

## Project Case Studies

<b>Project:</b>	Bulk Bin Process Improvements
<b>Client:</b>	Scottish Sea Farms
<b>Dates:</b>	October 2016 – August 2017



This project involved delivering a significant increase in the use of bulk bins for the packing and transport of Head On Gutted (HOG) salmon. The bulk bins are a sustainable alternative to the polystyrene boxes currently used widely throughout the industry.

Northern Light secured grant funding, project managed the design and implementation of the changes, and monitored and evaluated the results.

To pack a larger proportion of fish processed into bulk bins, it was necessary to change the layout and flow of the existing process used for harvesting, gutting and packing. As a result of the changes to cope with more bulk bins, it was in fact possible to completely transform the entire process flow, which we re-designed in conjunction with the processing teams at both the South Shian and Scalloway facilities.

As a result, gutting now takes place immediately after harvesting, and then cooling prior to grading and packing. The new process flow is industry leading and improves product quality and consistency, as the fish can be cooled quicker using less energy, and a cleaner fish is presented to the grading and packing area.

With respect to the original intentions of the project, it has delivered huge reductions in the use of polystyrene packaging – in the 6 months following completion of the project the amount of fish dispatched in bulk bins increase from an average of 10% of production to an average of 37% of production.

Energy use for cooling varies seasonally (due to changes in sea and air temperatures) but early results suggest consumption has been reduced by around 25%.

Other benefits include reduction in road miles (transport of packaging), increased product quality (reduced delay to gutting and faster chilling), temperature control improvements, improved staff welfare (manual handling) and increased capacity within the processing plant.

Post completion of the project we commissioned independent analysis which found that new bulk bins have reduced the carbon impact of the various processes evaluated by around 85%, saving 200 tonnes of carbon per annum.

<b>Project:</b>	Electro-Stunning
<b>Client:</b>	Scottish Sea Farms
<b>Dates:</b>	May 2018 – December 2018



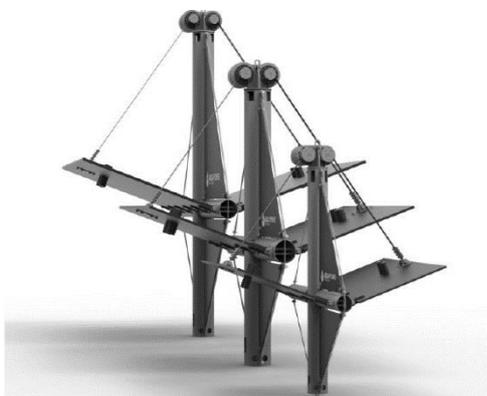
This project involved trialing a new electro-stunning technology at harvest to anaesthetise fish prior to slaughter both the South Shian and Scalloway processing facilities.

Working with technology provider Ace Aquatec, who had developed the system for trout, we established the protocols for the trial and secured approval from customers and the RSPCA. We also secured R&D grant funding from Scottish Enterprise to support the trials.

To incorporate the new equipment within the processing units we re-designed the fish intake arrangements; swim-through system from well-boat and a closed loop de-watering which displaces the fish at a fixed rate to the electro-stunning equipment whilst in water. A current is passed through the water creating a fixed electric field and all the fish passing through the field are rendered insensible prior to slaughter. The voltage, current and wave form can be manipulated to exact different outcomes. The key is to create the minimal exposure whilst still anaesthetise all fish to the same extent

The trials determined the key variables (temperature, salinity, flow speeds etc) and the crucial parameters required to ensure consistent levels of welfare standards and product quality were delivered which have given an improvement in fish welfare, product quality, operative health and safety and improved through-put. Much of this development has aided shared learning and uptake in the wider industry.

<b>Project:</b>	Aqua Power
<b>Client:</b>	Scottish Sea Farms
<b>Dates:</b>	March 2018 - Present



This project involves operational trials of a MANTA wave energy convertor at a marine fish farm site to evaluate deployment in the aquaculture industry.

We secured R&D grant funding from Scottish Enterprise to support the trial and managed the project. Working with Aqua Power and Scottish Sea Farms, we selected appropriate sites and deployed data buoys to measure wave action. With trial sites verified, consents were secured (Planning/Marine Scotland) and then the device deployed at two locations with different wave conditions.

Data from the device is analysed to determine how much power is produced in different conditions, along with feedback from the site operators on any issues/challenges in it's operation. Determining whether using the device at marine farm sites is commercially viable.

We have successfully proven concept and are now reviewing with the business taking this forward to include wider array network solution to generate power for the farm to run core facilities, and this technology is included in new and existing farms for the future where the environment will support consistent delivery