

More specific.  
More effective.  
More economical.

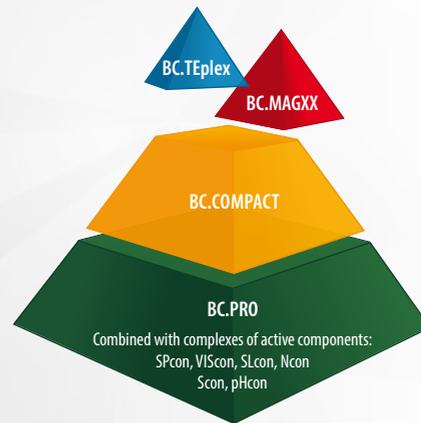


## The BC.MAGXX product line

BC.MAGXX allows a specific micronutrient supply wherever analytically determined deficiencies need to be balanced without there being macronutrient requirements or ulterior process disruptions. The new BC.MAGXX line is the systematic addition to existing Schaumann BioEnergy BC.-product lines.

BC.MAGXX combines reduced quantity rates with an excellent price-performance ratio. As in all Schaumann BioEnergy product lines, BC.MAGXX products are tailored to our customers' requirements.

Product Line	Description	Application
BC.TEplex	Concentrated, liquid micronutrient mix in complexed form, not corrosive, non-toxic	Purely micronutrient-supply, frequently combined with additional iron-application
BC.MAGXX	Specific, micronutrient-addition with highly bioavailable ACTILINC-trace elements along with a basic macronutrient supply	Plants with a basic macronutrient supply
BC.COMPACT	The Classic: Compact products for the specific supplementation of micro- and macronutrients	Plants with requirements for micro- and macronutrients
BC.PRO	The All-Rounder: Micro- and macronutrients according to requirements as well as the option to supplement with various complexes of active ingredients	Plants showing more than micronutrient deficiency, e.g. nitrogen-rich plants – BC.PRO Ncon



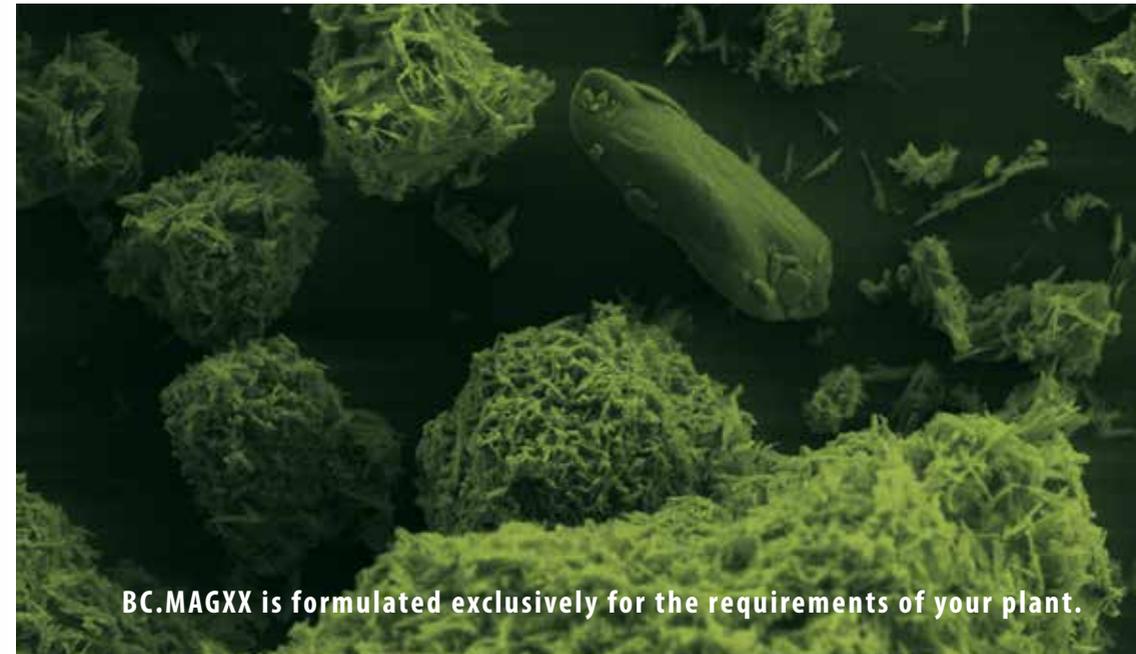
### Product-Overview BC-Concept:

Depending on the digester-specific requirements of micro- and macronutrients as well as other active ingredients your BioEnergy biogas-consultant chooses the optimal BC.-product that's just right for your plant.

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# BC.MAGXX

## The new dimension in micronutrient bioavailability



BC.MAGXX is formulated exclusively for the requirements of your plant.

**FM BioEnergy**  
A ForFarmers Company

In the UK and Ireland, Schaumann BioEnergy is working in partnership with FM BioEnergy.  
Contact: Tim Elsome · Phone: +44 1509 50 18 30 · Mobile: +44 7802 17 31 30 · tim.elsome@forfarmers.eu · www.forfarmers.co.uk  
Schaumann BioEnergy GmbH · An der Mühlenau 4 · 25421 Pinneberg Germany  
Phone: +49 4101 218-5400 · Fax: +49 4101 218-5499 · info@schaumann-bioenergy.eu · www.schaumann-bioenergy.eu

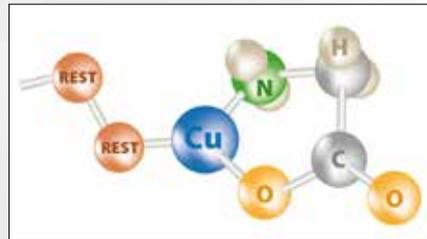
**SCHAUMANN**  
**BIOENERGY**

**SCHAUMANN** Competence in biogas  
**BIOENERGY**

## Basis of the BC.MAGXX line – the ACTILINC micronutrient-chelate complex

In cooperation with research partners, Schaumann BioEnergy has been able to develop the novel ACTILINC-micronutrients with the core objective of further improving the resource efficiency of trace element application. The basis of ACTILINC's innovative product formulation is the development of an entirely new manufacturing process. In this, metal ions are merged with amino acids in a solid state reaction, resulting in highly bioavailable micronutrient-chelate complexes (see Fig. 1). This new form of micronutrient additive allows for reduced dosage combined with unaltered high effectiveness. ACTILINC elements are used mainly in the BC.MAGXX product line.

Fig. 1: ACTILINC-Copper



## Scientifically proven effectiveness

Micronutrients from the ACTILINC-complex show significantly higher bioavailability for bacteria and archaea and accelerate biogas production. This was scientifically proven in lab tests as well as in field trials under full-

scale conditions. Even when applied at 50 % of the normal dosage, ACTILINC-micronutrients lead to more rapid as well as higher gas yields (see Fig. 2 and 3).

Fig. 2: Gas yield of ACTILINC-Nickel in comparison to other Nickel-formulations

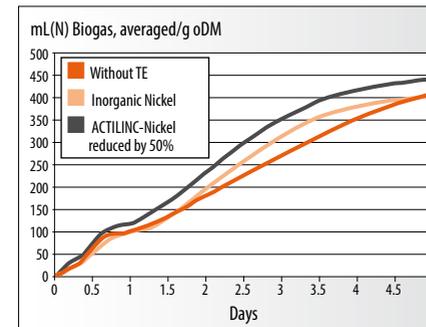
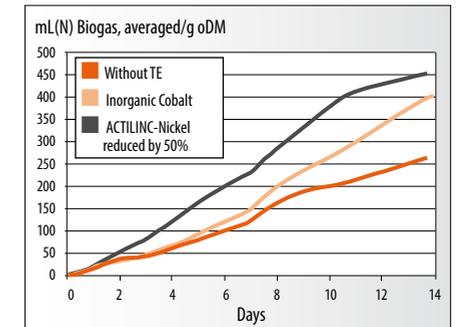


Fig. 3: Gas production dynamics of ACTILINC-Cobalt in comparison to inorganic Cobalt salt



## BC.MAGXX – faster reaction by improved availability

The use of metal-chelates offers various advantages: apart from protecting micronutrients from precipitation by sulphur- or nitrogen compounds, carbonates or proteins, they facilitate micronutrient uptake by microorganisms. Ionic micronutrients carry an electric charge which keeps them from crossing the bacterial cell wall. Uptake into the cells takes place only by an energetically costly process. The picture is completely different with ACTILINC-micronutrients! They already con-

stitute small, electrically neutral complexes, easily able to directly pass through the microbial cell wall. This accelerates uptake and leads to a more rapid effect of micronutrients (see Fig. 2). On top of that, the micronutrients' efficiency is enhanced because all added trace elements can be fully utilized by the microorganisms. This explains their enhanced effect on biogas generation at lower dosages than required for inorganic metal salts (see Fig. 3).