

Company:

Fricke und Mallah
Microwave Technology GmbH
Werner-Nordmeyer-Str. 25
31226 Peine
Germany

Tel. +49 5171 5457 0

info@microwaveheating.net
www.microwaveheating.net

Products:

Tunnel Ovens
Chamber Ovens
Laboratory Ovens
Solid State Technology
Generators
Magnetrons

Applications for:

Wood Industry
Food Industry
Ceramic Industry
Chemical Industry
Plastic Industry
Microwave Plasma
.... and many more

Benefits:

Consulting and Support
Research and Development
Practical Process Design
Simulations with CST Studio
Service worldwide

Drying of Insects

Mealworms and the black soldier fly are an important ingredient for fish and animal feed production. Due to their high protein content and comparatively uncomplicated breeding, these insects are predestined for sustainable feed concepts. Due to the considerably more efficient production compared to soy products, they contribute to the preservation of our ecosystems. Only the energy-optimized drying of the product has been an unsolved problem so far.

Challenge

Insects have a water content of about 60%. To make them usable as animal feed, this must be reduced to below 10%. Conservative drying methods using hot air are not energy efficient due to the high heat loss during continuous production.

The aim is to speed up this drying process considerably and to make the heat supply energy-efficient. For a continuous drying process, a tunnel system is aimed at, which allows continuous loading and unloading.



Solution

Fricke and Mallah has developed a tunnel system that meets the required performance parameters. With a microwave power of 40 kW, a water content of 40 kg / h is extracted from the insects at an entry weight of 80 kg / h, which means that at discharge the product has lost half its weight.

Due to the special coupling method of the microwave energy into the applicator and the design of the microwave tunnel, a very homogeneous microwave field distribution occurs in the drying zones, which enables a gentle drying of the insects. Furthermore, a high efficiency of the applicator is achieved. For uniform extraction of the vapors from the drying chamber, the microwave tunnel is equipped with a hot-air heating system and an extraction fan, the volume flow of which is continuously adjustable via a frequency converter.



Benefits

Fricke and Mallah's plant, which is 10 meters long in total, has significantly accelerated the drying process and enabled the customer to open up completely new production possibilities. This paves the way for adding an ecological and cost-effective alternative to fish and animal feed production.