

Competence in biogas

We optimise the biological processes.

Solutions for profitable biogas production

SCHAUMANN
BioENERGY
CONSULT



More competence.

We offer highly specialised know-how.

There are now more than 10,000 biogas plants worldwide producing renewable energy. And the market is growing. Make sure you grow with it! We create the conditions that help you increase your biogas yields and maximise your profits.

- Through innovative research and development in our own laboratories, research fermenters and pilot plants.
- Through high capacity analysis centres for identifying biological and chemical production parameters (accredited service laboratory).
- Through comprehensive know-how in the conservation of energy crops.
- Through decades of experience in the production of trace element and mineral mixes.
- Through advice tailored to meet individual needs from our special advisory teams active in every aspect of production.

Schaumann BioEnergy specialises in energy production from renewable raw materials – from substrate preparation through to the biology of fermentation. Our experts offer solutions for every type of plant, for every substrate.

Use our competence for your enterprise and see how good our services are:

- ▶ More energy – SILASIL ENERGY® programme page 5
- ▶ More efficiency – Biocatalysts to accelerate degradation page 7
- ▶ More performance – Fermentation additives for process optimisation page 8/9
- ▶ More analysis – More advice page 11



More energy.

We ensure more efficient biogas production.

The SILASIL ENERGY® programme

Specialised biological silage additives conserve the energy and nutrients in energy crop plants. The products within the SILASIL ENERGY® programme work through their particular bacteria strains especially selected for biogas production. The result: Energy and nutrient losses during storage are minimised and biogas yields are increased.

A special silage additive for every substrate group

For continual increase of energy yield we keep expanding our product lines with tailor-made silage additives for every group of substrates.

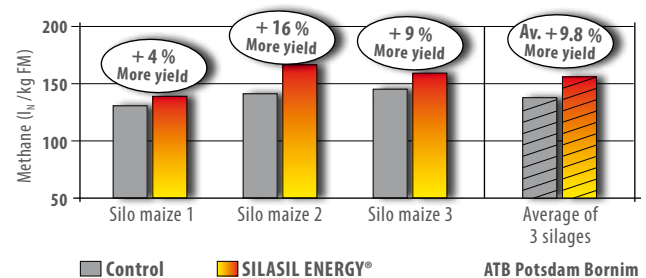
For example:

- SILASIL ENERGY.XD – for maximum stability during the storage of carbohydrate-rich energy crops even after short silage ripening periods.
- SILASIL ENERGY – specially for energy crop plants high in carbohydrate such as forage maize, CCM, wholecrop cereals and sorghum.
- SILASIL ENERGY.BG – for moist, protein rich, low sugar plants such as grass, clover/grass, green rye, lucerne, catch crops.
- SILASIL ENERGY.G and SILASIL ENERGY.C – combination products suitable for biogas production and livestock nutrition.

Products from the SILASIL ENERGY® programme

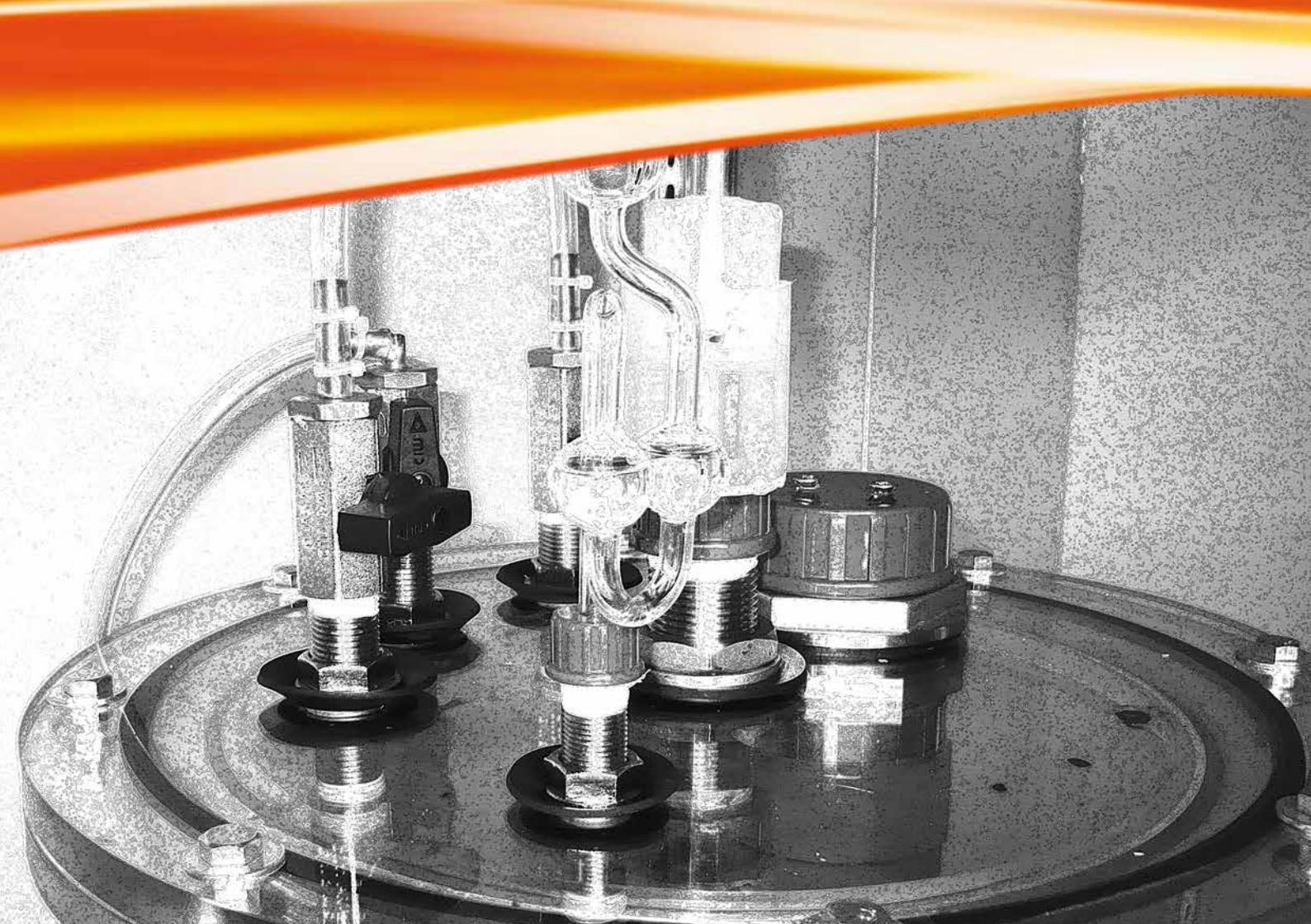
- Guide the ensiling process
- Protect energy and nutrients from storage losses
- Optimise biogas production
- Increase methane yield per hectare of cropland

Methane yield tests (batch trials) with three different maize silages



BC.ACID preservatives

The mix of acids in the BC.ACID range protects freshly harvested and moist biogas substrates from spoilage by harmful microorganisms.



More efficiency.

We boost degradation processes.

The tailor-made BC.ZYM modular concept ensures low viscosity and enhanced substrate utilisation.

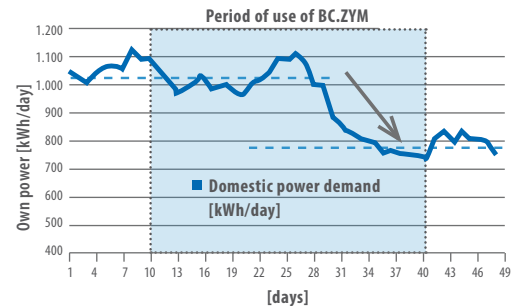
The BC.ZYM modules are active-ingredient complexes from specific biocatalysts (enzymes and cofactors) which facilitate or accelerate the decomposition of organic substrates.

Even in fermenters with stable biological processes, limited enzymatic activity can lead to poor substrate utilisation and/or poor stirring and flow behaviour. The modular design of the BC.ZYM system takes into account specific differences between different fermenters and is tailored precisely to the given circumstances.

How you benefit:

The BC.ZYM modules reduce viscosity, improve stirring and flow behaviour and thus support effective substrate degradation.

BC.ZYM optimises the domestic power demand



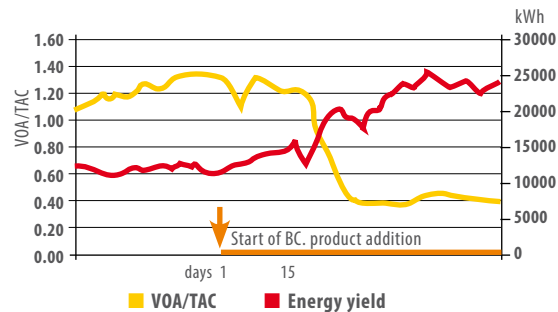


More performance.

We stabilise fermentation processes.

Schaumann BioEnergy offers a comprehensive package of solutions comprising in-depth analyses, plant-specific additives and competent advice to optimise biological processes and stabilise gas production. The result: A sustained increase in fermentation performance and methane production.

The BC. products bring VOA/TAC values to the normal level and increase the energy yield





The BC. concept – individual solutions for individual requirements.

BC.PRO®, BC.COMPACT, BC.MAGXX and BC.TEplex micronutrient mixes

These tailor-made micronutrient mixes in liquid or granular form help you get the most out of your fermenter. Carefully selected, high quality raw materials ensure maximum user protection.

Lasting solutions to complex fermentation problems can be obtained through the combination with active-ingredient complexes, e.g. for nitrogen fixation or substrate homogenisation.

When speed is of the essence

- BC.PRO® START – for rapid, reliable start-up
- BC.PRO® AKUT – for rapid intervention when the process fails

ACTILINC Trace Elements

ACTILINC Trace Elements, which are mainly used in BC.MAGXX products, guarantee maximum bioavailability and maximum user protection. Metal ions are combined with amino acids to create highly available trace element chelate complexes. The high degree of bioavailability means that dosages can be reduced.

ACTIVE supplementation

Secondary plant metabolites actively promote the metabolism of anaerobic microorganisms and raise biochemical conversion processes to a new level. The result: Enhanced regeneration of bacterial biomass and acceleration of metabolic processes.

The CR. concept for industrial plants

Schaumann BioEnergy offers a special product range designed to optimise processes in industrial biogas production. With micronutrient mixes tailored specifically to your biogas plant, processes can be precisely adjusted to maximise production capacity and increase your profit in the long term.

Specific combinations of active ingredients

The BC.ATOX range comprises specific combinations of active ingredients which reduce the inhibitory effect of toxic substances and iron products for desulphurisation. Three products are available to counteract the inhibitory effects of ammonia in nitrogen-rich fermenters. Products in the BC.ATOX Scon range are designed to maximise desulphurisation.



More analysis — More advice.

We provide the basis for decision-making.

Schaumann BioEnergy Analytics is the cornerstone of your biogas strategy. We use the results of our analyses to recommend scientifically-based solutions for substrate preparation and process biology for your system.

Input analysis

Preventing spoilage and ensuring the proper degradation of substrate constituents that break down slowly is key to profitable biogas production. We apply innovative laboratory analyses to determine decisive parameters to help us evaluate your system and make precise management recommendations.

Fermenter analysis

In our high-performance laboratories we use state-of-the-art methods (e.g. iCAP spectrometry) to analyse biological and chemical parameters. The results provide the basis for evaluating biological process and underpin our biological advisory service and production of system-specific additives.

How you benefit

We use the analysis results to assess storage stability and develop strategies to reduce storage losses. We work with you to devise a fermenter analysis package which, when combined with our tailored additives, ensures that your system operates with maximum degradation performance and process stability.

Consultancy

Our specialist biogas advisers are located throughout Europe and can be called on at short notice. Their extensive experience and high level of expertise means that you can be certain of receiving rapid support to optimise your processes. We offer a range of consultancy packages to enable you to select the level of support you require.

More efficiency – more profit

Our outstanding record of innovation is underpinned by a network of qualified specialists. Our creative and skilled teams of researchers strive to continuously optimise biogas production and increase efficiency.

We improve your energy balance

- Optimum ensiling and conservation of substrate
- More sustainable, environmentally friendly application of resources
- Long term stabilised biological process
- More full-load hours per year
- Maximising of profit from biogas production

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