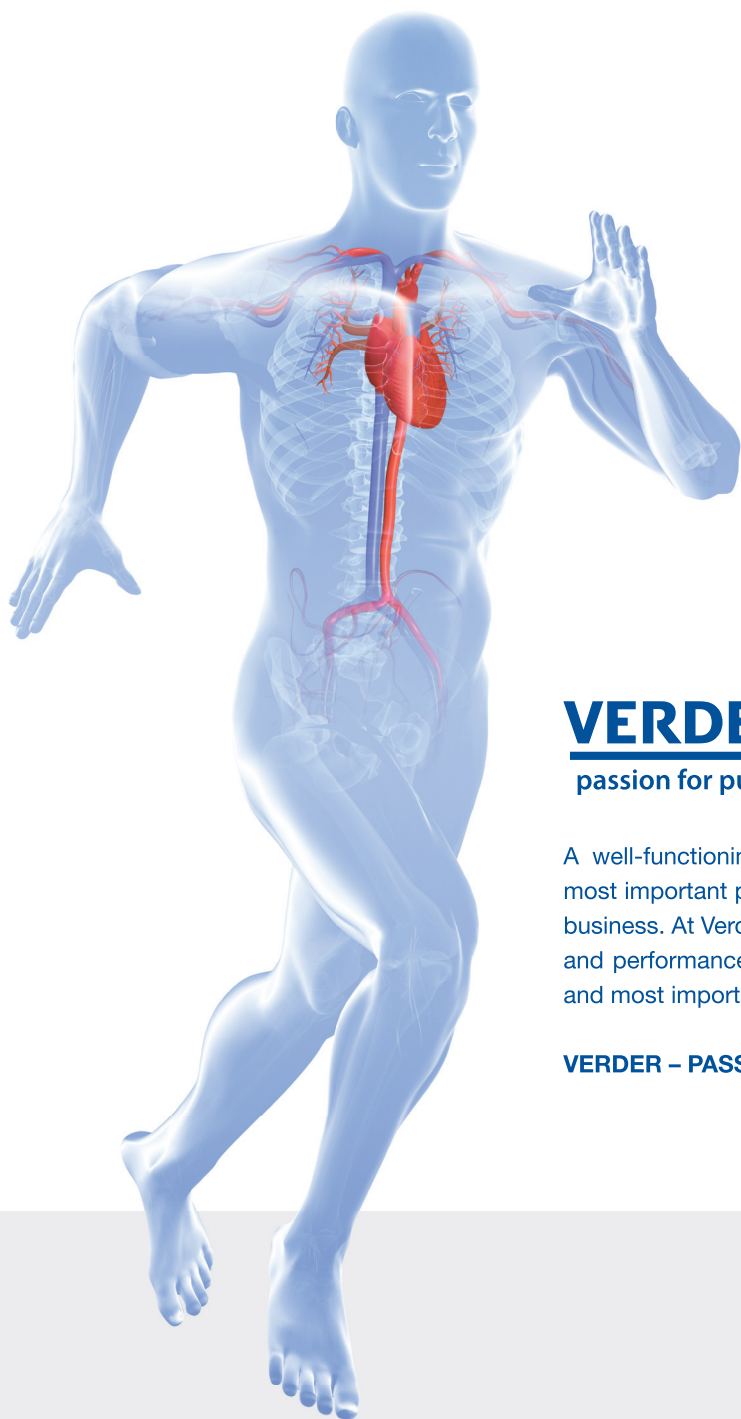




VERDERMIX® PRODUCT **OVERVIEW**

Static mixers | Dynamic mixers



VERDER
passion for pumps

A well-functioning pump helps you succeed. That applies certainly to the most important pump in life, the human heart, but the same goes for pumps in business. At Verder, all energy and attention is focused on improving the quality and performance of our pump and service. We do so with energy, dedication and most importantly, with our heart.

VERDER – PASSION FOR PUMPS



The Verder Group

*1 Company
26 Countries
55 Years of expertise
Global network
Local distributors
In-house service & maintenance
A solution for every application*

The Verder group is a family owned business formed over 55 years ago in the Netherlands; the group consists of a worldwide network of production and distribution companies. Group companies are involved in the development and distribution of industrial pumps, pumping systems, and high-tech equipment for quality control, research and development into solid material (solids sample preparation and analytical technologies). The Verder Group employs over 1.750 people worldwide.

Packo Inox NV

With more than 50 years of experience, Verdermix has built up a broad customer base worldwide and knowledge of mixing processes of fluids and gases. Since April 2016 Verdermix has become a brand of Packo Inox NV. Packo is a well-known partner for many companies active in different industries and an innovative manufacturer of stainless steel components and installations for sanitary applications as well as production processes. Packo Inox NV is a part of the Verder Group.



VERDERMIX

Verdermix static and dynamic mixers are ideal for handling all kind of liquids and gases, from low to high viscosity, with or without solids and available in many different metal and plastic configurations. All mixers come with a “process guarantee”. Every mixer/agitator is specified according to a customer's exact requirements with the size, material, impeller type, motor requirements etc. We believe this gives the customer a first class product with the best of a customized solution built with expertise and the good value of using the modular-type build from stock parts for a competitive offer.

Verdermix mixers are designed and built in-house in the Packo manufacturing facility to guarantee the quality finish expected of a product from Packo Inox NV. Moreover, Verdermix is strongly committed to research and product development in key industrial sectors and to further develop our knowledge of mixing processes.

Some of the many advantages of working with Verdermix

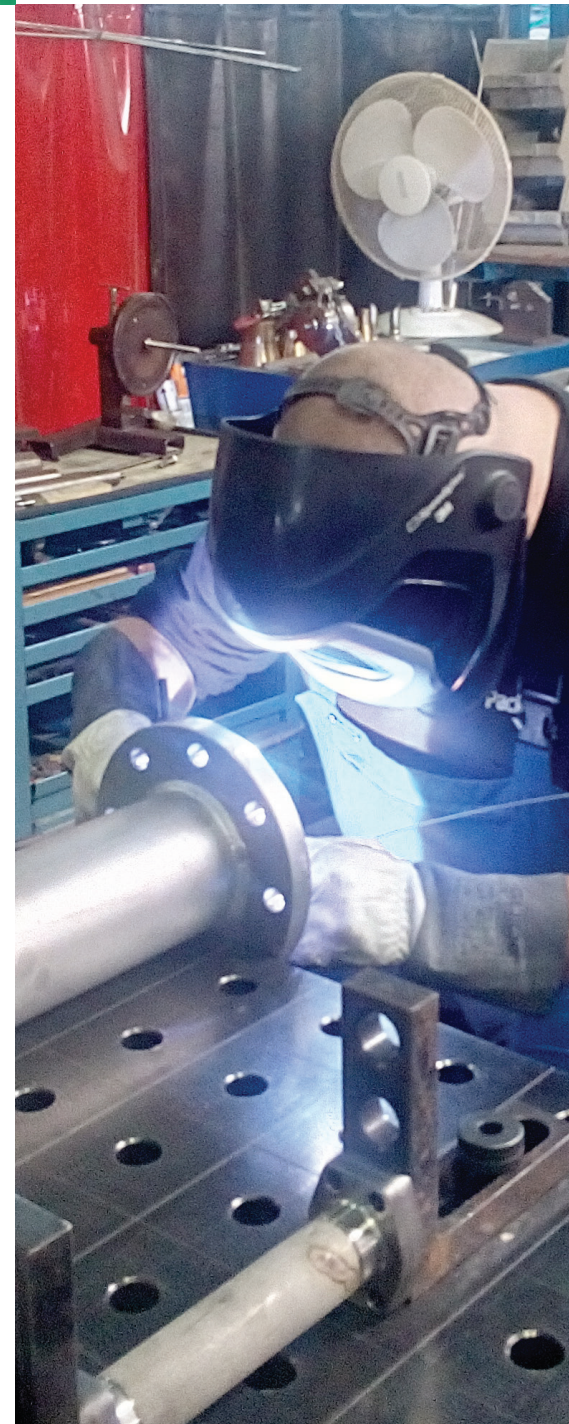
High quality products

Verdermix mixers perform better in many ways than our competitors. The maintenance free design, choice of high quality materials, service, knowledge of the market and a high level of finishing make this difference. These are some distinctive features that make our competitors jealous.

Single source solutions

Verdermix offers a single source for both static and dynamic mixing solutions. We design, manufacture and distribute a complete line of custom made agitators and static mixers. We have all the expertise in house to pickle or electro polish your stainless steel mixer for a better resistance against corrosion and for a better cleanability. Furthermore our factory is certified ISO 9001:2008 and ISO 14001.





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VERDERMIX[®]


Verdermix Static mixers

Verdermix Static mixers are ideal for handling all kind of liquids and gases “in-line”, from low to high viscosity and with or without solids. Our static mixers are available in different metal and non-metallic configurations for compatibility with chemicals, CIP and SIP processes and hygienic and sterile environments. Verdermix had developed a standard modular system to produce a mixer that is specific to your process, is quick to produce and ensures a long service life. The Verdermix design is optimised for delivering turbulent mixing forces and minimizing the drag and 'energy loss' in the system.

Verdermix VMV Series

These are the standard series of Verdermix static mixers. The VMV series contain the most applied mixing element shape in the world; which is the helical shaped mixing element. This mixing element has unique characteristics and a proven track record. The elements are fixed inside the tube. Also available with jacket (double piping) for heating or cooling.

Technical details




Type of elements	Helicals
Number of elements	Minimum 2 - maximum 24
DIN-size	In stainless steel or other metals: <ul style="list-style-type: none">• From DN4 to DN800- other sizes on request * From DN125: elements are made from flat strips, welded together In PVC, PE, PP, PVDF: <ul style="list-style-type: none">• From DN15 to DN150 - other sizes on request * From DN125: elements are made out of flat plate
Materials	SS304, SS316, PVC, PE, PP, PVDF - other materials on request
Connections	Flanged DIN, ASA or screwed connectors, sockets, plain end, other on request.
Surface treatment	Pickled (standard) - On request: Electropolishing

Verdermix VML Series

Similar to the VMV series, apart from the elements; they are mounted within the piping providing easy removal for thorough and easy cleaning or unclogging. Also available with jacket (double piping) for heating or cooling.

Technical details



Type of elements	Helicals
Number of elements	Minimum 2 - maximum 24
DIN-size	In stainless steel or other metals: <ul style="list-style-type: none">• From DN4 to DN800 - other sizes on request * From DN125: elements are made from flat strips, welded together In PVC, PE, PP, PVDF: <ul style="list-style-type: none">• From DN15 to DN150 - other sizes on request * From DN125: elements are made out of flat plate
Materials	SS304, SS316, PVC, PE, PP, PVDF - other materials on request
Connections	Flanged DIN, ASA or screwed connectors, sockets, plain end, other on request.
Surface treatment	Pickled (standard) - On request: Electropolishing

Verdermix VMS Series

This type of static mixer is intended for the food and pharmaceutical industries designed with a perfectly cleanable construction. The element is retractable for thorough cleaning. All wetted parts are electro polished and meet the hygienic standards according to regulation 1935/2004/EC and FDA. Also available with jacket (double piping) for heating or cooling. Not available in X or V shape (in regards to cleaning).

Technical details

Type of elements	Helicals
Number of elements	Minimum 2 - maximum 12
DIN-size	• From DN8 to DN800 – other sizes on request. *From DN125: elements are made from separate strips, welded together
Materials	SS304, SS316
Connections	All common hygienic connections
Surface treatment	Electropolished

Verdermix VMX Series

For certain applications, Verdermix is offering a better alternative: the Verdermix VMX static mixer. For very high viscous media and laminar flow applications the VMX is the way to go!

Technical details

Type of elements	X-shape
Number of elements	Minimum 2 - maximum 24
DIN-size	From DN17 to DN 300
Materials	• Elements only available in SS316 • Housing available in other materials
Connections	Flanged DIN, ASA or screwed connector
Surface treatment	Pickled (standard) - On request: Electropolishing

Verdermix VMW Series

These series are especially designed for certain low viscous applications, for fluids and gases, and fluids in combination with gases. The 'V'-type mixing element is ideal for mixing/dispersing gas(es) into low viscous fluids. For low viscosity media and turbulent flow applications, the VMW is the way to go!

Technical details

Type of elements	V-shape
Number of elements	Mostly between 2 and 6 elements
DIN-size	From DN17 to DN 300
Materials	• Elements only available in SS316 • Housing available in other materials
Connections	Flanged DIN, ASA or screwed connector
Surface treatment	Pickled (standard) - On request: Electropolishing





VERDERMIX®

Working principle

Helical elements

The static mixer uses a small part of the pump energy that is readily available in your process line. Mixing is accomplished in three ways:

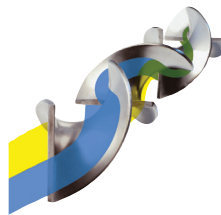


1. Flow division

Each time a product stream passes over an element, it is split in half, separated, creating layers.

The number of separations, $X, =2n$ (n =number of elements).

This means that with 20 elements in line more than 1 million layers are created.



2. Flow conversion

The product is pushed over the elements, spiral walls, causing the liquid in the centre to move radial to the outer diameter and the product on the outside to move vice versa. This leads to a difference in speed between the product molecules causing mixing of the product.



3. Flow inversion

The product direction of rotation changes in each element, receiving rapid inversion of inertial force, which agitates the product.

X-shaped elements

These X-shaped elements are especially designed for mixing and/or dispersing all kinds of (high) viscous media. In almost all cases it concerns a laminar flow. The media is continuously split, stretched, transported from the inside to the outside of the pipe diameter and vice versa. Each mixing element is placed, in line, under a 90 degree angle in relation to the previous mixing element. Due to the strong cross stream velocity gradients, the additive is sheared, as it passes through the mixing element. This results in continuously finer striations till it is 'homogeneous' mixed.

V-shaped elements

The V-shaped elements are especially designed for dispersing low viscous media such as gas and ideal for applications that require a homogeneous mixing and blending action in the turbulent flow regime.

The mixing elements consist of intersecting corrugated plates and channels that encourage rapid mixing in combination with plug flow progression. The elements are welded together, 90° turned to create an element string.

Thanks to these multi-layered 'V' shaped metallic (corrugated) plates, small sized bubbles are formed. Creating a very large contact area between the media that have to be mixed (fluid or gas). The bubbles are of a consistent size and evenly spread over the entire pipe diameter and the mixing length.

The number of elements depends on various factors and consist mostly between 2 and 6 elements, sometimes with a spacer in between them. Any number of additives can be mixed at the same time within the mixing zone.





VERDERMIX[®]

Advantages Verdermix static mixers

- High mixing efficiency
- Low energy consumption
- Low investment costs
- Custom design to meet specific requirements
 - Easy to install
- No need for a tank (inline mixing process)
- Robust and maintenance free
 - Available in all sizes

Applications Verdermix static mixers

Static mixers provide precise blending and dispersion, from low viscous to high viscous fluids, without utilizing moving parts. The different types of the Verdermix Static Mixers are being used in numerous processing applications and reduce your overall cost and significantly improve your efficiency.

Application areas

- Food
- Blending of different media
- Mixing catalyst
- Polyelectrolyte in waste water
- Aromas
- Paint & Lacquer/Dyes
- Media with high solids concentration
- Pharmaceutical
- Hygienic applications
- Sterile applications
- CIP or SIP
- Extremely high viscous media

Water treatment

- Diluting polymers and blending diluted polymers into the (waste) water stream
- Mixing water with chemicals, eg acids and/or caustics, for neutralization processes
- Blending water streams of different natures into one homogeneous stream
- A sizeable number of large mixers (750 mm diameter) have been supplied for city heating tubes. In this application, water streams of differing temperatures are blended into one stream of consistent temperature for accurate measurement.

(Petro) Chemical Industry

Verdermix supplies metallic mixers with chemical resistant coating or with (conductive) PTFE lining. Suitable for aggressive media, still withstanding high pressures and high temperatures.

Food, dairy & beverage Industry

- Blending ingredients and aromas with drinking yoghurts, soft drinks, smoothies, fruit juices, etc.
- Adding CO₂ to fruit juices, wine, beer, etc.
- Dilution of liquids and concentrates
- Adding thickening and stabilizing products in dairy business

Water & Wastewater Treatment

- PH control with acids or bases
- Diluting and adding flocculants
- Dissolving CO₂, O₂, Ozone, Cl₂ into water
- Blending water streams of different natures into a homogeneous solution
- Aerate drinking water

Paint & Chemical Industry

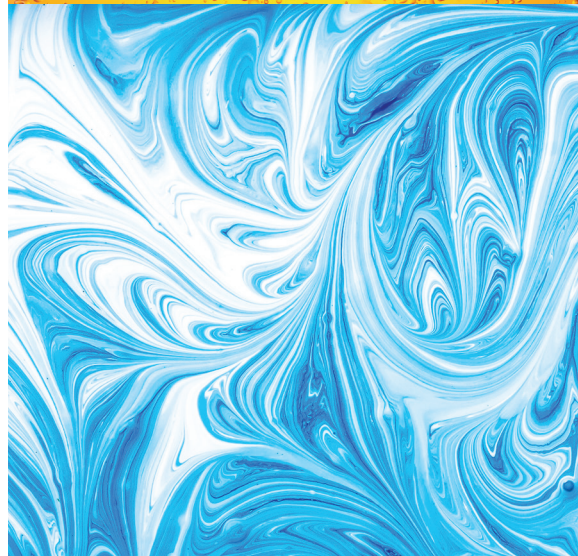
- Applications for paint and lacquer dyes
- Dispersing immiscible liquids in washing and extraction operations
- Mixing gases with air in front of catalytic reactors f.i. Nitric Acid production
- Mixing media with high solids concentration

Oil, Gas & Petrochemicals

- Blending crude oil from various storage tanks as well as blending additives into gasoline, lubricating oils, etc.
- Mixing aggressive media at high pressure and high temperature
- Catalyst applications
- Dissolve gases into liquids such as NH₃, SO₂, Cl₂

Pharmaceutical and biotech applications

- Contact Verdermix to get an answer on the most demanding mixing applications to the highest standards!





VERDERMIX[®]

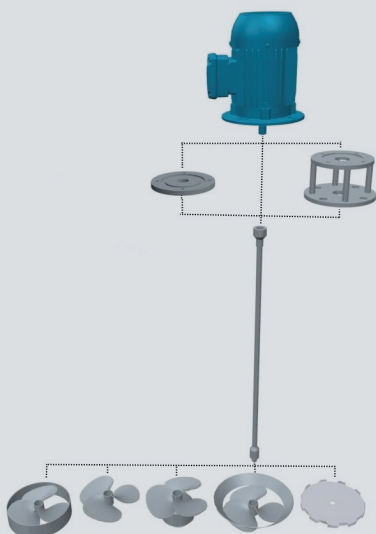
Verdermix Dynamic mixers

Verdermix dynamic mixers/agitators are ideal for handling all kind of liquids, with low or high viscosity, with or without solids, for small or very large tanks. A range of radial/axial impellers for circulation and blending are available. The Verder specification and design aims to prevent 'dead spots' and sedimentation occurring at the lower and side areas of the vessel. Options include direct driven mixers or gearbox driven mixers, with or without a preferred sealing device. The drive and shaft system are extremely robust for a stable and reliable operation. The materials of the "wetted parts" will be adapted to process needs such as compatibility with corrosive and/or abrasive fluids. Verdermix dynamic mixers are used in many industrial applications such as wastewater treatment, food and beverage production and chemical processes.

Direct driven dynamic mixers

Verdermix VNF-series

The VNF-type can be considered as entry model. It is an economical mixer with standard motor dimensions (IEC), deliverable according to local motor legislation.



Technical details

Options	Bearing lantern, sealing lantern with a mechanical seal lip seal or stuffing box, chemical resistant coating.
Additional	Fixed or portable stands can be constructed to meet customer specifications and requirements.
Shaft speeds	Between 750 and 3000 rpm
Shaft length	Up to 1700 mm
Mixing elements	PS (foldable) - L - PSL - Z - RB

Verdermix VSM-series

This type of agitator uses a special electric motor with a hollow motor shaft. The robust mixer shaft is fixed with both a conical and a cylindrical fit. Due to the hollow shaft construction the bearings are over dimensioned. A robust and stable design; a perfect construction for heavy duty applications.

Technical details

Options	Sealing lantern with a mechanical seal, lip seal or stuffing box, chemical resistant coating.
Additional	Fixed or portable stands can be constructed to meet customers specifications and requirements.
Shaft speeds	Between 750 and 1800 rpm
Shaft length	Up to 2500 mm
Mixing elements	PS (foldable) - L - PSL - Z - RB

Indirect driven dynamic mixers

The indirect driven mixers are equipped with an electric motor driven gearbox. These types of mixers are an excellent choice when mixable products require blending with a great care and intensity. A perfect combination of shaft speed and mixing blade size is of the utmost importance in processes of this nature.

Verdermix VFG-series

This type has a parallel shaft gearbox.

Technical details

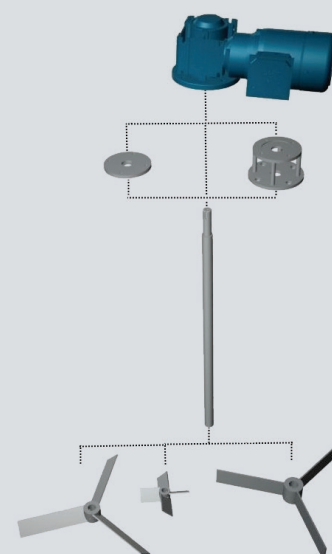
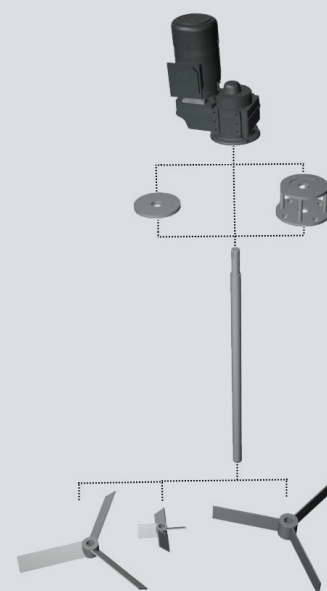
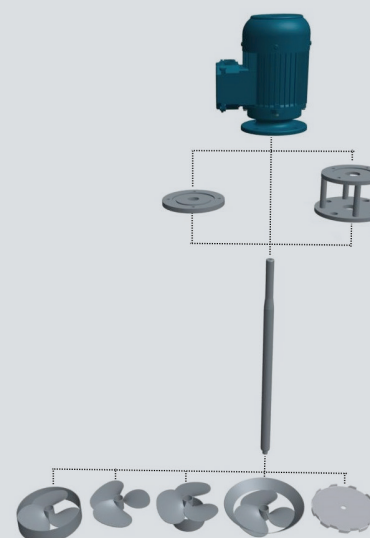
Options	Bearing lantern, sealing lantern with a mechanical seal, lip seal or stuffing box, chemical resistant coating.
Construction	Parallel shaft gearbox (VFG)
Shaft speeds	Between 15 and 350 rpm
Shaft length	Up to 3000 mm
Mixing elements	PB2 - PB3 - PB4 bladed

Verdermix VKG-VWM-series

This VKG-type is equipped with a helical bevel gearbox and the VWM-type with a Worm gearbox.

Technical details

Options	Bearing lantern, sealing lantern with a mechanical seal, lip seal or stuffing box, chemical resistant coating.
Construction	Helical bevel gearbox (VKG), Worm gearbox (VWM).
Shaft speeds	Between 15 and 300 rpm
Shaft length	Up to 2000 mm
Mixing elements	PB2 - PB3 - PB4 bladed (removable)





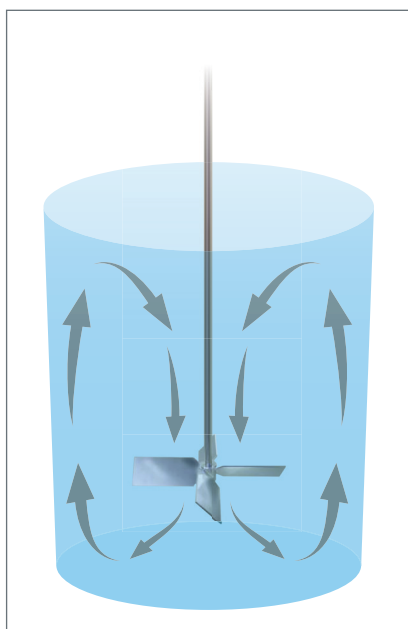
Working principle

The Verdermix stainless steel axial and radial flow impellers are suitable for various mixing applications in all kind of industries. Both type of impellers are specifically designed in order to generate a typical flow pattern. With an axial flow impeller the liquid will run parallel to the blade while a radial flow impeller will show in general a perpendicular flow pattern.

The dynamic mixers are installed in mixing tanks for mixing f.i. 2 different kind of liquids, solids in liquids, powder in liquids, etc.

Axial flow:

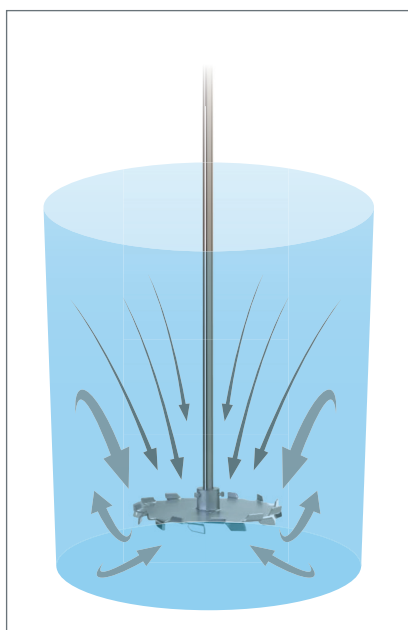
Axial flow impellers will generate a flow pattern parallel to the impeller shaft generating more flow and less shear so important for shear sensitive applications. They create top to bottom motion into the tank.



Axial Flow

Radial flow

Radial flow impellers will discharge fluid to the vessel wall in a horizontal or radial direction generating less flow but higher shear. They move liquids and / or solids to the wall of the mixing tank.



Radial Flow



Examples of axial flow impellers



Example of radial flow Impeller



VERDERMIX[®]

Advantages Verdermix dynamic mixers

- Robust
- Stable
- Prompt delivery time
- Modular system
- Easy assembly
- Simply modified for custom applications
- Suitable for almost all industrial applications

Applications Verdermix dynamic mixers

Verdermix designs and manufactures a complete range of dynamic mixer types to meet processing needs across all industries.

The selection of the best dynamic mixer with the correct impeller type will not only depend on the product viscosity, tank design, position of the mixing device, etc.

A lot more parameters have to be taken into account. Contact our team of engineers to help you selecting the right mixer for your application!

Application areas

- Neutralisation in wastewater plants
- Coagulation in wastewater plants
- Homogenisation of low viscous fluids
- Wastewater treatment
- Confectionery industry for continuous operation at high speeds in hot and viscous cacao mixtures
- Mixing fluids of higher viscosities
- Heavy duty applications
- Flocculation treatment
- Reactor vessels
- Homogenisation of solids in liquids

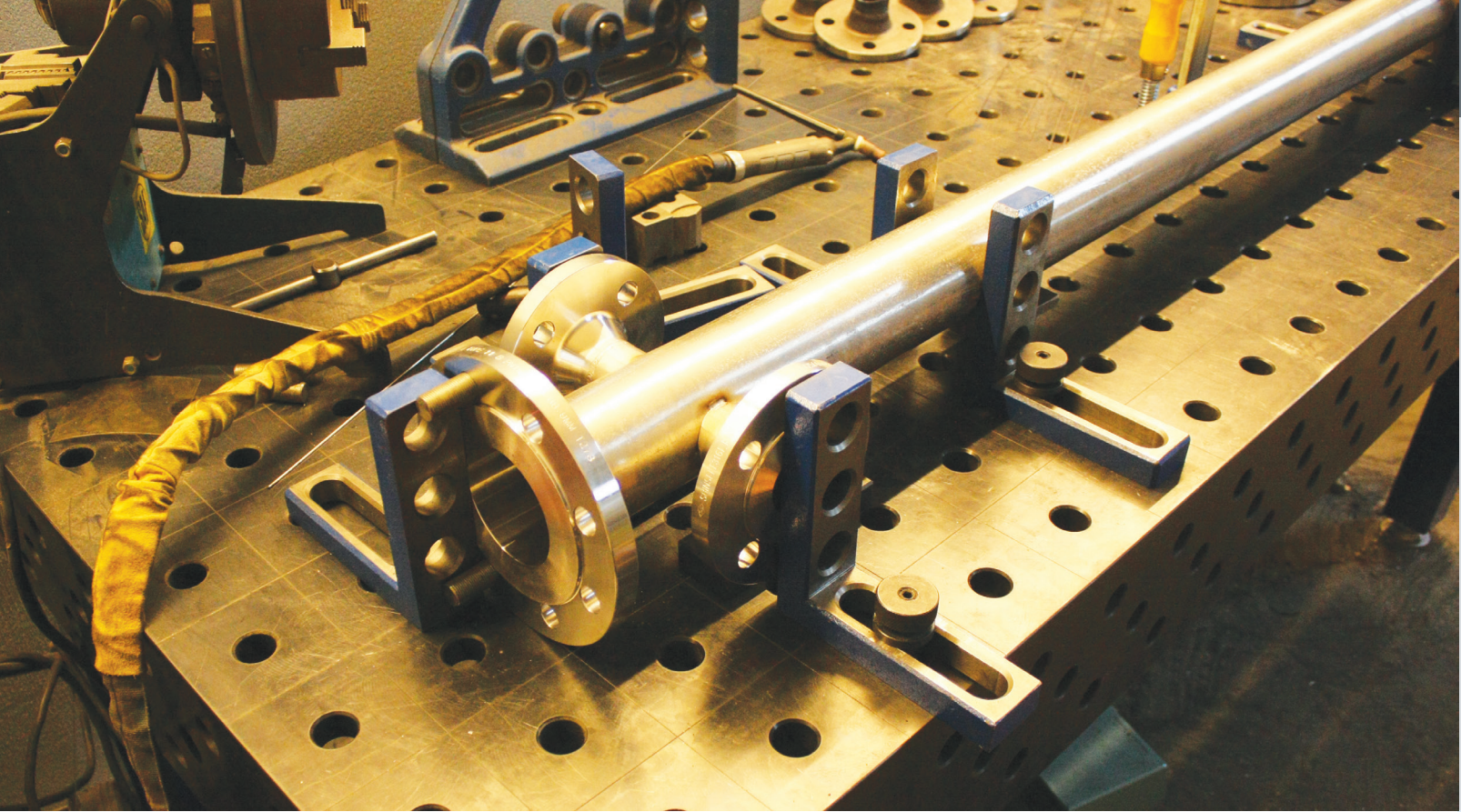
Neutralisation of wastewater

In many wastewater treatment plants the water is neutralised by adding caustics and/or acids. By using high speed agitators, eg VNF or VSM, this process will be completed effectively and efficiently. Because the shaft coupling is omitted, type VSM can easily be protected from chemical attack by using a nonferrous-lining or chemical resistant coating over the shaft and mixing elements. The motor bearings can be protected by a non-metallic flange in combination with a sealing ring.

Optimisation of surface contact area in flocculants

In flocculation tanks, it is desirable to optimize the surface contact area of flocs and the particles in the treated liquid. However, the floc must not be damaged due to high tip speed. Type Verdermix VFG is ideal for such applications.





Verder service

*Verdermix stands for a high quality product combined with a high quality service!
Our fast deliveries ensure a quick operational production process.*

*Do you need more information about recommended spare parts or do you need
technical information about mixers you have purchased in the past?
Please contact: sales@verdermix.com*

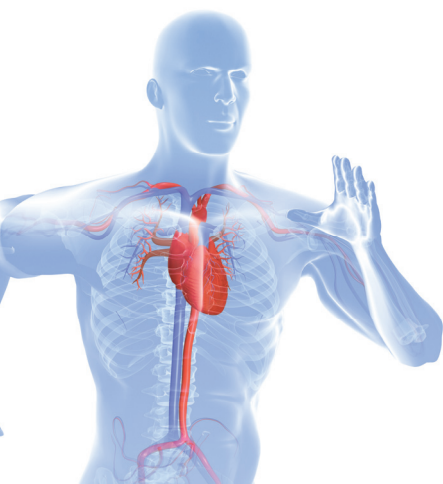


Contact Verdermix

To provide you with the best possible service, Verdermix Static and Dynamic mixers are marketed and distributed globally through the Verder-network as well as experienced independent companies.

*If you would like to know more about us, then please visit our website:
www.verdermix.com.*





If you would like to know more about Verdermix Static and Dynamic mixers then please visit our website www.verdermix.com where you will find the full breakdown of our Verdermix range as well as application stories, latest news and technical datasheets.

Packo Inox NV
Cardijnlaan 10
B-8600 Diksmuide
Belgium

TEL +32 (0)51 51 96 79
MAIL sales@verdermix.com
WEB www.verdermix.com

AT Wien **BE** Aartselaar/Diksmuide/Zedelgem **BG** Sofia **CN** Shanghai **CZ** Praha
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