Canada Newfoundland

Inshore Fisheries Development Agreement
Accord sur le Développement des Pêches Côtières

PROJECT SUMMARY

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THE COD TONGUE CUTTER

BACKGROUND:

Cod Tongues have been consumed in Newfoundland since earliest times. They are still very popular and considered a great delicacy locally, as they are in several other countries, especially those bordering the North Atlantic with historical ties to the cod fishery. Instructions for their preparation are to be found in the literature of Portugal, Britain, Norway and Iceland as well as other countries.

In Newfoundland, a large quantity of cod tongues are consumed. Most of these are purchased either from fishermen who remove them on the return trip from the fishing grounds or from individuals who remove them

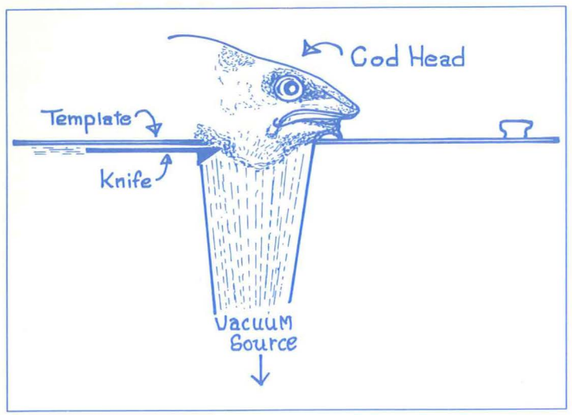

Figure 1. Schematic diagram of operation of the JM100 Cod Tongue Cutter.

Figure 2. Cods heads for tongue removal.

at the processing plant after the fish have been filleted. Small quantities are sold locally in stores and supermarkets and some are exported to speciality markets.

Processing plants often do not become involved in processing cod tongues because they have found the manual removal of tongues a slow, tedious and expensive practice, making it difficult to obtain significant or economic volumes. Several people have contemplated the design of a machine to remove tongues mechanically. This has become especially desirable as fish quotas decrease and processors think more and more about the recovery of discarded material.

Joe Moulton of Burin spent several years developing a cod tongue cutting machine. After much experimenting Mr. Moulton arrived at a prototype design that allowed cod tongues to be easily removed by a single operator, at a much faster rate than manual removal. However problems still existed with the tongue cutter which made it difficult to operate and maintain in a plant situation. In March of 1990 Canpolar East Inc. acquired the patents to the cod tongue cutter and since that time have modified it significantly and carried out further in-plant testing.

The Canada / Newfoundland Inshore Fisheries Development Agreement-Utilization of Discards Program provided funding to Canpolar East Inc. to enable them to carry out modifications to the original design and to carry out in-plant testing.

MODE OF OPERATION:

The redesigned tongue cutter is referred to by Canpolar as Model JM100(Figure 1). It operates as shown in the schematic diagrams (Figures 2 & 3). The cod head is placed on a template which has a hole of the appropriate shape and size. A vacuum draws the tongue down through the hole in the template and a knife operated by a foot switch severs the tongue, the tongue then passes through the vacuum source to a collection point.

MODIFICATIONS:

The JM100 Cod Tongue Cutter was modified to address such features as sanitary design, modularity, maintenance and manufacturability.

SANITARY DESIGN:

The original model used a shop vacuum to create a vacuum source on the underside of the template and the tongue had to be retrieved from it. The modified version uses a high pressure water pump in conjunction with a water pump eductor. The use of water as the vacuum source results in the tongue passing safely through the pump and ending up outside the machine ready for packaging. Water also results in constant cleaning within the food zone of the machine reducing the accumulation of residues and hence minimizing bacterial growth. The result is a much more sanitary design.

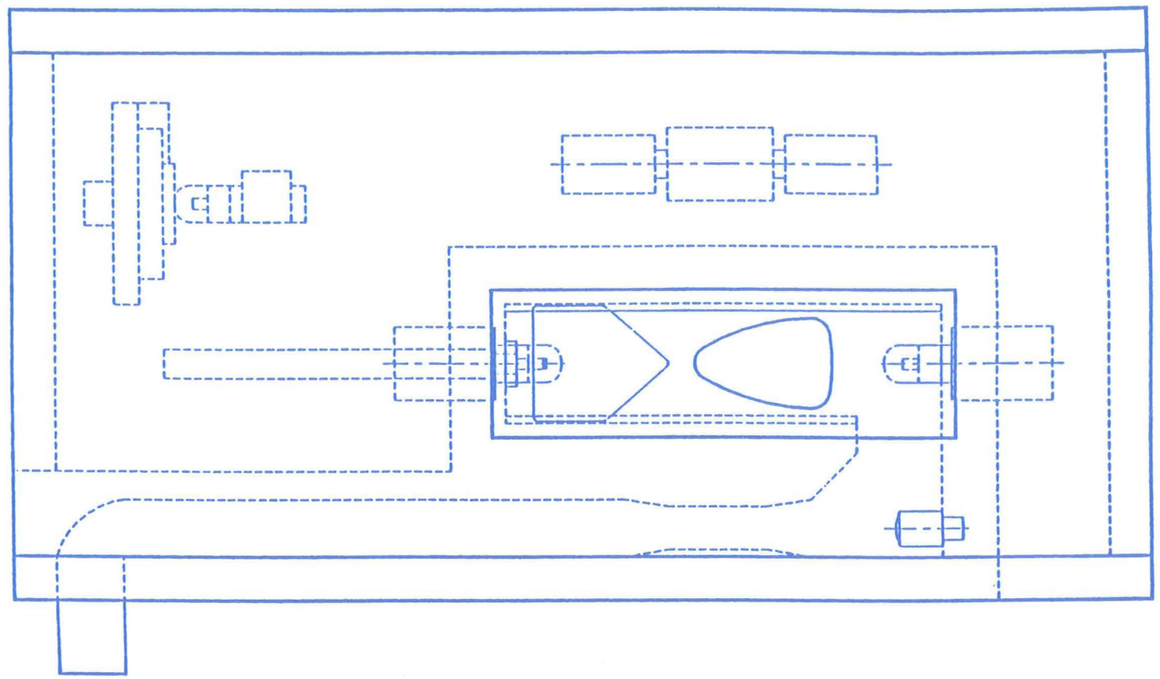

Figure 3. Top view drawing of the Cod Tongue Cutter

MODULARITY:

The size of the unit was reduced by 40 - 50 %. As a result of the use of high pressure water as a vacuum source, it also provides high pressure water to move the knife, resulting in a size reduced, more powerful and efficient knife action.

The new design and method of fabrication also results in ease of assembly and disassembly — important for clean-up and maintenance.

MAINTENANCE:

The original stainless steel knife was replaced by one manufactured from a tough tungston carbide material. It is anticipated that the knife will require fewer sharpenings than required formerly. The modular design results in ease of servicing the knife.

MANUFACTURABILITY:

The redesigned model JM100 Cod Tongue Cutter is made up of four components using a “sandwich” construction technique. They are (1) a stainless steel top plate (2) a stainless steel bottom plate (3) a one piece UHMW plastic vacuum chamber / eductor and (4) a hydraulic assembly consisting of standard off-the-shelf components.

RESULTS:

The Canpolar Cod Tongue Cutter Model JM100 enables the quick removal of cod tongues, by one operator at the rate of 15 to 20 tongues per minute or 4 to 5 times the manual rate. The machine is compact and suitable for vessel or plant operation.

The machine is adjustable for various sizes of cod heads simply by changing the top template and will cut tongues with jelly on or off, as required, by replacing the template.

It is currently being fine-tuned and intensively plant tested. One unit has already been sold.

Publications in this series:

1. Cod Holding Pens
2. Experimental Shrimp Fishery in Trinity Bay - 1989
3. The Utilization of Discards from Crab and Shrimp Processing
4. Newfoundland Sea Urchin Roe - Potential for Development
5. Under Running System
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7. Pelagic Fish Handling
8. Redfish Harvesting by Inshore Draggers Using Midwater Trawls
9. The Cod Tongue Cutter
10. Herring Roe-on-Kelp Production in Newfoundland
11. Icelandic Scallop Fishing St. Pierre Bank
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13. Male Capelin Utilization
14. Cod Roe

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