

**ekonek**

**Drying  
Innovation**

Machinery for advanced manufacturing systems

Industrial Services

**Etxetar**

**Talens**

**Gaindu**

**GURUTZPE**

**Macarbox**

**Izadi**

**Etxetar**

Machining solutions for high production of precision metal parts.

**Talens**

Laser technology solutions.

**Gaindu**

Assembly, testing & automation systems.

**Gurutzpe**

Heavy duty multi-task turning solutions.

**Macarbox**

Cardboard production and conversion solutions.

**Izadi**

Manufacturing, repair and treatment services for industrial workpieces.

Digital

Circular Economy

Tile Industry

R&D

**aingura**  
IIoT

**SoC-e**

**TITANIUM**  
Advanced Industrial Cybersecurity

**ekonek**

**ezarri**  
mosaico

**iker**gune

**Aingura**

IIoT solutions for operational excellence.

**SoC-e**

Ethernet communication solutions for critical systems.

**Titanium**

Industrial Cyber Security.

**Ekonek**

Solutions for creating dehydrated products.

**Ezarri**

High quality glass Mosaic products.

**Iker**gune

R&D center.



# WORLDWIDE PROJECT DELIVERY

520 employees.

41% with a degree.

Strong engineering capabilities:

Talent & Commitment.

- Headquarters
- INZU Group Service Center



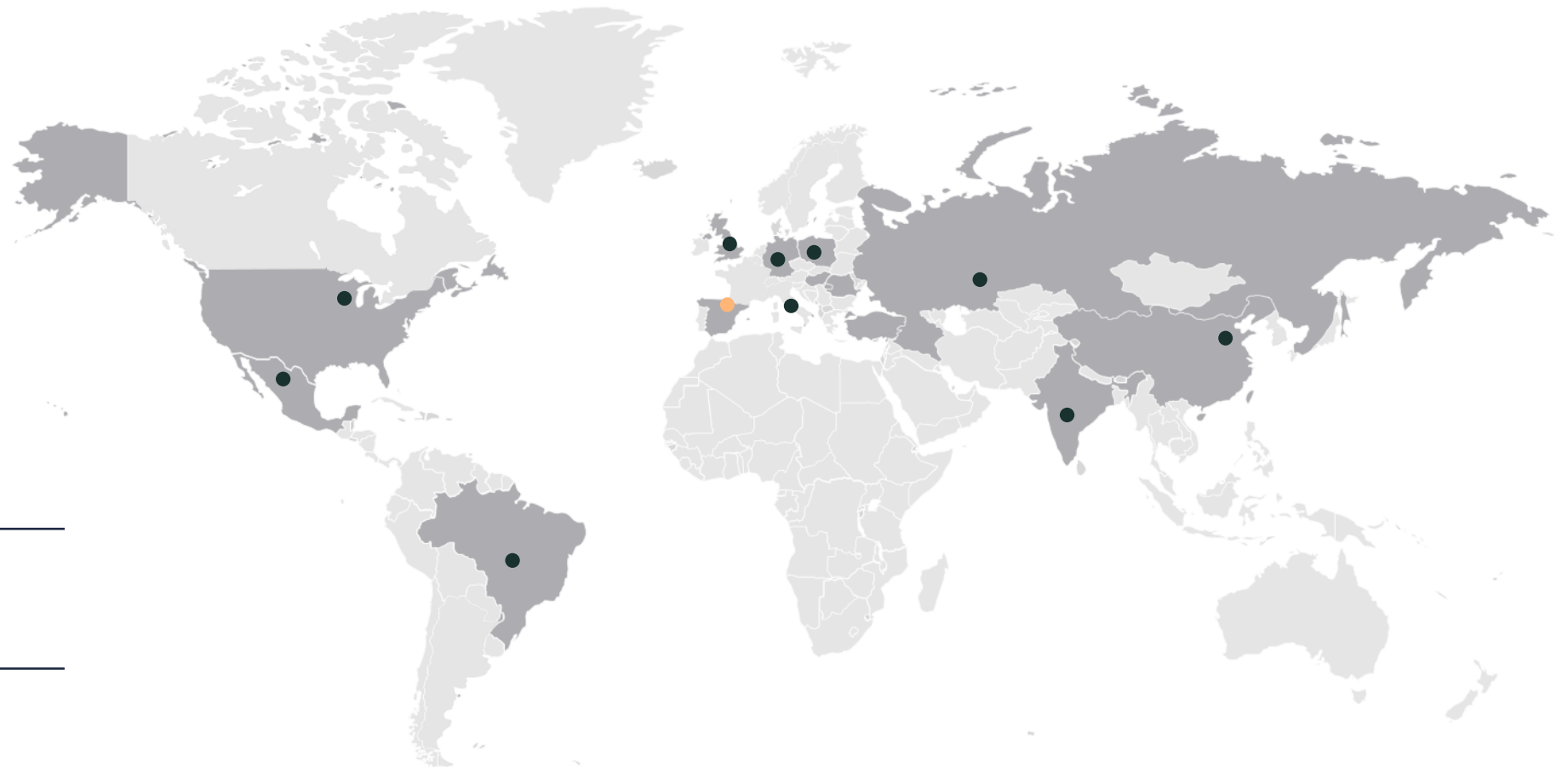
**Global**  
Support network



**Quick and efficient**  
Anytime, anywhere.

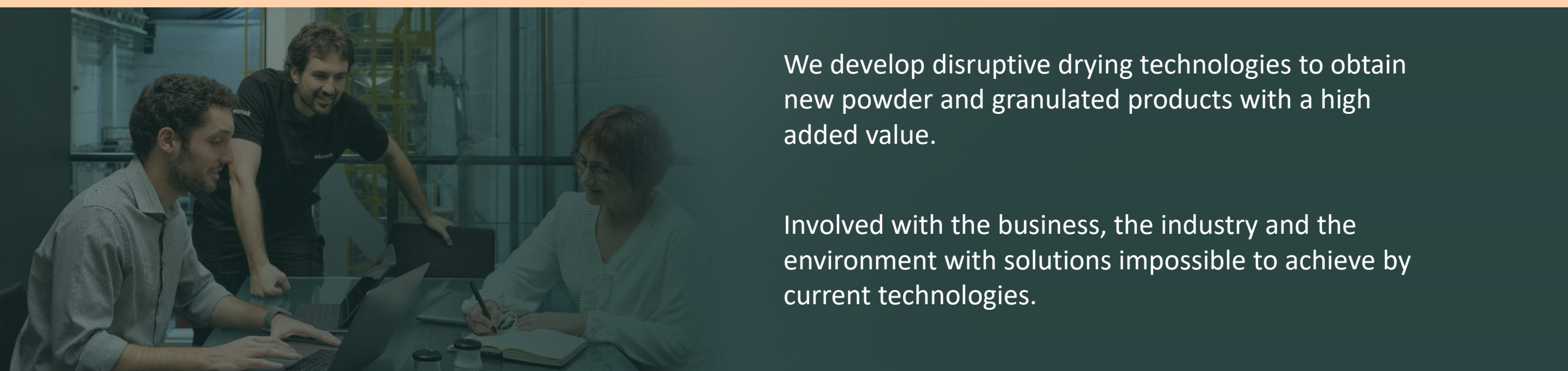


**100 On-site**  
Technicians



# ABOUT US

**Pioneers and ambitious.  
Designing to get a real impact  
in the activity.**

A photograph of three people in a meeting. Two men and one woman are gathered around a table with laptops. One man is standing and pointing at a laptop screen, while the other man and the woman are seated and looking at the screen. The image is overlaid with a dark teal semi-transparent filter.

We develop disruptive drying technologies to obtain new powder and granulated products with a high added value.

Involved with the business, the industry and the environment with solutions impossible to achieve by current technologies.

## COMMITTED

We are part of INZU Group, highly customer oriented and consolidated industrial group from one of the most competitive European regions.

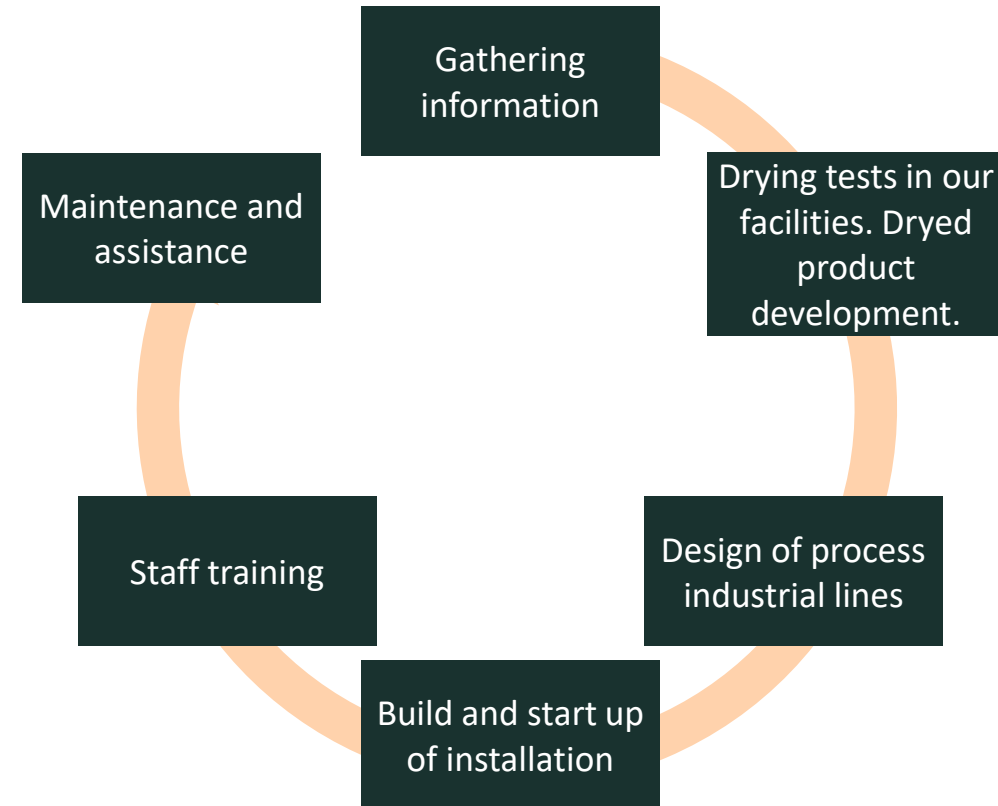
## ENGINEERING-LED

We are an engineering company that provides solutions.

## PIONEERING

We always go beyond devising solutions that go beyond the standard. We are innovators and we collaborate.

We cover the full life cycle of industrial project



# Awards



European Business Awards  
for the Environment 2018,  
Vienna (Austria)

Nordic Baltic Drying  
Conference 2017, Hamburg  
(Germany)

Young innovative  
company,  
Irun (Spain)

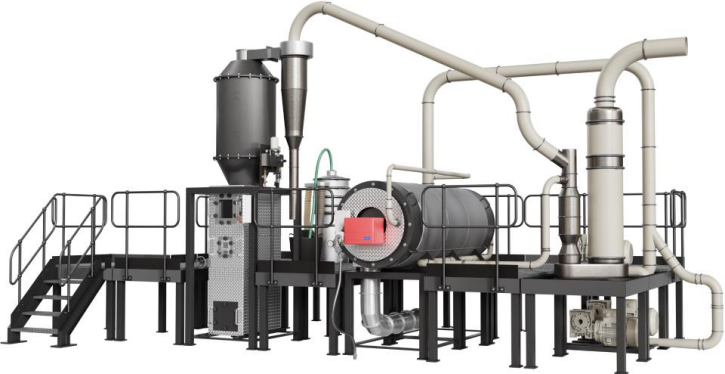


# Technologies

**PULSE SPRAY  
DRYING**



**SPOUTED BED  
DRYING**

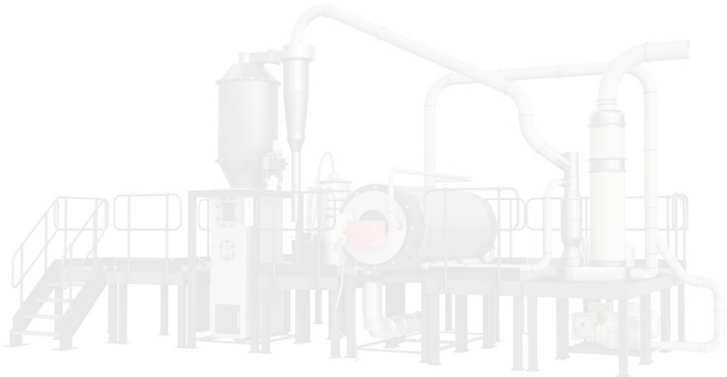


# Technologies

**PULSE SPRAY  
DRYING**

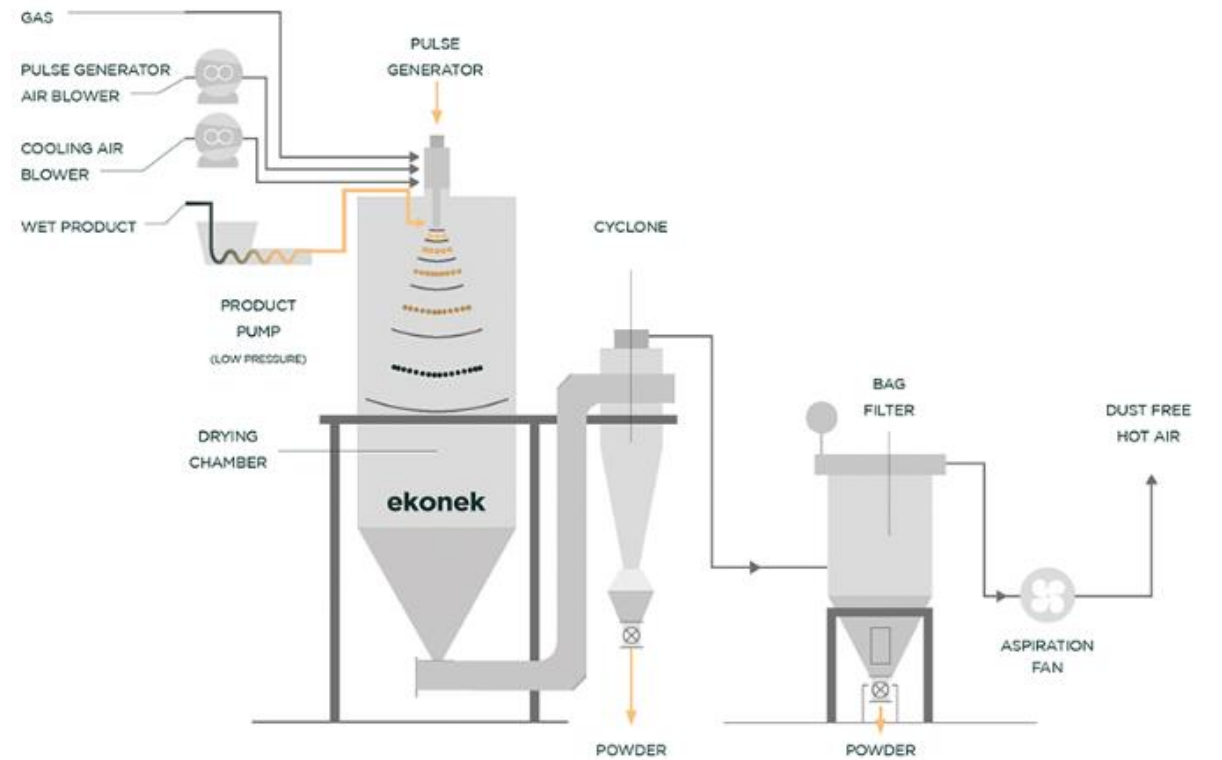
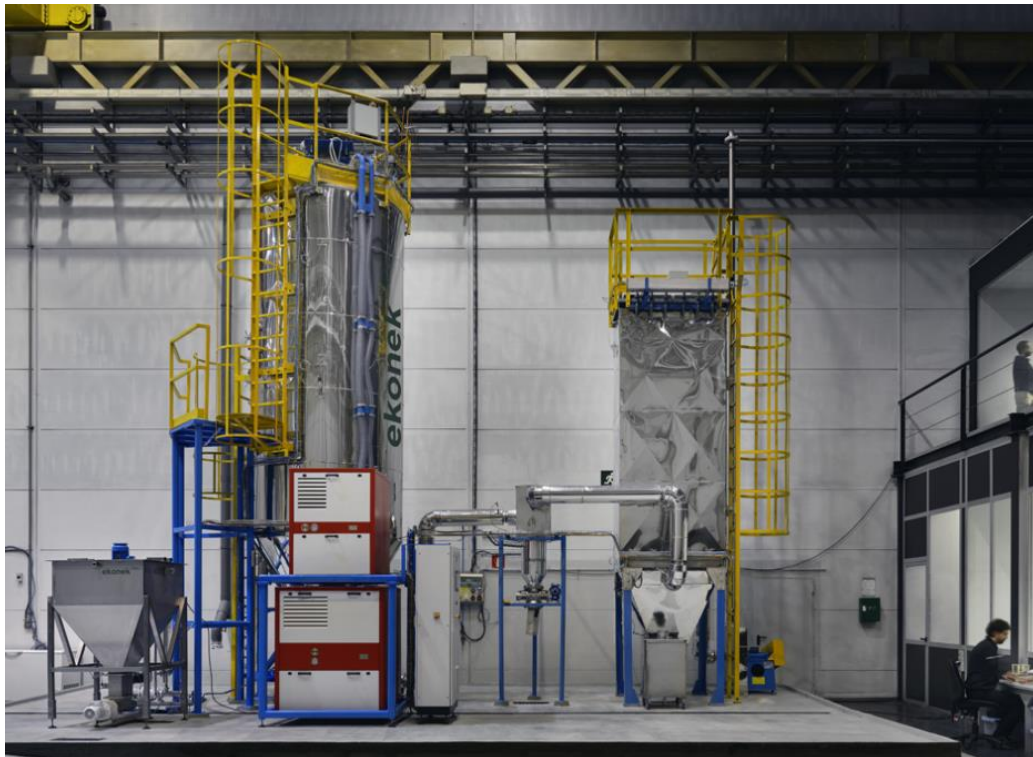


**SPOUTED BED  
DRYING**



## PULSE SPRAY DRYING

# Technology



## PULSE SPRAY DRYING

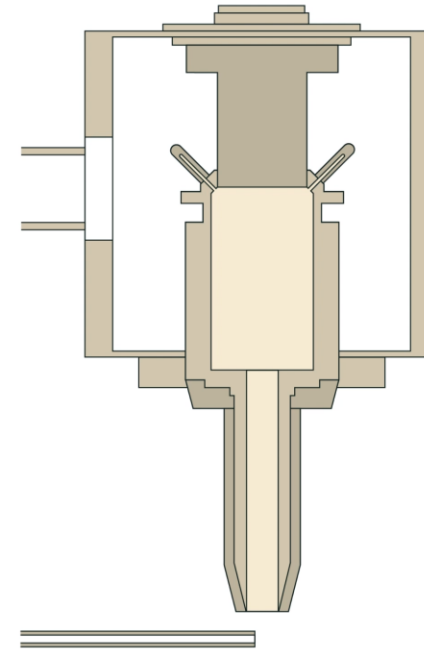
# Technology

Click here to view the animation:

<https://www.ekonek.eu/en/solutions/pulse-spray-drying>

1

Air is pushed inside the pulse generator, around the combustion chamber. When the electric motor opens the rotary valve, air goes inside the combustion chamber.



## PULSE SPRAY DRYING

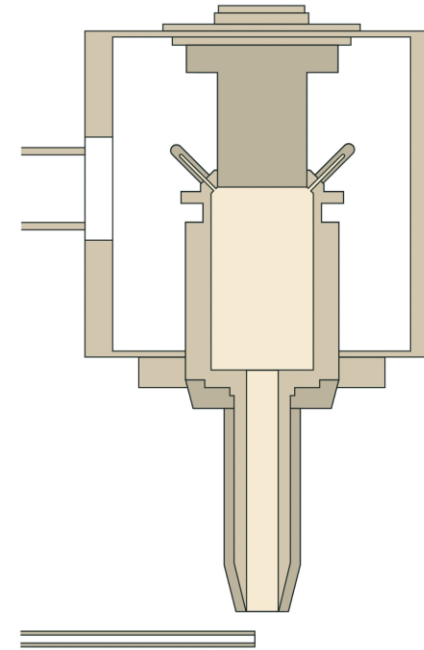
# Technology

Click here to view the animation:

<https://www.ekonek.eu/en/solutions/pulse-spray-drying>

2

When rotary valve closes again, gas comes into the combustion chamber.



## PULSE SPRAY DRYING

# Technology

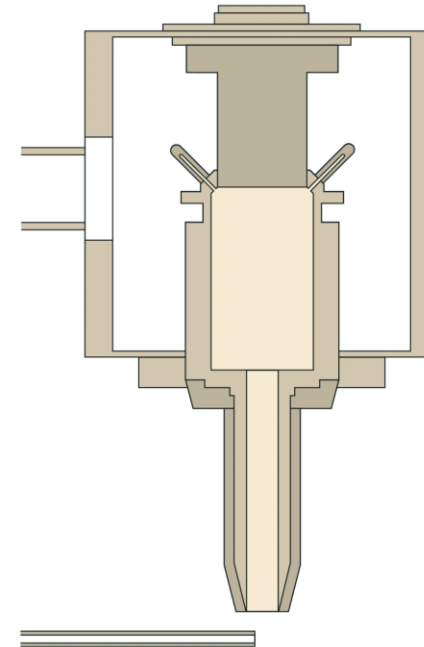
3

Rotary valve opens again, air goes in, and gas is ignited extremely quickly. That generates a pulse, or a sonic wave, that leaves the combustion chamber through the tail pipe, together with the combustion heat, at a very strong acceleration.

Rotary valve closes just after ignition, and the cycle repeats.

Click here to view the animation:

<https://www.ekonek.eu/en/solutions/pulse-spray-drying>

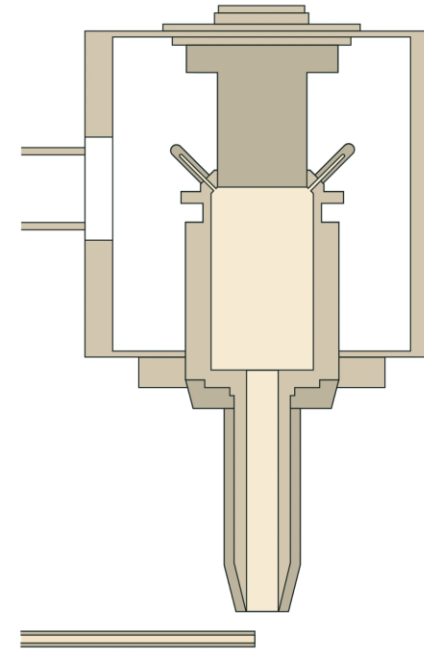


## PULSE SPRAY DRYING

# Technology

4

The cycle is repeated more than 100 times per second. That means that more than 100 pulses per second are going through the tail pipe.



Click here to view the animation:

<https://www.ekonek.eu/en/solutions/pulse-spray-drying>

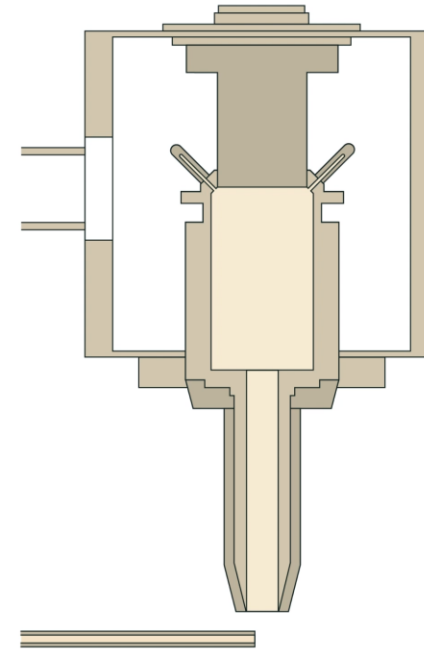
## PULSE SPRAY DRYING

# Technology

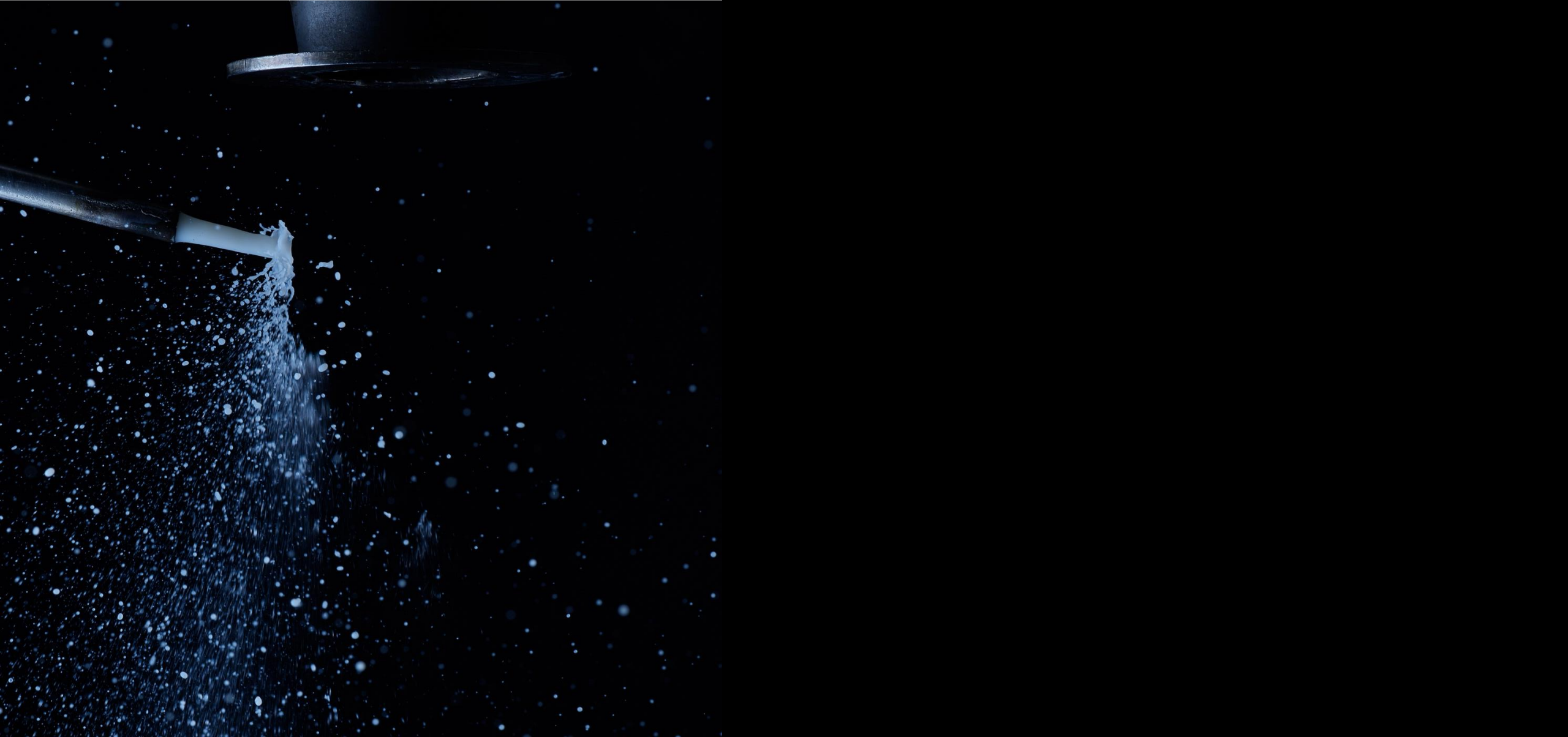
5

A liquid or pasty product is injected in the end of the tail pipe, through a single pipe, at low pressure. The pulses break the liquid down into thousands of droplets. A hot spray of fine droplets is generated, that goes inside the drying chamber.

Click here to view the animation:  
<https://www.ekonek.eu/en/solutions/pulse-spray-drying>









## PULSE SPRAY DRYING

# Benetfits



### ATOMIZATION OF PRODUCTS THAT CANNOT BE PROCESSED IN CONVENTIONAL DRYERS

It can atomize products with higher viscosity, higher concentration, or products containing fibers/solids up to a few mm.



### LOWER RUNNING COSTS

Energy efficiency:  
20-30% lower running costs than Spray Dryers.



### LOWER MAINTENANCE COSTS

No nozzles or discs that have to be frequently changed.



### HIGH FINAL PRODUCT QUALITY

Keeps the nutritional value of the products.

## PULSE SPRAY DRYING

# Applications



### VEGETABLES

Brewer's yeast, Pomaces, Okara, Broccoli, Olive vegetable water, Etc.



### MEAT BY PRODUCTS

Meat hydrolysates, Fresh meat, Meat trimmings, MDM, Blood or Viscera.  
New ingredients for human food, pharma or pet food.



### FISH BY-PRODUCTS

Fish hydrolysates, Fish Trimmings, Fish flavoring as a natural ingredient, Whole fish, Seafood, Etc.



### DAIRY

Milk, Whey, Permeates, Cheese, Out to date dairy products, Etc.

## PULSE SPRAY DRYING

# Applications



### PAPER WASTES

Slurries with cellulose, calcic carbonate, mechanical pulp lignin, black liquor, Etc.  
Lodos con celulosa, carbonato



### CERAMICS AND MINERALS

High dry matter slurries with mineral products, like:  
Calcium carbonate, Aluminium hidroxide, Calcium nitrate, Magnesium sulphate, Etc.  
Extremely fine products, with a narrow particle distribution.



### MICROALGAE

We can atomize high dry matter microalgae pastes, making powders that keep the nutritional value.



### OTHERS

We have successfully dried highly concentrated solutions of poliacrilates, detergents, chemical industry, etc.



## PULSE SPRAY DRYING

# Applications

PILOT PLANT FOR TRIALS AND R&D FOCUSED ON CLIENTS PRODUCTS

- Water evaporation capacity:  
70 kW (70 kg/h of water)
- Flexible and polyvalent for any type  
of products.



## PULSE SPRAY DRYING

# Applications

**“TURN KEY” INSTALLATION TO PRODUCE  
BREWER’S YEAST. 1.000 kW**

- Product in: About 1.500 kg/h yeast at 30% dry matter.
- Product out: About 500 kg/h yeast at 3% moisture.
- Evaporation : 1.000 kg/h water.





**PULSE SPRAY DRYING**

# Applications





## PULSE SPRAY DRYING

# Applications

### Comparing brewer's yeast powder:

- Left: dried by roller.
- Right: dried by Pulse Spray.



## PULSE SPRAY DRYING

# Applications

### “TURN KEY” INSTALLATION TO PRODUCE HYDROLYZED PROTEIN. 1.000 kW

- Product in: About 1.675 kg/h of hydrolyzed protein concentrate at 40% dry matter.
- Product out: About 670 kg/h of hydrolyzed protein powder at 3% moisture.
- Evaporation : 1.000 kg/h water.





**PULSE SPRAY DRYING**

# Applications

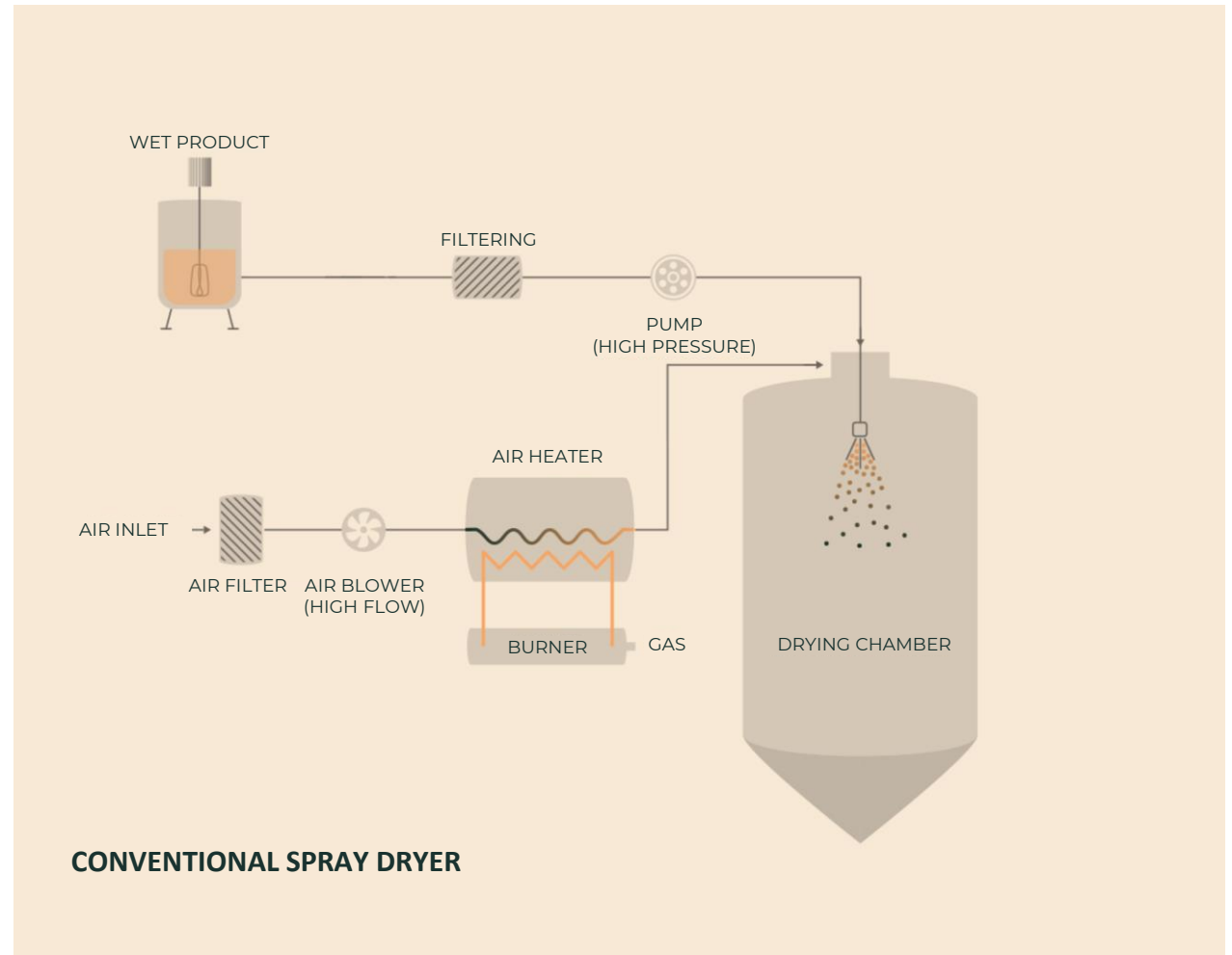


**PULSE SPRAY DRYING**

# Retrofit spray dryer to PSD

**IF YOU HAVE A SPRAY DRYER, IT IS POSSIBLE TO ADAPT YOUR INSTALLATION TO THE PSD TECHNOLOGY**

- Minimum investment.
- Increasing drying capacity of existing Spray Dryers.
- Savings of 20% to 30% of energy.
- Atomization of products that cannot be atomized by your Spray Dryer installation.
- Reduction of maintenance costs.

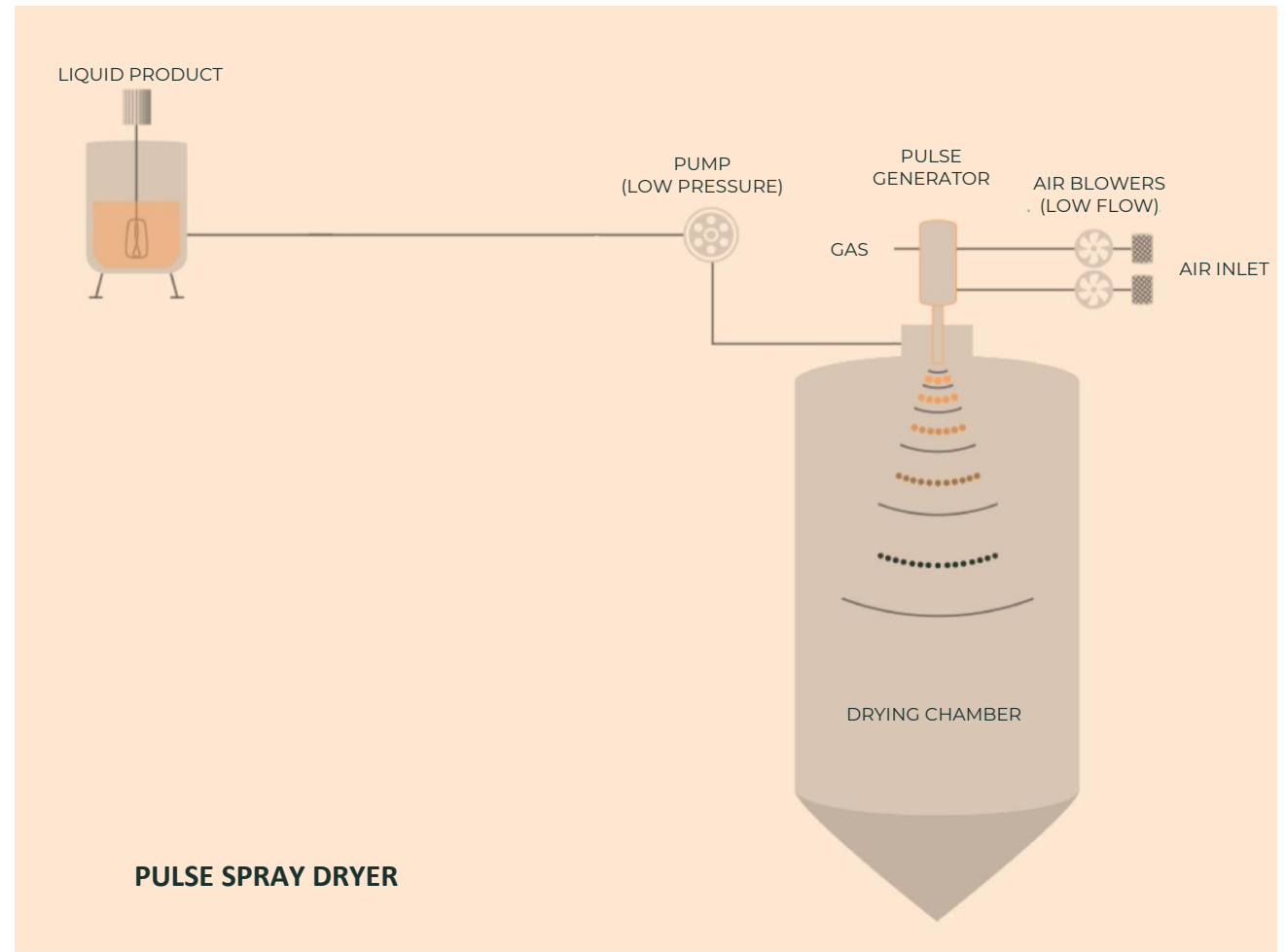


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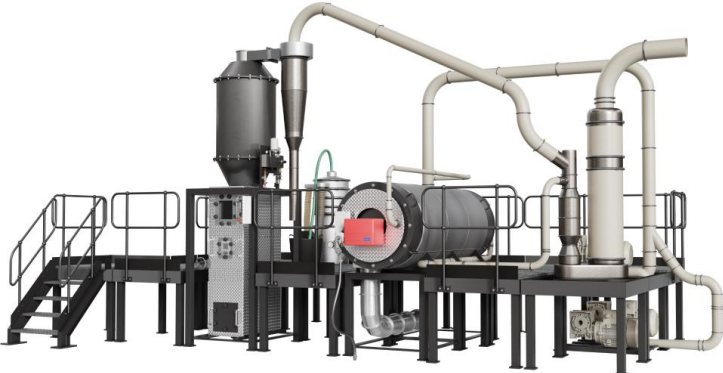


# Technologies

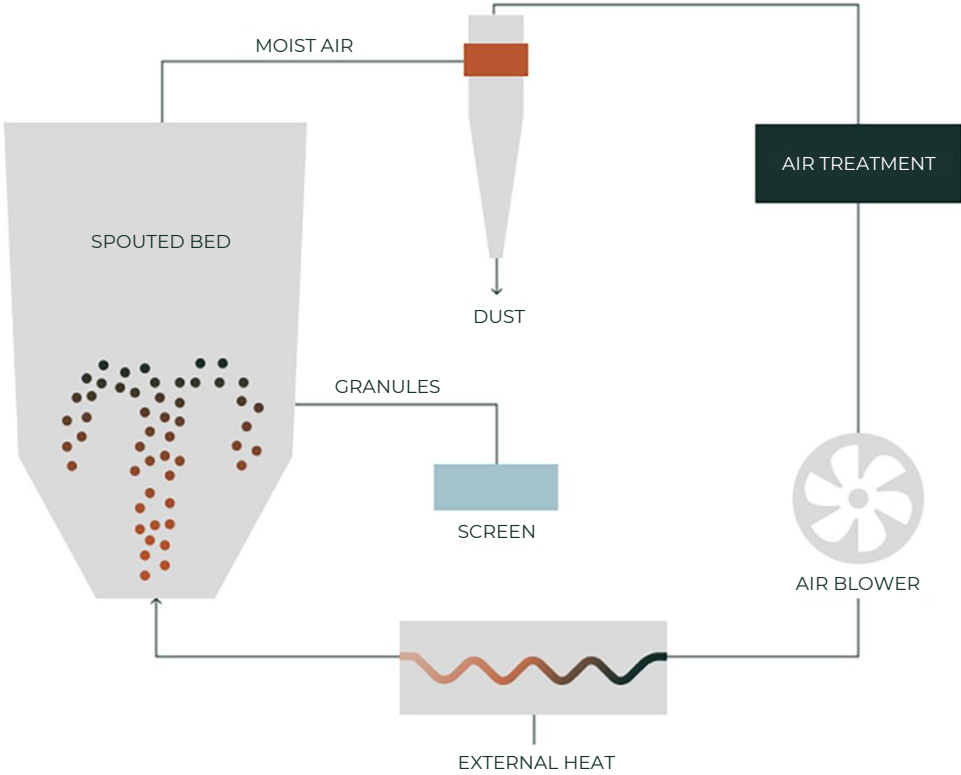
**PULSE SPRAY  
DRYING**



**SPOUTED BED  
DRYING**



**SPOUTED BED DRYING**



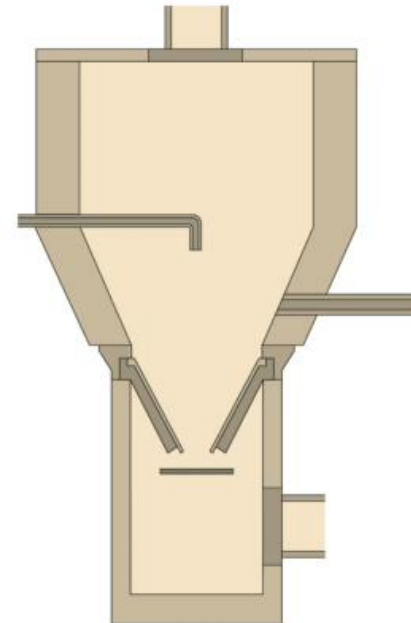
## SPOUTED BED DRYING

# Technology

1

Hot air gets inside a vertical fluid bed drying chamber, from the bottom, vertically upwards.

Click here to view the animation:  
<https://www.ekonek.eu/en/solutions/spouted-bed-drying>





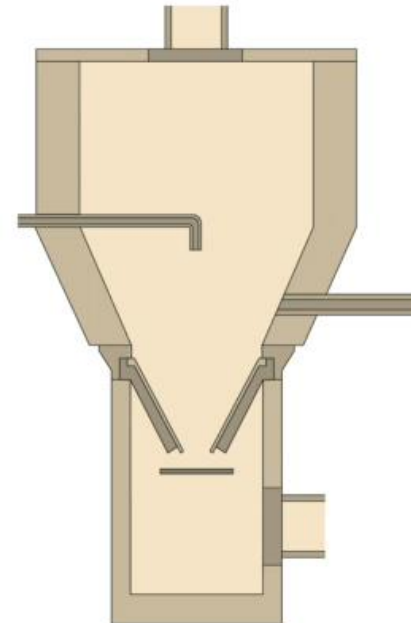
## SPOUTED BED DRYING

# Technology

2

The bed is full of granules, the hot air moves the granules creating a “spout”, circular movements up and down.

Click here to view the animation:  
<https://www.ekonek.eu/en/solutions/spouted-bed-drying>



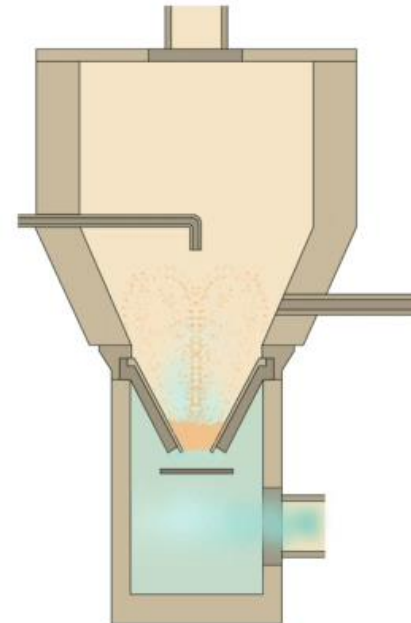
## SPOUTED BED DRYING

# Technology

3

When the liquid gets into the drying chamber, quickly distributes over all granules, creating new layers that get dried. Granules increase their size, new granules are also created, that amount of dry granules inside goes growing. Moist cool air leaves the drying chamber from the top.

Click here to view the animation:  
<https://www.ekonek.eu/en/solutions/spouted-bed-drying>



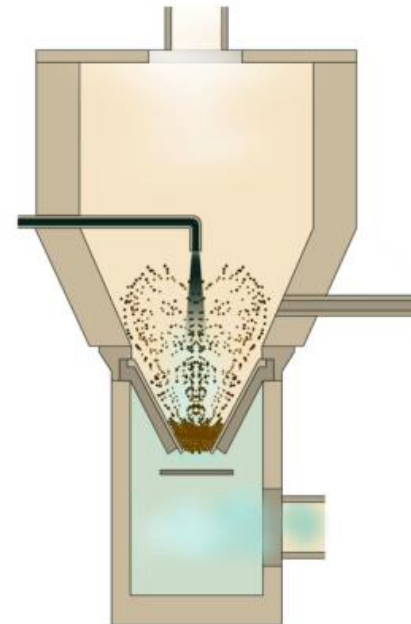
## SPOUTED BED DRYING

# Technology

4

The granules leave the drying chamber from one side, totally dry.

Click here to view the animation:  
<https://www.ekonek.eu/en/solutions/spouted-bed-drying>



## SPOUTED BED DRYING

# Benefits



### DIGESTATE, LIQUID MANURE, SLUDGE

It can granulate liquid and pastes that contain organic matter such as digestate, liquid manure, sewage sludge, etc.

### FLEXIBILITY FOR DIFFERENT HEAT SOURCES

It can use waste heat from other processes, or use different types of fuels (biogas, biomass, natural gas, ...). Drying in a closed circuit can be achieved, reusing exhaust gases and minimizing emissions/odors.



### SAME AS COMMERCIAL MINERAL FERTILIZERS

Granules are totally spherical, hard, dust free. It can make 2-4 mm diameter granules, or 0,5-2 mm microgranules. It's the same format as most mineral fertilizers.

### VERY HIGH GRANULES QUALITY:

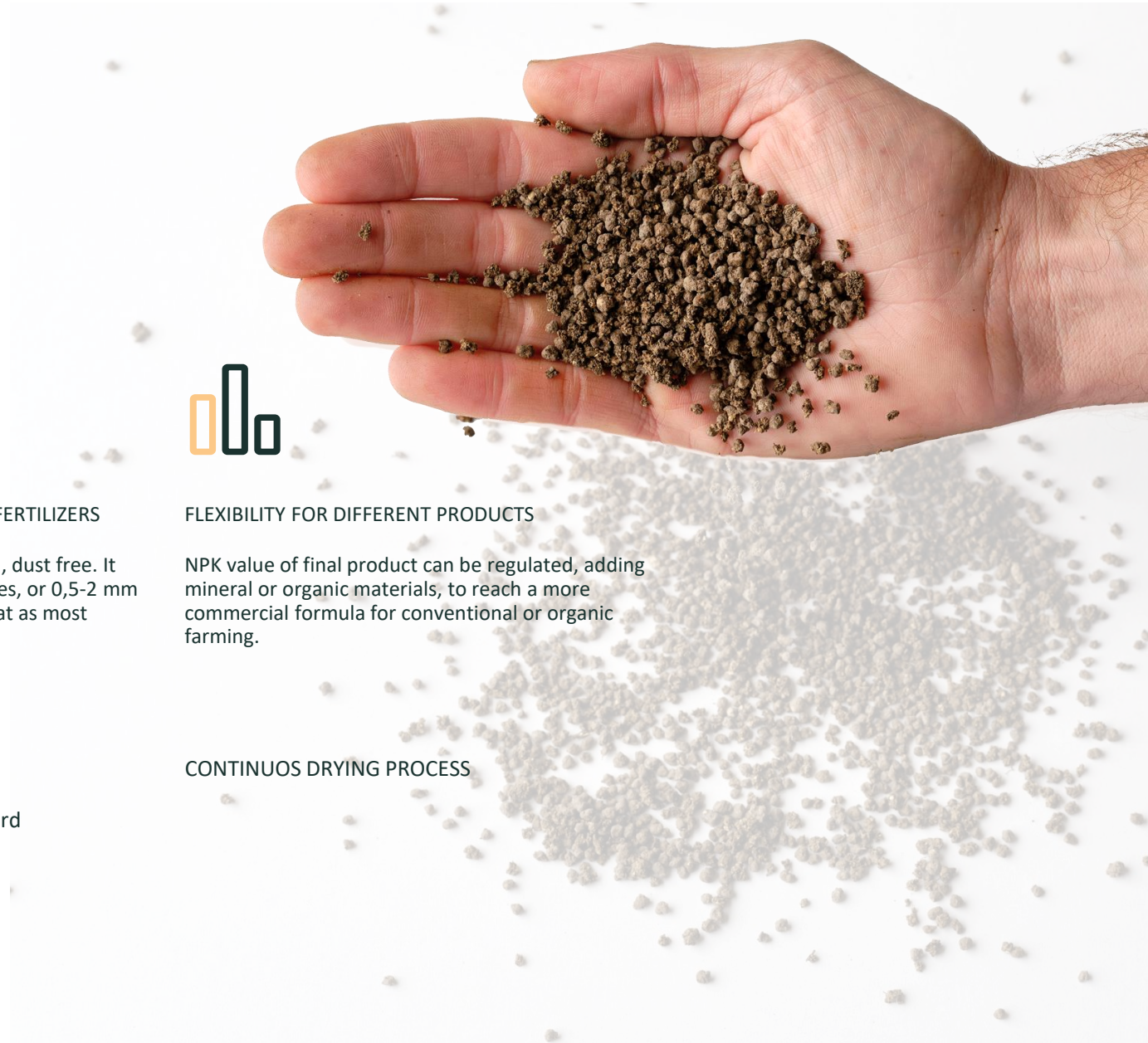
Spheroidal, uniform diameter, hard (doesn't generate dust in bags).



### FLEXIBILITY FOR DIFFERENT PRODUCTS

NPK value of final product can be regulated, adding mineral or organic materials, to reach a more commercial formula for conventional or organic farming.

### CONTINUOUS DRYING PROCESS



**SPOUTED BED DRYING**

# Applications



SOLID FRACTION OF DIGESTATE, STRUVITE AND BLOOD.



COMPOSED PULTRY MANURE AND NPK FERTILIZERS.



SEWAGE SLUDGE AND NPK FERTILIZERS.



SOLID FRACTION OF DIGESTATE, AMMONIUM, SULPHATE FROM DIGESTATE, STRUVITE.

## Service

We offer a complete range of services and technical support, to optimize operations, productivity and durability of the machine.



Max. uptime, productivity and quality.



Min. unplanned stops and total maintenance costs.



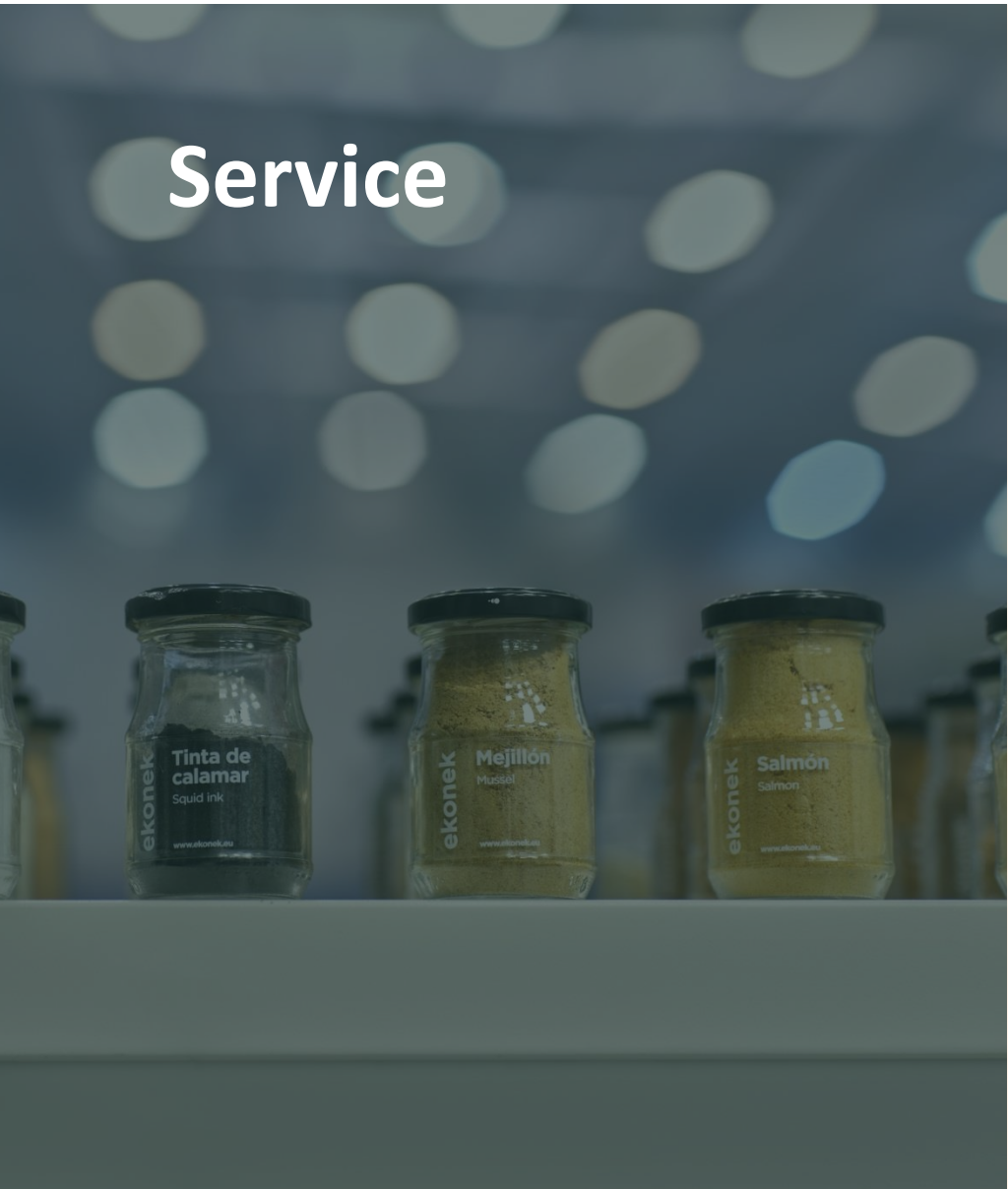
INZU Group is Worldwide established to give service to our Customers.



## Service

# Development of new dehydrated products

We obtain new food ingredients, feed or fertilizers of high added value, from different fractions of products or by-products.



## Service

A man in a black jacket with 'ekonek' on the sleeve is working on a large industrial machine in a pilot facility. The machine has a reflective surface and is surrounded by yellow safety railings. The man is leaning over the machine, adjusting a component. The background shows a complex industrial structure with yellow railings and a white grid pattern.

## Drying tests and preparation of customized products

We offer to our customers complete product tests in our pilot facilities. Including grinding, mixing or dosing of raw materials and drying by PCD or SB, in order to achieve the best characteristics of the final product.



## Service



# Design and construction of drying equipment

Each drying facility that we build is adapted to different needs, being designed to fulfil all your expectations.

We can supply Turn-Key installations if requested, including product preparation, concentration and homogenization, drying system, conveying the dry product and final bagging.

## Service

A photograph showing two men in a dimly lit office environment. They are both looking intently at a large computer monitor. The man in the foreground, who has a beard and is wearing a light blue shirt, is pointing at the screen with his right hand. The man behind him is also looking at the screen. The monitor displays a complex technical diagram with various colored lines and shapes, possibly representing a process flow or a structural design. The overall atmosphere is professional and focused.

## Industry 4.0.

Ekonek is implementing Industry 4.0 technology in our installations in order to offer the best Up-Time.

Ekonek is collaborating with the company Aingura at Industry 4.0 development. As Ekonek, the company Aingura is part of INZU Group.

## Service



## Maintenance

With the objective of having your installation operating without unexpected stoppages, we offer a maintenance contract with planned visits to your facilities, etc.

We can remotely control/operate the machine if needed.

## Service



## Training

- Specific training
- On-site and at Ekonek pilot plant training.
- Continuous training plans.
- Theoretical and practical training.

**ekonek**

Do you want to know more about Ekonek?

**[www.ekonek.eu](http://www.ekonek.eu)**



**ekonek**

**Drying  
Innovation**