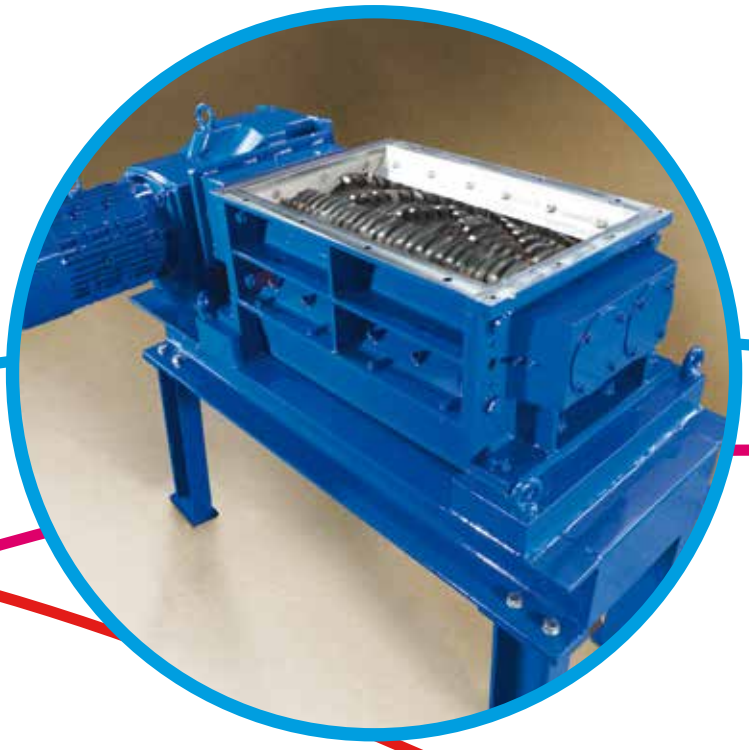
Bio-waste Processing



NOV Mono®

One Company, Unlimited Solutions

Anaerobic
Digestion Plant

Adding Value to your Waste Stream

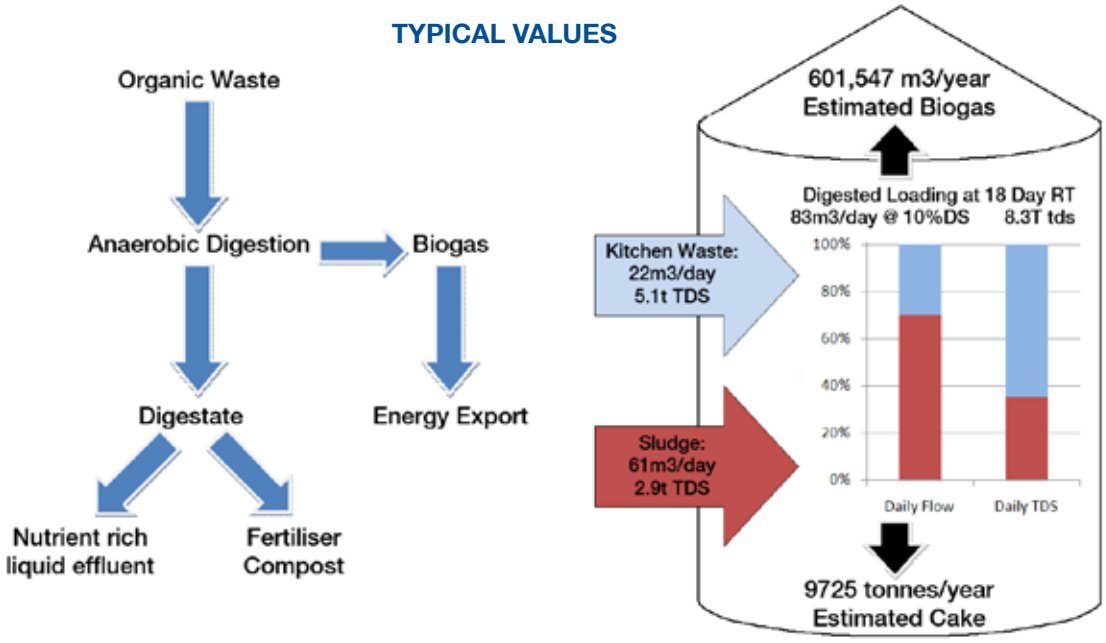
NOV Mono is a leading name in the design, manufacture and distribution of progressing cavity pumps, parts, grinders, screens and packaged systems, worldwide.

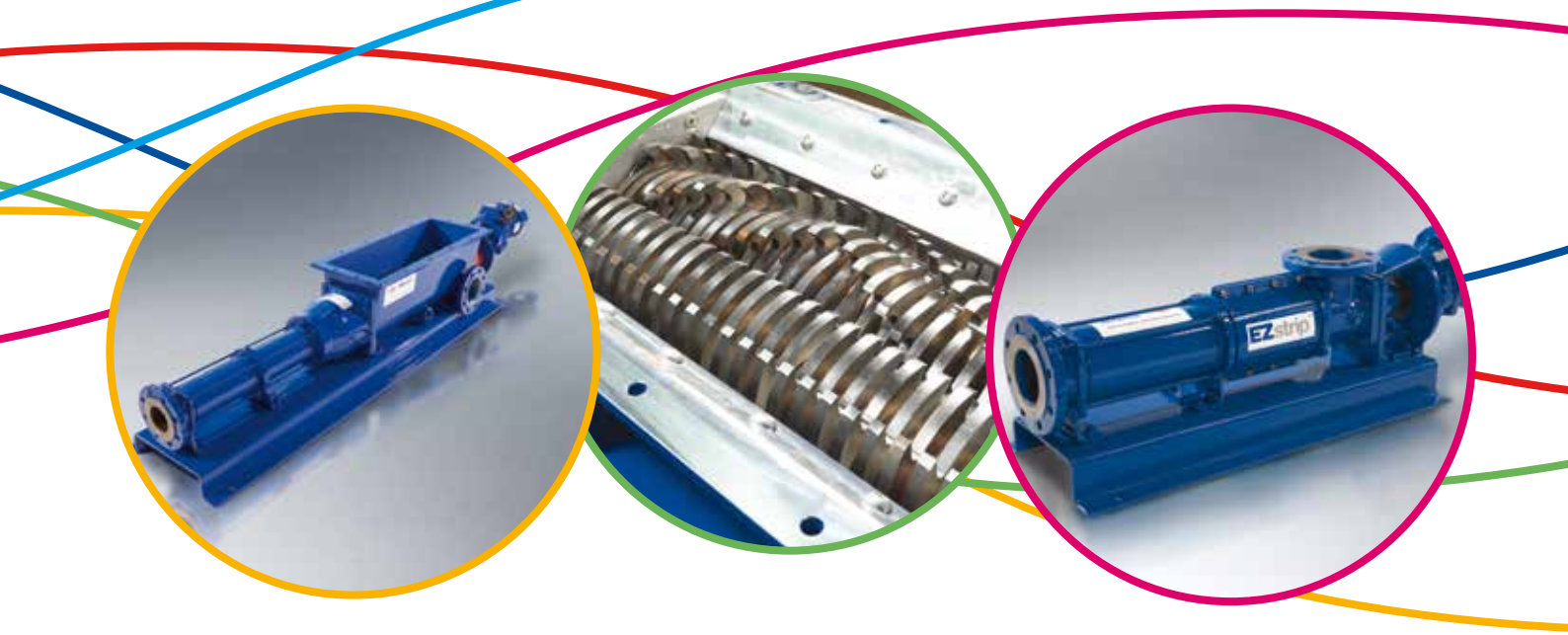
We are unique in providing a comprehensive range of solutions for the multiple application requirements of today's industries, including water supply & waste water, oil & gas, food & beverage, paper & pulp, chemical & pharmaceutical, mining & mineral and agriculture. Our experience in these industries allows us to have an in-depth understanding of your needs, providing a customer focused solution.

Our biogas solutions can assist in the pre-treatment process through transferring and significantly reducing the bulk and particle size of bio-degradable waste to help assist with the Anaerobic Digestion process. NOV Mono can also provide products which can improve the overall efficiency of the digestion process when dealing with a range of source materials such as food and drink, agricultural residues and sewage sludges.

Anaerobic Digestion Process

Anaerobic digestion is the natural process which converts organic matter such as household food, garden waste and farm slurry into energy. The main products resulting from anaerobic digestion are biogas and digestate (low level fertilizer). The process has many economical benefits with the biogas being used to generate electricity, gas or heat, or compressed for use as bio-fuel with the digestate being used as fertilizer.





Pre-treatment Technologies

Maceration and Pump Solutions

Already well-proven in food production processes and many mainstream waste and sewerage applications, the Muncher® range of grinders and NOV Mono PC pumps are also being used on various bio-waste processes.

The Mono Muncher can macerate solids to a consistent particle size and to a more homogenous consistency, which increases the speed of the biological breakdown of products and the overall efficiency of the bio-waste process.

Package a Muncher with a NOV Mono pump and you have an efficient, integrated solution which will grind down products to the required particle size, reduce bulk and transfer the macerated product for further processing and disposal.

Series F Muncher®

The Series F Muncher is a heavy duty, twin shaft grinder ideal for bio-degradable waste processing. The twin shafts are fitted with a series of interleaving cutters and spacers, operating at differential speeds. This creates an effective tearing, cropping and shearing action for grinding down products to the required particle size, meeting stringent European regulations.

The Muncher offers volume reductions of up to 70%, can devour whole 'off field' products such as fruit and vegetables in a matter of seconds, and makes light work of larger products such as meat and bones, that conventional macerators have difficulty with.

Features

- Cutters can be stacked into various arrangements to create a larger or smaller particle size
- Various thicknesses of cutter and numbers of teeth to meet varied application requirements
- Can consume up to 10 tonnes p/h of food waste
- Independent drive shafts offer greater torque
- Can be supplied with a feed hopper or delivery chute to assist material entry and discharge

EZstrip™

The EZstrip™ pump range provides outstanding performance with efficient transfer of highly viscous, fatty or greasy materials, and their low maintenance ensures huge advantages in terms of whole life operational costs.

For the pumping of thermal hydrolysis sludges, the EZstrip™ high temperature pump is able to transfer sludge at temperatures between 70°C and 130°c due to newly developed stator compounds that are extremely resistant to the high temperatures and aggressive liquids involved.

Features

- Handles capacities up to 225m³/h
- Quick and easy to disassemble
- Reduced maintenance downtime and labour savings - huge advantages in terms of whole life operational costs
- Enclosed system
- Eliminates dismantling lengths
- Transfers sludge at temperatures upto 130°C

Easily removed cutter stack

Process Benefits

EZstrip™ TR Muncher®

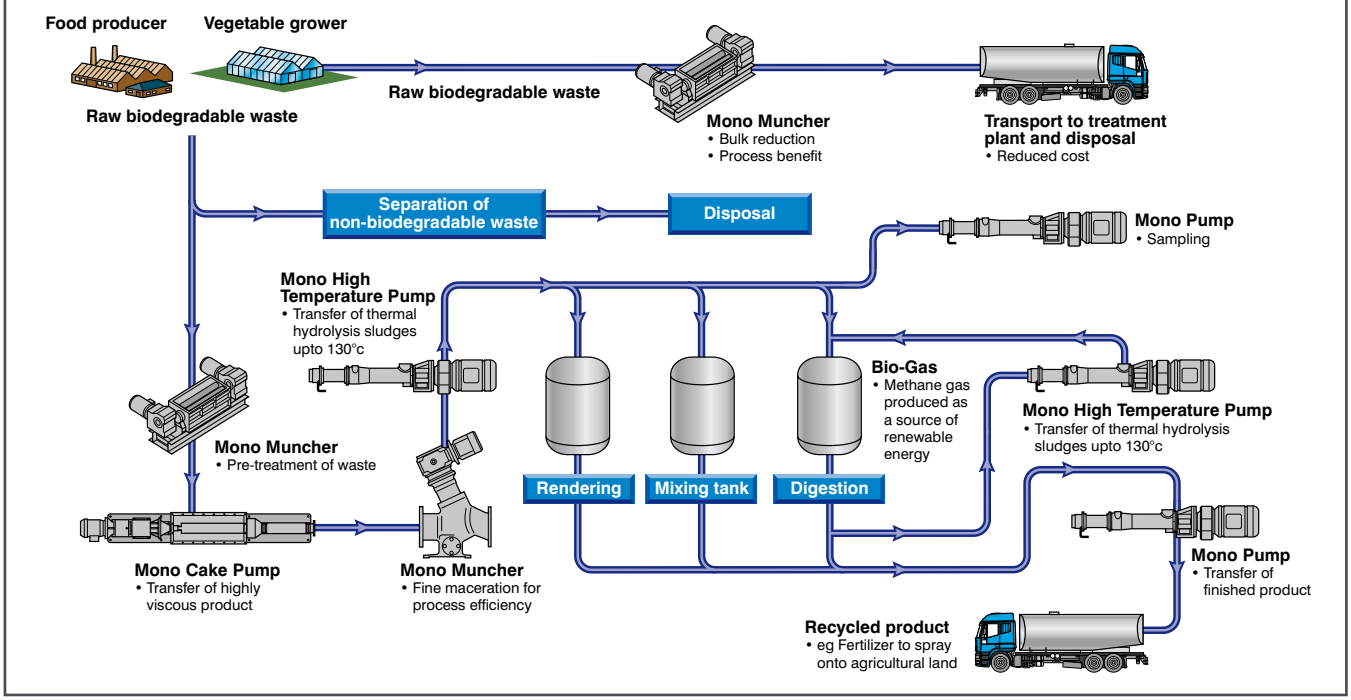
NOV Mono's EZstrip™ TR Muncher is a twin shaft, low speed, high torque grinder specifically designed for efficient maceration of bio-degradable solids which can be added to a digestion process to make it work more effectively.

Bio-degradable waste passes through a series of cutters, which revolve at differential speeds to pull apart, crop and shear any solids, such as bones, flesh, offal and vegetable waste. Liquid passes through the cutter stacks, whilst the solids are trapped and macerated to a small, consistent particle size, to help comply with legislation, protect pumps and improve process efficiency.

Features

- Able to unblock itself and restart automatically
- Full access port allowing ease of inspection and removal of any rejected debris
- Maintain-in-place of the cutters and spacers
- Easily removed cutter stack
- No need to disconnect pipe work to inspect
- Saves on maintenance downtime and associated costs
- Different cutter and cutter configurations are available to handle various products
- Energy efficient motors

How a pump and grinder solution can fit into the waste handling process



NOV Mono Aids Aerobic Digestion Plant

NOV Mono's successful partnership with an organic waste disposal company has built on the success of a pilot aerobic digestion plant to secure their first commercial order.

The plant processes food and vegetable waste with the help of Mono's progressing cavity pumps and Munchers®. The organic material is fed into the process in its raw form where it is finely macerated by a Mono Muncher. The homogenous slurry is then transferred to the digestion tanks to produce a useful end product, liquid soil conditioner, which can be sold to substitute fertilizer to some degree.

The new plant, processes organic waste, acting as a cost effective and environmentally friendly alternative to land fill for local businesses. From their initial investment, the farms not only benefit from the waste handling charges but they can also use or sell the end product, which is rich in Nitrogen, Potassium and Phosphorus.

The Munchers perform an essential role in reducing the material to a small particle size, whilst also providing protection to the transfer pumps, eliminating blockages and subsequent downtime. The installed SB and TR Munchers offer bulk reduction of the pre-shredded food waste to around 70% of the original volume, at low energy costs and can macerate a variety of solids within a flow, including hard particles.

Danish Biogas Company Turns to NOV Mono

A Danish Biogas company has installed a Series F Muncher® in a biogas plant near Copenhagen. The plant is contracted to handle the various waste materials from the surrounding area, mainly consisting of livestock manure and waste from fish farms and restaurants including bones, chicken, fish, bread and vegetables. The increased plant efficiency gained as a result of the Muncher installation means that the investment has already paid for itself.

The process requires the waste to be in a mostly liquid form when it is pumped into the digester to achieve maximum efficiency in gas production. The waste is efficiently reduced by the Muncher to a small particle size resulting in effective transportation, a more homogenous product and increased gas production.

The consequent savings in transportation costs, combined with the increased production rate, has meant that the unit has recovered its cost within 18 months of its installation and is now contributing to the revenue generated by this company.

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