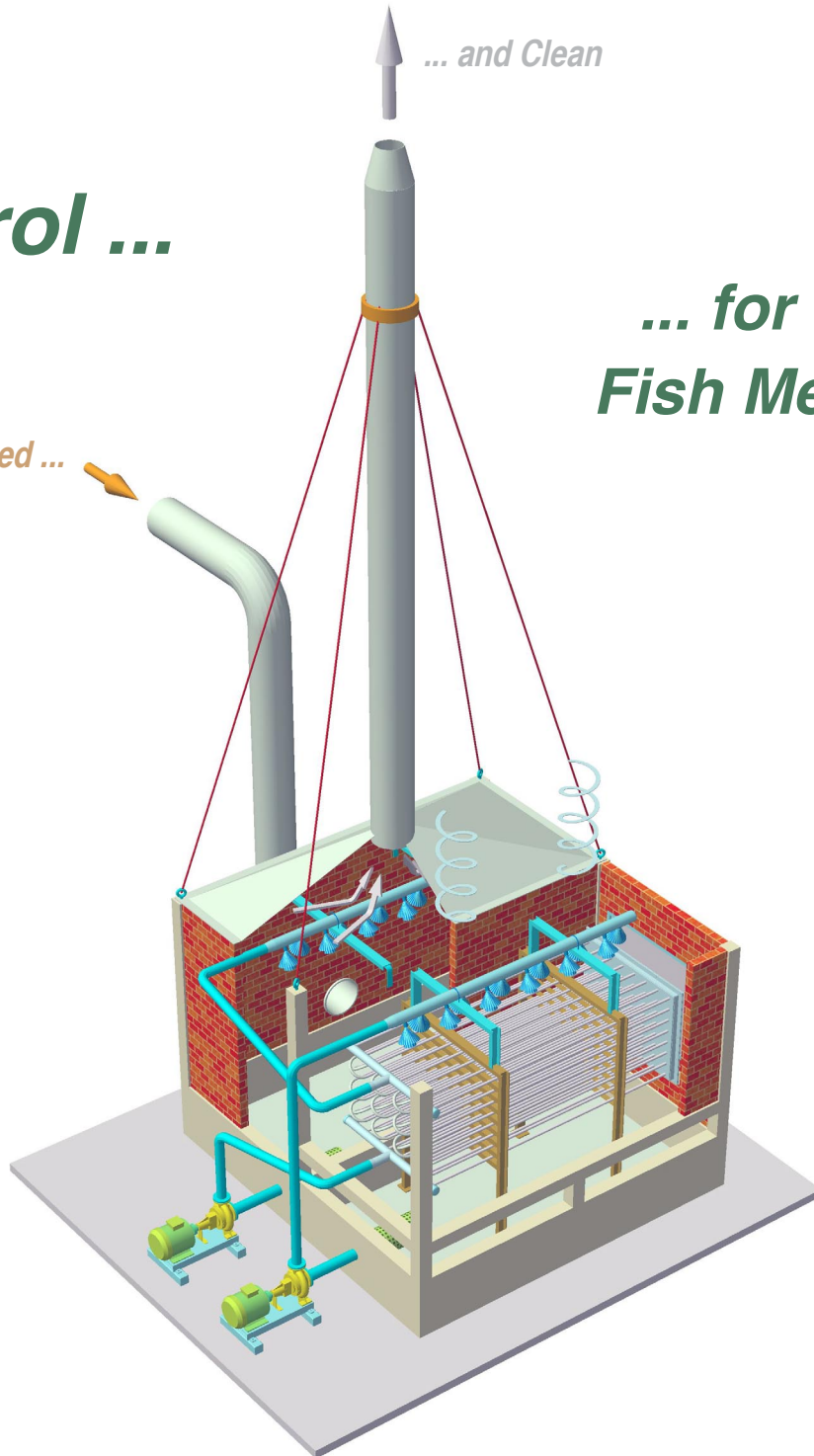


Do-it-yourself

Environment-compatible
LEANFISH

*Odor
Control ...*

Contaminated ...



*... for LeanFish
Fish Meal Plants*

Unique

Simplicity & Economy

LeanFish Odor Control

The **LeanFish Odor Control**—shown in a 3D picture on the front page—is constructed from **locally available conventional building materials**—the basin from **reinforced concrete**, the walls from **brick**—and equipped with hardware **fabricated and/or purchased locally**. It consists a **Scrubber** (left/behind in picture) and an **Evaporative Cooler** (right/front in picture), both of which can also be purchased in the market as **standard packaged units**.

Air arriving from the LeanFish plant (orange arrow in picture) is contaminated with (a) **flue gases** from the fuel combustion, (b) **fine dust** escaping the Cyclone, (c) **latent heat** from the drying (in the form of steam) and (d) **smell** from the processing. This contamination is **removed through the Odor Control before the air is released** to the ambient via the Smoke Stack (grey arrows in picture), **making the plant fully environment-compatible**.

The air enters the Scrubber at low level and is, on its way to the Smoke Stack, **washed by a shower of water** from a Spray Tree. The water passes through the Cooling Coil of the Evaporative Cooler, where the **latent heat is removed**, and is recirculated back to the Scrubber. Another Spray Tree in the Evaporative Cooler wets the surface of the coil for cooling by natural draft. **Smell** is removed through (1) a **bio-chemical additive**, generating a flora of micro-organisms in the Scrubber fluid that virtually eat the smell, or (2) the **injection of ozone** into the fluids.

Before processing commences, the **basins** of the Scrubber and Evaporative Cooler are **filled with water** and the **recirculation pumps started**. Steam condenses when latent heat is removed and **condensate accumulates** in the Scrubber fluid. The accumulated quantity **equals that of the moisture** being removed—approx 750 to 800 kg per mTon of raw material—and must be **disposed of in the sewer or treated in a septic tank**. Apart from the excess Scrubber fluid, **neither liquids nor solids are discharged from a LeanFish fish meal plant**.

In some places **environmental ordinances in force do not permit** the excess Scrubber fluid to be disposed of in the sewer—nor treated in a septic tank. It can then be dealt with through **Reverse Osmosis**, abbreviated RO, rendering potable water, which **can be used** as make-up water in the Evaporative Cooler. The consumption of the Evaporative Cooler **slightly exceeds** the quantity condensed in the Scrubber, while a comparatively small amount of solids separated by the RO **can be sent to the municipal waste disposal**.

**We provide Drawings and Designs;
you fabricate the Odor Control yourself**

For more information:

<http://www.ingvar.is/LeanFish/LeanFishPage.html> &
<http://www.ingvar.is/Downloads/SlideShows.html> - Section 1



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