New BIO-Mix 200: Powerful pump for large biogas plants

Pumpenfabrik Wangen GmbH has expanded its product range: the BIO-MIX 200 pump powerfully conveys substrate to the fermenter

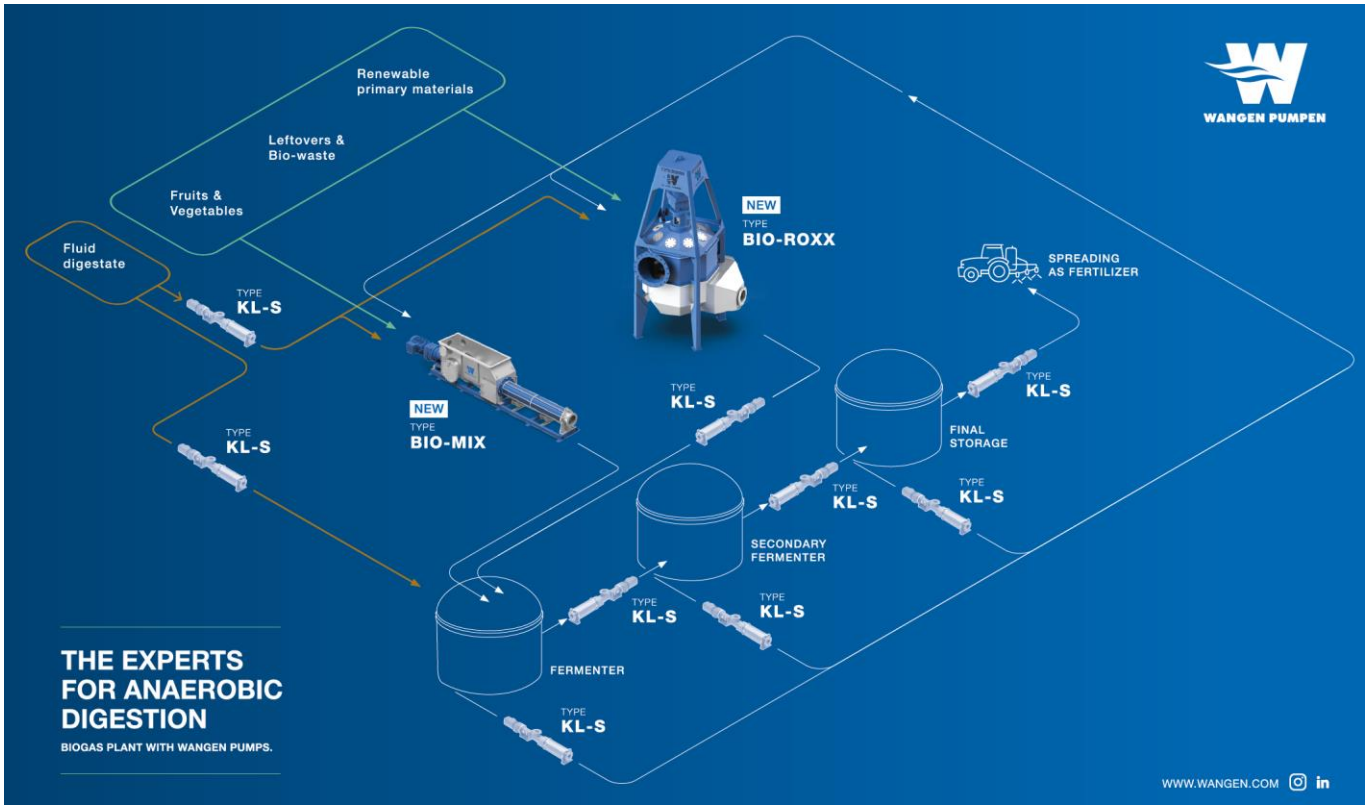
The BIO-MIX 200 conveys media to fermenters in biogas plants or in plants for anaerobic fermentation processes. This media is then mixed in the pump with liquids, such as bovine manure or slurry. In a comparative test operating at 150 cubic metres per hour, the pump achieves the highest flow rate in this pump class coupled with a higher pressure. The robust and durable pump works within a large viscosity range, reliably pumping hydrophobic, abrasive and fibrous components, and boasting a long service life. This future-centric product is therefore a useful addition to the Pumpenfabrik Wangen pump range for the biogas sector.

The WANGEN BIO-MIX 200 has a flow rate of 150 cubic metres with a maximum pressure of 8 bar

The demand for regenerative energy is increasing worldwide and correspondingly so are the demands on energy generation: today, biogas plants, for instance in the USA and Brazil, are larger, have a bigger capacity, and are more seriously industrialised than even a few years ago. And, in Europe too, high-performance pumps for biogas plants are increasingly sought after. Wangen Pumpen has now responded to this demand and is expanding its existing BIO-MIX range with a powerful pump capable of delivery rates of up to 150 cubic metres per hour.

Reliably transporting solids to the fermenter

The BIO-MIX 200 pump is designed to reliably transport variable solids to the fermenters. The manufacturer WANGEN PUMPS has developed a process for this, in which the fermenters are variably fed with liquid feed. Spigots on both sides of the pump enable liquid to be fed in for mashing, as required – with the entire hopper chamber being used as a mixing chamber. The hopper feed pump is generously sized and is easy to fill. There is sufficient clearance along the entire length of the hopper for contaminants to be diverted and removed through the service openings. Moreover, the robust rotor comes in a range of different geometries. Overall, the entire pump is designed to restrict wear and maintenance to a minimum.



Test operation successfully passed

Since 2014 in the Northrhine-Westphalian town of Dorsten, TerraSol Wirtschaftsdünger GmbH has been operating a biogas plant, which annually recycles 195,000 tonnes of regional farm manure – predominantly slurry and manure – from the Münsterland region. The annual output of the plant is around 65 gigawatt hours, with around 75% of the raw gas being treated on site and fed into the local natural gas grid as biomethane. The Wangen Bio-Mix 200 has been undergoing testing here since April 2024. Solids are fed to the pump through the hopper and mixed there with liquid from fermenters, post-fermenters, or slurry tanks. Only then is the mixture transported to the fermenter. This ensures that the mixture is properly mixed and there is less need for stirring in the fermenter – a key factor in saving energy. Operations

Manager Lars Heermann: “We are very happy with the pump – large pumps, quiet nights.” He considers the benefits of the pump to be, above all, its high throughput rate of up to 21 tonnes per hour, its large ball passage, and its tolerance to varying substrates with different moisture content. In short: “After a two-week test phase, it was clear that the pump would stay.” It transports the media with ease even over long sections and large differences in height within the plant. The BIO-MIX 200 is thus future-proof. After all, in addition to its high flow volume at high pressure, these are essential criteria when it comes to expanding or repowering biogas plants.

Successfully tested at the TerraSol biogas plant in Dorsten

Technical data for the Bio-Mix 200

ITEM	Technical data
Delivery volume	150 m3/h
Pressure	Bio-Mix 200.0 - 4 bar Bio-Mix 200.2 - 8 bar
Substrates	All biogas substrates
Ball passage	150 mm
Dry matter content	18% dry matter at the pump outlet
Solids volume (depending on the dry matter content of the substrates)	~ 20 t/h with maize silage ~ 15 t/h with cattle manure ~ 3-4 t/h with pure straw (density: 0.2 t/m³)
Power consumption	Bio-Mix 200.0 – 45 kW Bio-Mix 200.2 – 55 kW

About Wangen Pumpen

Pumpenfabrik Wangen GmbH, with its headquarters in Wangen in the Allgäu region of Germany, is a machine and plant construction company and a provider of high-quality displacement pumps for industrial applications. Its product range includes progressing cavity pumps and twin screw pumps for use in various sectors: food and beverage production, environmental and sewage technology, biogas and agricultural technology, the chemical and paper industry, pharmaceuticals, cosmetics or shipbuilding. Since it was founded in 1969, Wangen Pumpen has grown from a smaller trade operation to become a mid-sized company employing around 280 people.

The manufacturer of industrial pumps has been part of the Power Technique business unit of the Swedish Atlas Copco Group since 2022.

www.wangen.com

Text and photo source: WANGEN PUMPEN and TerraSol Wirtschaftsdünger GmbH, 2024