



Waterjet cutting of fish under X-ray.

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Trimming and portioning of fish fillets is much faster, the yield higher and the value of the prepared fish greater using a new, X-ray guided cutting machine called RapidPinbone from Icelandic firm, Valka. A patent is pending on the process, which is powered by a **KMT** Baseline pump and pressurised delivery system that produces fine, 50,000psi jets of pure water for cutting the fish.

Analysis of X-ray and 3D images of fish travelling through the machine on a conveyor belt allows data on the precise position of the fillets to be fed to two robots deploying water jets. They trim away the areas containing pin bones and cut the fillets into predetermined portion sizes with exceptionally high accuracy.

A prototype machine was developed in collaboration with Reykjavik fish processor, HB Grandi, for pin-boning redfish after the head, tail, spine and skin have been removed.

The machine first underwent formal trials, supervised by Syni Laboratory Service, where tests focused on three main areas: fillet yield after cut-off, remaining bone count, and productivity. Two fillet sizes were processed during test runs involving more than 500 fillets.

The loss of fish resulting from cut-off was half of what is expected when trimming fish manually and 94 percent of the fillets were bone-free. There remained only 0.6 bones per kilogram in the total amount of fish, which is well within most packing requirements. A second X-ray machine can be placed behind the line to ensure that all fillets have no bones at all.

Labour costs are low using the automated Valka system, as it requires only three to four operators instead of the 10 to 12 staff that would be needed to achieve the same throughput

by manual cutting. Furthermore, the value of products without bones is greater than that of products with bones in them, resulting in higher profit.

Valka is now set to integrate the first machine into a complete processing line at HB Grandi's facility, which is expected to be running by June 2012. Further testing of the machine for handling other fish species such as cod, salmon and pollock are ongoing. If similar results are achieved, the technology could suggest a breakthrough in the fish processing industry.

Commenting on his choice of a **KMT waterjet** pump for this application, Valka's owner, Helgi Hjalmarrsson, said, "**KMT** intensifier pumps have a reputation for reliability and the manufacturer has centres in 30 countries providing support, which will mean prompt service of our RapidPinbone machines wherever in the world they are installed.