SHRIMP FISHING WITH VISION

Powerful sorting system with the Bachmann M1-PLC

With the continuous exhaustion of fishing grounds, many fish species have become endangered. For this reason, the fishing industry is searching for solutions to ensure an environmentally-responsible approach. De Boer RVS and Pliant from the Netherlands have developed a shrimp sorting machine that returns bycatch consisting of crabs and young fish quickly and unharmed back into the sea. The system was implemented with the M1 automation system from Bachmann electronic.

De Boer RVS is headquartered in Makkum, Netherlands, and is a machine builder that has specialized in shrimp fishing. "We know the sector inside out. In order to hold back the consequences of overfishing, our customers are greatly restricted in their activities. They are forced to operate sustainably. Only in this way can they secure their survival in the long term," Melle de Boer, CEO of De Boer RVS, sums up the problem. That is why he and his company searched for a solution how to considerably reduce the bycatch. "Our activities here have also been supported by the European Union," Melle de Boer makes clear the importance of this issue.

Sorting with a visual scanning system

Shrimp fisheries currently use rotating drums for sorting. The disadvantage of this technology is the fact that the majority of the bycatch is already dead before it is thrown back into the sea. "In future, shrimp fishermen will be forced to bring the bycatch to shore – as already laid down for fishermen from 2016," de Boer states. Added to this is the fact that environmental organizations and bodies are pushing for the development of sustainable technologies. In order to stay successful, the bycatch must be drastically reduced, whatever the circumstance. ▶▶
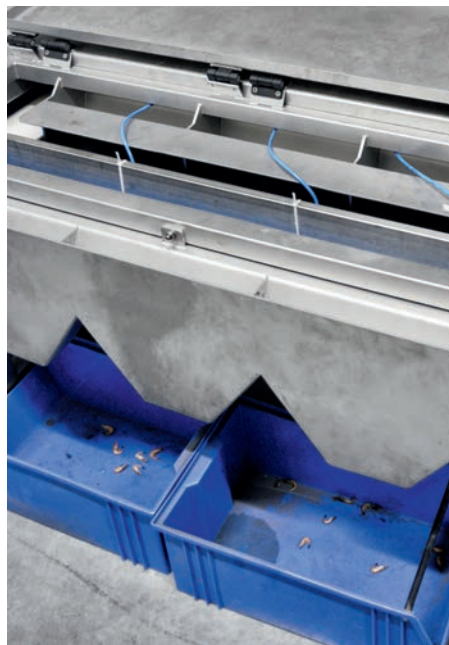
▶▶ An innovative process is opening up new possibilities here. Together with Alex Heurkens, CEO of Pliant, the engineering company, De Boer developed a shrimp sorting machine based on a visual inspection system. This places the shrimps and the bycatch on a conveyor belt. Two cameras connected to a computer are used to distinguish reliably between different shrimp sizes and the bycatch. The sorting is performed with compressed air. "The key to this is the fact that the bycatch is on board for no more than a minute and is therefore thrown back into the water alive," Boer explains the benefit of his system. Up to 300 kilograms of shrimps can be sorted in an hour and therefore fished sustainably.

»Bachmann takes our questions seriously and supports us in the development of our solutions. This is very important for us. «

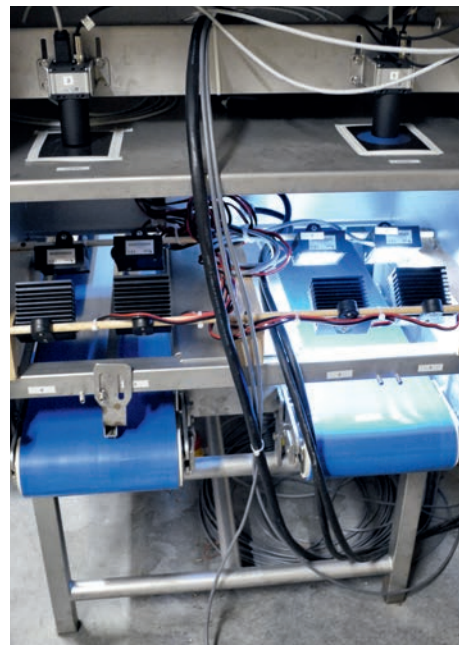*Alex Heurkens,
CEO of Pliant*

Powerful and reliable

The system, which works in the background, is well thought-out in every detail. "A vacuum system sucks in the catch and distributes it on a conveyor belt. We use two IDS GigE cameras, each with resolutions of 1.3 mega pixels, to take pictures of the individual objects," Alex Heurkens describes the process. "Our software for the image processing is based on a Halcon script. It identifies shrimps and grades them into three different sizes. This enables 10 to 20 images to be analyzed per second, depending on the speed of the conveyor belt." The Bachmann M1 controller receives the relevant

▶ **Quickly sorted**: The shrimp sorting machine separates up to 300 kg of shrimp from bycatch in an hour. (left)

▶ The visual scanning device with two IDS GigE cameras. (right)

▲ **On board the shrimp cutter of De Boer RVS in Makkum harbor:** Ronald Epskamp (manager for Bachmann Benelux), Alex Heurkens (CEO of Pliant) and Melle de Boer (CEO of De Boer RVS).

image data via an Ethernet connection. This PLC then activates different air nozzles and uses targeted blasts of air to transport the shrimps by size into the appropriate container. "Bycatch is simply ignored by our system and stays on the conveyor belt, which returns it directly back into the sea," Heurkens finishes the explanation of the process.

Robust, compact, flexible

Pliant has already worked with Bachmann several times before. "This company takes our questions seriously," a delighted Alex Heurkens states. "And not only that. The people at Bachmann immerse themselves in our solution. Their M1 is a good system and they respond quickly and flexibly to any special requests we have." With the shrimp sorting machine, Pliant benefited from this service. "Bachmann provided us with a compact PLC equipped with an Ethernet socket – just how we needed it," Heurkens explains.

The controller is fitted with the DIO280 I/O

module, which provides 32 digital and 32 analog outputs, as well as 16 freely configurable channels with an encoder input. "The major benefit of this module is the fact that an additional encoder is no longer needed. It also has a very robust design, which is what we urgently need. After all, the control cabinet is installed in the engine room of the ship. Only the control panel is installed on the bridge," Heurkens explains the challenging environmental conditions of the system.

Very promising

Melle de Boer and Alex Heurkens are convinced that the shrimp sorting machine will be a complete success. "We completed the last practical tests in early summer. We could clearly demonstrate on our own shrimp cutter how effectively the machine works," says a delighted Melle de Boer. "The most important requirements are simple operation and a high degree of reliability. This is precisely what our system offers."

> » **What counts is simple operation and a high degree of reliability. These are what our system can offer.** «
>
> *Melle de Boer,
> CEO of de Boer RVS*

de boer RVS

The machine building company De Boer RVS is based in Makkum in Friesland, Netherlands, and specializes in the shrimp fishing industry. Sustainability and the highest quality of the end product are top priorities at De Boer RVS.

↗ www.deboerrvs.nl

pliant
partner in technical solutions

The engineering company Pliant is based in Breda, Netherlands, and develops technical solutions for agriculture, the food industry, the marine and offshore sector as well as the recycling industry. The company also includes robotics to its fields of activity, as well as visual scanning systems and machine controls.

↗ www.pliant.nu