



# INNOVATIVE SOLID MATTER FEEDING

Machines and systems  
for bacteria-friendly digester feeding

**VOGELSANG – LEADING IN TECHNOLOGY**

**VOGELSANG**









# You can rely on it

**Quality, experience and expertise guarantee  
for future-proof technology**

**By inventing the elastomer-coated rotary lobe pump, Vogelsang already demonstrated its innovativeness in the agriculture sector and has become a leading mechanical engineering company worldwide. Vogelsang developers broke new ground in the biogas sector, too, with some of the first products tailored specifically for biogas plants.**

Whether pump or shredding technology, solid matter feeders or disintegration systems – based on our diverse experience and constant research, we develop full systems that ensure efficient biogas production and trouble-free processes throughout the entire digestion system in the long term, in addition to highly functional components.

Both the production and material quality of our machines are testimony to our responsible actions for the benefit of our customers. Their simple handling, the compact design and adaptability of our products increase the yield and sustainability. That is why plant operators worldwide rely on Vogelsang solutions to react effectively to new circumstances or legal requirements.

# Vogelsang: simply more biogas

## Reliable solid matter feeders for efficient biogas production

Biogas technology must be reliable and efficient to allow economical operation of the biogas plant. Digester feeding has a key function in this. As a result, we have developed systems for feeding solid matter in a mashed form that promotes the bacteria. With their optimal feeding of the microorganisms, they increase the gas yield and reduce the energy required for mixing, stirring and pumping. This is a scientifically tested and confirmed fact.

### **Our knowledge advantage**

The systems for solid matter feeding that we have developed and perfected over the years are internationally in use and prove their quality on a daily basis. Research, continuous adaptations and innovative features ensure maximum efficiency and economy in biogas production.

### **Liquid feeding: the more efficient way to feed a digester**

The solid matter feeding method has a significant impact on the efficiency of a biogas plant. In general, the more thorough the treatment, the higher the gas yield. 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 CC-Mix and PreMix, we offer suitable solutions for optimizing the gas yield of nearly any biogas plant for almost all concepts and input materials.



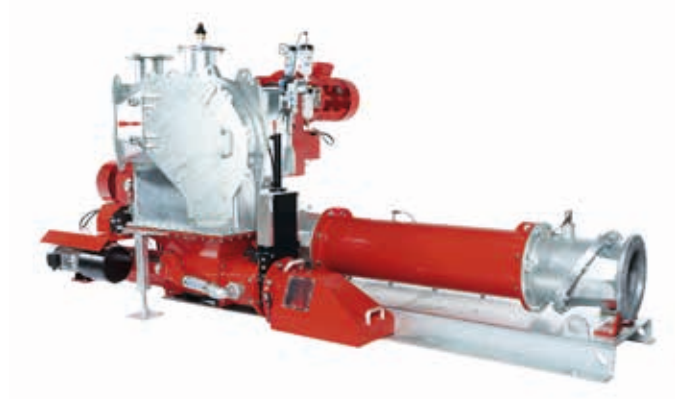
## Overview of Vogelsang solid matter feeders



### **CC-Mix:** **Economical liquid feeding system**

Mashing and feeding of pourable classic renewable resources and pastry cosubstrates such as maize silage, dry animal food or vegetable waste.

- Energy-efficient mixing of solid matter and fluids thanks to the unique structure
- Integrated foreign matter separator protects against heavy material
- Easy to integrate thanks to wide range of connection options for feeding solid matter, and compact dimensions



### **PreMix®:** **Universal liquid feeding system**

Optimal preparation and feeding of a wide range of different substrates, from pulpy feed and food waste, to bulky crops, to dry and long-fibered (maize) straw, with optimal treatment.

- Unique 4-in-1 concept for separating, mashing, preparing and pumping with just one unit
- Separates foreign matter reliably, reduces disruptive matter to an unproblematic size
- Feeds the digester with optimally chopped down and prepared biomass that promotes microbiological processes



CC-Mix

# Liquid feeding from an economic perspective

**The CC-Mix for digester feeding  
with flowable to slightly pasty  
solid matter**

Unproblematic, energy-rich cosubstrates are desirable and valuable. As a result, it is extremely important for efficient biogas production to feed solid matter like maize silage, dry chicken manure, sugar beet pulp, grain meal or fruit and vegetable waste with less effort, yet optimal prepared. A reliable, energy-efficient mashing process helps maximize the use of the nutrients contained in the valuable cosubstrates.



## **Advantages of the CC-Mix**

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

### Performance

The CC-Mix strenghts deliver it: Thanks to its thought-out engineered design, it requires minimum power to mash the cosubstrates with the liquid to form a homogeneous suspension, thus providing the conditions necessary for optimum fermentation in the digester.

### Design and operating principle

The CC-Mix brings together proven components into a new design. It is based on the unique, easy-to-maintain progressive cavity pump from the CC series (Cavity-Comfort), supplemented by a generously sized mixing chamber. The solid matter is transported into the mixing chamber via a feed screw at the side or from above. At the same time, liquid, such as recirculated material, is added at the beginning of the mixing chamber. Thanks to the unique design of the CC-Mix, the solid matter is transported actively into the fluid, and both are mixed intensively by the mixing shaft equipped with ripping teeth and paddles. This makes the suspension particularly even.

At the same time, the effective mixing action ensures optimum extraction of heavy material 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 with this one Vogelsang CC-Mix and easy connection of additional tanks later.

Despite the generously sized mixing chamber, the CC-Mix has an impressively compact design and can be integrated easily into a plant. Retrofitting is also unproblematic thanks to the simple charge of solids by screw conveyor.

### Maintenance and repairs

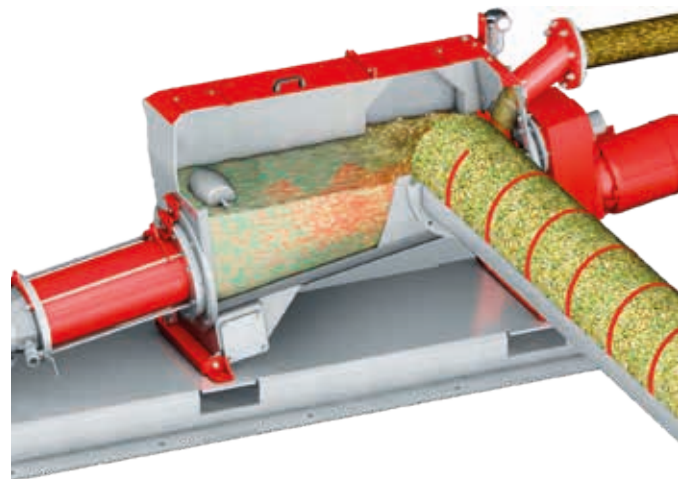
Parts replacement is quick and easy, thanks to the innovative QuickService concept of the CC series: The rotor and stator swivel out as a unit for quick-and-easy removal and replacement. If necessary, the mixing shaft can also be replaced with just a few manual steps. Downtimes in the feeding process due to service and maintenance are reduced to a minimum.

### Practical seal changes

The proven Vogelsang Cartridge mechanical seal is used as the shaft seal for the CC-Mix. The preinstalled mechanical seals can be replaced quickly and simply, as they are particularly easy to access. All you have to do is remove the parallel shaft geared motor. No further disassembly steps are required on the CC-Mix.

### Applications

Thanks to its principle of operation and the innovative design, 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 resources.

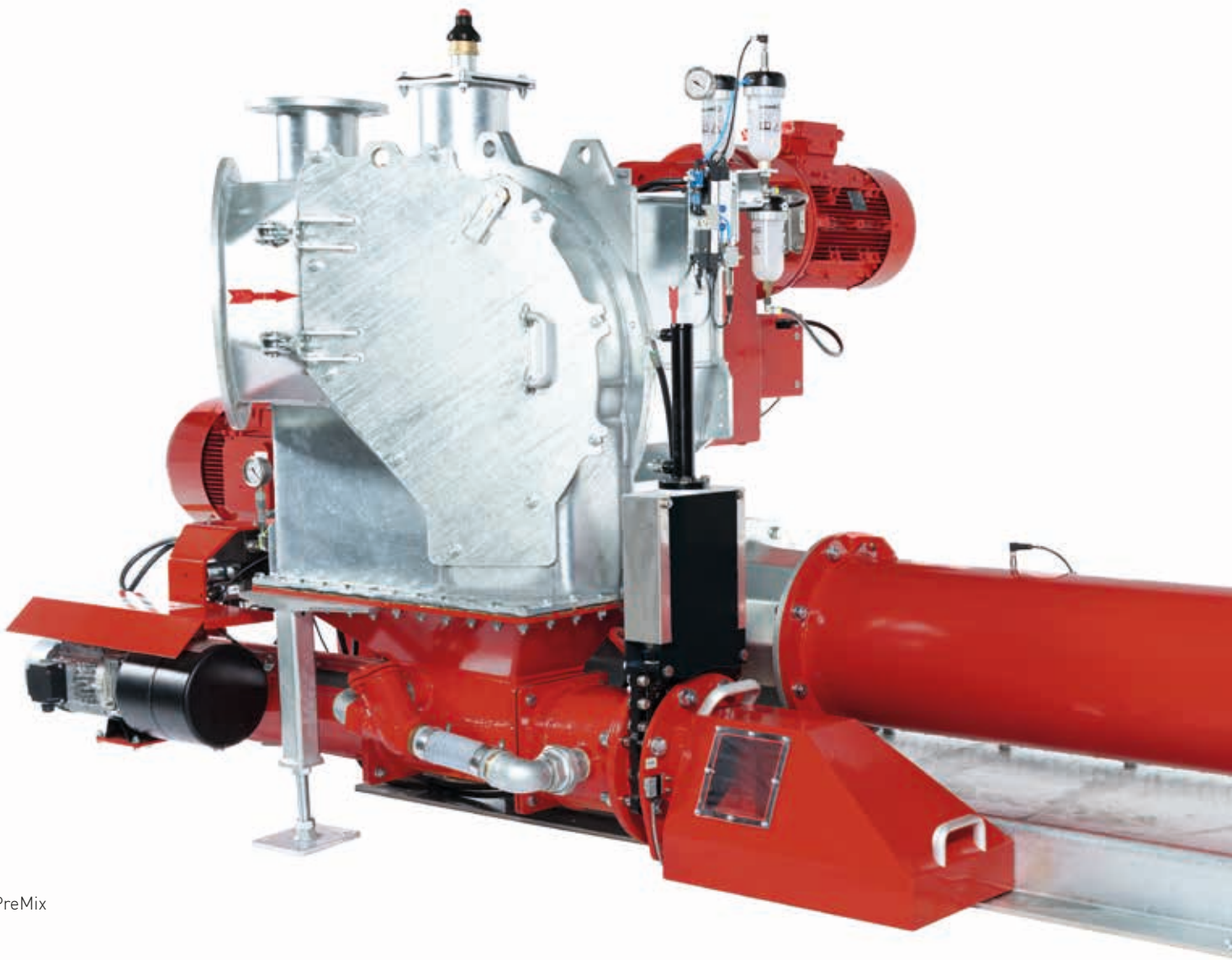


Section of a CC-Mix, at right of image:  
the solid matter supply via a feed screw







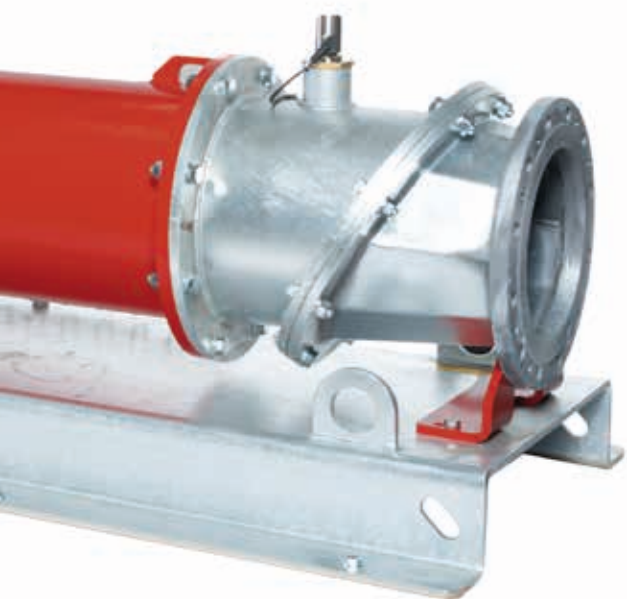


PreMix

# Wide range, low workload

## The versatile PreMix® for treating pulpy, high-volume and dry cosubstrates

Biogas plant operators who want to react as flexibly as possible to the wide range of cosubstrates need an equally adaptable solid matter feeder. Especially when more challenging and difficult-to-process biomass like dung, whole plant silage as well as organic waste or food waste and leftovers are to be used. Input materials, which are that coarse and full of foreign matter, require thorough particle size reduction and treatment before digester feeding.



### Advantages of the PreMix®

- Treats a 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
- Easy to integrate thanks to compact dimensions
- Feeding of multiple digesters
- Quick-and-easy service on-site



### Performance

The PreMix cleverly combines four steps into one compact unit designed to feed an extremely wide range of cosubstrates.

### Design and operating principle

The universal PreMix system is a combination of our easy-to-maintain progressive cavity pump (CC series) with the effective RotaCut.

The PreMix already separates any heavy material out while the cosubstrates fed into the system by a feed screw at the side are mixed with the liquid suspension added at the same time (e.g., recirculated matter, liquid manure) in the large mixing chamber. The RotaCut cuts any coarse and fibrous particles in the organic suspension, and homogenizes the medium optimally, before it is fed to the digester.

As the cosubstrates are in the form of a mashed, pumpable suspension that promotes bacteria growth, one PreMix can easily supply multiple digesters. Separating out foreign material and cutting harmful matter also extends the lifetime of the pump unit. At the same time, the thorough treatment creates ideal conditions for high gas yields.

Thanks to its space-saving design, the compact PreMix fits into every plant and is therefore also easy to retrofit.

### Maintenance and repairs

One feature of the PreMix is its great ease of service and maintenance. All necessary work, including wear part replacement, can be completed quickly and easily on-site. This minimizes operating downtime. The innovative swivelling 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.

### Applications

Thanks to the multifunctional design of the PreMix, it can be fed with a wide range of cosubstrates and treat them reliably. For example, pulpy food waste, bulky crops or even dry renewable resources like straw or woody grass.

### Eject foreign matter faster with the Debris Removal System

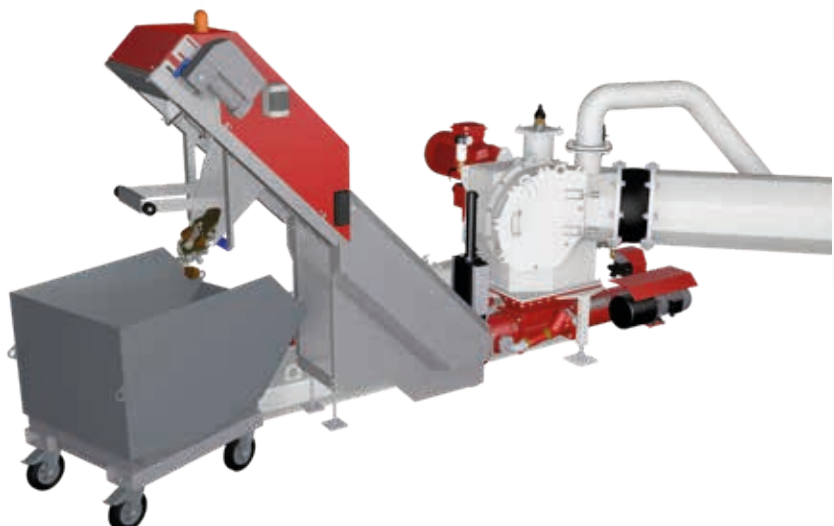
Depending on the cosubstrates chosen, large quantities of foreign matter can occur in biogas plants. Until now, removal was quite complicated, which is why it pays to supplement the PreMix with the innovative Debris Removal System (DRS) by Vogelsang.

It ejects foreign matter separated out while the PreMix is still running. Equipped with the DRS system, the PreMix does not need to be switched off or opened. Compared with conventional solutions, DRS completes the process in one sixth of the time, and can even be partially automated with a corresponding control. In addition, only roughly 15 l of medium is ejected with the heavy material. This not only avoids trouble and irregularities in feeding solid matter, it means that only a little of the suspension needs to be led back.

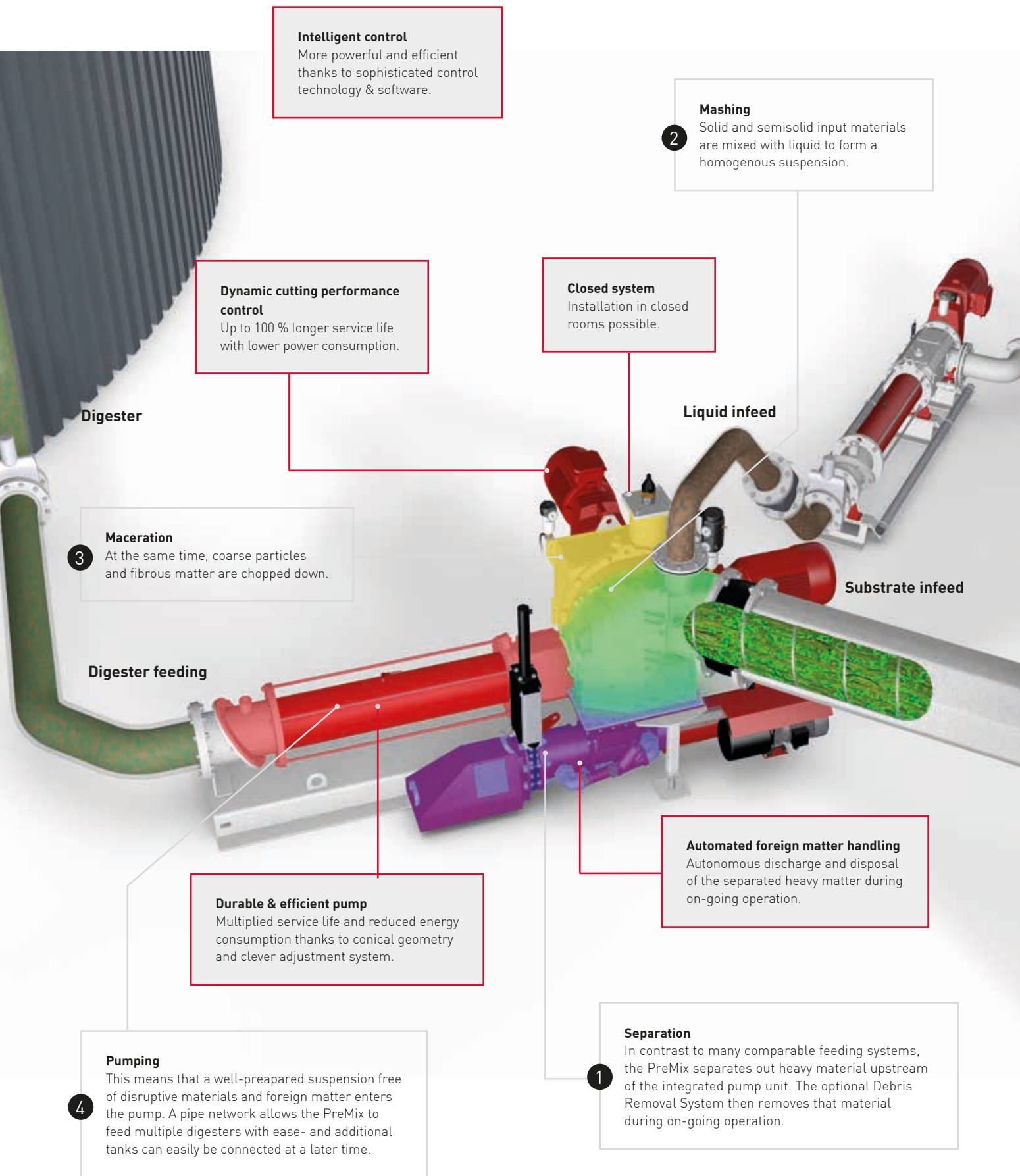
### Automatic disposing of foreign matter with the Debris Lift Unit

The Debris Lift Unit is the ideal addition to the Debris Removal System, enabling professional foreign matter handling. The heavy material ejected by the Debris Removal System (DRS) during ongoing operation is automatically tipped into a collection container by the DLU shortly after, that only need to be emptied occasionally.

The entire lifting process is automated so that monitoring and manual intervention are no longer necessary. Thanks to that handling foreign matter becomes more hygienic and small amounts of foreign matter doesn't have to be removed manually.



**Efficient 4-in 1  
Efficient feeding  
digester feeding**



## Economical solutions for a wide range of tasks



### VX series & IQ series

With their outstanding characteristics – compact design, self-priming, easy to service and maintain – Vogelsang rotary lobe pumps are the economical solution for many different pumping tasks.



### RotaCut®

Wet macerator and heavy material separator combined. Reliably separates foreign matter such as stones or metal parts and effectively macerates fibrous and coarse matter in liquid media, thereby ensuring more homogeneous and flowable suspensions.



### CC-Mix

For economical feeding of flowable to slightly pasty solid matter. Optimal mixing with a liquid suspension increases the gas yield and reduces the power consumption of the pumps and mixer.



### HiCone® & CC series®

For pumping highly viscous and abrasive media, and media with a high proportion of foreign matter. The revolutionary conical shape of the rotor and stator as well as the innovative concept for adjustment and service sets new standards for lifetime and ease of maintenance.



### RedUnit XRL

Facilitates efficient fermentation of fruit, vegetables and various organic waste. The powerful twin-shaft shredder cost-effectively treats large and coarse solid matter in liquid or dry media.



### PreMix®

The universal 4-in-1 solid matter feeder. Separates foreign matter out, treats a wide range of cosubstrates optimally, chops down coarse and fibrous particles and feeds several digesters with optimally treated suspension.



### DisRuptor

Flexible and efficient mechanical disintegration of structured substrates thanks to adjustable function unit. Accelerated conversion and increased gas yield thanks to larger surfaces. Prevents floating layers and reduces the viscosity of the organic suspension.



### XSplit®

The unique separator with excellent cost-benefit ratio. Combine dry substance contents of up to 40 percent with reliable plug formation without the addition of auxiliary agents and high ease of service.



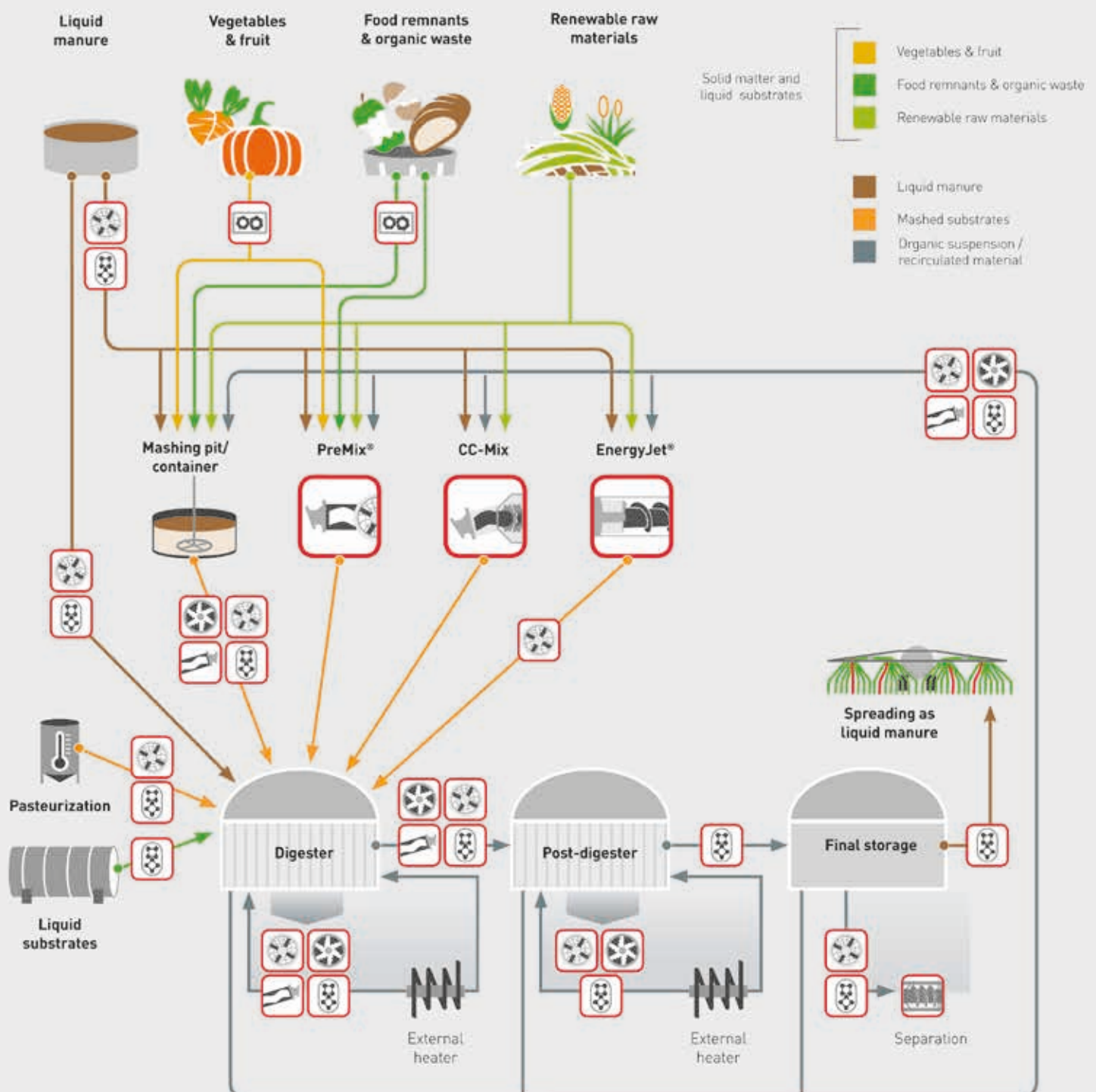
### EnergyJet®

The efficient solution for trouble-free digester feeding with renewable resources and dung. The wear and foreign matter-resistant system mixes structured substrates with a liquid suspension to a well-mashed organic suspension.



# Economical biogas production

with reliable and efficient technology



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

**Comprehensive services for smooth operation and a long lifetime**

## **Support and supply from A to Z**

Because we are aware that close customer proximity is essential for our mutual 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 generate an active dialog with our customers and provide reliable support.

This means you always get the precise support you need in every phase of our partnership. Our highly qualified staff make it possible – experts such as consultants and technicians who know your Vogelsang machines inside and out.

Since its establishment in 1929, Vogelsang has become an internationally recognized mechanical engineering company with numerous branches, sales centers and subsidiaries.





### **We think ahead**

Thinking ahead in your best interest begins with our extensive and detailed product documentation. Spare parts are available within a short time due to 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 wear part replacement. The Vogelsang ServicePack completes the offer. Whether you need start-up, on-site training, training at the Vogelsang facility, or full service support with a maintenance contract and a wear parts service package – we offer a support program tailored specifically to your needs.



## What we offer

We provide solutions in the following sectors:  
AGRICULTURAL TECHNOLOGY, BIOGAS,  
INDUSTRY, TRANSPORTATION, WASTEWATER



## Our broad range of products and services

- Consulting and service
- Data management and control technology
- Disintegration technology
- Individually tailored solutions for special applications
- Pumps and pump systems
- Solid matter feeders
- Spreading technology
- Supply and disposal systems for railway, busses and boats
- Wet grinders and solids reduction as well as separation technology

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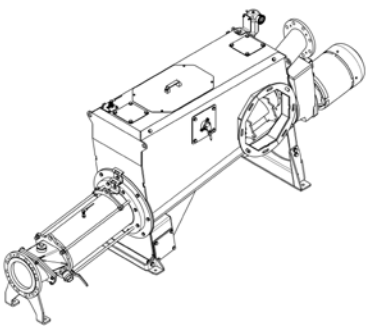
# SPECIFICATION

# INNOVATIVE SOLID MATTER FEEDING

Machines and systems  
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# CC-Mix

The CC-Mix for economic digester feeding  
with flowable to slightly pasty solid matter



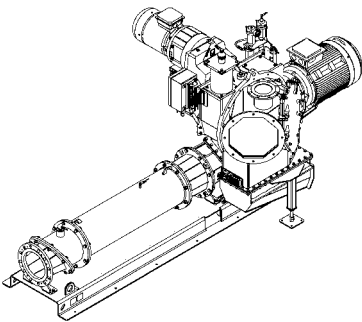
Type*	Max. capacity	Max. pressure**	Installed drive power	Max. free passage	Solid matter inlet
	m <sup>3</sup> /h	bar	kW	mm	mm
CC - Mix66 - M1	50	6	11	88	□ 418
CC - Mix66 - M2	50	12	15	88	□ 418
CC - Mix66 - D1	85	6	15	95	□ 418

\* D1/M1: single-stage progressive cavity pump, M2: two-stage progressive cavity pump  
\*\* The recommended operating pressure may vary.



# PreMix<sup>®</sup>

The versatile PreMix<sup>®</sup> for treating pulpy, high-volume and dry co-substrates



Model		Max. capacity	Max. pressure*	Installed drive power			Solid matter inlet
Pump**	RotaCut	m³/h	bar	Pump kW	Pump U/min	RotaCut kW	mm
HiCone 77-V3	RCX - 58G	85	12	30	100	16.5	□ 418
HiCone 77-V3	RCX - 68G	85	12	30	100	20.4	□ 418
HiCone 77-V3	RCX - 58G	68	12	22	79	16.5	□ 418
HiCone 77-V3	RCX - 68G	68	12	22	79	20.4	□ 418
HiCone 66-V3	RCX - 58G	50	12	18.5	114	16.5	□ 418
HiCone 66-V3	RCX - 68G	50	12	18.5	114	20.4	□ 418
HiCone 66-V3	RCX - 58G	40	12	15	95	16.5	□ 418
HiCone 66-V3	RCX - 68G	40	12	15	95	20.4	□ 418
HiCone 55-V3	RCX - 58G	30	12	11	135	16.5	□ 418
HiCone 55-V3	RCX - 68G	30	12	11	135	20.4	□ 418
CC66-D1	RCX - 58G	90	6	18.5	114	16.5	□ 418
CC66-D1	RCX - 68G	90	6	18.5	114	20.4	□ 418
CC66-D1	RCX - 58G	75	6	15	95	16.5	□ 418
CC66-D1	RCX - 68G	75	6	15	95	20.4	□ 418
CC55-D1	RCX-58G	55	6	11	116	16.5	⊘ 418
CC55-D1	RCX-58G	55	6	11	116	20.4	⊘ 418
CC55-D1	RCX-58G	45	6	9.2	97	16.5	⊘ 418
CC55-D1	RCX-68G	45	6	9.2	97	20.4	⊘ 418

\* The recommended operating pressure may vary.  
\*\* D1: single-stage progressive cavity pump, M2: two-stage progressive cavity pump.

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