



Hot Air Drying Concept

All Haarslev Hot Air Driers are designed for continuous drying of a wide range of high-protein material with low fat or water content, such as fish meal or blood meal.

Haarslev Industries manufactures three types of hot air driers with different characteristics and designed for various applications.

Main Advantages

- Low energy consumption.
- Short retention time.

- Hygienic design and no dead spaces.
- Enhances protein digestibility.
- Good caretaking of nutritious materials

Haarslev Industries

Through the acquisitions of Atlas-Stord Denmark A/S, Stord-Bartz and Hetland Haarslev Industries has become the leading supplier of processing equipment for fish meal factories all over the world, and gained access to markets for equipment

for handling of by-products from production of bioethanol.

Sharing know-how and experience enables us to develop and optimize machine and process design to suit individual requirements.

Our solutions are designed for improved product quality and reduced environmental impact and energy consumption.

RUDD

The Rotary Universal Drum Drier (RUDD) is developed by Atlas-Stord and now an integrated part of the product programme of Haarslev Industries A/S.

Design Features

The most important part of the RUDD drier is the drum. It is engineered with an advanced single-pass free-flow system.

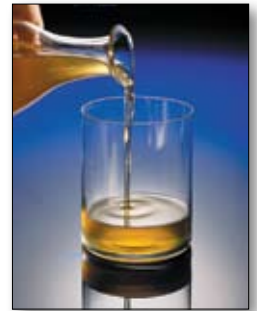
Light particles dry quickly when entering the initial hot zone of the drum and the retention time is relatively short.

Large and heavy particles do not evaporate the moisture as quickly and will be retained in the last part of the drum. The low temperature in this end of the drier provides a gentle drying process and less damage to the product.

When drying products with sticky or paste-like structure with high viscosity, the RUDD drier implies a feedback system for product to be mixed into the raw material. In this way building-up of product in the drum is avoided.

Applications

The features of adjustable speed for drum rotation, large turndown ratio for fuel combustion and free-flow drum design make the RUDD drier flexible to process a wide range of raw materials such as fish meal, DDGS, biomass as well as gelatine and bone.



HLT

The Hetland Hot Air Drier (HLT - Hetland Lufttørrer) drier is fully integrated in the product programme of Haarslev Industries.

Design Features

The HLT is a co-current convective drying system with a rotating drum. It consists of two separated circulation systems, which imply no contact between product and combustion gases.

The air system consists of a discharge chamber for product outlet, cyclones for removal of dust, scrubber for condensation of evaporated water and a drier fan. A standard HLT works as a drying loop, which reduces odour emission to a very low level.

We engineer HLT driers for a range of different applications and requirements, in some cases with a built-in oxidizer.

The scrubber can be replaced by a waste heat evaporator for utilisation of waste energy or by an indirect condenser.

The HLT is also available as a drying system with intensive recirculation of drying air producing vapours with high x-value. This gives approx. 50% energy savings, when waste heat is recovered in an Atlas-Stord waste heat evaporator.

Application

The Hetland drier is internationally recognised as the original low temperature fish meal drier system, ideal for drying of fish meal and other products of similar composition, sensitive to temperature exposure. The HLT is a good solution when a high quality end product is required.

Characteristics

- Low temperature and short retention time for high quality products
- Completely deodorised effluent gases – non odour operation
- Capacities from 4,500 to 15,000 kg/h water evaporation
- Easy operation through advanced control system
- Possible to adapt to existing direct fired drum driers



Dyno-JeT

The Stord Dyno-JeT is a two-stage hot air drier characterized with very short retention time and moderate temperatures.

Design Features

The first stage is a pre-drier where the product is disintegrated and mixed with hot air. Then the material enters the finishing drier where the product is given the sufficient retention time to remove the remaining moisture. More than 50% of the total evaporation takes place in the pre-drier. The total retention time is approx. 20 minutes.

The Dyno-JeT is designed for alternative energy sources, such as fuel oil, natural gas, electricity etc.

Applications

In fish meal manufacturing the drying process is the most critical unit operation effecting the quality of fish meal, especially regarding the nutritional value. Since fish meal prices are usually based on the nutritional value, a proper drying process is essential to assure profits in today's competitive feedstuff market. The Dyno-JeT hot air drier is designed for production of fish meal of the finest quality (LT quality).



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Applications for Hot Air Driers	RUDD	HLT	Dyno JeT
Fish meal		X	X
Meat and bone meal		X	
Biomass		X	
DDGS	X	X	
Gelatine	X		