



ENGINEERING AND PROCESS TECHNOLOGY FOR

Rendering and Pet Food



Our focus is on customised processing solutions based on the know-how, technology and products merged together from the former brands: Tremesa S.A., Atlas-Stord Denmark A/S, Stord-Bartz, Sværtek A/S and Haarslev A/S, brands that have been recognised world-wide for performance, reliability and high quality.

Haarslev Industries manufactures processing equipment to customers in the rendering, pet food, fish, oil, environmental protection and bio-fuel industries world-wide.

We work in close co-operation with our customers. Plant durability, reliability and service are key-words for Haarslev supplies, whether it is a single piece of equipment or a complete turnkey plant. Over the years Haarslev Industries has specialised in processing equipment for handling animal by-products and fallen stock. We develop and supply processes and equipment to meet the demanding requirements and challenges that the rendering industry faces. Haarslev designs focus on optimal and economical utilisation of raw material and energy as well as product quality, regulatory conformance, and environmental sustainability.

Throughout the years Haarslev Industries has become an experienced company at the forefront of the technological development and a trendsetter in the market.

RENDERING

We define animal by-products as animal carcasses, parts of carcasses or products of animal origin that are not intended for human consumption. Farmers, slaughterhouses and meat producers around the world are faced with increasing demands regarding handling of these by-products. Rendering of animal by-products not only solves a waste problem, it also creates high grade end products with good market value, such as meat and bone meal and animal fats.



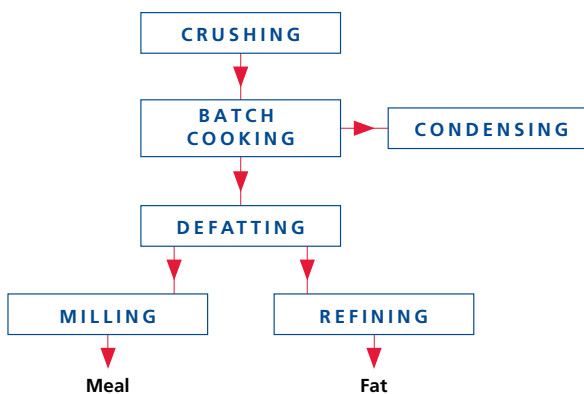
Poultry and Red Meat Rendering



Our process and engineering technology concentrates on customised solutions in order to make our customers' business more profitable and sustainable. We supply a wide variety of equipment and complete plant solutions to support batch as well as continuous processes. Our process solutions cover wet and dry rendering, processing of poultry feathers and blood, fat melting and by-product handling systems for slaughterhouses and for pet food raw materials.

BATCH DRY RENDERING

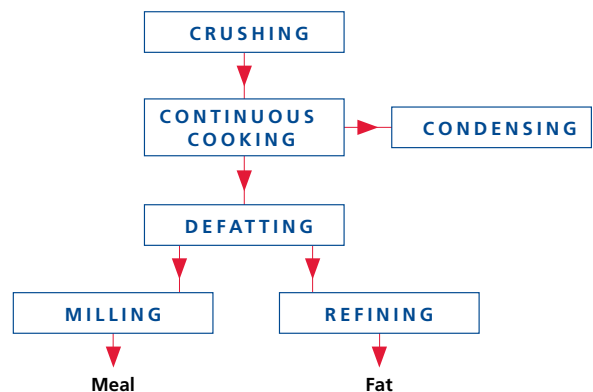
The conventional batch dry rendering process is characterised by its simplicity and versatility. All kinds of animal raw materials can be treated in this process. The crushed raw material is heated, cooked and dried in the batch cooker, before the fat is separated in the high pressure press.



CONTINUOUS DRY RENDERING

The Haarslev continuous dry rendering system is the result of many years of experience in the rendering industry. Our processing equipment handles almost all types of materials, it is very flexible and can be combined with other types of rendering systems.

Compared with a conventional batch cooker process the Haarslev continuous dry rendering system is suitable for much higher capacities and can reduce the operating costs.

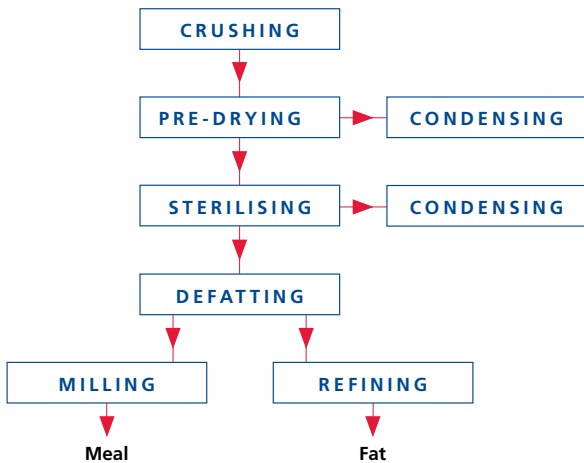




CONTINUOUS PRE-DRYING AND BATCH STERILISATION

The system developed and perfected by Haarslev Industries combines the advantages of traditional batch and continuous high temperature systems. It handles almost all kinds of raw material and while maintaining the high evaporative capacity of continuous cooking and the ability to pressure sterilise in batch cookers, it reduces the need for particle size reduction and maintains superb pressing ability of the cooked greaves.

Traditional batch or continuous high temperature systems can easily be upgraded to this process.

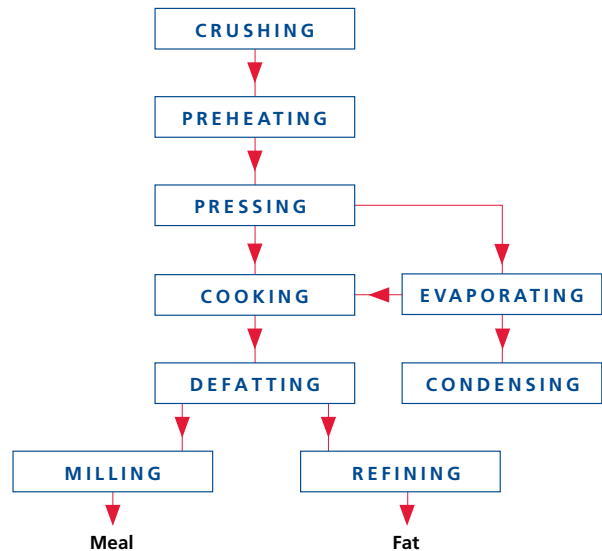


WASTE HEAT DEWATERING PROCESS

The Haarslev waste heat dewatering process is a further development of the continuous dry rendering system. This process provides an optimum combination of mechanical and thermal dewatering by recovery of waste heat energy. Most continuous rendering systems can be converted to waste heat dewatering systems.

The major advantages of the waste heat dewatering process are:

- 50-60% reduction in steam/fuel demand compared with conventional dry rendering systems.
- Up to 70% capacity increase of existing continuous cooker/drier installation.
- Reduction in electric power consumption per unit throughput.



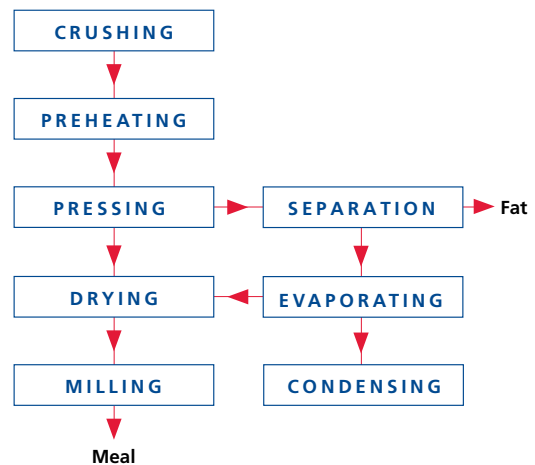


LOW TEMPERATURE WET RENDERING

In the wet rendering process proteins and fat are separated early in the process. This provides fat with excellent colour and significantly increased yields. The result is a highly digestible meal with a bright colour and a low fat content. The Haarslev concept of low temperature rendering can reduce the steam consumption to less than half the steam consumption in traditional dry rendering. Hereby the operating costs are significantly reduced.

The major advantages of the low temperature wet rendering process are:

- Low steam consumption due to extensive energy recovery.
- High fat quality with excellent colour, bleachable and with very low polyethylene content.
- Highly digestible meal with low fat content and bright colour.



Blood and Feather Processing



Processing of blood can be highly profitable as dried blood meal has a high protein content and contains essential and valuable amino acids when used in for example fish or shrimp feed.

The drying method has a high influence on the quality of the blood meal. Steam drying either atmospherically or under vacuum offers a good compromise between capital investment and product quality.

Steam driers from Haarslev Industries are available for blood processing from capacities ranging from 1 ton/hour and upwards.

FEATHER AND HOG HAIR PROCESSING

Hydrolising of feathers and hog hair prior to drying breaks down the protein bonds in the raw material and makes the amino acids available. This transforms feather and hog hair into a valuable feed ingredient.

Haarslev Industries offers a range of hydrolysers, batch as well as continuous. The selection of hydrolyser for a specific customer is done considering capacity, end product quality and energy consumption in each individual case.

After hydrolising, the hydrolised substance is typically dried in our steam driers ensuring a good balance between product quality, energy consumption and capital investment.

As a supplement to the feather and hair processes offered by Haarslev Industries, we supply presses for dewatering the raw materials at the slaughter-houses thus reducing weight and thereby transport and processing cost at the rendering plant. Dewatering with presses from Haarslev Industries also ensures a consistent feed to our hydrolysers and thereby production of consistent feather meal quality.



Odour Control



Current and future legislation with regards to protecting the environment and governing the levels of emissions of volatile organic compounds (VOCs) produced from industrial processes, including rendering, is increasingly stringent. Moreover, process smells coming from rendering plants adjacent to residential areas can be a continual source of conflict in a local community.

At Haarslev Industries, we design and manufacture two types of thermal oxidisers: Regenerative Thermal Oxidiser and Recuperative Thermal Oxidiser.

REGENERATIVE THERMAL OXIDISER

The regenerative thermal oxidiser consists of three chambers filled with a ceramic material. A specially designed burner heats one chamber to 950 °C. Cooking vapours and process air are fed into this chamber where they are oxidated into less harmful, odour-free components. The hot oxidised reaction gases are then led to the next of the three chambers and pre-heats this chamber. When the second chamber has reached the reaction temperature, the gas flow is automatically changed so that cooking vapours and process air are oxidised in this chamber while the third chamber is pre-heated. This cycle continues thus ensuring low energy consumption and efficient oxidation. Finally, the gases are vented to the atmosphere via a chimney, at temperatures and emission levels well within those permitted by relevant authorities.





RECUPERATIVE THERMAL OXIDISER

A recuperative thermal oxidiser consists of an automatic system for feeding cooking vapours and process air into a combustion chamber where the temperature is raised to above the threshold required to initiate oxidation into less harmful, odour-free components.

The hot oxidised reaction gases are then passed through a boiler and/or a heat exchange unit, depending on the requirements, to recover energy in form of steam and/or heat for subsequent utilisation in the rendering plant and minimising waste. Finally, the gases are vented to the atmosphere via a chimney, at temperatures and emission levels well within those permitted by relevant authorities.

SPECIAL FEATURES FOR RENDERING APPLICATIONS

Our thermal oxidisers have a unique range of features, which allow their complete integration into the rendering process, contributing to the overall control and efficiency of the plant and individual machines. As a manufacturer dedicated to providing equipment to the rendering industry, we have used our expertise to maximise the performance of our thermal oxidiser specially in rendering plants.

CHEMICAL SCRUBBING

Haarslev Industries scrubbers are designed in either single or multiple stage systems, which utilise reagents to effectively reduce the emissions of VOCs. In each case we select the reagent combinations and dimension the equipment on a basis of the flow rates to be handled and the gas composition.

BIOFILTER

For many years Haarslev Industries has designed biofilters for treatment of room air from rendering plants. Biofilters can handle large quantities of air and offer relative good odour removal with low capital investment. The filter bed is normally built on site. Haarslev Industries supplies design calculations as well as ducts, fans and humidifiers for handling the air to the biofilter.



Pet Food



Haarslev Industries has developed a range of raw material handling and preparation equipment for the pet food industry based on the experience acquired from the non-edible food industry.

The systems are suitable for small as well as large production capacities and each system will be tailor-made to suit the requirement of each individual customer. Extensive use of our heavy-duty and reliable pumps

eliminates manual handling, which makes the systems very cost efficient and hygienic.

Our products range covers bulk handling and pumping systems, frozen block crushers, grinders and emulsifiers all designed for high efficiency and reliability.



Haarslev Service

We are well aware that the perfect functioning of our machinery and equipment will contribute to maximum profitability for their users. Therefore we employ competent and experienced service engineers and supervisors working world-wide.

The Service Departments of Haarslev Industries take pride in supporting our customers in order to optimise the operation of our equipment. We are always in dialogue with the customers in order to establish a system for supplying spare parts securing the quality in the application of original parts. We also offer re-building of most of our products in one of our service centres. By renovating equipment, we increase the efficiency of the production line, and our customers avoid investing in completely new machinery.

All equipment is offered with a list of recommended spare parts based on a part number system, which secures that the parts are in accordance with the original design specification.

Our files contain documentation for equipment supplied and can be used to confirm or identify the specifications for parts supplied more than 30 years ago.





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