

## Standard units

Units	Type of distillation	Pressure	Stirring	Raw material	Accessories	Advantages
202	Hydrodistillation	Atmospheric pressure	✓	Crushed plants, seeds, etc.	Gravity-assisted cohobation	-
206	Direct steam injection	Atmospheric pressure	-	Bulk plants		Economical
208	Hydrodistillation	Atmospheric pressure	-	Rose and orange blossom	Recovery of hydrosol	Dedicated solution
254	Hydrodistillation	Pressurized (2.5 bars)	✓	Crushed plants, seeds, etc.	Cohobage par pompe	Energy savings
256	Direct steam injection	Pressurized (2.5 bars)	-	Bulk plants		Energy savings
256 modifiée	Direct steam injection / Hydrodistillation	Atmospheric pressure / Pressurized (2.5 bars)	✓	All types of plant	Cohobation with pump	Multi-purpose solution, high level of productivity
Special powders	Dry distillation	Atmospheric pressure / Pressurized (2.5 bars)	✓	Powders		Innovative solution

**Characteristics:** • Construction materials: High-quality stainless steel (304L et 316L) • Capacities and dimensions: from 50L to 10,000L • Approvals and standards: EU regulations / PED Directive / CODAP pressure vessel design code

**Ancillary equipment:** Tournaire can offer as an option • Steam generator (electric, gas, oil) • Crusher, roller, chip cutter • Support structure • Waste processing • Discharge conveyor • Screw conveyor

### Innovative solutions



Direct steam distillation of dry powder under pressure.

### R&D / pilot tests



A full series of tests can be performed in our pilot hall to validate a process and guarantee the start-up and performance of the equipment.

### Here's what our clients say:

“ I can say without hesitations that Tournaire was the best supplier in all the evaluation items one can consider. The quality of the work, the relation with the customer, the knowledge, the respect for the deadlines are something I would like to point as the stronger features of Tournaire. ”

Dr. Miguel Cardoso, NatureXtracts

70 COUNTRIES 5 CONTINENTS

To consult our technical fact sheet on rectification

March 2019 - Photos: Tournaire, JJ L'Héritier, Fofelin, Sonic Blue



Complete made-to-measure turnkey solutions, suitable for all types of raw materials.

## STEAM DISTILLATION

### FIELDS OF APPLICATION

PERFUMERY  
FLAVORINGS AND INGREDIENTS  
COSMETICS  
HEALTH

- ▶ 180 years of expertise in the steam distillation process.
- ▶ Unceasing innovation to meet each new need.
- ▶ Support of an expert team through all phases of the project.



SINCE 1833

70, route de la Paoute - Le Plan  
CS 71004 - 06131 Grasse Cedex France  
Phone +33 (0)493 09 34 34 - Fax +33 (0)493 09 34 56  
equipment@tournaire.fr



SINCE 1833

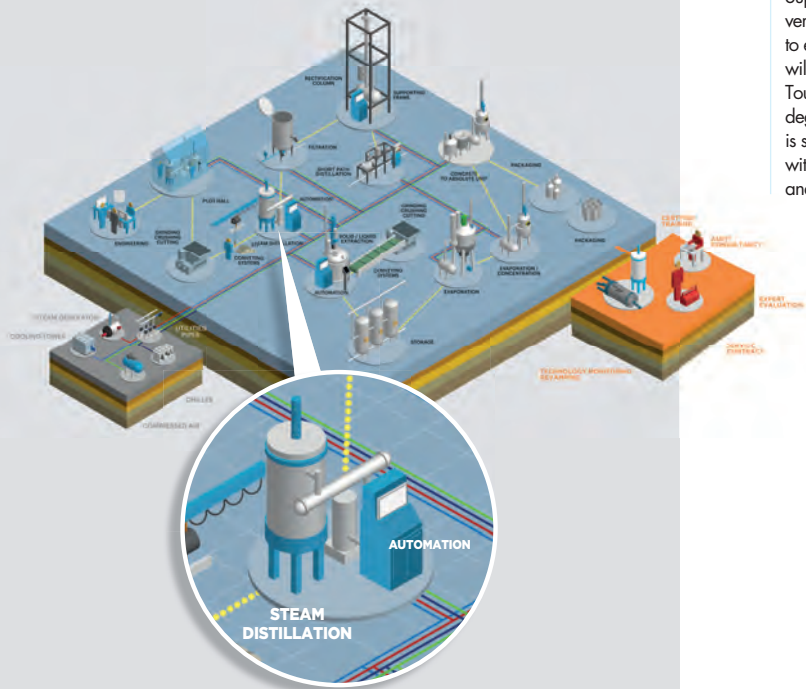






# STEAM DISTILLATION

Founded in 1833, Tournaire came into being along with the first perfume flower distilleries in Grasse. Originally a coppersmith, then manufacturer of stills, modern extractors and cans for flower oils in copper and then aluminum, Tournaire has continually acquired new expertise as the perfume industry has developed, to meet the specific needs of its clients.



## Tournaire's added value

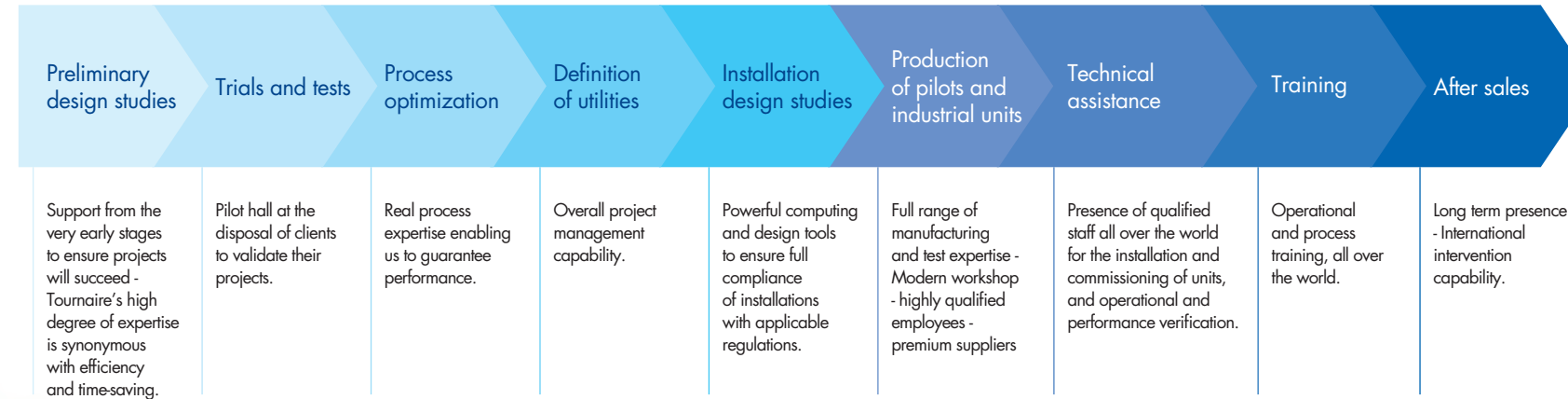
Tournaire possesses **unique experience** of distillation acquired throughout its long history, covering dozens of different raw materials. Tournaire has ceaselessly improved its production and today offers the **fullest and most effective range** available in the sector.

From the **simplest still** to the **most complete multi-purpose systems** on the market, Tournaire designs units to suit the specific needs of each client. Tournaire offers a wide range of capacities: from pilot units of a dozen liters up to a whole series of units capable of processing several dozen tons a day.

Tournaire can offer **full support** for all types of project, from the initial pre-design phases through to the delivery, installation and commissioning of industrial plants. Tournaire also makes available to its clients a range of tools in its **pilot hall**. Tests performed with these tools provide the fullest qualitative and quantitative guarantees of process viability.

Tournaire also enjoys an **international reputation**: throughout the world its equipment is renowned for excellence, robustness, and quality of construction materials.

Tournaire supports and advises its clients throughout all the stages of the distillation process.



Seeds



Herbs



Fruits



Rhizomes



From raw materials through to the finished product, Tournaire can provide the right solution.



Flowers



Gums / Resins



Roots

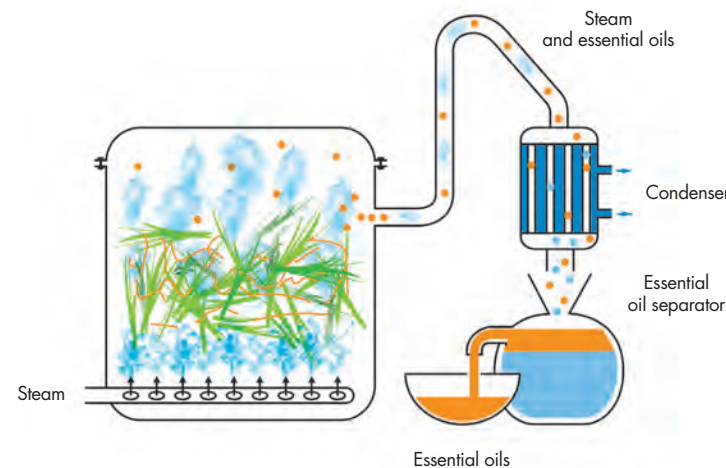


Wood / Bark

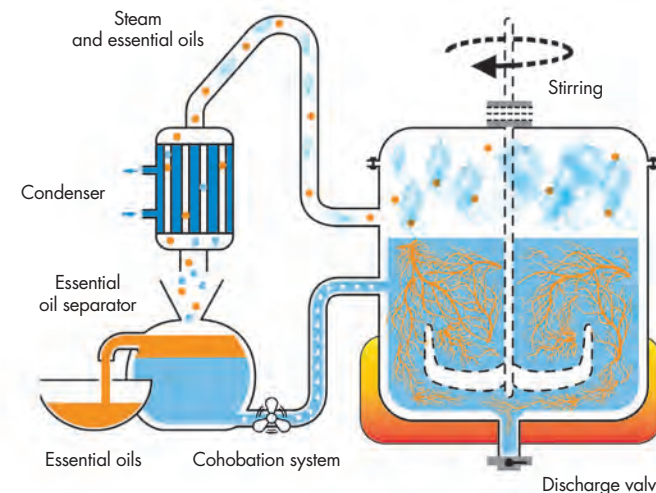


Leaves

## DIRECT STEAM DISTILLATION



## HYDRO-DISTILLATION STATIC OR STIRRED



AT ATMOSPHERIC PRESSURE OR PRESSURIZED (UP TO 2.5 BARS) FOR DIFFICULT MATERIALS OR FOR ENERGY OPTIMIZATION

## Still body

- Robust construction, made to last.
- Depending on loading system, possibility of fully-opening hinged cover.
- Standard bolted flange closure or quick-fasten bayonet system (hydraulic operation for large diameters) with mechanical security lock.
- Heating: jacketed circuit, double bottom or steam injection from below.
- Large-diameter discharge valve at base of unit.



## Loading systems

- Solution adapted to each type of material: chain grate, stacked trays or baskets.
- On request, design of automatic transport systems for loading/discharge: mobile hopper, conveyor belt, vacuum transport.



## Stirring

- Available as an option for hydro-distillation units:
  - Fixed agitator (suspension of solids and improvement of heat transfer)
  - Mobile system

## Multitube cooling condenser

- High-efficiency multitube system with low pressure loss.
- Condensation in the tubes for ease of cleaning.
- Check of outflow temperature.

## Cohabation system

- Returns distillate continuously to the still during hydrodistillation.
- Gravity-assisted cohabation (distillation at atmospheric pressure).
- Self-adjusting cohabation pump when operating under pressure.



## Separators

- A full range for essences of every type: light, heavy, mixed.
- Special separators with coalescer and heating/cooling system for "difficult" essences.



## Automation and control systems

- From the simplest system to one that is totally regulated for full control of operational parameters.
- Regulation of steam flow, °C, pressure, automatic loading / discharge cycle, weighing, etc.

