

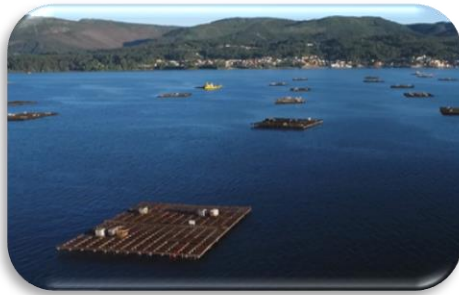


Co-funded by the European
Maritime and Fisheries Fund

The MUSSELPRO projects (GA 863681) counts “with the contribution of the European Maritime and Fisheries Fund of the European Union”

MUSSELPRO. NEW TECHNOLOGIES APPLIED TO THE MUSSEL PROCESSING

With the aim of reducing the climate impact and improving the canned mussel production process, TEINCO and JEALSA carried out the MUSSELPRO project: DEMONSTRATION OF AN IOT 4.0 MUSSEL PROCESSING SYSTEM FOR AN ADVANCED SEAFOOD CANNING INDUSTRY G. A. 863681, with a budget of 1.538.781,33 € co-funded by the European Climate, Infrastructure and Environment Executive Agency (CINEA) in the framework of the European Environment and Fisheries Fund 2018 (EMFF2018 - 65% EC contribution = 993.707,87 €).



Mussel cultivation

The MUSSELPO project was implemented by TEINCO and JEALSA, who have joined forces for the improvement of the seafood processing industry, and more specifically, the mussel industry. In this way, TEINCO's capacities as a specialist in the development of innovative equipment for the food processing sector and in the and in the implementation of 4.0 technologies, and JEALSA as the second largest seafood cannery in the EU, experts in the processing and marketing of canned fish and seafood.



Extraction from the sea

The mussels are farmed on wooden platforms anchored in the estuaries known as bateas from which they are extracted and are destined in our case to the processing industry, where they are processed and where, at the end of the process, we obtain high sensory and nutritional quality products such as canned mussels.



Mussel cultivation

The MUSSELPRO system is an innovative technology-based solution that optimises and controls the cooking and sterilisation conditions of the mussels, adjusting the processing times and temperature levels to the characteristics of each batch of mussels to be processed.

We combine different key enabling technologies (KET): Image analysis with hyperspectral technology, advanced control with artificial intelligence and application of mixed reality for equipment maintenance, a novel combination in the state-of-the-art canning industry.



Destination to processing industry

We have developed an advanced cooker and an intelligent autoclave where each has an intelligent system to control and monitor the applied process.



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Musselpro Cooker and Autoclave.

A self-developed control system, capable of programming the processing time and temperature according to the characteristics of the raw material. In addition, it has a real-time zone monitoring system that allows the temperature to be monitored and its homogeneity to be checked during the cycle. In this way, uneven heat distribution and problems resulting from incorrect application of the heat treatment are avoided.

This equipment is supported by a hyperspectral system, Hipsysbru, developed specifically for MUSSELPRO that measures the characteristics of the mussel and allows the most appropriate thermal processing to be selected according to its characteristics.

A self-developed control system, capable of programming the processing time and temperature according to the characteristics of the raw material. In addition, it has a real-time zone monitoring system that allows the temperature to be monitored and its homogeneity to be checked during the cycle. In this way, uneven heat distribution and problems resulting from incorrect application of the heat treatment are avoided.

This technology makes it possible to analyse the characteristics of the mussels in real time and in a non-destructive manner. In this way, a series of elements to be taken into account when classifying the raw material and assigning it a specific heat treatment were identified, which are shown below:

- Byssus and foreign bodies.
- Salt
- Moisture
- Fat

Hipsysbru



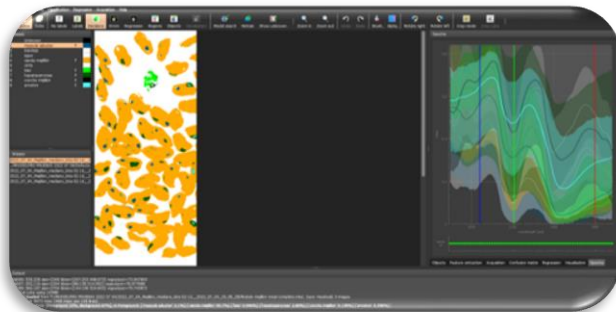
Testing with Musselpro mixed reality technology

Sorting and choosing the most suitable process is possible thanks to the power of data, as MUSSELPRO integrates an IoT 4.0. platform that receives and processes data from the vacuum from the vacuum cooker, intelligent autoclave and the hyperspectral system; which also offers other functionalities such as such as:

- Real-time remote monitoring and remote maintenance.
- Visualisation of equipment through the application of mixed reality.
- Automatic learning capabilities.

As a result, MUSSELPRO achieved the following results:

- 20% more production.
- 15 % less energy consumption per cycle.
- 30-45 % less water consumption.
- 15% less greenhouse gas emissions per cycle.
- Improved product quality due to less dehydration of the mussel.



HIPSYSRU. Musselpro Hyperspectral System.

Páginas web:

<http://www.musselpro.com> / [Automatismos Teinco, S.L.](http://www.automatismos-teinco.com)