jbs progas® e + e xf

Exploit your substrate's gas potential more efficiently

Many substrates have a high content of vegetable cellulose substances. Cellulose substances encase utilizable nutrients (so-called cage effect), thus rendering them temporarily unavailable for energy generation.

For each of the cellulose wall's components, there is a special enzyme – like cellulase for splitting up cellulose, pectinase for pectin degradation etc. The bacteria in the fermenter require time to produce their own enzymes for fibre degradation. It is, however, uncertain whether the fermenter's microbiological stock will provide a sufficient amount of all the necessary enzymes.
Selected enyzmes in our **jbs progas® e** products support the bacteria in speeding up the „breakup" of cellulose substances. Cellulose and others are split into single sugar molecules, preparing them for their further transformation from fatty acids to methane.

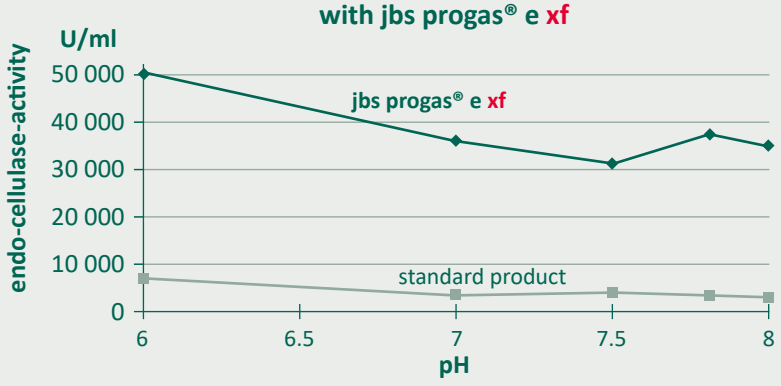
The daily application of enzymes intensifies the degradation of vegetable cellulose substances during the stage of hydrolysis. Cellulose substances participate in the development of swimming layers, the accumulation of solids in places the stirring unit cannot reach and the development of sinking layers. Using enzymes has positive effects on the viscosity in the fermenter. The amount of energy needed for stirring and pumping as well as the wear and tear of the technology involved is significantly reduced.

jbs progas® e for maize-dominated feeding rations	**jbs progas® e xf** for fibrous rations (grass silage, solid dung, whole plant silage)
Application add 20 - 25 ml/tonne of solids/day (without liquid manure) to your fermenter (using the solids dispenser, for example)	
Packaging 25 kg = 21.9 litres	**Packaging** 25 kg = 20.3 litres
Storage and shelf life shelf life of at least 1 year from date of manufacture if stored in a dry place at a minimum temperature of 1 °C up to a maximum temperature of 55 °C	

The composition of **jbs progas® e xf** has especially been developed to disintegrate fibrous substrates. The enzymes selected are significantly more active – as illustrated in the chart using the example of endo-cellulase.

This increased activity combined with an excellent stability over a wide range of pH levels results in a more intense fibre degradation and therefore a much improved viscosity.

Enhanced endo-cellulase-activity with jbs progas® e xf



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At a glance

- optimizes microbiological processes
- improves substrate exploitation / saves substrate
- increases methane content and gas yield
- reduces time and efforts needed for stirring and pumping
- reduces the risk of swimming or floating layers
- increases CHP running times

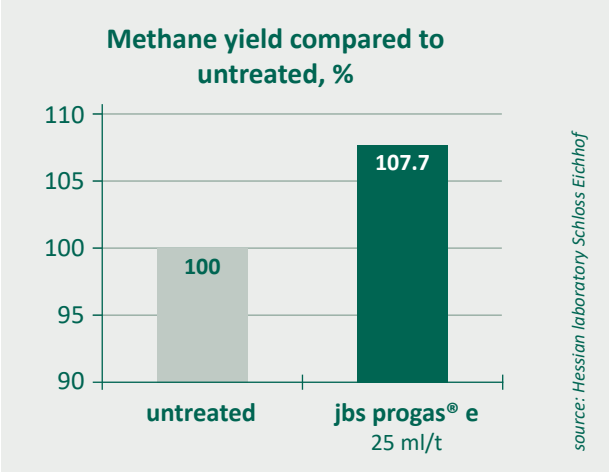
Fachverband Biogas e.V.

Fermentation trials conducted at Hessian laboratory Schloss Eichhof

Fermenation trial with jbs progas® e
Substrate: maize silage and liquid manure

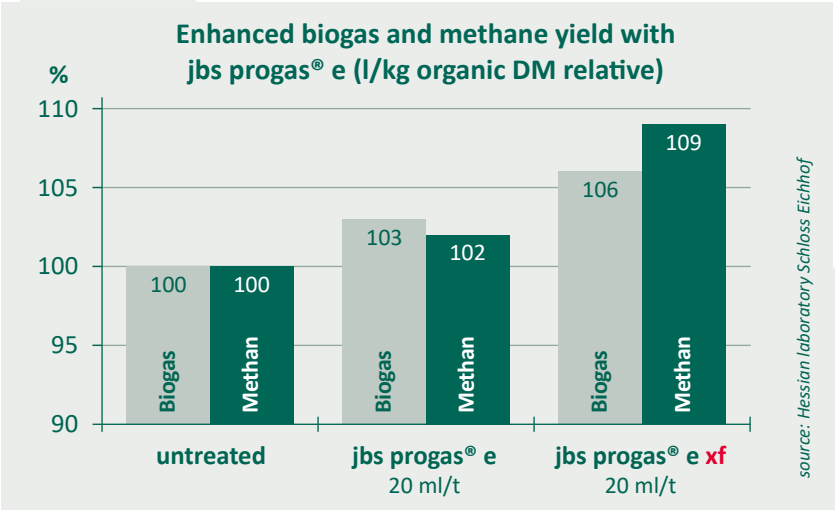
During the trial period, an application rate of 25 ml per tonne of substrate resp. silage increased the methane yield by 7.7 % compared to untreated.

The effect of enzymes will be diminished if only cattle manure is used as the bulk of the digestible cellulose has already been utilized by the animals. Pig manure per se contains little cellulose as pigs are hardly ever fed with silages.



Fermentation trial with jbs progas® e xf
Substrate: grass silage and solid manure

An application rate of 20 ml per tonne of substrate resp. silage over the course of the trial showed an increased methane yield by 9 % compared to untreated. Interesting fact: The biogas yield was only increased by 6 %, meaning that the methane content in the biogas was also increased.



This second trial showed that in substrates like grass silage or solid manure, **jbs progas® e xf** has a greater impact on the degradation of fibrous material – which is due to the selection of special enyzmes for endo- and exocellulose.

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