DISTILLATION

Characteristics	Laboratory units	Pilot units / small scale production	Industrial units
Use	Feasibility tests Production samples	Carry out tests for scaling up to industrial production Small scale production	Large scale industrial production
Advantages	Easy to install, use and clean Visible processes	Compact, versatile, multi-product system	Robust, made-to-measure system
Construction	Borosilicate glass	316 L stainless steel	316 L stainless steel
Evaporation area	0,01 to 0,3 m²	0,06 to 1 m²	2 to 10 m² (or more)
Average output range	0,1-3 kg/h	3-50 kg/h	100-500 kg/h
Temperature	Up to 200-250°C	Up to 300°C	Up to 300-350°C
Vacuum level	1.10^{-1} to 1.10^{-3} mbar abs	1.10^{-2} to 1.10^{-3} mbar abs	1.10^{-2} to 1.10^{-3} mbar abs
Degasser	/	Options Demisting cartridge	Options: Demisting cartridge or wiped film evaporator (primary stage)
Frame	Stainless steel bench	Machine-welded stainless-steel frame	Framework
Control panel	/	Basic	Basic Options: HMI, automation
Certification	/	ATEX, as an option	ATEX, as an option

Characteristics: • Construction materials: High quality stainless steel (304L and 316L) • Certification and standards: EU regulations / PED Directive / French CODAP construction code for pressurised equipment / Machinery Directive / ATEX Directive

Accessories: Temperature sensors • High vacuum gauges • Mass flow meters • Level detectors

Innovation

Whether implementing complex and innovative processes like molecular fractionation, or processing delicate and demanding raw materials, Tournaire's team of experts brings all its know-how to designing made-to-measure equipment that is perfectly adapted to its customers' needs.

Tournaire sets great store by its customers' data and undertakes to work completely confidentially, particularly with regard to trials executed in its pilot hall.

YOUR TAILOR-MADE SOLUTION IS OUR STANDARD

Our customers say:

« Not our first Equipment from Tournaire. Still, we are always amazed to see how serious the manufacturing is. We now own a development-oriented Pilot that matches our needs and exhibits robustness and quality traits of an industrial equipment. Trust starts here! »

Iann Rance
Pharmaceutical lipochemistry R&D Director
Expanscience Laboratoires

See also our rectification technical datasheet

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

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TOURNAIRE
Produces the best, protects the most

TOURNAIRE EQUIPMENT

DISTILLATION

Complete, made-to-measure, turn-key solutions, suitable for all types of raw material.

MOLECULAR DISTILLATION

APPLICATIONS

PERFUMES AND FLAVOURS
FOOD INGREDIENTS
PHARMACEUTICALS AND HEALTH
COSMETICS
CHEMISTRY

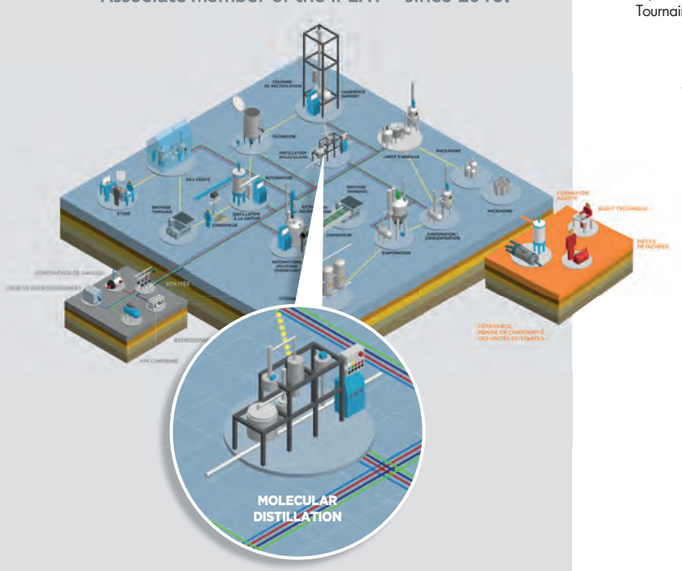
- Expertise in molecular distillation processes for the most demanding materials.
- Constant innovation to meet every need.
- Support from a team of experts in all phases of the project.
- More than 1000 complete units for natural material processing, supplied since 1833.

WWW.TOURNAIRE.FR EQUIPMENT | PACKAGING

SINCE 1833

TOURNAIRE
Produces the best, protects the most

Founded in 1833, Tournaire came into being alongside the first perfume plant distilleries in Grasse.
Originally a coppersmith, then a manufacturer of stills, modern extractors and copper then aluminium containers, Tournaire has continually acquired new expertise with the evolution of the perfume industry, and to meet the specific needs of its customers.
« Associate Member of the IFEAT » since 2018.



Tournaire added value

The benchmark partner for processing natural raw materials, Tournaire designs **molecular distillation** (or short-path distillation) units to extract value from all types of compound for perfumery, food industry, nutraceutical, cosmetic and pharmaceutical uses.

Tournaire proposes complete turnkey units which offer **top performance** and are **custom** designed to perfectly meet each customer's specific need. This equipment is available in a **wide range** of capacities: from laboratory through pilot units to industrial systems that can process several tons of product per day.

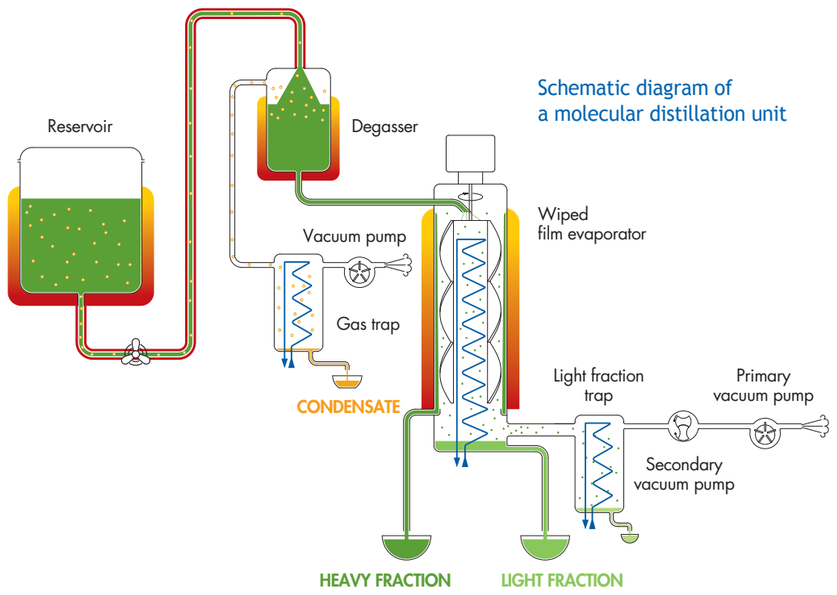
Tournaire can offer **complete support** for projects, whether upstream in pre-study phases, or on delivery, installation and commissioning of industrial units. Tournaire also makes **a range of tools** available to its customers in its pilot hall. Tests carried out on these tools can provide both qualitative and quantitative guarantees for processes.

Tournaire also enjoys an **international reputation:** excellence, robustness and quality of construction materials are what define Tournaire equipment all over the world.

MOLECULAR DISTILLATION

Molecular distillation is a form of distillation carried out under high vaccum, known as molecular, where a light fraction is separated from a heavy fraction using a wiped film evaporator. Product contact time with the heating wall is very short, avoiding heat degradation. This distillation is described as «short-path» because the evaporated light fraction condenses immediately on a condenser placed at the core of the evaporator. This process is generally used to remove colour and purify extracts.

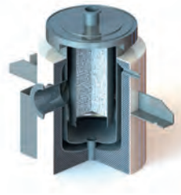
Assistance from the earliest upstream phases to help bring projects to fruition. Tournaire expertise, which is synonymous with efficiency and time savings.	Preliminary design studies
Pilot hall available to customers for project validation.	Tests and trials
Real process expertise provides performance guarantees.	Process optimisation
End-to-end project management capability.	Utilities definition
Powerful computing and design tools for installations that fully comply with current regulations.	Installation studies
Full range of manufacturing and testing expertise - modern workshop - highly qualified staff - premium suppliers.	Pilot and industrial unit production
Qualified teams able to work anywhere in the world on installation and commissioning, with operational and performance qualification of the unit.	Technical support
Operational and process training, all over the world.	Training
Long-established - ability to respond internationally.	After-sales



Loading

- Preparation tank with heating jacket and optional agitation, for loading a product.
- Gear pump with heated body, perfect for viscous products.
- Feed-line positioned for product pre-heating.

Degassing system



- 1st treatment stage under soft vacuum, offered as an option for the lightest products that might interfere with the molecular distillation process («2nd stage»).
- Demisting cartridge system or wiped film system similar to the 2nd stage
- Condenser to recover condensates in a receiver.
- Dedicated vacuum generator.

Wiped film evaporator

- Evaporator under high vacuum (10^{-3} mbar) heated by thermal fluid circulation.
- Wiped film using stirring device equipped with rollers.
- Internal condenser.

Light and heavy fraction recovery

- Intermediate receiver in glass or stainless steel with heating element.
- Transfer gear pump with heated body.

Vacuum trap

- To protect the vacuum group by trapping the final gases.
- Serpentine system for circulating cryogenic fluid.
- System filled with dry-ice or liquid nitrogen (automatic).

Vacuum groups

- Various technologies that can achieve a molecular vacuum of 10^{-3} mbar.
- Primary level: rotary-vane pump or liquid ring pump with ejector.
- Secondary level: diffusion or roots pump.

Heating/cooling units

- High performance thermal fluid systems for heating and maintaining temperature.
- Compressor or exchanger cooling systems for the condensers and cold-traps.

Control unit

- System controls and process data display.
- Possible implementation of a programmable logic control system.

Support framework

- Unit mounted on skids.
- Support framework of machine-welded stainless steel.