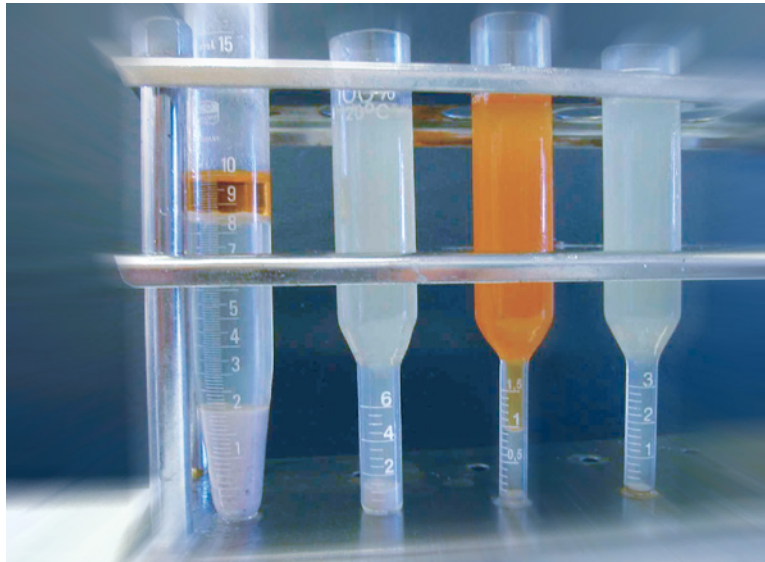




Small Capacity Plants from GEA Westfalia Separator for the Fish Industry



High Profit with Small Capacities

Fish specialities

The rivers, lakes and oceans of the world are the source of one of the most important foodstuffs. Fish is a valuable supplier of protein and other essential nutrients. However, today's industrial fish processing industry is facing new challenges. The conventional processes for the recovery of fish meal and fish oil were designed for processing large fish quantities of up to 200 t/h. However, in times when resources are in increasingly short supply, processes must be found which can also efficiently process small quantities of fish.

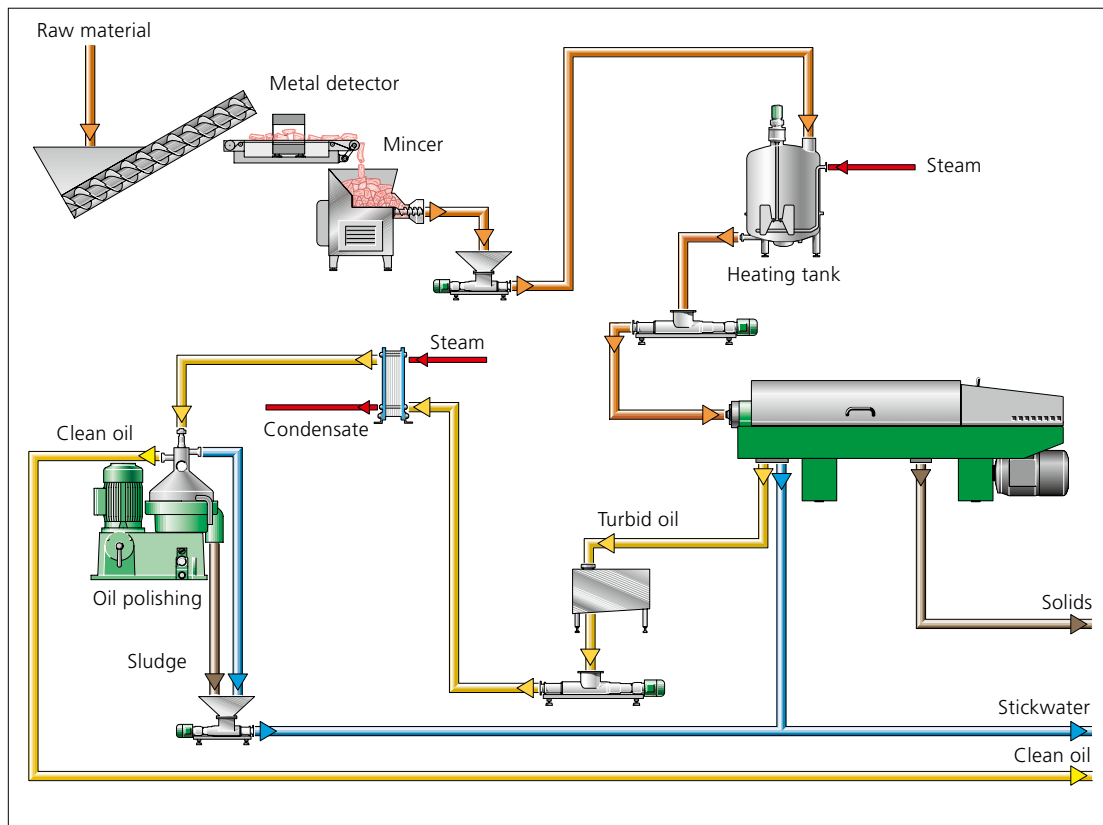
Consequently, GEA Westfalia Separator Group has developed new processes for the fish industry which are worthwhile investing in particularly when processing small quantities. The new processes, which are based on the traditional 3-phase process, have been simplified so that now 2 – 4 t/h can be processed without difficulty while additionally increasing the added value of the complete process.

GEA Westfalia Separator Group can draw on the experience gained over a period of 120 years making it

a market leader in centrifugal separation technology. The spectrum covers application-oriented, innovative solutions in machine technology and process engineering for a wide range of applications in the chemical and pharmaceutical industry, dairy and beverage technology, the starch industry, environmental technology, mineral oil technology and oils and fats recovery. The first separator for the recovery of fish oil was commissioned back in 1929.

Since then, GEA Westfalia Separator Group has developed, manufactured and delivered more than a thousand centrifuges for the fish oil industry while at the same time successfully and innovatively optimizing the processes.



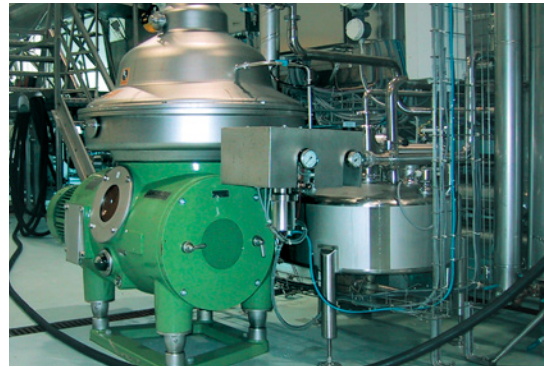


Processing fish offal

Low expenditure, high benefit

The offal obtained during the filleting of, for example, salmon still contains valuable oil and utilizable solids. For this reason, GEA Westfalia Separator Group has designed the new small installation for the recovery of fish oil from offal. The fish offal is first gently crushed to disintegrate the fat-containing cells and very carefully coagulated in the heating tank. This is important to maximize the oil yield and to obtain optimum quality of the end product. The coagulated raw material is subsequently separated into solids, oil and an aqueous phase in a 3-phase decanter. This process can do without presses to separate the solids. Therefore, no expenses are incurred for purchasing and operating those presses.

The oil phase from the decanter contains small quantities of free water and solids and can be polished in a separator. The solids from the separator can either be processed to fish meal in suitable driers or can be utilized untreated as raw material for ensilage plants. The aqueous phase or stick water from the decanter is concentrated in evaporators due to the substantial proportion of dissolved solids and processed to fish meal together with the solids. The compactness and low number of process stages make this process ideal for processing small quantities.



Recovering high-grade proteins

Highly soluble and low-fat protein hydrolyzates can be recovered with this enzymatic process. This turns them into an extremely high-grade additive for the food industry and also an attractive fodder in aquaculture, particularly for breeding young fish.

Virtually all fish raw materials can be processed to hydrolyzates. However, the most suitable are offal from salmon, trout or remains from canned fish or Surimi production.

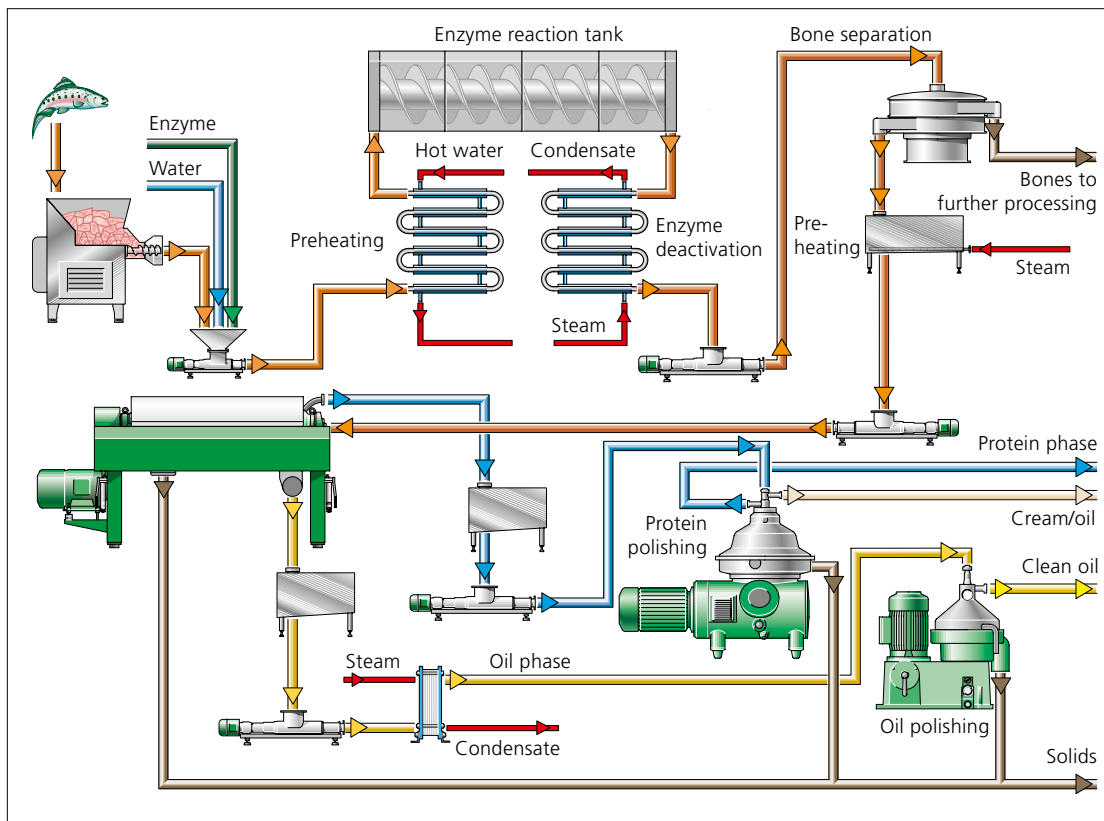
The enzymatic treatment of the crushed material takes place in a reactor in which temperature and dwell time can be precisely set. The extremely precise process control is necessary to recover “tailor-made”

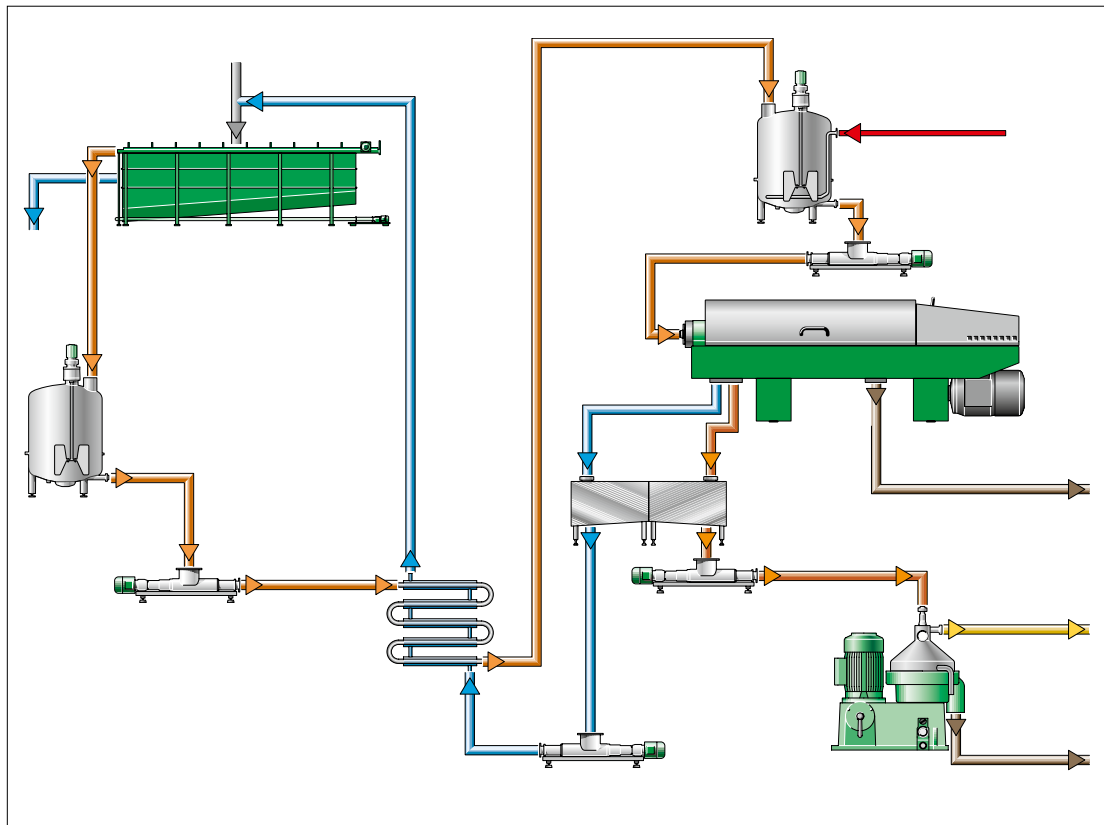
hydrolyzate. Properties and taste can be individually determined via this control.

After screening off the bones, the liquid phase is sent to the 3-phase decanter. Here, the suspension is separated into oil, solids and protein-containing water. The big advantage of the 3-phase technology is the separation of the insoluble solids and oil in one step.

Only by this means is the highly soluble, low-fat protein retained in the aqueous phase. A high-performance separator then separates the protein from the remaining small quantities of solids and oil. Following evaporation of the water, the concentrated protein is flash pasteurized and spray dried.

Processing fish offal





Canning wash water processing

Adding value

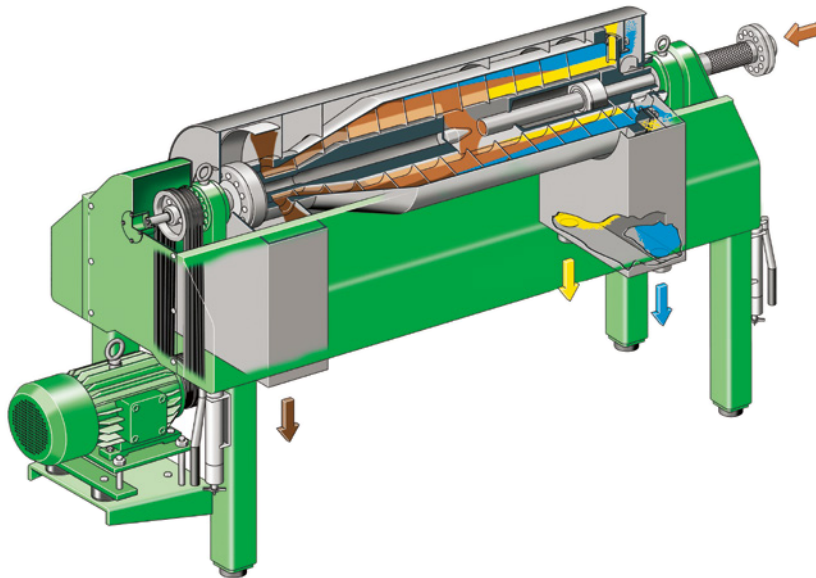
When producing canned goods in the fish industry, waste water streams are obtained which are heavily loaded with oils and solids. These primarily consist of residues of sauces and vegetable oils which are canned with the fish. As a rule, such heavily contaminated waste water is not directly discharged but rid of the solids in flotation plants. The resultant flotation sludges must be disposed of, whereby the disposal costs involved are fairly high. To minimize the disposal costs and simultaneously exploit the valuable substances in the waste water, GEA Westfalia Separator Group offers a newly developed process which converts waste into valuable substances and saves costs.

The flotation sludge is collected in an agitator tank and then pre-heated with the aid of a suitable heat exchanger. The hot water phase from the decanter is used for this purpose. With this solution, no cost-intensive external heat generation is required. The oil is released through subsequent coagulation of the proteins in special tanks supplied with live steam.

The 3-phase decanter from GEA Westfalia Separator Group then ensures in one step efficient separation of the solids, oil and the aqueous phase. The latter is subsequently cooled with heat exchangers and fed back into the flotation sludge. The recovered turbid oil, by contrast, is polished with self-cleaning separators and rid of residual impurities such as water and solids. The products recovered in this way can be sold as fodder. The overall effect is a drastic reduction in disposal costs.



Decaners and Separators for Efficiently Processing Small Capacities in the Fish Industry



Minimum oil losses

- High g-force for better solids recovery
- High lambda for better separation
- Long retention time

Low maintenance costs

- Heavy duty design
- Bowl in durable duplex stainless steel
- Hinged hood for easy and fast inspections
- Low differential speed for less wear and tear

- Super resistant and long lasting hard facing of scroll flights
- Soft stream elongated distributor with simple wear plates
- Smooth operation

Low operation costs

- Energy saving flow system
- Continuous and automatic operation
- Electronic scroll overload control system

Decaners at a glance



CD 205 – Motor rating: 7.5 kW



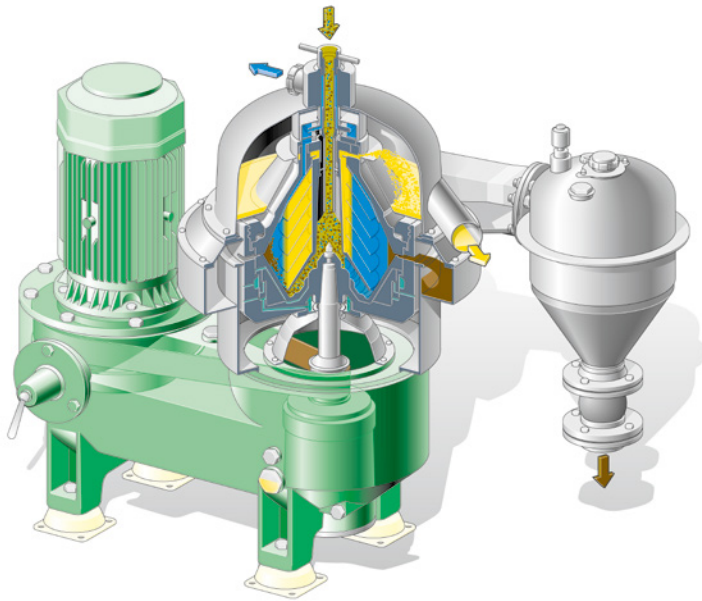
CD 305 – Motor rating: 15 kW



CC 450/458 – Motor rating: 30 kW



CA 501 – Motor rating: 35 kW



Higher effective capacity

- Continuous feed even during cleaning cycle
- High g-force
- No downtime

Low maintenance cost

- Simple bowl design for lower cleaning frequency
- Newly designed clutch with stronger clutch shoes for longer lifetime

Minimum oil losses

- Patented GEA Westfalia Separator hydrostop system for high concentrated solids discharge

No supervision required

- Equipped with a PLC system for optimal control of cleaning cycle

Separators at a glance



OSD 10 – Motor rating: 5.5 kW



OSD 30 – Motor rating: 11 kW



OSD 50 – Motor rating: 22 kW



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GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

GEA Mechanical Equipment

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