Fraunhofer FEP

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E-VITA – With accelerated electrons to healthy seeds

On July 1st, 2021, Ceravis AG and the Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP founded a collective joint venture, the "E-VITA" GmbH. The Fraunhofer spin-off is dedicated to the chemical-free, sustainable treatment of seeds and feedstuffs to free them from pathogenic fungi, bacteria and viruses.

The newly founded E-VITA GmbH offers the treatment of organic bulk material – such as mainly seeds, but also feed and herbs – with accelerated electrons for gentle and reliable disinfection: a sustainable, proven and economical alternative to chemical dressing with fungicides.

"Our focus is not only on disinfection of the grain itself, but also on comprehensive treatment of the seed with biological stimulants to sustainably increase yields and improve resistance," explains André Weidauer, Managing Director of the spin-off E-VITA GmbH.

E-VITA
Technologie, die schützt.

How does it work, though?

The environmentally friendly, purely physical process for disinfecting seeds is based on the germicidal effect of accelerated electrons. When the energy-rich electrons strike harmful organisms residing in the target area, they are eliminated in a very efficient way. Electron treatment ensures that the electrons only penetrate the shell deep enough to demonstrably exclude any effect on the embryo and endosperm inside the seed. Initial developments for the safe, chemical-free treatment of seeds with electrons started in the 1980s at the Manfred von Ardenne research institute (Germany) and were brought to industrial maturity by Fraunhofer FEP in long-term development projects with independent institutes and companies.

The use of biostimulants on treated - meaning healthy, pathogen-free - seed has enormous potential from the point of view of E-VITA and users. These biostimulants, in combination with the E-VITA® process, are able to increase yields, improve nutrient efficiency and form long-lasting protection.

"E-VITA offers interested users, such as growers, contractors and commercial processors, system technology for rent and for purchase. Likewise, of course, the contract treatment of seed on site by E-VITA itself," summarizes Andreas Prelwitz of Ceravis AG the scope of the start-up. "Our customers draw on the vast experience of ourselves

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and Fraunhofer FEP, as well as our partners and customers, who have already been successfully using the E-VITA® process for years and treat well over 15,000 metric tons of seed with it every year."

In order to make the process attractive for smaller quantities as well, it was necessary to develop completely new plant technology with partly novel physical concepts. The centerpiece of these – compared to the already established state of the art – more compact systems is an electron ring source developed by Fraunhofer FEP. E-VITA GmbH now primarily, but not exclusively, offers plants with this new, compact technology, which also operates economically efficiently at lower annual throughputs.

All interested parties will thus find an attractive offer: very small annual quantities can be processed directly on site on a rented plant by the customer or by subcontracting to E-VITA. For small, medium and high throughputs, there is also the option of renting or purchasing your own plant with this ring source. For very high throughputs of more than 10,000 tons per year, the proven pilot plant of Fraunhofer FEP is available, which can also be further developed to customer specifications.

The demand for environmentally friendly, sustainable and at the same time highly economical seed treatment processes is great and inadequately met by the few suppliers for a long time. The success of treatment with electrons, especially at Ceravis AG in Güstrow (Germany) and BayWa AG in Hainichen (Germany), has for some years now also generated great interest among other manufacturers, dealers and users. E-VITA GmbH is now in a position to satisfy this demand and present its customers solutions tailored to their individual productivity requirements.

In addition to the improved cost-effectiveness for small and medium annual volumes, the combination with biostimulants offered by E-VITA will significantly increase the benefits of electron treatment for users. Prof. Dr. Gösta Mattausch, Head of Department for Special Electron Beam Systems and Technologies at Fraunhofer FEP, is pleased about the new cooperation: "This partnership further strengthens the area of work that deals with the application of active ingredients directly to the seed, thereby reducing global fertilization of fields."

E-VITA® plant technology for efficient on-site seed treatment

Picture in printable resolution: www.fep.fraunhofer.de/press