



FOR HIGH GAS YIELDS AND LOW ENERGY REQUIREMENTS

# Innovative solid matter feeding

Machines and systems for  
bacteria-friendly digester feeding





Reliable solid matter feeders for efficient biogas production

# Vogelsang: simply more biogas

When it comes to biogas technology, Vogelsang's solid matter feeders contribute to the efficiency and economical operation of your biogas plant – a fact that has been scientifically proven. Knowing digester feeding is a key part of the process, we have developed systems for converting solid matter into a mashed form that is favorable to the feeding bacteria. By optimizing the bacteria's ability to feed off the organic matter, they increase the gas yield and reduce the energy required for mixing, stirring, and pumping.

## **Our knowledge advantage**

The systems for solid matter feeding we develop and continually perfect have stood the test daily in applications all over the world. Research, continuous improvement, and innovative features ensure maximum efficiency and economy in biogas production.

## **Fluid feeding: efficient digester feeding**

The method of solid matter feeding has a significant impact on the profitability of a biogas plant. Studies such as the EU research project "EU AGRO BIOGAS" demonstrate the advantage of feeding with well-mashed cosubstrates. It is

important to adapt the technology to the biogas plant and the input materials. With our BioCut, CC-Cut, CC-Mix and PreMix, Vogelsang offers a suitable way of optimizing the gas yield of nearly any biogas plant, no matter how it is designed.

# Solid matter feeders from Vogelsang: the right solution for any plant design

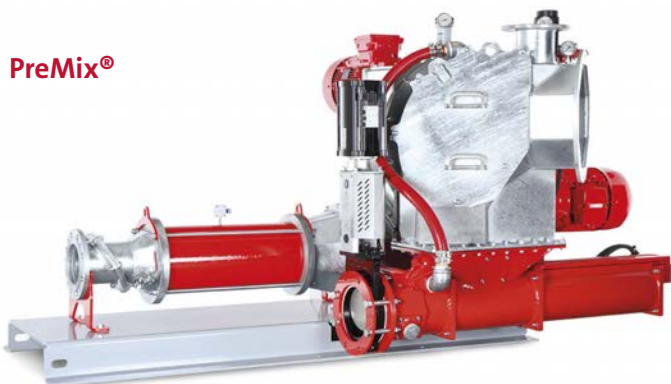
## Mix

Cosubstrates with varying characteristics from semisolid to solid are mashed with fluid and fed in. Example: food waste, animal feed, various forms of silage, etc.

CC-Mix



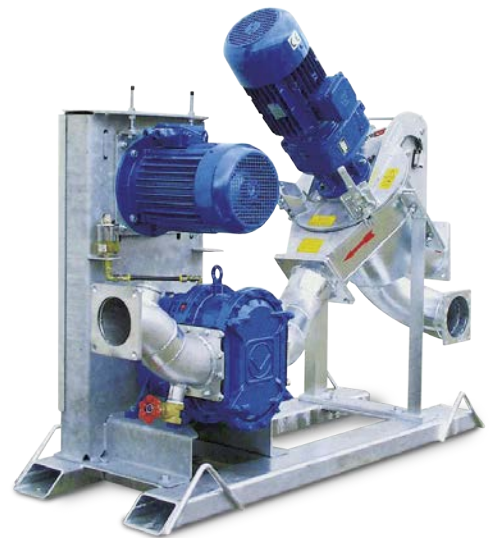
PreMix®



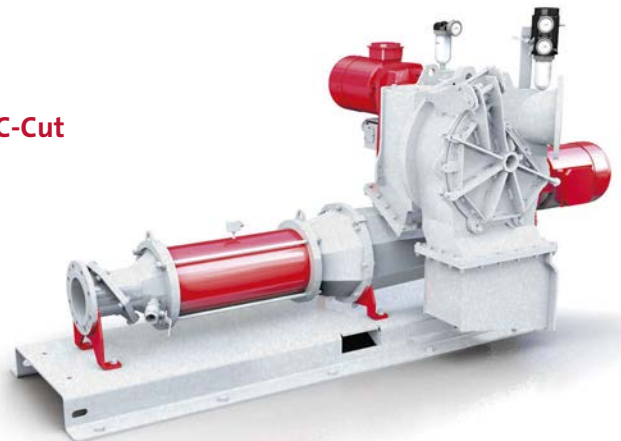
## Cut

Mashed, flowable suspensions and media are pumped out of tanks and pits, prepared and pumped in (mashing pit, hydrolysis).

BioCut®



CC-Cut





# CC-Mix

## The economical fluid feeding system

Vogelsang's CC-Mix is designed for economical digester feeding with solid matter ranging from flowable matter to paste-like semisolids, such as corn silage, dry chicken manure, sugar beet pulp, fruit and vegetable waste.

### Performance

Unproblematic, energy-rich cosubstrates are desirable and valuable. For efficient biogas production, it is very important to feed them in with a minimum of effort but with optimum preparation. The CC-Mix excels at doing exactly that. Thanks to its thought-out engineered design, it requires minimum power to mash the solid matter with the liquid suspension to form a homogeneous suspension, thus providing the necessary conditions for optimum fermentation in the digester.

### Design and operating principle

The CC-Mix brings together proven components in a new arrangement. It is based on the unique, easy-to-maintain

progressive cavity pump of the CC series, supplemented by a generously sized mixing chamber upstream. The solids are transported via a feed screw sideways or from above into the mixing chamber. At the same time, a liquid suspension, such as recirculated material, is added at the beginning of the mixing chamber. The innovative design allows the solid matter to be conveyed actively into the liquid suspension before being intensively mashed into a homogeneous suspension by the mixing shaft, which is fitted with ripping teeth and mixing paddles in an optimized arrangement. At the same time, the effective mixing action ensures optimum extraction of foreign matter in the integrated foreign matter separator at the end of the mixing chamber.

The downstream progressive cavity pump pumps the suspension into the digester reliably and economically. A pipe network then allows feeding of multiple digesters and easy connection of additional tanks later.







## Applications and advantages

Despite the generously sized mixing chamber, the CC-Mix has an impressively compact design and can be integrated easily into any plant. Retrofitting is also unproblematic thanks to the simple charge of solids by screw conveyor. The CC-Mix is especially useful for plant operators seeking to utilize alternative cosubstrates such as sugar beet pulp or waste fruit and vegetables in addition to the standard renewable materials. Parts are replaced quickly and easily thanks to the innovative SERVICEplus concept of the CC series: The rotor and stator swivel out as a unit for fast and simple

removal and replacement. If needed, the mixing shaft can then be exchanged in just a few straightforward steps. Feeding downtimes due to servicing and maintenance are reduced to a minimum.

### Practical sealing change

The tried-and-trusted cartridge mechanical seal is used for the pump shaft. Since it is a preassembled part, it can be quickly and easily replaced on site. Once the parallel shaft geared motor has been removed, the seal is easy to access and can be replaced effortlessly. No other dismantling work is necessary with the CC-Mix.

## Advantages of the CC-Mix

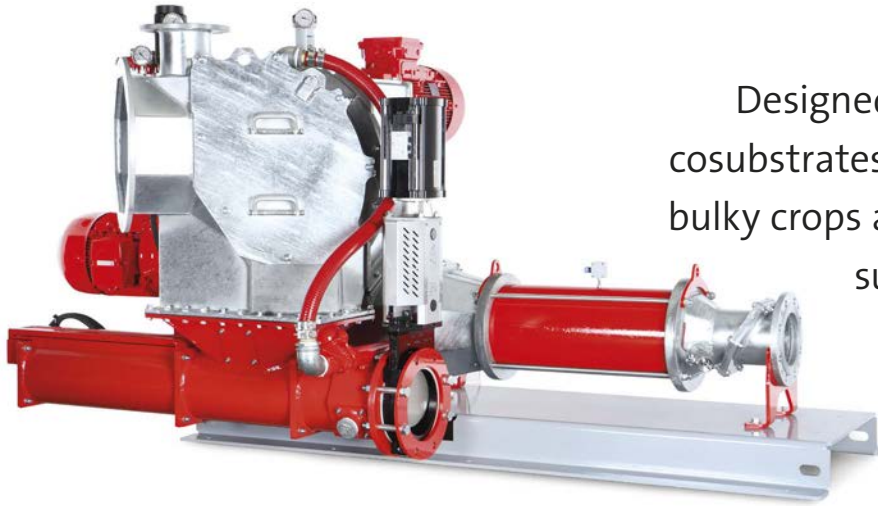
- Treats a wide range of cosubstrates, turning them into a mashed, homogeneous organic suspension
- Separates out heavy matter upstream of the pump unit
- Easy-to-integrate, compact dimensions
- Feeding of several digesters with a single system
- Easy changing of parts

## CC-Mix specifications

Model	Capacity m <sup>3</sup> /h	Max. pressure bar	Req. drive power kW	Max. free passage mm	Solid matter inlet mm
CC-Mix66-M1	50	6	11	88	□ 418
CC-Mix66-M2	50	12	15	88	□ 418
CC-Mix66-D1	85	6	15	88	□ 418

D1/M1: single-stage progressive cavity pump, M2: two-stage progressive cavity pump

# PreMix®



Designed for the widest spectrum of cosubstrates – from pulpy food waste to bulky crops and dry renewable resources such as straw or woody grass.

## The universal fluid feeding system

### The concept

PreMix cleverly combines four steps into one compact unit designed to feed an extremely wide range of cosubstrates. This universal system is a combination of our easy-to-maintain progressive cavity pump (CC series®) and the RotaCut®.

The cosubstrates are fed into the side of the system by a feed screw. At the same time, a liquid suspension is added, such as recirculated material or liquid manure. In a single operation, the PreMix mixes the input, separates out foreign matter, macerates coarse and fibrous components, and dispenses everything into the digester.

### Efficient solid matter feeding

As the cosubstrates are in the form of a mashed, pumpable suspension that is favorable to bacteria, one PreMix can easily supply multiple digesters. At the same time, the excellent preparation is the groundwork for high gas yields. Separating out foreign matter and chopping down disruptive matter extend the service life of the pump unit.

### Fits into every system

The PreMix features a small footprint and is easy to integrate or retrofit into any plant.

### Easy to maintain

One feature of the PreMix is its high ease of service and maintenance. All work including wear part replacement can be performed quickly and easily on site. This keeps interruptions to operation to a minimum. The innovative swiveling mechanism allows maintenance and replacement of parts on the pump unit without dismantling parts of the pipe. The cutter is easily accessible through the large service flap. This allows the cutting blades and screen to be replaced in a few easy steps.

### PreMix specifications

Model		Max. capacity	Max. Pressure	Req. drive power		Solid matter inlet
CC-Serie	RCX	m³/h	bar	Pump kW	RotaCut kW	mm
CC44-D1	RCX-48G	30	6	7.5	12.1	□ 310
CC55-M2	RCX-48G	30	12	11	12.1	□ 310
CC55-D1	RCX-58G	60   70	6	11   15	16.5	□ 418
CC55-D1	RCX-68G	70	6	15	20.4	□ 418
CC66-M2	RCX-58G	55   65	12	15   18.5	16.5	□ 418
CC66-M2	RCX-68G	65	12	18.5	20.4	□ 418
CC66-D1	RCX-68G	85   105	6	15   18.5	20.4	□ 418

D1: single-stage progressive cavity pump, M2: two-stage progressive cavity pump

### Advantages of the PreMix

- Treats an extremely wide range of cosubstrates, turning them into a mashed, homogeneous organic suspension
- Separation of heavy material and maceration of coarse particles/fibers upstream of the pump unit
- Compact dimensions, easy to integrate
- Feeding of multiple digesters
- Quick and easy servicing on site



## Efficient 4-in-1 digester feeding

### 1 Separation

In contrast to many comparable feeding systems, the PreMix separates out heavy material while still upstream of the integrated pump unit. The optional Debris Removal System then removes that material during ongoing operation.

### 2 Mashing

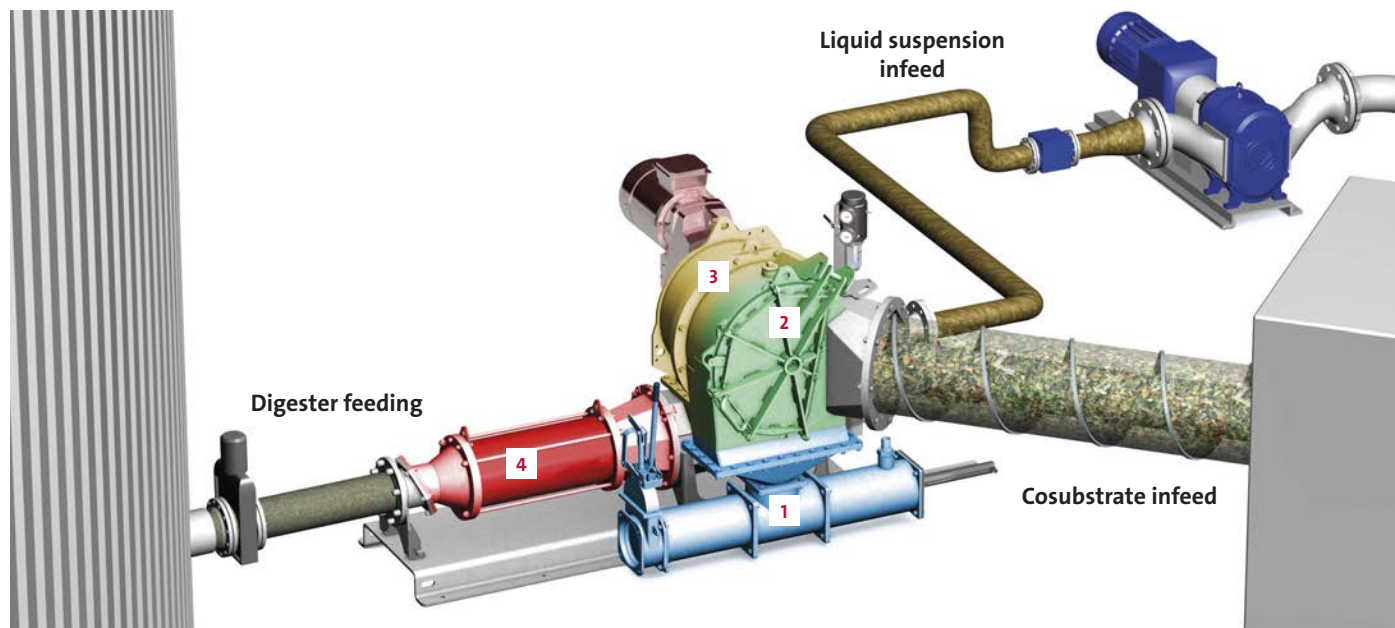
Solid and semisolid input materials are mixed with a liquid suspension to form a homogeneous suspension.

### 3 Maceration

At the same time, coarse particles and fibrous matter are chopped down.

### 4 Pumping

This means that a well-prepared suspension free of disruptive materials and foreign matter enters the pump. A pipe network allows the PreMix to feed multiple digesters with ease – and additional tanks can easily be connected at a later time.



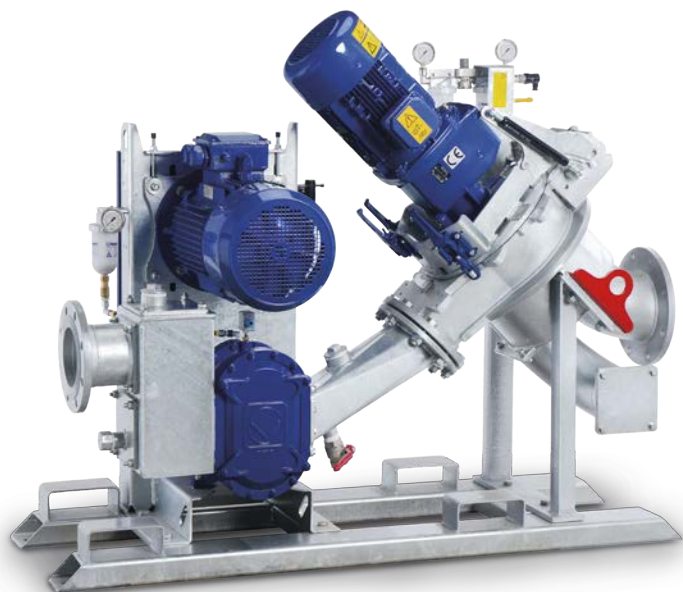




Powerful components perfectly combined and coordinated

# BioCut® & CC-Cut

Specially designed for biogas plants: the effective combination of a Vogelsang positive displacement pump and an upstream RotaCut®.



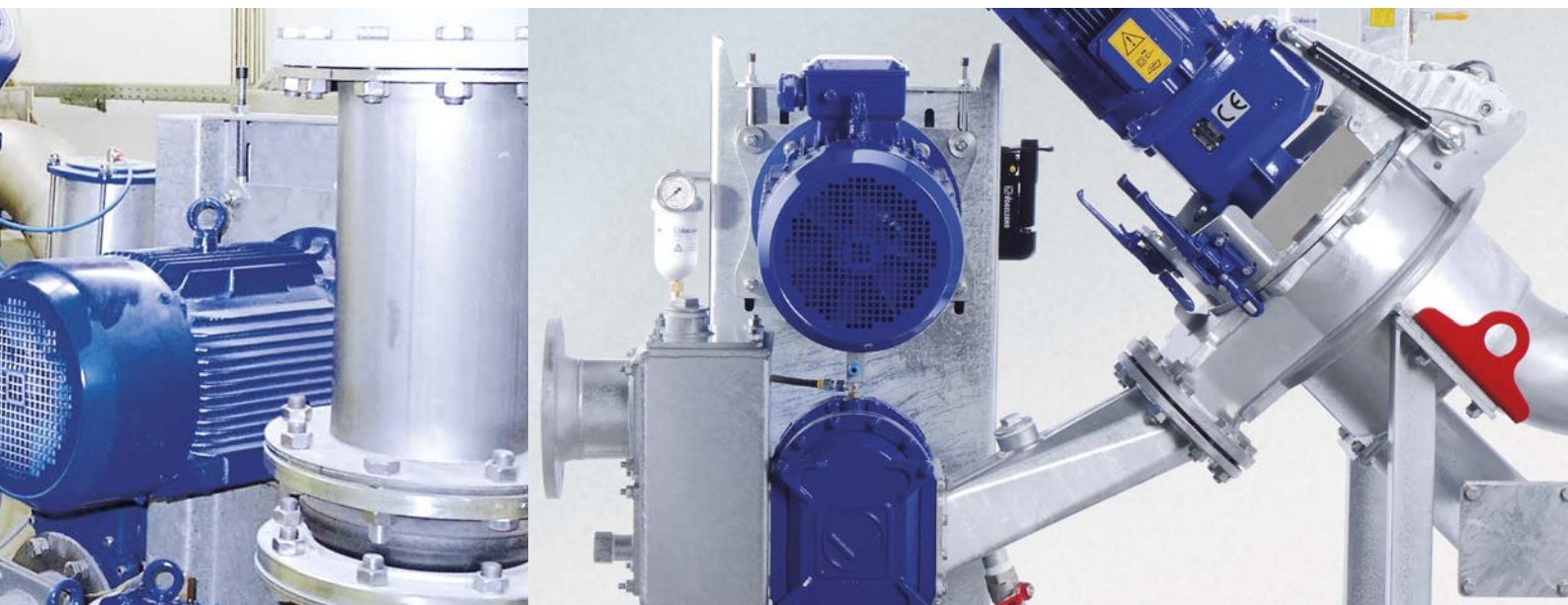
## Performance

Thorough maceration and uniform blending of the liquid phase and cosubstrate into a homogeneous biosubstrate substantially increases the efficiency of biogas production. Vogelsang has created compact units for this task: the BioCut and CC-Cut. Their combination of a robust positive displacement pump and a powerful cutter makes for excellent preparation of the organic suspension. At the same time, they feed one or more digesters – under automatic control – and, if necessary, handle other pumping operations in the biogas plant.

## Design and operating principle

The system consists of a self-priming rotary lobe or progressive cavity pump in combination with a special type of construction of the proven RotaCut. Due to its design as a central pump station, the BioCut can assume more pumping responsibilities within the plant. These include emptying distributed storage pits or the feeding of remote external sites.





### Applications and advantages

In most cases, the BioCut and CC-Cut suction the organic suspension out of the mashing tank where the liquid manure or digestate is mixed with the cosubstrates. Meanwhile, the upstream heavy material separator protects the system from foreign matter, preventing damage to the downstream system components. The RotaCut chops down all long fibers. This helps to prevent clogging. The maceration effect and the desired throughput can be adjusted by varying the cutting screen geometry and the speed of the blade rotor. If necessary, the cosubstrate can be treated several times and homogenized even more intensely by means of repumping or in a bypass operation.



Available combinations					
Model		Rated capacity	Max. operating pressure	Installed capacity of	
		m³/h	bar	Pump kW	RotaCut kW
BioCut	VX136-105Q / RCQ-26	25	4	7.5	4
BioCut	VX136-105Q / RCQ-33pro	30	4	7.5	5.5
BioCut	VX136-140Q / RCQ-33pro	42	4	11	5.5
BioCut	VX186-130Q / RCQ-43pro	98	4	22	7.5
CC-Cut	CC44-D1 / RCQ-33Gpro	30	4	7.5	5.5
CC-Cut	CC55-M2 / RCQ-33Gpro	30	8	11	5.5
CC-Cut	CC55-D1 / RCX-48G	60	4	11	8.3
CC-Cut	CC66-M2 / RCX-48G	55	8	15	8.3
CC-Cut	CC66-D1 / RCX-58G	85   105	4	15   18.5	12.1

D1: single-stage progressive cavity pump, M2: two-stage progressive cavity pump

# When it comes to service, we leave nothing to chance

Whether commissioning, training, or full service with a maintenance contract and wearing parts service package, our tailored, comprehensive services are always available to you. This way, we guarantee smooth operation from the start.

## Comprehensive services for smooth operation and a long service life

### Support and supply from A to Z

Because we realize that close proximity to our customers is essential for our joint success, we design our services to best meet your needs. In Germany and in countries where we have subsidiaries, Vogelsang service centers and contractual partners maintain an active dialogue with our customers and provide reliable support.

That means you get precisely the support you need in every phase of our partnership. Our highly qualified staff make it possible – expert consultants and technicians who know your Vogelsang machines inside and out.

### We think ahead

Thinking ahead in your best interest begins with our extensive and detailed product documentation. Spare parts are available within a short period of time given our high degree of vertical integration in production. In addition, you will always find an authorized service partner in your area who can help with repairs and replacement of wearing parts. The Vogelsang ServicePack completes our range of services. Whether you need start-up services, on-site training, training at Vogelsang's facilities, full service support with a maintenance contract or a wearing parts service package – we offer a support program tailored specifically to your needs.





### **LifeGuard – leading through innovation**

Maintenance generally results in downtime as well as expenditures for personnel and spare parts. We have therefore developed a concept to keep servicing and repair times to a minimum: LifeGuard – for maximum service life of our products.

The service life of a Vogelsang machine is determined by specific LifeGuard factors. We take these factors into consideration and offer you features that are key to maximum productivity and a long service life.

Many years of experience with customers' biogas plants has shown that when used in combination with our performance control units (PCU), LifeGuard produces optimal results while ensuring a long and trouble-free service life of your machine.







## Our company

Innovation and progress have been hallmarks of Vogelsang for over 80 years and have made us a leading global engineering company. Time and time again we have achieved significant milestones of progress. Today, we develop, manufacture and distribute some of the most innovative and reliable machines and systems for agriculture, municipalities and industry.

With our overseas subsidiaries and service centers, we are world-renowned for advanced engineering and customer-friendly solutions.

## Our product range

We offer solutions for the following areas:

- Industrial sector
- Waste water treatment
- Biogas
- Transportation
- Agriculture

We offer a broad range of products:

- Rotary lobe pumps
- Maceration technology
- Distributors
- Spreading technology
- Supply and disposal systems
- Complete solutions

We also offer customized solutions for your specialized applications.

## How to reach us

Vogelsang is present worldwide. Visit us online for more information about our company and wide range of services:

**vogelsang.info**

We are here to assist you and look forward to speaking with you.

**vogelsang.info**

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Product availability, appearance, technical specifications and details are subject to continuous development. All information presented here is therefore subject to change.