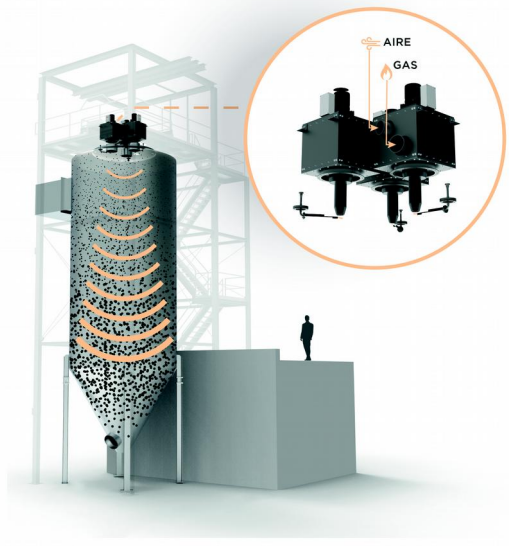
JORNADAS DE TRANSFERENCIA DE TECNOLOGÍA
IX MURCIA FOOD

Food'19
Brokerage Event
Jornadas de Transferencia de Tecnología en Alimentación

Deshidratación de subproductos alimentarios mediante Pulse Combustion Drying

Drying food by-products using Pulse Combustion Drying



ekonek Drying Innovation

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About us:

We were born in 2009 to deliver circular economy solutions to the food industry.

Strong R+D commitment. New developments:

- New processes to convert food by-products into new products. For animal feed, or as new food ingredients. Specially drying processes.

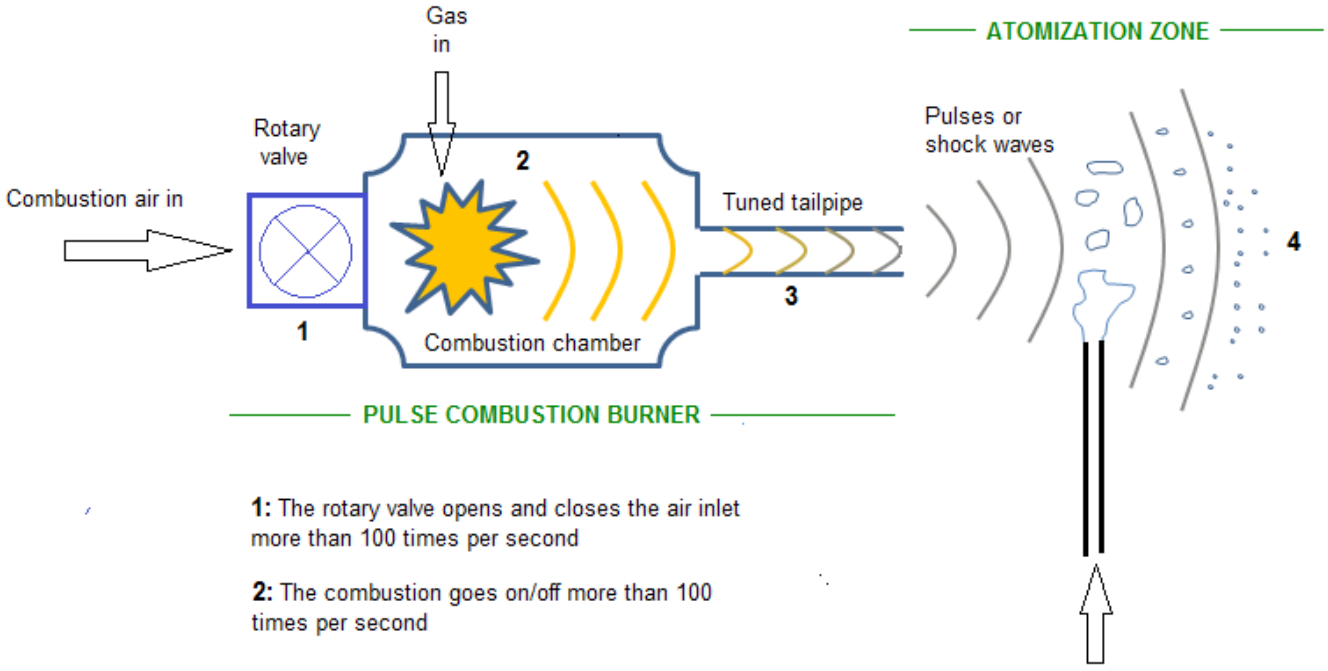
- New dehydrated products, starting from food-byproducts.

Last years we have been busy, developing PULSE COMBUSTION DRYING technology.

We started like a start-up company around this development. Since 2018 we are part of a strong industrial group based in northern Spain, called Etxe-tar Group, which delivers complex turnkey industrial projects globally.
More than 500 people and more than 90% export

ETXE-TAR group

What is Pulse Combustion Drying?



1: The rotary valve opens and closes the air inlet more than 100 times per second

2: The combustion goes on/off more than 100 times per second

3: That creates more than 100 pulses (shock waves) through the tail pipe. Combustion heat also goes through

4: Every pulse brakes the liquid into thousands of micro-droplets, which instantly converts the product into dry powder

Why is it interesting?

Energy efficiency: around 1 kWh thermal /kg water evaporated, around 0,12 kWh electric /kg water evaporated.

That´s 20-30% better than spray dryers. LOWER RUNNING COSTS

It can atomize products with higher viscosity, higher concentration, or products containing fibers/solids up to phew mm. CAN ATOMIZE PRODUCTS IMPOSSIBLE FOR CONVENTIONAL SPRAY DRYERS

KEEPS NUTRIONAL VALUE OF THE PRODUCTS

LOWERS MICROBIOLOGY more than conventional spray dryers

DEVELOPMENT

2009: 70 kW prototype

Still in use to perform drying tests

2012: 160 kW industrial plant

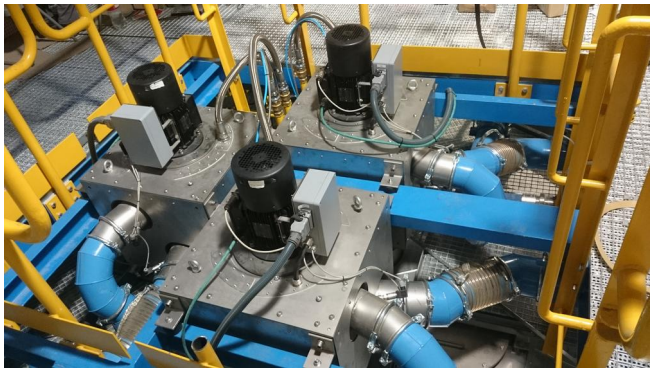
In a fish meal factory near Bilbao

First big industrial plant started in 2017: 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
- ✓ Air out : 13.500 Nm3/h at 105ºC

Drying chamber

3x350 kW PCD burners in the top of the drying chamber



Cyclone and bag filter

Left: brewer´s yeast form a roller dryer

Right: same yeast from the pulse combustion dryer

Other products:

FISH BY-PRODUCTS

Whole fish or fish trimmings for human food:
natural ingredients

Whole fish or fish trimmings for animal feed and petfood

Stick water, highly concentrated hydrolysates

MEAT BY-PRODUCTS

Fresh meat, MDM and trimmings for human food:
natural ingredients

Viscera, trimmings, MDM for animal feed and petfood

Blood, higly concentrated hydrolysates

DAIRY BY-PRODUCTS

Higly concentrated skimmed milk, whole milk, whey, whey protein retentate, lactose permeate …

Out to date dairy products for animal feed

FOOD INNOVATIONS

RUTF: new formulas for Ready to Use Therapeutic Food

Pasta and similars containing fish

Wet byproducts combination to make complete feed final powders.

VEGETABLES

Okara (soybean by-product)
Brewers yeast, high concentration
Pommaces
Brocoli
Pumpkin
Starch

INDUSTRY

Paper sludge
Lignine
Used diapers
Mineral salts, fertilizers
Mineral sludges
Pigments, ceramics

“There are no by-products that can not generate value. There are only innovations that we still did not start”

Nordic Baltic Drying Conference, Hamburg (Germany)

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Gracias!
Thanks a lot!

European Business Awards for the Environment, Vienna (Austria)