



## ***TripleNine Fish Protein a.m.b.a.***



*Managing Director Christian Bisgaard:*

**“Our objective is to achieve products of the best quality by means of the most efficient use of energy and with as little effect on the environment as possible”**

*TripleNine's quality and environment control system is certified to ISO 9001 : 2008, ISO 14001 : 2004, EN16001 : 2001 and GMP B1.*

*The company is also certified according to IFFO and MSC: COC and to EU regulation 1774/2002, By-product Regulation.*

*TripleNine is also registered to Animal Feed Hygiene Regulation (The European Parliament and Council Regulation (EF) no. 183/2005 of 12 January 2005 concerning animal feed hygiene requirements).*



## The company and environment

TripleNine Fish Protein a.m.b.a. consists of a storehouse and an administration department in Esbjerg and a fish meal factory in Thyborøn which has a processing capacity of about 3,000 tons of fish per 24-hour period.

At TripleNine, we manufacture fish meal and fish oil by processing fish with a high protein content: sand eel, sprat and Norway pout as well as some cut-offs from the consumer industry (only sea-caught fish). The finished fish meal has a protein content of approx. 70%.

Both fish meal and fish oil are used as protein feed mainly in fish farming. Over 80% of our production is exported.

In simple terms, the manufacturing of the products is as follows: the raw material is boiled for 20 minutes without the addition of water, since on average the fish contains approx. 75% water. The fish mass is then pressed, which separates the product into press cake and press water. The water is centrifuged to extract the oil from the water and then the cake and boiled-down fish water are processed further to obtain the finished fish meal.

Depending on the time of year, species and quality of fish, approximately 21–22% fish meal and on average 6% fish oil are produced from the raw materials. Annual production varies from 60,000 to 80,000 tons fish meal and between 18,000 and 24,000 tons oil.

## Environmental effect

The processing of 300,000–400,000 tons per year has an effect on the local environment, mainly due to our energy consumption, wastewater effluent and odour emissions.

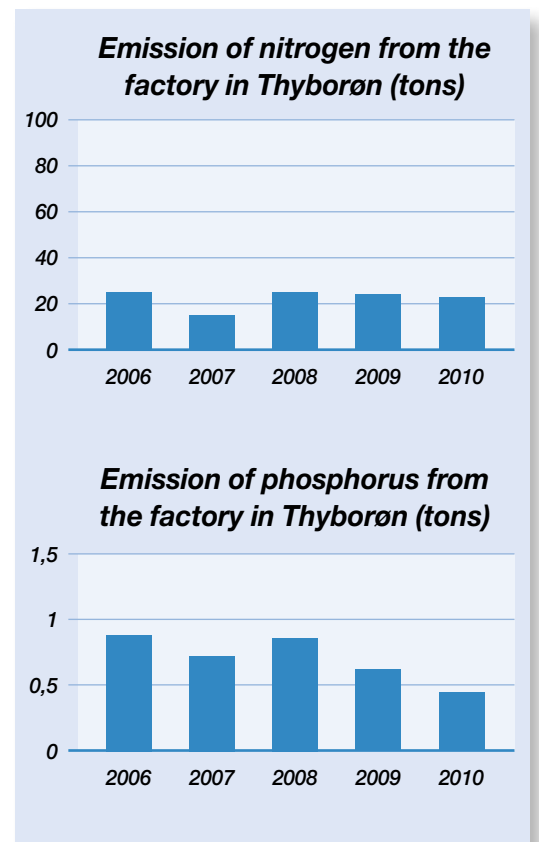
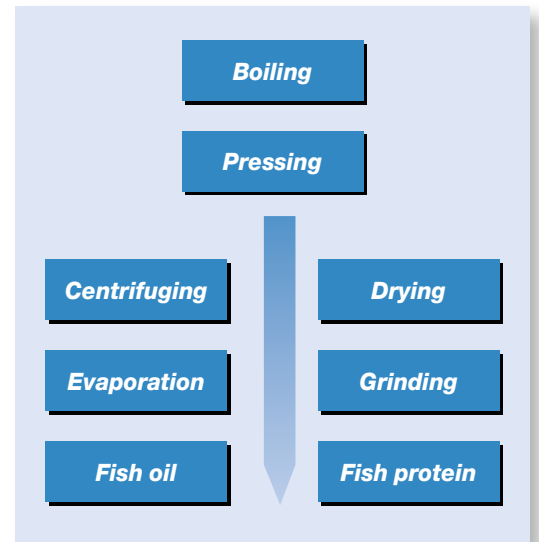
In the year 2010, production in Thyborøn used 585 kWh of energy per ton fish, which makes TripleNine one of the world's most energy-efficient producers of fish meal. Approximately 92% of energy consumption is from fuel and approximately 8% is from electricity.

Energy consumption in Thyborøn has fallen by 4.2% per ton of raw material since 2007. The marked decline first and foremost is due to the company's efforts as to energy saving projects but is also influenced by the increase in the amount of raw material, so that the large, constant basis consumption thus has a reduced effect on the average consumption.

The factory in Thyborøn uses gas, coal and oil as fuel sources. The company's energy control system was in 2010, certified to EN 16001 and has therefore become an integral part of our environment and quality control system.

This has also had a positive influence on energy consumption. The processing of 1 ton fish results in approximately 0.85 m<sup>3</sup> wastewater containing numerous elements that have an effect on the environment. Modification and optimisation of the treatment of both process and cooling water has, over the years, led to a reduction in the amounts of nitrogen and phosphorus emitted (see the bar chart) to Thyborøn Channel.

The company is using increasing financial and energy-wise resources in its quest to reduce the problem of odours in relation to the production process. This is especially achieved by the incineration of process air, whereby consumption is reduced to around 10 kWh per ton of raw materials.



## Viable results

Biologists have calculated that the total fishery of the major sources of protein fish accounts for only 15–30% of the total population of the species and must therefore be considered viable and responsible.

The same research documented that the fishing of protein fish had no major effect on the populations of consumer fish such as cod, haddock and mackerel etc.

The food chain of protein fish includes great amounts of algae containing Omega 3 fatty acids. These fatty acids constitute an important component of the fish oil from TripleNine, used in fish production. This means that the Omega 3 fatty acids are passed on to the consumers through ingestion of the produced fish.

In nature, 1000kg protein fish results in 100kg consumer fish. TripleNine transforms 1000kg protein fish to fish meal, which in turn, used as fish food, results in no less than 650kg consumer fish – a figure that is expected to increase to 1000kg within the foreseeable future.

## Quality and environment

The quality of the raw materials is one of the factors of major importance regarding the cost of production, yield and product quality and the degree of negative impact on the environment, not least the odour problem.

From a technical point of view, it is the fish TVN\* content that is of major importance. TVN is formed by the chemical breakdown of fish protein, which therefore means that TVN indicates how fresh the fish are.

This is why a quality-related pricelist was introduced some years ago, whereby fishermen obtain higher prices for catches of low TVN-values. Over a period of several years, this has led to a gradual improvement in the quality of the raw materials - for the benefit of both production and environment.

\* Total Volatile Nitrogen





# **TripleNine**

## ***Fish Protein***

The Triple-Nine Concern encompasses several companies with activities in Esbjerg, Thyborøn and Hvide Sande. TripleNine was established in 1948 and is owned by the suppliers of the raw materials – the fishermen. The concern is internationally known for the high quality of its products and its effective capacity for supply.

999, the name by which the company is commonly known, has for many years spearheaded the use of new, effective and more environment-friendly production technologies.

999's quality and environment control system is thus certified to ISO 9001 : 2008, ISO 14001 : 2004, EN16001 : 2001 and GMP B1.

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All information contained in this publication appertains to the TripleNine Environment Report 2010 for the factory in Thyborøn.  
The Environmental Report can be requisitioned from:

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