

# FISH-LIVER-HARVESTER (FLH) development projects

## - an automated fish liver harvesting machine

### Summary

**The “challenge and the solution”:** On today’s modern fishing trawlers, substantial valuable organic material is wasted due to inadequate technologies for separating and capturing the valuable parts of the guts. The entrails are normally fully discharged into the sea through pipes connected to the gutting machines. E.g. more than 95% of all fish liver is wasted. However, the patented innovation, the new Fish-Liver-Harvester (FLH) machine, provides for the **first time a solution of fishing technology onboard high sea trawlers to automatically harvest the valuable fish livers.**

The project will be carried out in close cooperation with local fishing boat owners and companies.

**The impact of a successfully completed project will be significant.**

The FLH-Machine enables **automatic harvesting of the valuable fish livers – and makes money of it.**

There is also a high value connected to be able to secure **a stable supply of fresh fish liver** to the fish oil industry and the consumer market. Also, a direct **environmental benefit** is created because it **“reduces marine litter.**

**Context and needs:** There is a heavy environmental and economic pressure for a better utilization of the raw material which today for technical and economic reasons is discarded by the fishing fleets. Therefore, there is a need for solutions that can contribute to a more sustainable fishery by using larger parts of the guts for food or feed production. Today, the entrails are normally fully discharged through pipes connected to the gutting machines, as the only alternative solution on the fishing boat is manual separation, which is too time consuming and costly.

**The innovation:** The FLH-Machine is connected to the gutting process, and is automatically separating the fish livers from the rest of the guts. The innovation is to utilize the difference in specific gravity of the livers and the rest of the guts to separate the livers from the rest of the guts. The “onboard” FLH-Machine can also easily be adapted to also be a solution for the land-based labour-intensive processing of un-gutted fish, which also represents an interesting market for the FLH-Machine.

**Project and goals:** There are 4 major objectives of the project: A) to **make final optimization of the FLH Machine design** to the practical working conditions onboard the trawler; B) to conduct further “**live onboard testing**” and performance documentation; C) to **make the machine easy and cheap to produce & service** and ready for commercial sales and production; D) to finalize the DeLiver SpF’s funding and business strategy. The planned onboard tests will also provide documentation of the extra revenues to the boat-owners, which harvested fresh fish liver represents. This documentation is a significant element in the sales and marketing strategy to be implemented after the completion of the project.

### Unique solution vs. state-of-the-art

For harvesting the fish livers from machine-gutted fish, there is no competing automated solution. Utilizing fish livers from manually gutted fish, the competition only comes from manual harvest of the fish livers. This is a labour-intensive work, difficult to perform in harsh weather. The FLH-Machine can be used for both manually and machine-gutted fish. Using the FLH-Machine and associated handling units will reduce the crew’s manual work substantially, to only shifting the hose filling the bags with fish livers, from a full to an empty bag. The current FLH-Machine is a result of 10 years research and development started at Faroe Marine Research Institute, see <http://www.hav.fo>, and brought further by a private company Deliver SpF.

We have focused on finding an automated solution on board seagoing trawlers for separating and capturing the valuable parts of the guts.