VOGELSANG
ENGINEERED TO WORK

INCREASED GAS OUTPUT, ENHANCED DEWATERING

Digestion & Biogas

Pumping, Grinding & Processing Products

ROBUST, RESILIENT, RELIABLE!

Robust products for tough biogas applications

Vogelsang has been a leader in the design and manufacture of slurry pumping, grinding and biogas products for over 80 years. During this time, we've been responsible for most of the major innovations in positive displacement rotary lobe pump design and the invention and development of the RotaCut® Inline Grinder and BioCrack Sludge Lysing System. Vogelsang is proud to build its products in the US and also to service thousands of installations and satisfied customers all over the world.

BioCut Pump & Grinding Unit

BioCrack Sludge Lysing System

WORKING WITH VOGELSANG

Cutting Edge Materials

Every application of our products requires ideal material choices to optimize performance and minimize wear. Wherever there is contact or friction between moving parts, we have developed combinations of materials that will optimize the equipment for your specific needs.

This benefits you both in equipment life and in product performance. Our wear parts come in several material options to get you the best possible life.

Quality Custom Construction

Our production team will design your equipment to the most effective size and configuration for your application. We can build a compact unit to fit tight installation areas or a special flange design to allow a precise fit into and existing system.

Our products are available in many sizes and capacities that will suit many biogas application requirements. We offer the highest standard of construction and materials to ensure you get the highest quality product possible.

Service & Warranty

Our relationship doesn't end with the sale. Expect quick and expert advice and troubleshooting about our products once they're installed. When you need service or maintenance, we'll be there on time to get your system back up and running fast.

We offer our standard warranty to our biogas customers. Vogelsang products are covered by our 1-year manufacturers defect warranty.

ROBUST, RESILIENT, RELIABLE!

High Solids, Heavy Grit & Abrasives

Vogelsang offers the premier positive displacement pump in the biogas market. Due to the nature of our rotary lobe pump, our exclusive lobe design, most types of slurry or sludge can be pumped throughout your system with ease as compared to progressing cavity, centrifugal and other rotary lobe pumps. Our products are built to pump thick and abrasive sludge with no pulsation. Vogelsang pumps offer quick and easy access to the wet end for inline repair without disturbing connected piping.

HiFlo VXQ Series VX100, VX136 & VX186

ROBUST, RESILIENT, RELIABLE!

The VX HiFlo® Rotary Lobe Pump Product Line.

Vogelsang offers a full line of Rotary Lobe Pump models to suit various applications and operating conditions. The VX HiFlo® Q Series is our standard design and works well in most wastewater applications requiring a positive displacement pump. For increased flow and medium pressure, we offer the VX HiFlo® QD series which features a much larger wet end and outboard bearing configuration to eliminate deflection. For high flow and high pressure applications, the Marathon QDM2 Series handles pressures to over 200psi in a two stage outboard configuration.

All Vogelsang pumps can run dry without damage, self prime and run in forward or reverse. Vogelsang pumps are great for suction lift applications up to 25'. Due to our convoluted HiFlo® Lobe design, the pump delivers pulsation free pumping action making it ideal for applications such as dewatering feed.

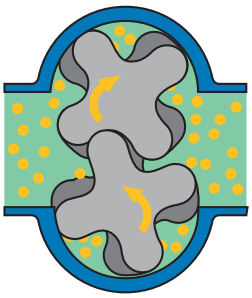
HiFlo® VXQ Series VX136

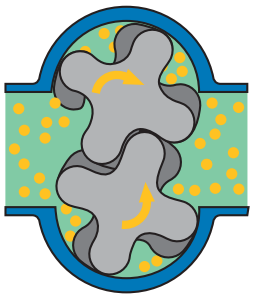
HiFlo® VXQD Series VX186

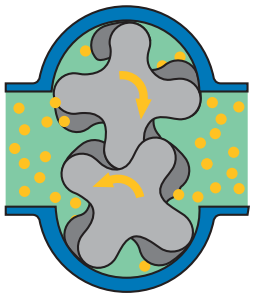
HiFlo® VXQDM2 Series

How the Rotary Lobe Pump Works

Two intermeshed lobes are affixed each to gear driven shaft. The shafts rotate in opposite directions. The rotating motion of the lobes creates an expanding cavity on the suction side. This allows fluid to enter and fill the suction side of the pump. The rotors carry the fluid around the housing to the discharge side where it is expelled out of the pump by the closing cavity.







Hard solids are passed through the pump within the cavities between the lobe and outer housing. Vogelsang offers a true unique solids passing design, all build into our Dynamic Injection housings. This design allows for solids passing, without damage to the lobes, and extends operation life. The Vogelsang pump can pass most any solid that can fit in the cavity. Maximum non-compressible solid size varies by pump model up to 2.5".

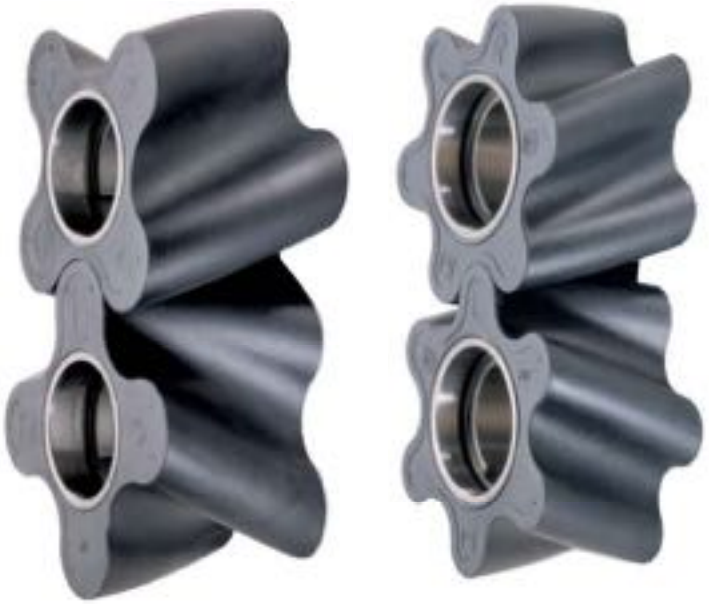
IT'S ALL ABOUT THE LOBES

Pulsation Free, High Abrasives & Low Shear

The state of the art in positive displacement pumps. The HiFlo® Lobe has increased capacity compared with former lobe designs while eliminating pulsation. The convoluted design of the HiFlo® Lobe provides a large cavity that's perfect for harsh and abrasive sludge. This design also makes it possible to achieve a required pressure at a slower rpm which results in less damage to lobes and minimal wear to the rest of the pump.

The gentle pumping action of the HiFlo® Lobe is also friendly to shear sensitive liquids. This also applies to applications where large amounts of entrained air is present in the liquid.

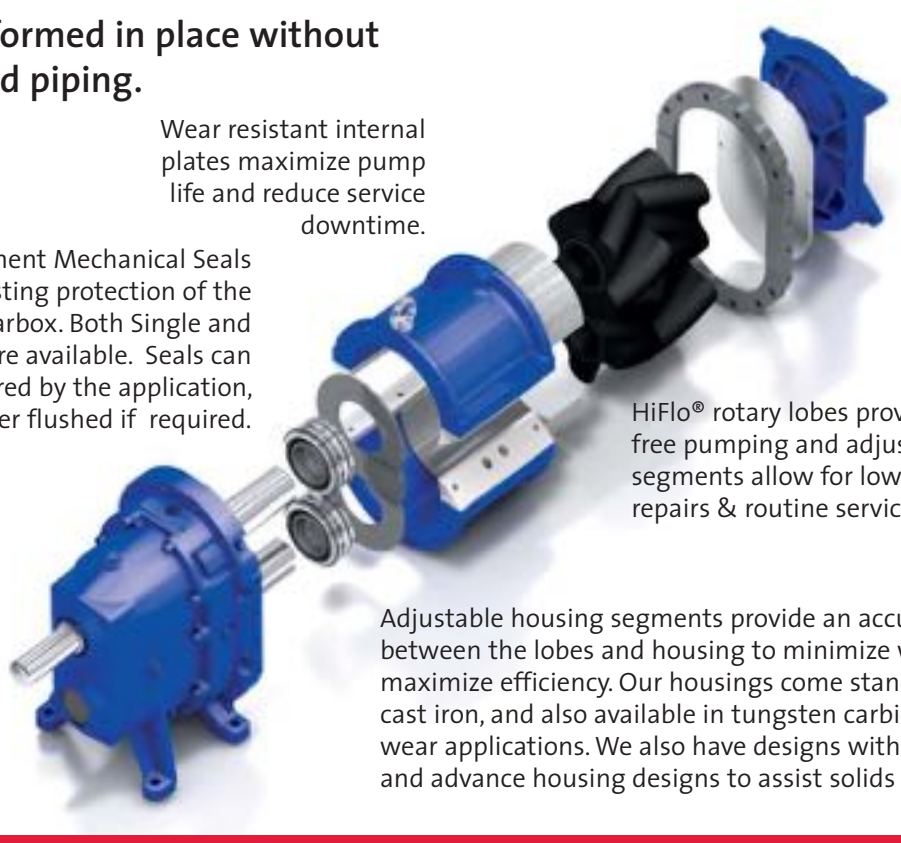
Vogelsang offers six wing lobe options in the VX100 series and four wing for the VX136 & VX186 series. There are several elastomer options for maximum chemical compatibility, abrasiveness and temperature requirements.



Maintenance is performed in place without disturbing connected piping.

Wear resistant internal plates maximize pump life and reduce service downtime.

Robust Cartridge or Component Mechanical Seals provide long lasting protection of the buffer chamber and gearbox. Both Single and double mechanical seals are available. Seals can also have an air gap if required by the application, and also be water flushed if required.



HiFlo® rotary lobes provide pulsation-free pumping and adjustable housing segments allow for low cost wetend repairs & routine service.

No step down shafts. We have maximized the diameter of our shafts to prevent wear lobes, seals and bearings caused by shaft deflection. **The lowest shaft deflection in the industry!**

Adjustable housing segments provide an accurate gap between the lobes and housing to minimize wear and maximize efficiency. Our housings come standard with grey cast iron, and also available in tungsten carbide for high wear applications. We also have designs with radial liners, and advance housing designs to assist solids passing.

QUICK & EASY INLINE MAINTENANCE

VX Pump Series Performance Specifications:

Model		Capacity gpm	Capacity m3/h	Displacement gal/100rev	Displacement l/100rev	Max. Solids in	Max. Solids mm	Flange Size in	Flange Size mm	Max Pressure Q: psi	Max Pressure bar	Max Pressure QD: psi	Max Pressure bar	Max. Speed rpm 1/min
VX100	45	13-60	3-13	7.7	29	.75	20	2.5	65	145	10			1000
	64	22-85	5-19	11.1	42	.75	20	3.0	80	131	9			1000
	90	26-120	6-26	15.6	59	.75	20	4.0	100	102	7			1000
	128	40-170	9-38	22.2	84	.75	20	4.0	100	58	4			1000
VX136	70	45-200	10-45	33.5	127	1.50	40	4.0	100	145	10	174	12	800
	105	65-310	15-70	50.0	190	1.50	40	4.0	125	145	10	174	12	800
	140	90-400	20-90	67.0	253	1.50	40	6.0	125	116	8	174	12	800
	210	130-610	30-140	100.0	380	1.50	40	6.0	150	73	5	145	10	800
	280	180-800	40-180	134.0	506	1.50	40	6.0	150			116	8	800
	420	260-1220	60-280	200.0	759	1.50	40	6.0	150			87	6	800
	140M2	45-200	10-45	33.5	127	1.50	40	6.0	125			232	16	650
	210M2	65-310	15-70	50.0	190	1.50	40	6.0	150			232	16	650
	280M2	90-400	20-90	67.0	253	1.50	40	6.0	150			203	14	650
	420M2	130-610	30-140	100.0	380	1.50	40	6.0	150			174	12	650
VX186	92	90-440	20-100	94.0	356	2.50	61	6.0	125	145	10			600
	130	130-640	30-145	133.0	503	2.50	61	6.0	150	145	10	174	12	600
	184	180-880	40-200	188.0	712	2.50	61	6.0	150	116	8	174	12	600
	260	260-1280	60-290	266.0	1006	2.50	61	8.0	200	73	5	145	10	600
	368	360-1760	80-400	376.0	1424	2.50	61	10.0	250	44	3	116	8	600
	390	390-1920	90-435	399.0	1509	2.50	61	10.0	250	44	3	102	7	600
	520	520-2560	120-580	532.0	2012	2.50	61	10.0	250			87	6	600
	736	720-3520	160-800	752.0	2848	2.50	61	14.0	350			44	3	600
	184M2	90-440	20-100	94.0	356	2.50	61	6.0	150			232	16	600
	260M2	130-640	30-145	133.0	503	2.50	61	8.0	250			232	16	600
	368M2	180-880	40-200	188.0	712	2.50	61	10.0	250			203	14	600
	520M2	260-1280	60-290	266.0	1006	2.50	61	10.0	250			174	12	600
IQ112	81Q	242	55	27.0	1.02	1.30	33	4.0	100	116	8			900
	114Q	343	78	38.0	1.44	1.30	33	4.0	100	72	5			900

APPLICATIONS

Transfer

VX Series Pumps are commonly used for a variety of transfer applications. VX series pumps provide flows up to 4000 gpm and pressures up to 218 psi to transfer slurry from one point to another with ease.

Long distances can be overcome using the Marathon Series two-stage pump.

Our design is simple and compact and will easily install into an existing system as a replacement pump. Drive options are available such as electric, hydraulic or PTO for advanced mobility. A three or four point linkage system is also avialable to drive the pump via a tractor's PTO.

Digester Feed

Delivering slurry to a single or series of digesters shouldn't be the most difficult application. Vogelsang VX series pumps can pull a suction lift up to 25 feet and feed your digester from any location.

Incoming slurry to the biogas plant needs to be feed to the digester slowly and evenly, Vogelsang HiFlo® rotary lobe pumps have the ability to feed at high flow, or even low flows with the use of a VFD.

Whether it be manure, fats, oils, or greases, Vogelsang pumps can move even the thickest of liquids to your digester to maximize efficiency and enhance gas output.

Digested Sludge

Digested Sludge applications are very common in bio-gas plants that have anaerobic digestion. These applications are normally between 8-10% solids and mostly very homogeneous in nature. In these applications the operating pump can see light to medium abrasive so the right material of lobes are very critical.

Digested sludge applications require low pulsation in their flow, as they typically feed to dewatering equipment. The lower the pulsation, the more accurate polymer dosage can be applied. Additionally, the pumps can encounter solids like hair and rocks that may be difficult to pass by pumps not designed for solids handling.

APPLICATIONS

FOG & Substrate

FOG (Fats, Oils, & Grease) can be very difficult to pump. Rotary lobe pumps allow easy truck offloading to onsite storage tanks. Vogelsang customers can also cut equipment costs by using the same pumping unit to offload and feed the digestion system.

Due to its varying viscosity, Substrte can cause problems with the average centrifugal pump. Switching to a rotary lobe pump provides the ability to pump variable viscosity fluids without rapid changes in flow rates.

Dewatering Feed Pumps

Our pumps have been widely chosen to feed dewatering componenets such as Belt Press, Centrifuge and other dewatering devices. This is largely due to the pump's ability to deliver sludge to the equipment evenly with no pulsation.

An even flow of sludge to the dewatering equipment helps the equipment run as efficiently as possible and with less polymer. Additionally, it's compact and easy to fit or retrofit onto the same skid as the detwatering unit itself.

DAFT

DAFT applications are difficult not only because of the entrained air, but also the thickness of the sludge. Vogelsang pumps are designed for pumping viscous liquids containing heavy solids. A slower operating pump coupled with a wide range of available elastomers is critical.

These applications require low speed in order to keep the pump from excess cavitation due to air pockets building in the cavities of the pump. Additionally, you can encounter floating solids, hair and rags that can build-up over time.

SOLIDS REDUCTION, SOLIDS SEPARATION, SLUDGE CONDITIONING

High Performance Grinding, Easy Inline Maintenance

The RotaCut® plays an important part in boosting plant efficiency by ensuring that biogas plants can operate reliably and economically. The RotaCut® is used for a wide range of applications within the biogas plant – including liquid feeding, digester agitation, slurry transfer to the post-digester, material recirculation, as well as in locations upstream from the separation unit and from the external heat exchanger. This versatility ensures cost-effective operation of the facility.

Standard features include Auto Reverse, Auto Cut Control, self sharpening blades, and reversible cutter screens. RotaCut® is 100% rebuildable inline, which eliminates the need to send out cutter cartridges for reconditioning.

Placed on the suction or discharge side of any manufacturer's pump, the RotaCut® will eliminate ragging, reduce solids and protect downstream equipment. Protect pumps and dewatering equipment from clogging, prevent

RotaCut® RC 3000, RC 5000 & RC 10000 Series

NUMEROUS SIZE & CONFIGURATION OPTIONS

The RotaCut® Product Line.

Vogelsang offers a full line of RotaCut® models to suit various applications and operating conditions. The RotaCut® RC series is our standard design and works well in most wastewater applications suitable for an inline grinder. For increased solids reduction we offer the Pro, Pro Compact & Cyclone series which features a larger collection basin and horizontal head orientation. For more extreme solids handling, the RCX series is available and offers higher pressure, lower headloss and maximum solids reduction at even the highest flows.

RotaCut® RCX48 & RCX58

RotaCut® Pro Compact

RotaCut® Cyclone

RotaCut® RCQ

How the RotaCut® Works

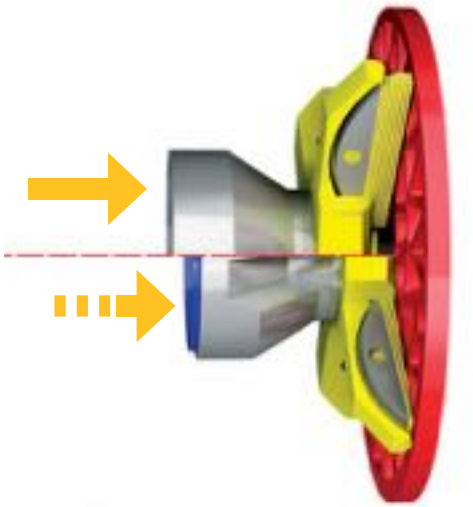
When placed on the suction side of a pump, the RotaCut® effectively reduces floating solids in the liquid stream. Heavy solids are captured in the collection basin and eliminated entirely from the liquid. The combination of solids reduction and separation provides true protection for downstream components.

AutoReverse is how the RotaCut® handles large objects by reversing the rotation of the blades until the object is cleared, reduced and passed through the screen. AutoReverse engages at preset intervals which keeps the blades wearing evenly. The trailing edge of the blade is sharpened as a natural effect of the cutting process. When the rotation is reversed a fresh edge enhances the cutting quality.

INCREDIBLE SOLIDS HANDLING & MAXIMUM LIFE CYCLE

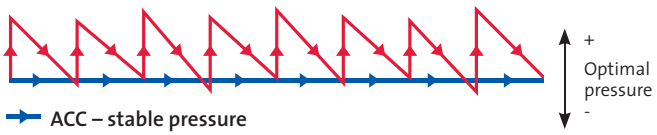
Quality Performance & Control

The RotaCut® requires direct contact between the blades and the cutting screen. This is how it achieves the scissor-like cut. The blades are designed to wear over time but must wear evenly to achieve maximum lifecycle between routine replacement. To ensure that the blades last as long as possible, the RotaCut® includes a standard feature know as Auto Cut Control or ACC.



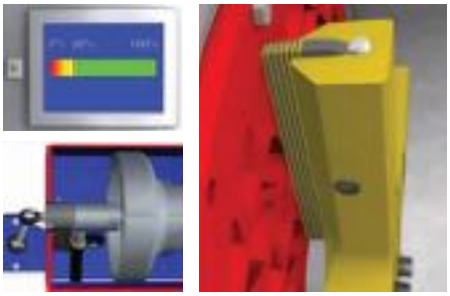
ACC ensures high cutting performance at all times by automatically adjusting the blades as normal wear progresses. ACC completely eliminates manual maintenance of the cutting head tension. The entire process is controlled externally which minimizes the need to open the unit.

The diagram below demonstrates the difference between manual adjustment versus real time automatic pressure optimization.



ACC – stable pressure

Manual preloading system: fluctuating pressure; excessive pressure causes unnecessary wear



Auto Cut Control (ACC) Monitor your blade life and get alerts

Easy Inline Maintenance

One of the best features of the RotaCut® is how easy it is to maintain. Everything can be done inline in minutes without removing any connected piping. The RC series are all designed with a hinged cutting head that can be accessed by disengaging one or more hand latches. The head is disassembled by removing the allen bolt that holds the entire assembly together. At this point routine service such as blade or screen changes can be performed quickly.

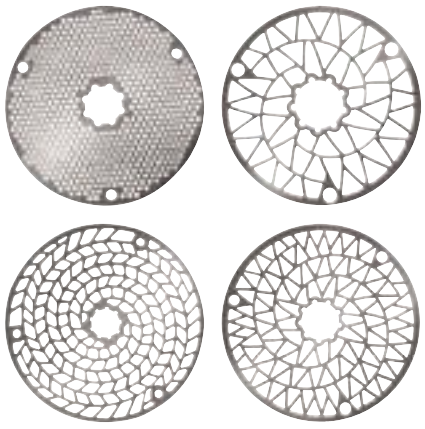
The RCX model features a quick release door allowing access to the cutting head.

Typical routine service such as changing blades or flipping the reversible cutting screen takes only a fraction of the time required to service a typical twin shaft grinder. In addition there are no cartridge style parts that require factory refurbishment.

QUICK & EASY INLINE MAINTENANCE

RotaCut® Grinder Performance Specifications:

Model	Capacity gpm	Capacity m3/h	Motor Power hp	Motor Power kW	Cut Solids in	Cut Solids mm	Flange Size in	Flange Size mm	Max Pressure psi	Max Pressure bar	Motor Gear	Motor Hyd	Speed Options rpm 1/min
RCQ 20 Inline	396	90	1.5-3.0	1.1-2.2	.39-0.78	9-20	4	100	30	2	Yes	No	87-320
RC 3000 Inline	792	180	2.0-5.0	1.5-4.0	.31-1.10	8-28	6	150	30	2	Yes	Yes	76-326
RC 3000 Cyclone	792	180	2.0-5.0	1.5-4.0	.31-1.10	8-28	6	150	6	.5	Yes	Yes	76-326
RC 5000 Inline	1320	300	2.0-10.0	1.5-7.5	.15-1.18	4-30	6	150	30	2	Yes	Yes	73-330
RC 5000 Cyclone	1320	300	2.0-10.0	1.5-7.5	.15-1.18	4-30	6	150	6	.5	Yes	Yes	73-330
RC 5000 Compact	1320	300	2.0-10.0	1.5-7.5	.15-1.18	4-30	6	150	44	3	Yes	Yes	73-330
RC 10000 Inline	2640	600	3.0-10.0	2.2-7.5	.15-1.50	4-38	8	200	30	2	Yes	Yes	66-319
RC 10000 Cyclone	2640	600	3.0-10.0	2.2-7.5	.15-1.50	4-38	8	200	6	.5	Yes	Yes	66-319
RC 10000 Compact	2640	600	3.0-10.0	2.2-7.5	.15-1.50	4-38	8	200	44	3	Yes	Yes	66-319
RC 10000 Compact XL	2640	600	3.0-10.0	2.2-7.5	.15-1.50	4-38	8	200	44	3	Yes	Yes	66-319
RCX 48 Inline	2640	600	7.5-15.0	5.5-11.0	.15-1.50	4-38	8	200	87	6	Yes	No	114-311
RCX 58 Inline	3300	750	10.0-20.0	7.5-15.0	.31-1.33	8-34	10	254	87	6	Yes	Yes	94-276



Specify a required cut size using one of several pattern cutting screens.

Screens come several patterns that will produce a designated size solid. The rotational speed of the cutting head also influences the solid size. The examples shown will produce a different solid size and are easily interchangeable should operating conditions change. Screens are available in several material options for high wear applications. All RotaCut® screens are reversible to allow for a fresh cutting surface without buying a new spare part.

HEAVY WET & DRY SOLIDS REDUCTION

Substrate Grinding

The XRipper® twin shaft grinder effectively reduces large solids to manageable size for further solids reduction or for downstream pumps and equipment to process without clogging or damage.

What sets the XRipper® apart from other twin shaft grinders i its unique cutting elements. Traditional twin shaft grinder cutters are stacked up along the shaft using smaller individual blades and components. The main disadvantages of the traditional design is the complexity of maintenance and high cost of repair. Periodic factory service is required to keep a traditional twin shaft grinder operating efficiently which affects maintenance costs and increases downtime.

The XRipper® features solid ripper rotors that are precision machined out of high quality hardened alloy. They are not built up out of several smaller pieces like typical twin-shaft grinders. Our cutters provide long lasting grinding performance and are easy to replace without removing any connected piping or sending parts back to the factory.

XRipper® XRS Q

WET OR DRY GRINDING CONFIGURATIONS

The XRipper® Product Line.

Vogelsang offers two main configurations, the XRS Q and QD, designed to operate in an inline fluid stream condition. There is also one configuration, the XRL QD, designed to operate in a wet or dry feed condition.

The XRS comes in several housing sizes and wet-end options to suit numerous flow rates and solids handling conditions. The XRL is designed to work with a hopper feed and an adjustable frame. This allows it to be worked into an existing system with minimal retrofitting.

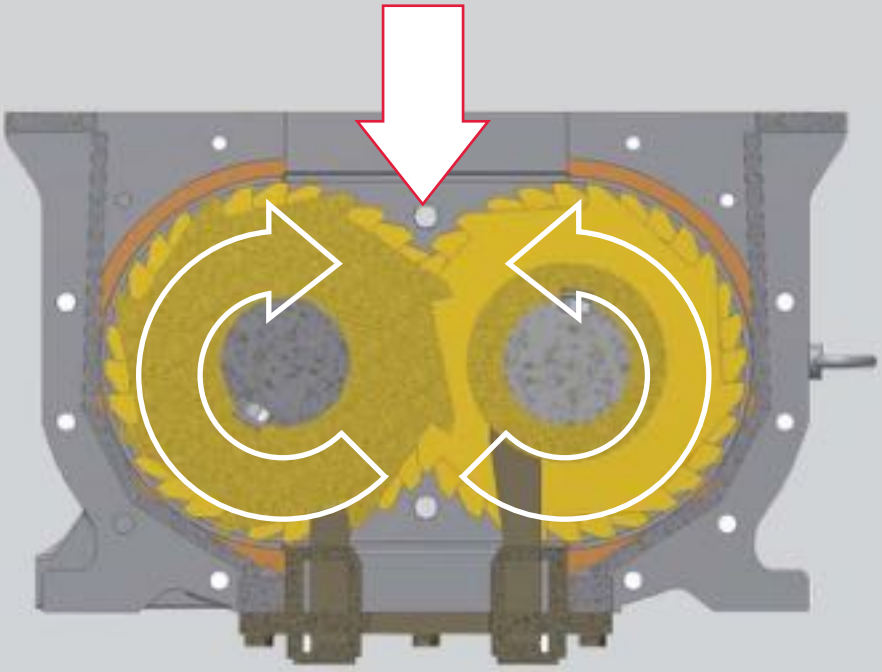
XRipper® XRL QD

XRipper® XRS QD

How the XRipper® Works

The XRipper® grinds and reduces solids by means of two rotating ripper rotors. Each rotates in the opposite direction towards the center of the device. This draws solids between the ripper rotors which effectively grinds the solids as they pass through.

To enhance the grinding effect, one of the cutting elements is rotating faster than the other. The difference in rotational speed enhances the overall ripping effect of the device.



INCREDIBLE SOLIDS HANDLING & MAXIMUM LIFE CYCLE

Quality Performance & Control

The XRipper's cutting performance can be controlled in two ways. The first method is by the width of the blades. The XRS 100, 136 & XRS 186 allow for optional blade widths which generate different cuts. Finer blade width results in a more reduced solid.

The other way to influence cut size is by rotation. Higher RPM also produces a finer cut.

The cutters are precision machined from as a single piece. They are made from specially processed steel that is formulated to be ductile inside with an incredibly hard surface. This creates a cutting element that is highly resistant to impact while retaining sharp edges.

Easy Inline Maintenance

By comparison to a traditional twin shaft grinder, the XRipper® is easy to maintain. Everything can be done inline in without removing any connected piping.

The XRipper® series is maintained much like our VX Pump series. The front cover is removed for easy access to the cutting elements. The XRipper's cutting elements are both removed at the same time and come off in one piece.

Typical routine service such as changing cutting elements takes only a fraction of the time required to service a typical twin shaft grinder. In addition there are no cartridge style parts that require factory refurbishment.

QUICK AND EASY INLINE MAINTENANCE

XRipper® Grinder Performance Specifications:

Model	Capacity gpm	m3/h	Operating Torque in. lbs.	Nm	Cut Solids in	mm	Flange Size in	mm	Max Pressure psi	bar	Solids Wet	Dry	Speed rpm 1/min
XRS100-64Q	176	40	2655	300	.32	8	3	80	131	9	Yes	No	800
XRS100-90Q	242	55	2655	300	.32	8	4	100	131	9	Yes	No	800
XRS136-140Q	484	110	10620	1200	.47	12	6	150	174	12	Yes	No	650
XRS136-140QD	484	110	10620	1200	.47	12	6	150	174	12	Yes	No	650
XRS186-130Q	748	170	21240	2400	.59	15	6	150	174	12	Yes	No	500
XRS186-130QD	748	170	21240	2400	.59	15	6	150	174	12	Yes	No	500
XRS186-260QD	1584	360	21240	2400	.59	15	8	200	145	10	Yes	No	500
XRS186-520QD	2994	680	21240	2400	.59	15	10	250	87	6	Yes	No	500
XRL186-260QD	88	20	21240	2400	.59	15	n/a	n/a	29	2	Yes	Yes	500
XRS186-520QD	176	40	21240	2400	.59	15	n/a	n/a	29	2	Yes	Yes	500

Specify a required cut size using one of several cutting elements.

XRipper® models 100, 136 & 186 have optional blade widths. The XRS 136 features optional cutting elements in .38" or .54" widths. The XRS 186 or XRL 186 features optional cutting elements in .31", .41" or .63". A width is selected based on the application, solid type and operating conditions.

APPLICATIONS

Our grinders have been widely chosen for handling solids and conditioning liquids in a variety of applications throughout a biogas plant.

RotaCuts are generally placed in front of pumps, digesters and process equipment that are ulnerable to damage by liquids containing hard solids, fragments and debris commonly found in biogas sludge streams.

In many cases, an XRipper® twin shaft grinder can be used to chop a variety of substrate materials, commonly found in biogas applications.

Digester Recirculation

Digester recirculation applications need maceration in order to provide better exposure of the substrates to the bacteria. The RotaCut® is perfect for this application due to its ability to reduce even the most difficult solids.

Whether the slurry contains hair, straw, skins, or hoof blocks, The RotaCut® works like a spinning sheer to handle tough solids.

The RCX Series RotaCut® is ideal for high flow, low head loss recirculation applications requiring an overall robust construction. The RCX has a very large cutting area for its footprint and can be retrofitted into an existing system in a variety of ways.

Substrate Feed

The biogas industry often brings in by-product substrate materials from other industries. Most commonly these substrates are food waste, rendering and fats.

These high energy materials require the proper size reduction and conditioning before being feed into the digester. XRipper® is perfect for most food wastes from apples, potatoes, beets, corn and various other fruits and vegetables. Since XRipper® can run dry, it can work in both wet and dry substrate applications.

A RotaCut® is typically preferred for applications already in a fluid state, that contain stringy fibrous materials or rocks. RotaCut® features a built-in solid separator to keep non-organic materials from entering the digester.

APPLICATIONS

Dewatering Feed

Adding a RotaCut® in front of a Belt Press, Centrifuge or most any other dewatering device protects it from harmful solids and floating solids.

Additionally, the rotating action of the cutting head conditions the sludge into a homogenous suspension that flows evenly into the device. Combined with the pulsation free flow provided by our pumps, the dewatering equipment is fed fully conditioned sludge free of potentially damaging elements.

Digester Feed

Much like feeding dewatering equipment, the RotaCut® is also well suited to prevent heavy objects from entering the digester. In the process, the sludge is also conditioned to a homogenous suspension ready for digestion.

The RotaCut® offers a distinct advantage over twin shaft grinders in feeding applications. The scissor-like cutting action reduces rags, hair and other fibrous objects into fine particles. XRipper®, our twin shaft grinders, tend to rip these solids into longer shredded pieces. The presence of larger solids in the liquid interferes with the process and can cause blockages.

Digester Transfer

Digester transfer is a very good application for the RotaCut®. After primary digestion, if the liquids is sent to secondary digestion or dewatering, RotaCut® can reduce the particle size of the solids contained in the digested liquid.

The RCX powers through thick sludge containing high amounts of heavy solids, grit and other debris that is known to settle in the bottom of digesters.

XRipper® XRL QG

Your low-maintenance, drop-in alternative to Muffin Monster®* & other inline twin shaft grinders.

TWIN SHAFT GRINDING FOR TOUGH APPLICATIONS

Easy Inline Maintenance

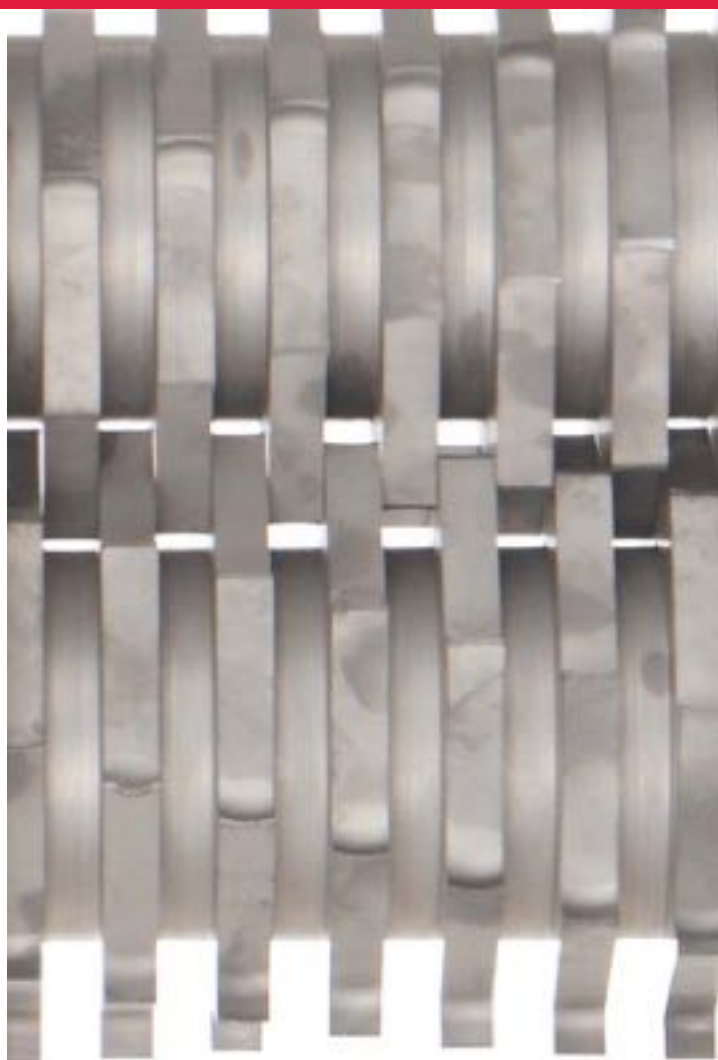
By comparison to a traditional twin shaft grinder, the XRipper® is easy to maintain. Everything can be done inline without removing any connected piping. Simply remove a few retaining hex nuts and the unit can be lifted vertically while the flanges and housing remain connected to the piping.

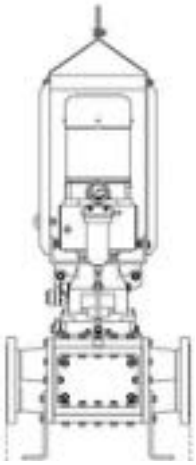
The XRipper's ripper blades are both removed at the same time and come off in solid sections versus individual pieces like ordinary twin shaft grinders. Typical routine service such as changing ripper blades takes only a fraction of the time required to service a typical twin shaft grinder. In addition there are no cartridge style parts that require factory refurbishment.

Quality Construction & Control

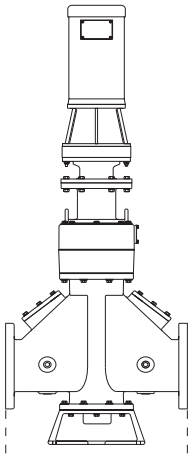
The cutting elements are precision machined as a single piece of steel. They are made from specially processed steel that is formulated to be ductile inside with an incredibly hard outer surface. This creates a cutting element that is highly resistant to impact abrasion while retaining sharp edges for superior cutting performance.

Cutting performance and size can be controlled in two ways. The first method is by the width of the blades. The XRL 136 & XRL 186 allow for optional blade widths which generate different cuts. Finer blade width results in a more reduced solid. The other way to influence cut size is by rotation and higher RPM which produces a finer cut.





XRipper® XRL QG



Muffin Monster® 30004T

XRipper® XRL QG provides higher flow, pressure & torque!

The same compact footprint!

INCREASED GAS PRODUCTION, REDUCED SOLIDS DISPOSAL

If you're looking for a high-performance, low-maintenance alternative to typical twin shaft grinders, XRipper® QG is your answer.

Our grinders have been widely chosen for handling solids and conditioning sludge in a variety of applications. XRipper® QG is used throughout several industries including fisheries, meat processing, vegetable processing, plastic processing, wastewater, recycling and biogas.

The XRipper® QG is generally placed either in front of pumps or in areas where solids need to be cut down to size to prevent plugging. Solids are cut down to size to make solids easier to dispose, transport or process in downstream equipment.

What sets the XRipper® apart from other twin shaft grinders is its unique cutting elements. Traditional twin shaft grinder cutters are stacked up along the shaft, by the factory, using smaller individual blades and spacers to make the entire cutting assembly. The main disadvantage is that the gaps along the sides of the blades enlarge over time due to wear on the cutters and spacers. The enlarged gaps allow movement of the cutting blades and ultimately overall failure or poor cutting performance. The Vogelsang XRipper® cutter is CNC cut out of a single block of steel to the required shape and size. This advantage reduces maintenance, and gives longer overall life to the cutting materials.

Head to Head Specifications:

Vogelsang XRipper® XRL QG vs. Muffin Monster® 30004T

	Flow Rate (gpm)	Flange (in)	Flange to Flange (in)	Centerline (in)	Max Pressure (psi)	Max Force at Cutter Tip (in lbs)
XRL136-200 QG	415	4"	19.25"	9.375"	174	10,620
30004T-1204	400	4"	19.25"	9.375"	90	9,150
XRL136-200 QG	610	6"	21.25"	10.375"	174	10,620
30004T-1206	600	6"	21.25"	10.375"	90	9,150
XRL136-200 QG	835	8"	23.25"	11.25"	174	10,620
30004T-2408	800	8"	23.25"	11.25"	90	9,150
XRL186-260 QG	1240	10"	27.25"	12.31"	145	21,240
30004T-2410	1000	10"	27.25"	12.31"	90	9,150
XRS186-260 QG	1415	12"	31.25"	13.25"	145	21,240
30004T-2412	1200	12"	31.25"	13.25"	90	9,150

XRipper® XRC QD with SIK *(Sewer Integration Kit)*

TWIN SHAFTED GRINDING FOR OPEN CHANNEL FLOW

XRipper® XRC QD with SIK for Wastewater Applications

The heavy concentration of hair, rags and floatable non-organic debris creates the need for a grinder that can perform and last in harsh operating conditions. In wastewater, XRipper® is recommended due to its high flow range, low head loss and overall robust construction.

The XRipper® has a very large cutting area for its footprint and can retrofit into an existing system in a variety of ways. Assembly options include channels, pipe line, or wet-well applications to grind solids down to manageable sizes before passing through pumps or downstream process equipment.

XRipper® is frequently chosen for raw sewage, collection systems, scum and sludge applications in municipal wastewater as well as industrial applications.

Sewer Integration Kit

The XRipper® XRC QD with the Sewer Integration Kit (SIK) is optimal for installation in any wastewater sewer. The SIK positions the XRipper® XRC QD directly in the sewer in various mounting arrangements.

Coarse matter contained in the wastewater, such as textiles, wood, wipes, diapers, and plastic bags, enter the XRipper® XRC QD along with the fluid stream. Here they are reliably ground to smaller particles.

The low speed and high torque allows the XRipper® XRC QD to operate with low drive power. In addition, the XRipper® XRC QD is designed with multiple motor options for these applications. The XRipper® XRC QD is capable of being hoisted out of the sewer for maintenance using the standard integral guide rails.

XRipper® XRC QD with SIK is not your average twin shaft grinder!

Easy Onsite Maintenance

By comparison to a traditional twin shaft grinder, the XRipper® XRC QD is easy to maintain.

The XRipper® ripper rotors are both removed at the same time and come off in monolithic sections versus ordinary twin shaft grinders where you have a separate cutter & spacer assembly.

Typical routine service such as changing ripper blades takes only a fraction of the time compared to servicing a typical twin shaft grinder. In addition, there are no cartridge style parts that require factory refurbishment.

Twin Shaft Solids Reduction for Multiple Applications

The XRipper® XRC QD with the Sewer Integration Kit (SIK) twin shaft grinder effectively reduces large solids to manageable size for further solids reduction or for downstream pumps and equipment to process without clogging or damage.

What sets the XRipper® apart from other twin shaft grinders are the unique cutting elements. Traditional twin shaft grinder cutters are stacked up along the shaft using smaller individual blades and components. The main disadvantage of the traditional design is the complexity of maintenance and high cost of repair. Periodic factory service is required to keep a traditional twin shaft grinder operating efficiently which effects maintenance costs and increases downtime.

The XRipper® features solid ripper rotors that are precision machined out of high quality hardened alloy. They are not built from several smaller pieces like typical twin shaft grinders. Our cutters provide long lasting grinding performance and are easy to replace without removing any connected piping or sending parts back to the factory.

How the XRipper® XRC QD Works

The XRipper® grinds and reduces solids by means of two counter rotating ripper rotors. Each rotates in the opposite direction towards the center of the device. This draws solids between the ripper rotors which effectively grinds the solids as they pass through.

To enhance the grinding effect, one of the cutting elements is rotating slightly faster than the other. The difference in rotational speed enhances the overall ripping and grinding effect of the device.

Typcially, the XRipper® XRC QD with SIK is placed either in front of pumps or in applications where solids need to be cut down to size to make solids easier to dispose, transport or process in downstream equipment.

INCREASED GAS PRODUCTION, REDUCED SOLIDS DISPOSAL

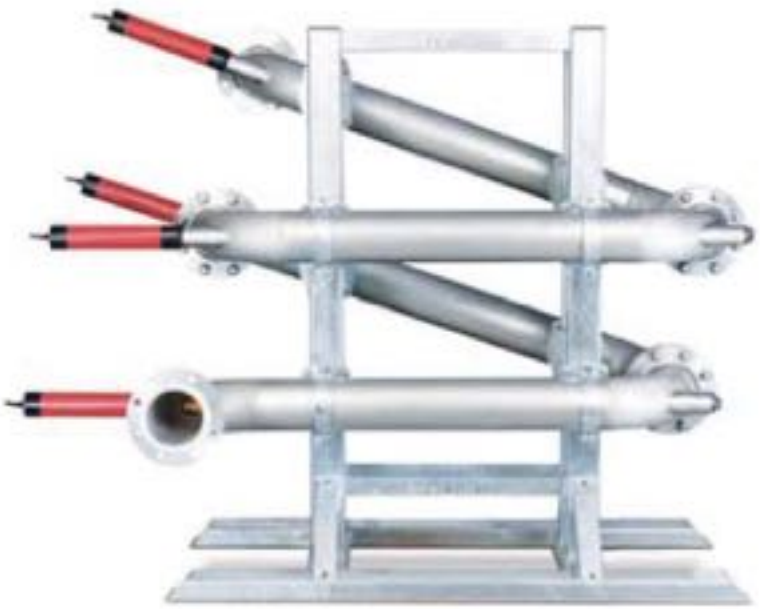
High Voltage Cell Lysing

The BioCrack is a state-of-the art high voltage cell lysing system that prepares the liquid for maximized bio-gas yield and reduces solids content in sludge. The overall system uses mechanical maceration combined with an electrokinetic process that produces a liquid with the highest potential for making biogas and reducing solids compared to conventional slurry handling and reduction methods.

The BioCrack provides the bacteria easier access to the nutrients in the bio-suspension. A high voltage field is generated by the electrokinetic disintegration process within the module. Exposure to the field degrades and breaks the cell walls of the organic matter. As a result, the nutrients within the cells are released to the fermenting bacteria. The result: increased gas yield, better utilization of the substrates and less residual solids to dispose of.

The BioCrack Product Line.

The BioCrack is a highly configurable device that can be worked into countless configurations to maximize space savings and minimize retrofitting. The BioCrack can be installed on a frame as shown below or mounted to an existing structure.



Typical Results.

Adding a BioCrack affects each plant differently depending on the properties of the sludge or slurry.

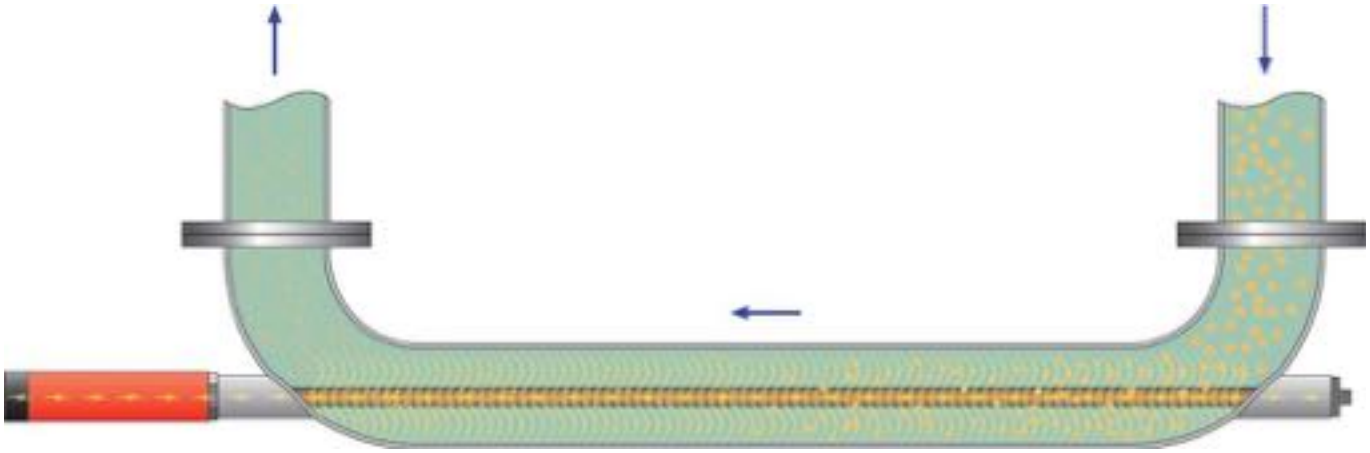
Average Results include:

- Increased Bio-gas yields up to 18%.
- Increased energy production.
- Enhanced digestion with less material consumption.
- Reduced process energy consumed by mixing.
- Shorter and more stable digestion cycles.
- Reduced dry solids content with better dewatering up to 21%.
- Reduced polymer consumption up to 18%.

How the BioCrack Works

The sludge flows through a pipe system with an internal electrical high voltage field. The electric force creates a pulsing effect on the cells causing them to deform and finally rupture.

As a result, the raw material inside the cell is exposed to the bacteria. The enhanced exposure produces more methane gas.
The process also stimulates the bacteria which allows it to perform at higher efficiency.

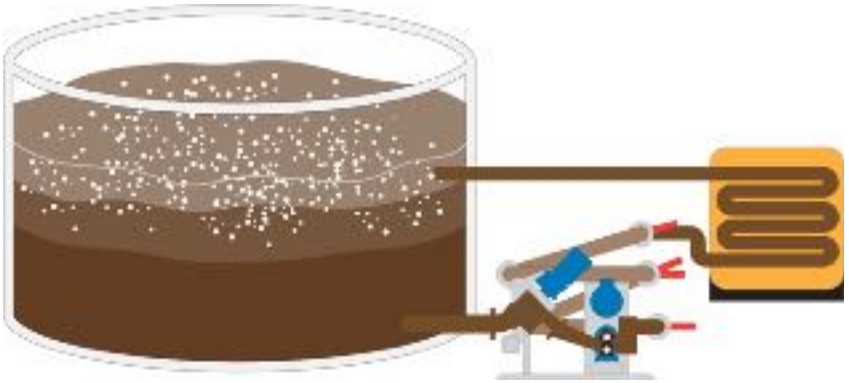


INCREASED GAS, REDUCED RESIDUAL SOLIDS

Where to add a BioCrack?

The BioCrack is primarily designed to enhance the digestion process. It is typically placed between the digester and the heat exchanger or on a thickened sludge feed line.

Sludge is cycled through the BioCrack at predetermined intervals depending the characteristics of the sludge as well as the digester and related components.



Feeding the BioCrack

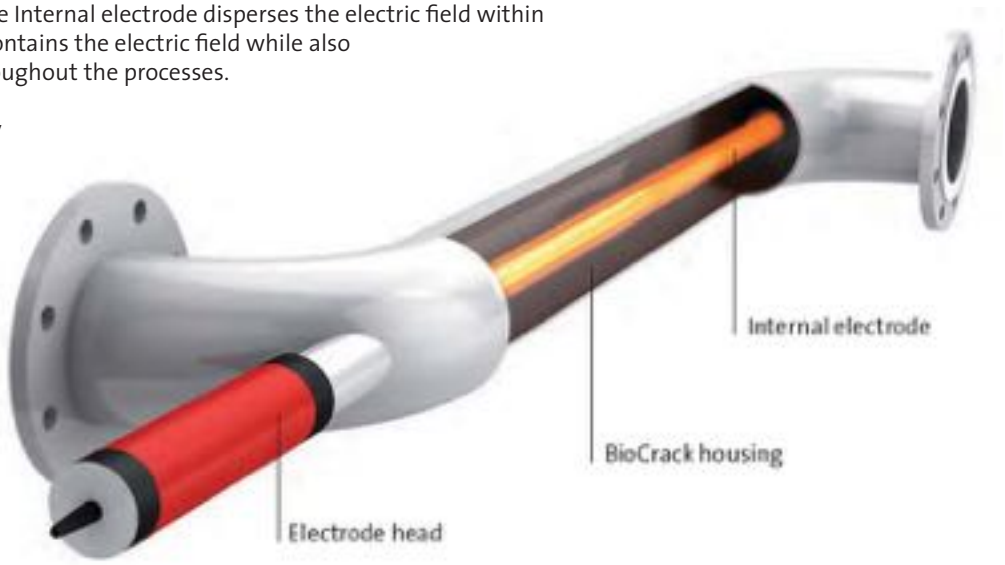
The BioCrack must be fed the sludge by means of a pump. The sludge must also be mechanically conditioned to remove or separate hard solids while also homogenizing the liquid.

For best results, we require a Vogelsang VX Rotary Lobe pump and a RotaCut Inline Grinder to feed sludge into the BioCrack System. This ensures the system is fed at the optimum flow rate and damaging solids are reduced or removed from the liquid.

Components of a BioCrack Module

The BioCrack is made up of three major components. The Electrode head is where the Voltage is converted from 110 to over 1,000. The Internal electrode disperses the electric field within the tube housing. The tube housing contains the electric field while also containing and feeding the liquid throughout the processes.

The electrodes are controlled either by individual panels or can be wired together into a common control panel. The panel can also be configured to control the RotaCut and Pump as well. The BioCrack requires a feed pump and a RotaCut inline grinder. Solids must be reduced in order for the process to work effectively.



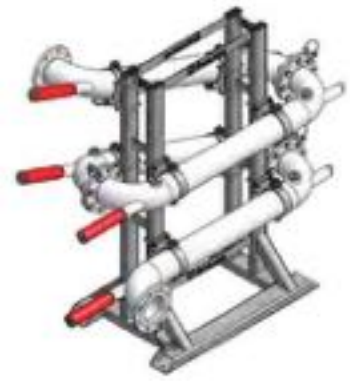
BioCrack Performance Specifications:

Model	Dimensions l/w in	l/w mm	Power Required Watts	Voltage	Max Solids %	Flange Size in	mm	Max Pressure psi	bar	Material Stainless	Capacity* gpm	m3/h
U-Style Pipe	81x13	2053x326	35	110v, 60hz	8	6	125	73	5	316	352	80
S-Style Pipe	81x20	2053x492	35	110v, 60hz	8	6	125	73	5	316	352	80
90° Left Flange Pipe	81x20	2053x326	35	110v, 60hz	8	6	125	73	5	316	352	80
270° Right Flange Pipe	81x20	2053x326	35	110v, 60hz	8	6	125	73	5	316	352	80

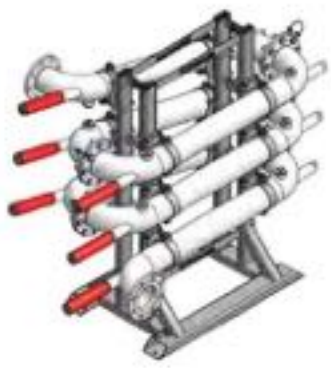
*Max Flow rate varies based on the solids percentage.

BioCrack Configurations

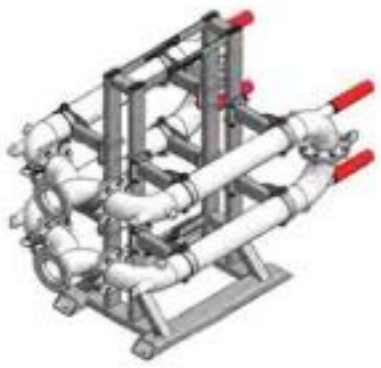
The BioCrack can be set up in a variety of ways. Using our assembly frame, up to six pipes can be mounted together. The number of pipes is determined by the characteristics of the sludge and digestion process. Each plant is different thus, many options are available to achieve the best results.



BioCrack 4 Pipe Assembly



BioCrack 6 Pipe Assembly



BioCrack 4 T-Pipe Assembly

VOGELSANG
ENGINEERED TO WORK

Our company

Innovation and progress have been hallmarks of Vogelsang for over 80 years and have made us a leading designer and manufacturer of pumping, solids handling and process products. Time and time again we have achieved significant milestones of innovation and product development. Today, we manufacture some of the most innovative and reliable products for municipalities, industry and agriculture.

Our products are proudly made and assembled in Ravenna, Ohio, USA.

Vogelsang Products are Proudly made in the USA

Our product range

We offer solutions for the following areas:

- Industry & Processing
- Wastewater treatment
- Biogas
- Railway wastewater disposal
- Agriculture

We offer a broad range of products:

- Rotary lobe pumps
- Grinding 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:

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7966 State Route 44 • P.O. Box 751
Ravenna, Ohio 44266, USA

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Part #USL.0004 Rev. H2015

vogelsangusa.com

RotaCut®
Inline macerator cuts and separates damaging solids suspended in liquid process stream.

BioCut®
Pump & RotaCut® combines the power of both products into one compact unit.

XRipper®
Low-maintenance, drop-in alternative to other inline twin shaft grinders.

HiFlo® Rotary Lobe Pump
Designed to handle viscous liquids and tough solids.

RotaCut® RCX48 & RCX58
Inline macerator offers higher pressure, lower headloss and maximum solids reduction.

QuickMix®
Dry Solids & Slurry Mixing System creates optimum slurry mixtures for maximum gas output.