

# Processing of pelagics - a new approach

**A new concept of an integrated processing plant, which can ensure that catches of pelagic fish are fully and rapidly utilised, is introduced. It is designed to prevent even odour-contaminated air from escaping into the surroundings.**

**M**ore than two-thirds of mankind have inhabited coastal regions and rims of inland waterways from early times, and still do. Over the centuries, traditional harvesting of pelagic marine and aquatic fish species has taken place in these areas all over the world. Man has continuously invented new gear to catch and haul ashore these vital supplies, and the concepts of these

gears are constantly being upgraded to improve their efficiency. However, once it is landed, the rather perishable harvest must be processed immediately, to extend its shelf life and permit it to be delivered to consumers in a marketable condition.

Drying in the sun is still the only means of preserving pelagic harvests in many developing countries. However, rain and

strong winds hamper the drying and the areas in question are prone to seasonal changes in the weather. More often than not, the process must be enhanced through prior salting, but the salted products fetch lower market prices than freshly dried ones. This problem can be overcome by the adoption of integrated total processing plants, introduced below, which can operate independently of ambient weather conditions. Brown arrows indicate the flow of material through the process. The plants recover the excellent, life-supporting raw materials mentioned above completely and nothing is wasted.



Ingvar Nielsson

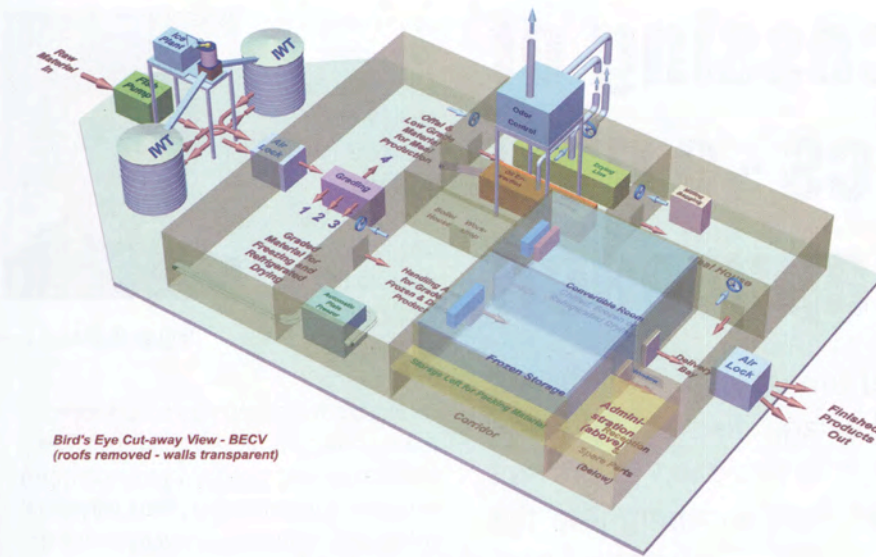
## The integrated processing plant

An integrated total processing plant



Traditional harvesting of Indian oil sardine *sardinella longiceps* (inset) in Oman.

An integrated total processing plant for pelagic harvests

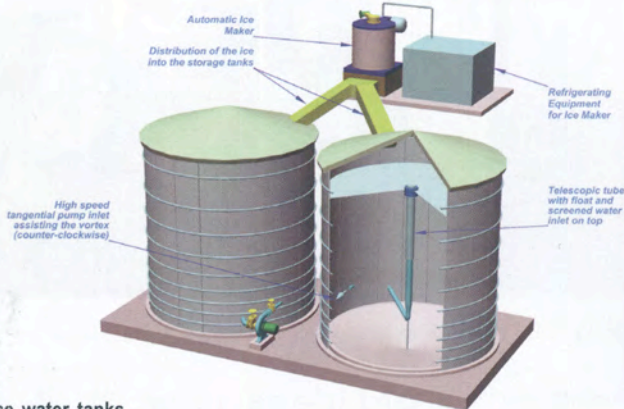


The integrated total processing plant

consists of ice water tanks for temporary storage of the incoming raw materials; a grader; one or more plate freezers; a frozen storage room; a convertible room for refrigerated drying or, alternatively, storage of chilled or frozen products; and a processing line to render the offal to fish meal. Moisture from the raw material and the pumping carrier evaporates in the process and is condensed to potable water. Depending on the prevailing market prices of fish oil and fuel, the fish oil can either be used to fuel the boiler, or it can also be refined to industrial and marketable grades – including even edible. Hence, the entire fish harvest is contained in the final products, which leave the plant as frozen blocks, dried fish, fish meal, and sometimes also as fish oil.

Air locks at the inlet and outlet of the facility isolate the activity area from its

An integrated total processing plant for pelagic harvests



Ice water tanks



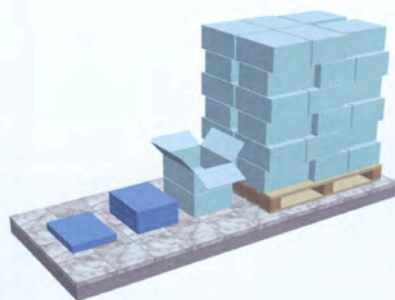
surrounding environment. To prevent odour-contaminated air from escaping to the surroundings, internal air pressure in the facility is kept just a fraction below the prevailing atmospheric condition. Blue arrows and axial fans in the walls show how odour-

contaminated air is collected from all over the plant and sent to the odor control for deodorisation. Hence, the facility is fully environment-compatible, releasing no fluids, no solids and no smell - in short; nothing whatsoever except the potable water - to the

surrounding environment.

**Catch disposition**

Depending on the degree of decomposition of the raw material arriving at



Products from pelagic harvests (from left): frozen blocks, dried fish, fish meal and fish oil.

the plant, between one-third and two-thirds of the landed catches (grades 1, 2 and 3) are graded from the bulk and sent for prime processing. The resulting products - frozen blocks and dried fish - are consumed by humans and fed to exotic animals in zoos, growout facilities and animal husbandry operations. Fish meal rendered from the offal (grade 4) becomes a feed supplement for local livestock.

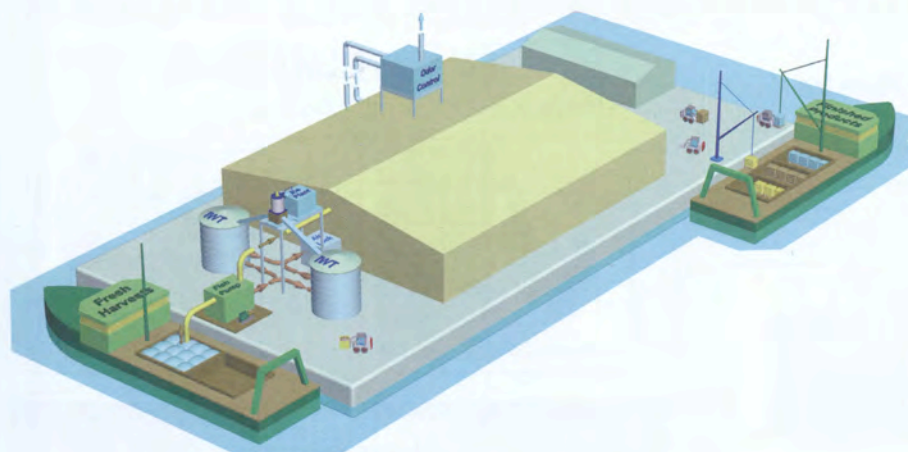
The plants comply with all environmental ordinances in force worldwide. To minimise damage to the fresh harvests during delivery and, at the same time, reduce the costs of transportation, the plants should preferably be located directly on the landings in fishing ports. However, they can also be erected on flat top barges, thus permitting fast relocation if fish schools moving with the seasons must be chased.

### Old ideas, new concept

All individual concepts in this proposed setup are well known and proven. They have all been in use throughout the world for decades; however, the integrated total processing concept is new. Much of the major equipment components can be found in second hand markets, while auxiliary components - tanks, conveyors, supports - can be fabricated in local workshops, of which there are many in all developing communities.

The integrated total processing plants come in handy in developing countries, where they can produce valuable commodities for export, thus earning the communities much needed foreign exchange. Drawings and specifications - to fabricate, assemble, erect and commission the plants - can be provided on request. ☺

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A seaborne integrated pelagic processing plant based on a barge.

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