

Do-it-yourself meal plants

A DO-IT-YOURSELF fishmeal plant suitable for developing countries has been designed by Icelandic company IceBits.

The company run by engineer Ingvar Nielsson is working on several projects in the Far East to set up fishmeal plants. One is for an area devastated by the tsunami at the end of last year.

IceBits had previously supplied a do-it-yourself block ice plant to this area, but the tsunami destroyed it.

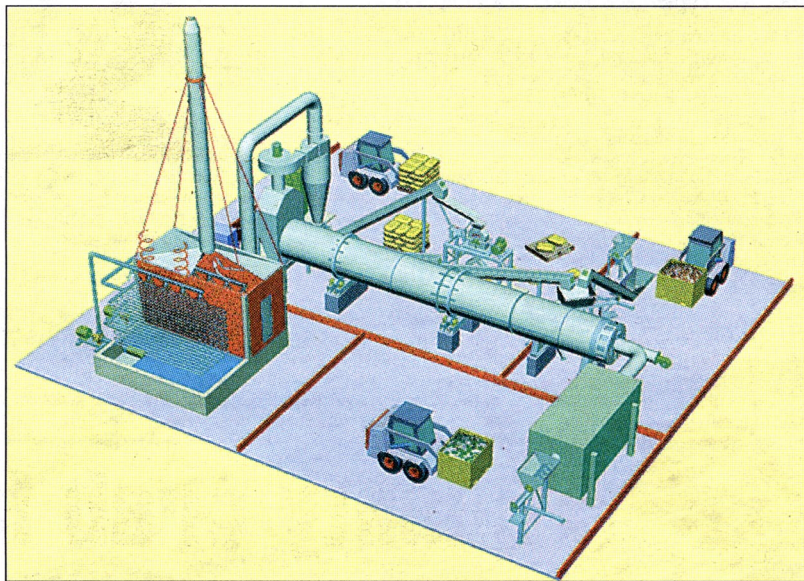
One fish meal project is being planned on do-it-yourself lines, with as much as possible manufactured locally, while the other involves co-operation with the Icelandic company Alstál to manufacture and supply much of the equipment.

Projects in South and Central America and Africa are in progress, including a plant to process oily fish in West Africa being designed around used and reconditioned equipment, plus other components made on the spot.

Ingvar Nielsson used to manage Ice Bits Pte Ltd. of Singapore in the 1970s and 1980s. During those years he gained much experience being involved with refrigeration and fishmeal projects, including two systems for the Bintawa fishmeal factory at Kuching, Malaysia.

"This company installed a processing line capable of handling a tonne of raw material an hour. It was a commercial success and was extended with another line – both of which are still going strong after 20 years in operation," Ingvar Nielsson says.

He explains that, in the past, European fishmeal



Cut-away view of a LeanFish One fish meal plant to process one tonne of raw material an hour. "The brick wall scrubber and natural draft evaporative cooler for the odour control on the right in the picture may appear primitive. They are shown in this way to suggest inexpensive local construction and can be replaced with standard packaged units from manufacturers in Europe and the USA. The green cabinet next to the foreman's desk is the electric control panel, while the violet cabinet represents the ozone generator," Ingvar Nielsson says.

with the injection of ozone into the scrubber fluids are more effective and less costly.

"LeanFish fish meal plants based on the good old direct fired rotary dryer are staging a comeback," Ingvar Nielsson says.

"IceBits – the successor to our Singapore company – has upgraded the designs to the latest mechanical EU standards and we now offer them for do-it-yourself at attractive costs.

"We estimate that, if fabricated at price levels prevailing in developing countries, these plants will cost less than one-third of the going prices for hi-tech fish meal plants of equal capacities."

plants all worked with direct fired rotary dryers, normally with equipment fabricated locally, apart from precision components such as presses, centrifuges and oil burners.

"These plants worked well and were easy to operate and maintain. They produced whole low temperature meal – referred to as WLT-meal – the only drawback being the somewhat annoying smell," he tells *FNI*.

In the 1970s and 1980s hi-tech fish meal processing equipment was developed. Fish meal was in demand and hi-tech designs – although expensive – became popular.

"Small fish meal plants based on the direct fired rotary dryer went out of fashion and were decommissioned. Fish meal technicians

in Europe and the USA toyed with new designs while people in the developing world – half of whom inhabit coastal and lake areas – continued to deal with marine and aquatic catches as they had always done. Skills to operate hi-tech equipment is virtually non-existent in many areas.

"Equipment must be simple and user-friendly," Ingvar Nielsson says.

"However, well equipped mechanical workshops are quite capable of complicated fabrication work if designs are available."

He adds: "Close to 80% of wet marine offal is water. When it is rendered dry, most of the water evaporates and the oil content – the so called Live Oil Content or LOC – remains with the solids to become the fat content in the dried product.

"The resulting fat content in the product is about four times the LOC value. To warrant long shelf life, the product should be less than 10% fat, meaning that the LOC of the raw material should not exceed 2.50%.

"An LOC value determining whether raw material is lean or oily can thus be set at 2.50%. Well over half of all marine and aquatic offal worldwide is lean. The new design at Kuching was named LeanFish to

emphasise that it was designed for lean raw material."

Recent years have seen regulations and requirements for odour levels coming into force. In Kuching, odour control was based on scrubbing the exhaust and a biochemical additive to the recirculated water.

The additive develops a flora of micro-organisms that virtually eat the odour. Newer techniques that work



Fishmeal processing at Bintawa, Sri Lanka, in full swing.

Fire up on coconut shells!

ICEBITS is developing a system of biomass firing that will allow LeanFish plants to be fired with agricultural offal, such as coconut shells, spent sugar cane or rice husk.

"Agricultural offal is available in abundance in the developing world to the point where disposing of it can present problems," Ingvar Nielsson says.

"That is also where most of our potential

clients are located and biomass firing would make the operation of LeanFish plants much more feasible."

Ingvar Nielsson explains that the mechanical section of the biomass gasifier would be supplied by a specialist, but the heavy primary chamber can be built locally.

He comments that, with rising oil prices, a complete biomass firing set-up from an overseas

supplier would pay for itself within two years.

"I am looking for a manufacturer prepared to take part in this project. The manufacturer would supply the hardware, but with the primary chamber made locally.

"This would make it even more economic, as it would mean that the biomass firing section could be paid off within one year," Ingvar Nielsson says.

LeanFish

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