

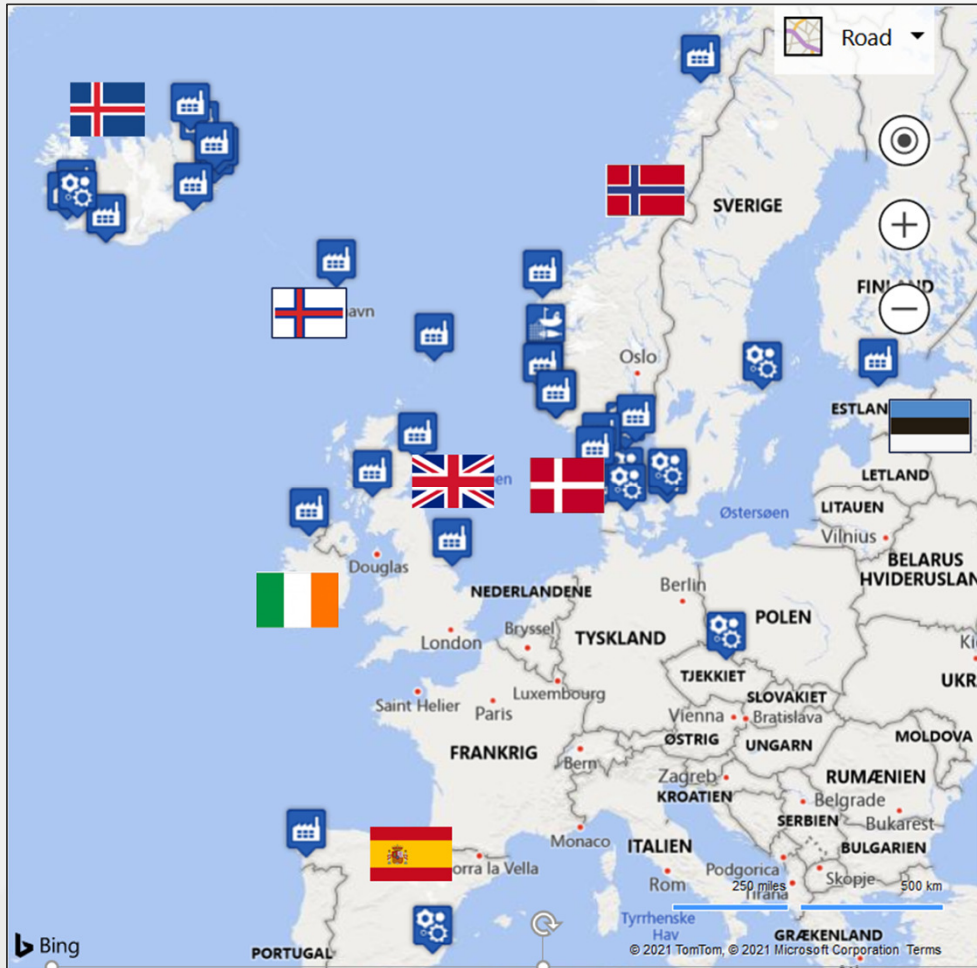


# **EUROPEAN FISHMEAL AND FISH OIL PRODUCERS**

## **Meeso stakeholder workshop**

Anne Mette Bæk, Director  
March 29 2021

# EUROPEAN FISHMEAL AND FISH OIL PRODUCERS (EFFOP)



- European industry association representing European fishmeal and fish oil producers
- National associations are members.
- Represent 30 factories in:
  - Denmark
  - Faroe Islands
  - Iceland
  - Norway
  - United Kingdom
  - Ireland
  - Spain
  - Estonia
- **Total production FM+FO 2019 = 790,000 t**
- **Total raw material received 2019 = 2,840,000 t (38% trimmings)**

MAP: <https://effop.org/about-european-fishmeal/members-of-european-fishmeal/>

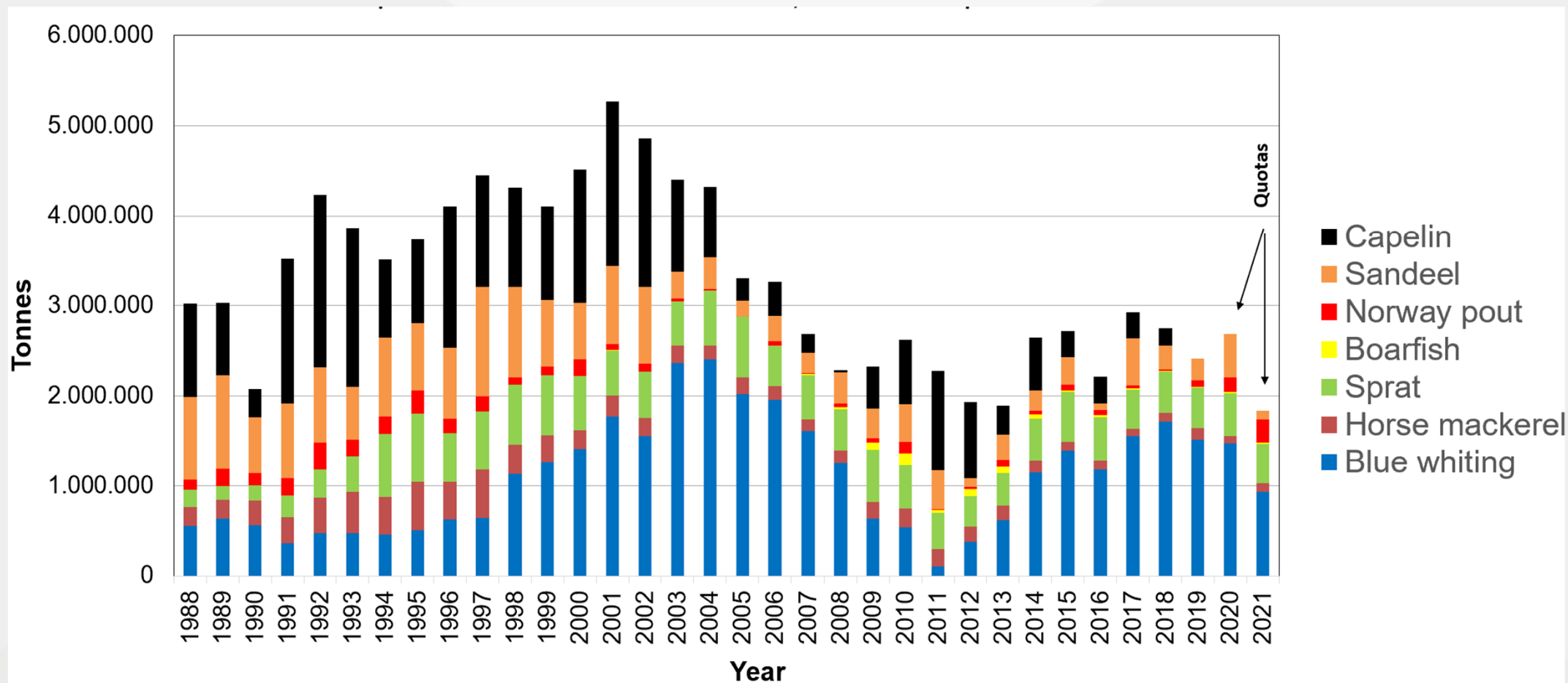
Meeso stakeholder workshop 29/3 2021

## European raw material production capacity

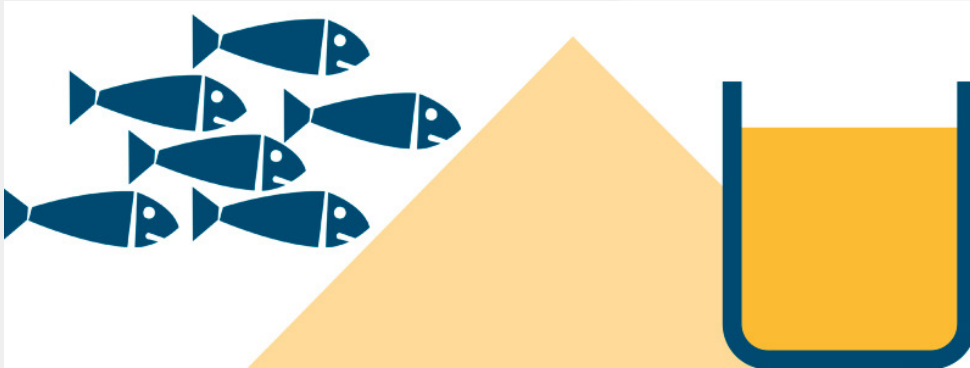


Denmark	6.500 tonnes/day
Faroe Islands	2.400 tonnes/day
Iceland	10.700 tonnes/day
Norway	8.700 tonnes/day
UK	2.050 tonnes/day
Ireland	1.200 tonnes/day
Germany/France/Spain	1.400 tonnes/day
Estonia	300 tonnes/day
Total:	33.250 tonnes/day

# CATCHES OF PROTEIN FISH IN THE NORTH EAST ATLANTIC SEAS



# What is fishmeal and fish oil?



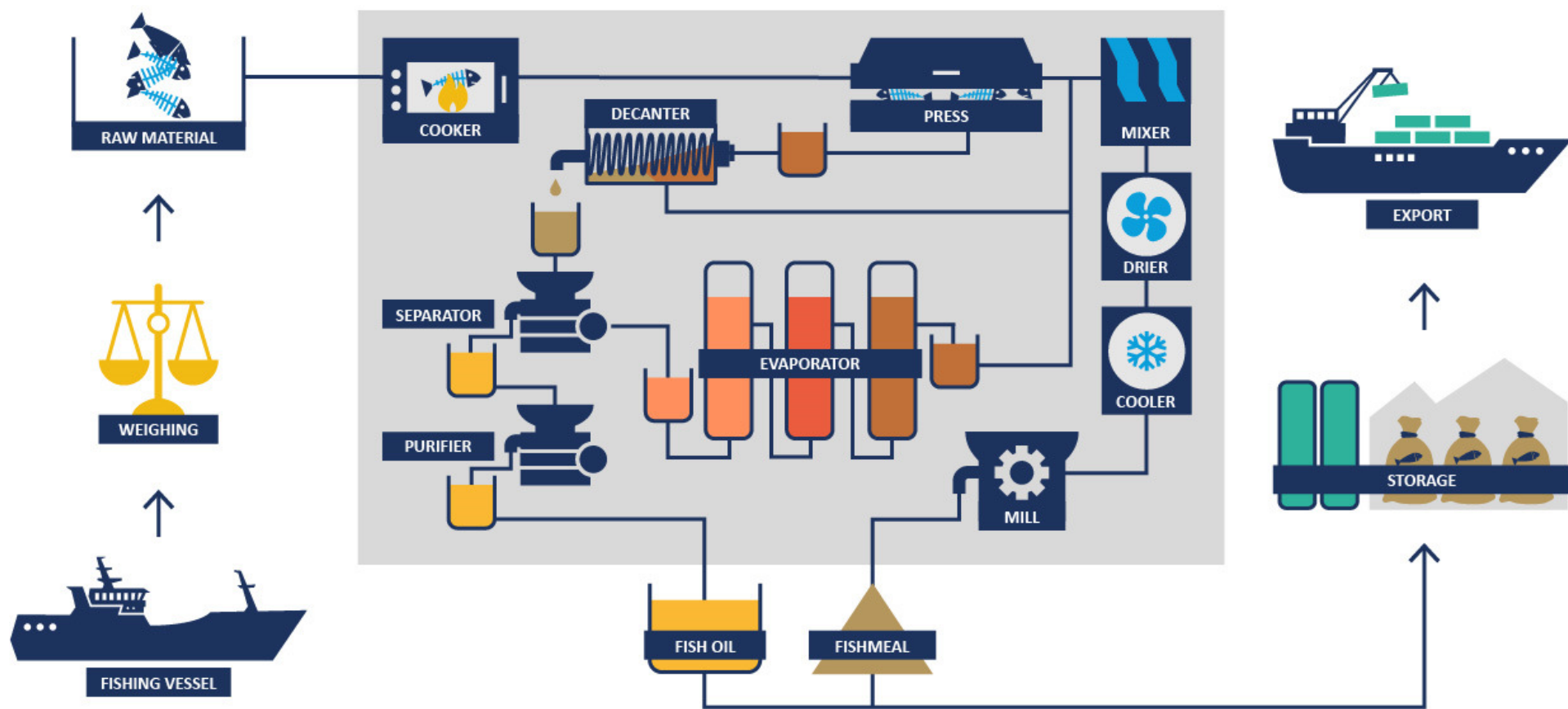
- Fishmeal is an important and very digestible fish protein and fish oil ingredient in feeds and is used for the production of feed for aquaculture and agriculture.
- Fishmeal consists in average of between 60-72% fish protein, 10-20% ash and 5-12% fish oil
- Fish oil is 100% marine oil and has a high content of very essential omega 3 fatty acids.
- Fish oil is mainly used for the production of feed for farmed fish and in the production of refined fish oil for human consumption.
- Fish oil is rich in omega-3 fatty acids – EPA and DHA. These have been the subject of numerous studies showing they confer several health benefits which are well documented.

## Strategic feed ingredients

- High protein content of 62 to >70 %
- Rich in long-chain omega-3 fatty acids EPA and DHA
- Contain minerals: calcium, phosphorus, magnesium, potassium and selenium
- Contain vitamins: B1, B2, B6 and B12
- Comparatively high digestibility



# HOW FISHMEAL IS PRODUCED:





**HAARSLEV™**

Processing Technology

## CASE STORY

# KRILL PROCESSING SYSTEM

Jette Lund Kristensen



# HAARSLEV GLOBAL REACH



PROCESS IS POTENTIAL

GLOBAL BUSINESS PARTNERSHIP FOR THE RENDERING & PROCESSING INDUSTRY



MAXIMIZING  
ENVIRONMENTAL SOLUTIONS



Haarslev name stems from the Danish village that serves as the global headquarters today



ATLAS+STORD

Merged with Atlas-Stord in 2006 with nearly a century of knowledge



Global reach & local presence. Has manufacturing facilities in America, Europe and Asia, while sales and customer care representatives in 17 countries worldwide



Collaborates with 48 agents all over the world



Products has been sold in over 120 different countries



1000+ employees globally



80.000m2 production area



HAARSLEV™  
Processing Technology

INDIVIDUALLY ENGINEERED SOLUTIONS

## MARINE PROTEINS AND OILS

*Haarslev design and supplies the ideal processing solution no matter the raw materials involved, the end-product quality needed, or the standard and regulations that have to be complied with*

- **Over 100 years of experience in the fish meal and oil industry**  
**Haarslev is a merger of Atlas, Stord and Hetland**
- **Sold the first equipment for on-board krill processing in 2004**  
**and have equipped more than 9 vessels since then**
- **More than 80% of the world's krill vessels have Haarslev solutions onboard**
- **Worldwide presence to provide you with the best service and security**
- **Constant focus on innovation to ensure you better results**
- **Experts in combining and streamlining different equipment setups - new or existing, regardless of supplier**



PROCESS IS POTENTIAL

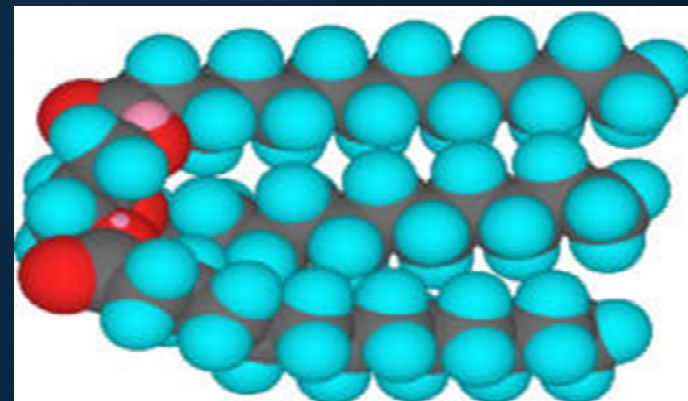
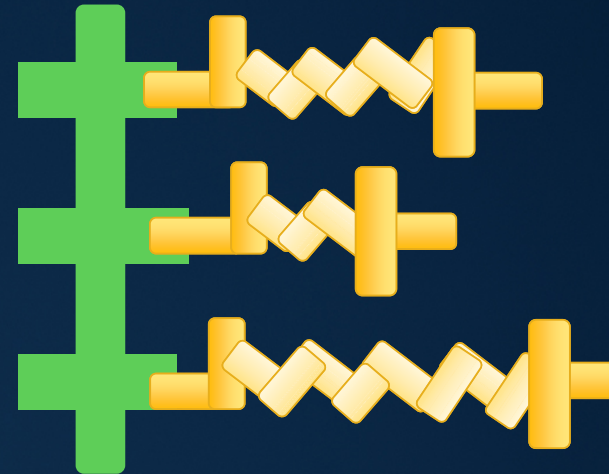
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Triglycerides

## Fish Oil

- An ester of glycerol with three fatty acids.
- Also known as triacylglycerols
- Monounsaturated fatty acids
- Polyunsaturated fatty acids
- Omega 3 and omega 6 Family



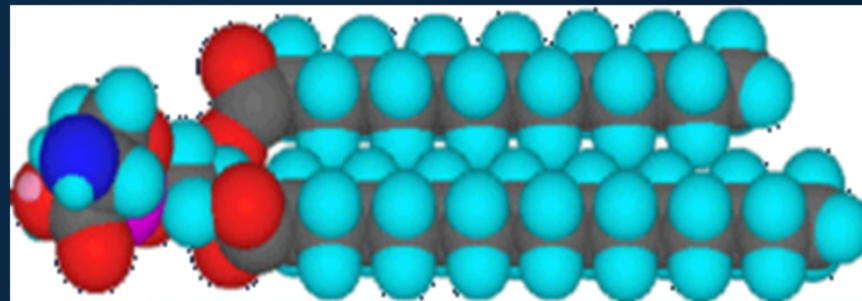
## Phospholipids

### Krill Oil

- An ester of glycerol with two 2 fatty acids.
- Add of a phosphate group instead for third fatty acids
- Polyunsaturated fatty acids
- Omega 3 and omega 6 Family



*Combinations of lipid and protein lipid protein are important cellule contributants and provided shape and cantour to act as metabolic regulators in the body*

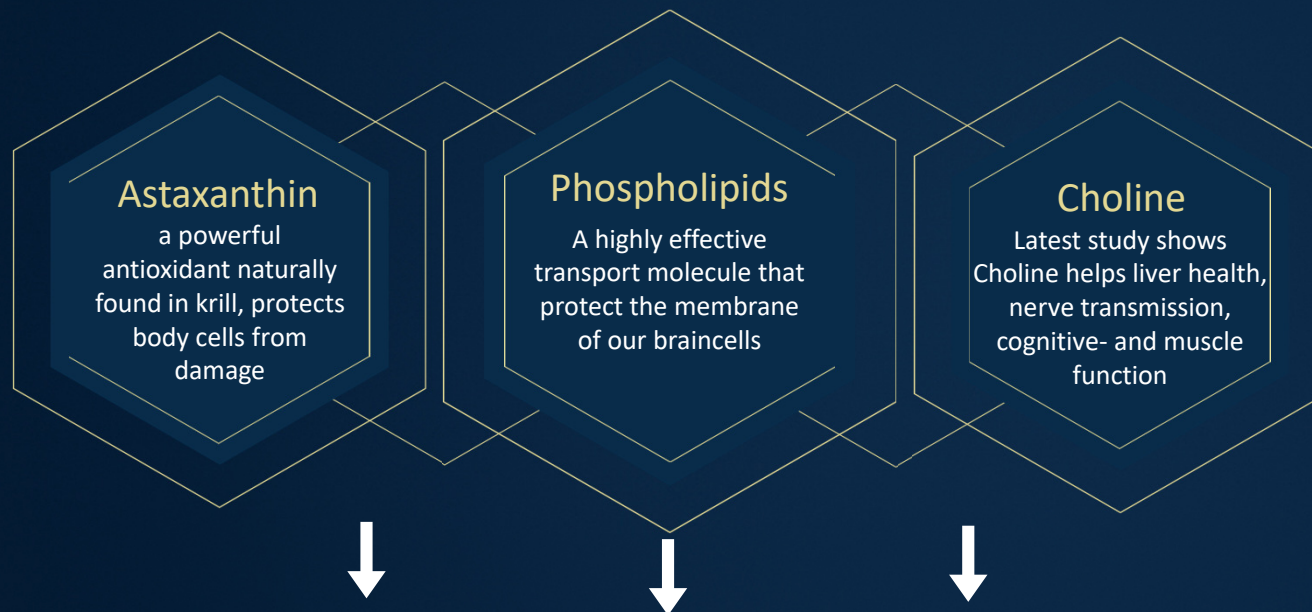


## INDIVIDUALLY ENGINEERED SOLUTIONS

# WHY KRILL IS VALUABLE

Krill is well known for its health benefits. Krill oil has unique ingredients with several key nutrients.

Krill is a premium oil known as red oil, with extremely high contents of phospholipids that is a building stone for membrane structures in vital membrane structures such as braincells



Latest research shows krill oil reduces inflammatory responses while aiding immune function, cognitive function and muscle function

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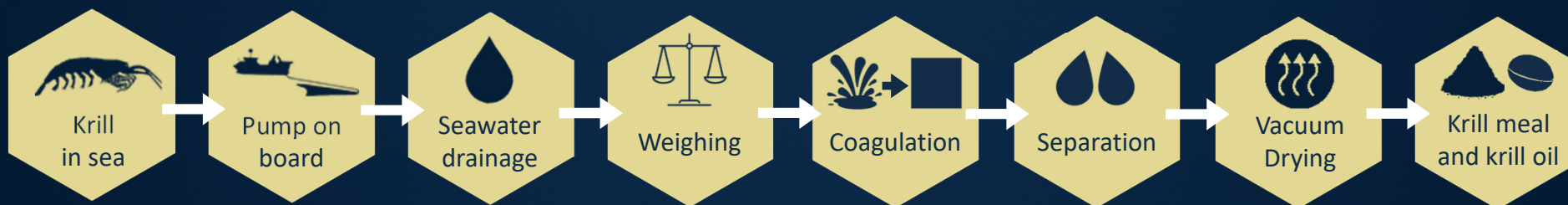
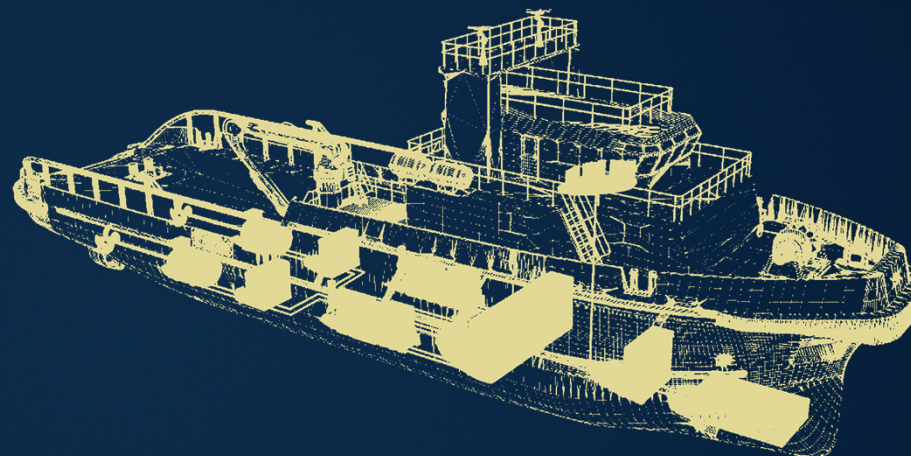
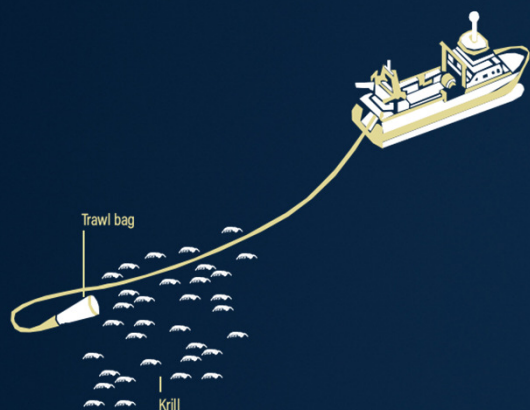
### About Krill:

- 🦋 Krill is mainly fished in the Antarctic and often used in high quality oil for human consumption (supplements)
- 🦋 Krill is the worlds largest biomass
- 🦋 Excellent Krill meal with high attractant and functionalities
- 🦋 The oil content of 2–7%, depending on season, is one of the major advantages



# SHIP-BASED KRILL PROCESSING PLANTS

*With you all the way! The process may look simple, but it requires deep process knowledge and practical expertise designing and manufacturing equipment to vessels*



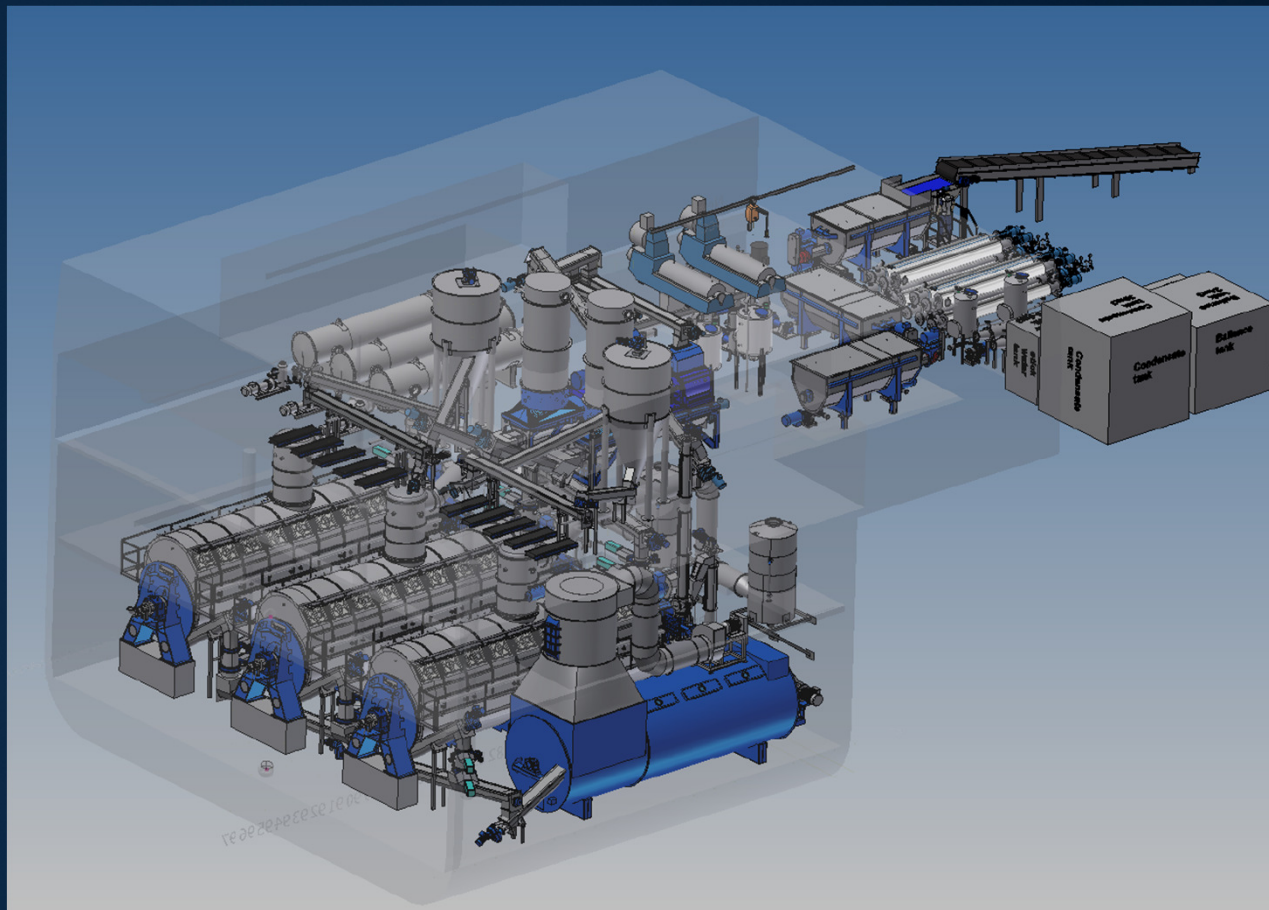
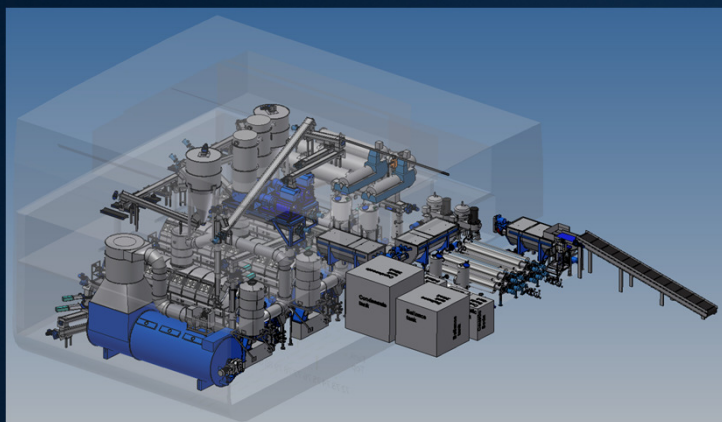
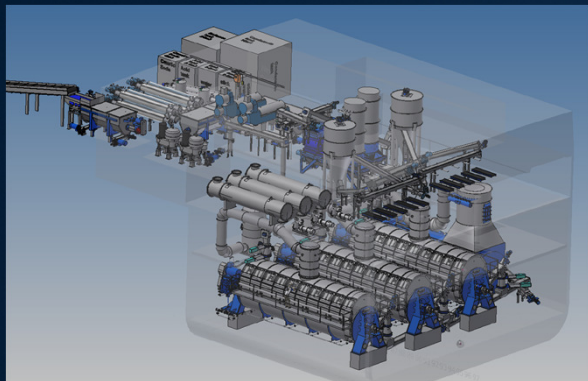
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Processing Technology

## SPACE-SAVING SHIPBOARD SYSTEMS COMPACT SOLUTIONS



Haarslev configures each fish processing system to the exact space and vessel involved, and to your particular needs and output requirements – with as much built-in flexibility as you want or need

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## INDIVIDUALLY ENGINEERED SOLUTIONS

# MARINE PROTEINS AND OILS



### Endproducts

#### Meal

Marine proteins as attractant ( good smell and taste ) enhancer product .

Axsanthin is a natural antioxidant for the valuable oil  
*(The krill must be special extracted from the meal )*



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## INDIVIDUALLY ENGINEERED SOLUTIONS

# MARINE PROTEINS AND OILS



Learning have been:

- Methods for processing onboard
- Storage/ packing onboard
- Onboard conservation
- Land based process for bioactive oil phase
- Ongoing land based process for protein co.ntinoue

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MAXIMIZING  
ENVIRONMENTAL SOLUTIONS



# HAARSLEV WORLDWIDE

MAXIMIZING  
ENVIRONMENTAL SOLUTIONS



# HAARSLEV™

Processing Technology

**WHEREVER YOU ARE IN THE WORLD, YOU'LL FIND A  
HAARSLEV REPRESENTATIVE RIGHT NEARBY**



Visit [www.haarslev.com](http://www.haarslev.com) for more info

## **Headquarters in Europe**

Haarslev Industries A/S

Bogensevej 85

DK-5471 Søndersø

Denmark

+45 63 83 11 00

[info@haarslev.com](mailto:info@haarslev.com)