

THE USE OF THE MOLECULAR DISTILLER FOR THE RECOVERY OF USED MINERAL OIL

Technology that leverages the value of industrial waste energy possible re-use.

The appraisal of a byproduct is one of the most important objectives that the Spanish industry faces, and in many occasions the repercussion of the byproducts produced in a process seriously affects the viability of a project. In Zean we contemplate the use of energy as well as the reutilization of byproducts created by different processes in the industry, for this reason we offer the market a new technology to recover used mineral oil. This application has the advantage of the **REGENERATION OF A MINERAL OIL FROM A WASTE.**

It's convenient to highlight that a laboratory molecular distiller is available to run tests with the oils to be able to check the separation efficiency as well as the quality of the distilled product and its concentration.



*Regeneration of industrial waste requires a specific technology.
Photo: Nick Fletcher.*

Through a system of pumping, the product enters a heat exchanger where it heats the oil until it reaches a temperature of 170°C, next the product enters a vacuum drying tower, this equipment allows for the elimination any water that the oil may have, especially from storage.

After, the moisture-free oil enters into the short path evaporator and via the high vacuum distillation, operating at 0.1-0.5 mbar allows the separation of the oil and asphalt avoiding the decomposition of the products.

Distillers 'Short Path' operates under 0.5 mbar vacuum, which increases performance

The short path distiller, or Short Path, is a roller wiper evaporator with an internal condenser; this arrangement allows it to work at less than 0.5 mbar and lowers the operating temperature while at the same time increasing the process efficiency.

The design of **Zean's** own internal scrapers allows the elimination of any possible asphalt incrustations conducting a constant "sweep" of the unit.

The distilled oil is collected in a buffer tank and then filtered for storage and sale.

The concentrated product, mainly asphalt, is cooled and extracted from the plant continuously.

The fundamental application is the creation of asphalt fabrics in waterproofing.



Partial view of 'Short Path'

System Control

The system runs automatically from the system control station; from a SCADA the operation is displayed and operates on the different control loops.

The system consists of:

- **MACHINES:** heat recovery, heater, drying tower, short path evaporator (Short Path), storage tanks, pumping units, and a vacuum system.
- **INSTRUMENTATION AND CONTROL.**
- **ASSEMBLY.**
- **THE STRUCTURE.**

ADVANTAGES

- Continuous process: It allows for maximum production in the shortest time possible.
- The use of the Short Path technology: to work at lower temperatures and increase the evaporation yield at the same time.
- Automated System: The system governs itself from a control booth and doesn't require the presence of workers at the unit.
- Minimum Space: Using a thin film distillation yields are doubled for the same amount of space.