
CENTRIFUGATION
INNOVATION
SEPARATION
ROUSSELET
ROBATEL

ROUSSELET ROBATEL

Rousselet Robatel company situated in Annonay, South of France, designs, manufactures and sells complete centrifugal systems for the solid/liquid and liquid/liquid separation.

Over 250 years of combined experience allows ROUSSELET ROBATEL to develop a solid technological expertise and build a strong professional reputation based on quality and reliability.

The company became an expert in centrifugal separation from lab to industrial scale.

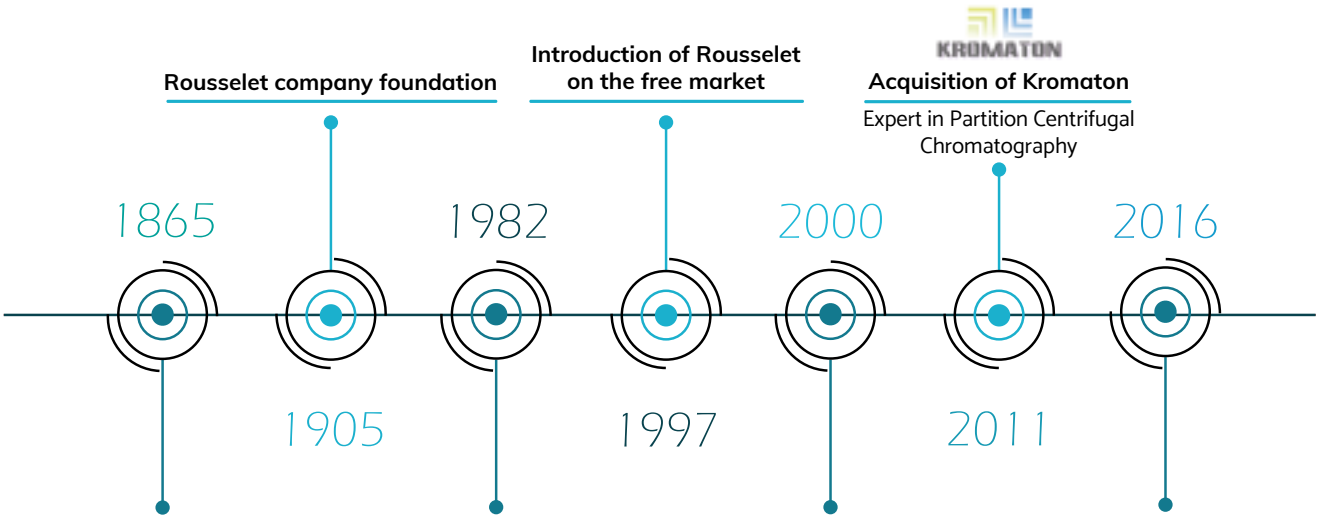
THE WORLDWIDE SPECIALIST OF INDUSTRIAL CENRIFUGES

High level of technical qualification and continuous seeking for innovation are the mainstay of the company.

More than fifteen of highly qualified engineers and **technicians** work on continuous improvement and design of the machines which allows us to offer and **deliver unique and reliable solutions for specific separation tasks**.

Our mission is to supply technical support to our clients in order to identify their needs and expectations and to offer them the most suitable solutions.

OUR HISTORY



Robatel company foundation

Rousselet company foundation

Takeover of Rousselet by a new team

Introduction of Rousselet on the free market

Rising of Rousselet Robatel

Expert in centrifugal separation

Acquisition of Kromaton

Expert in Partition Centrifugal Chromatography

Acquisition of Callebaut de Blicquy

Expert in dyeing machines and impregnation systems for textile materials.

OUR STRENGTH AND VALUES

FULLY INTEGRATED PRODUCTION

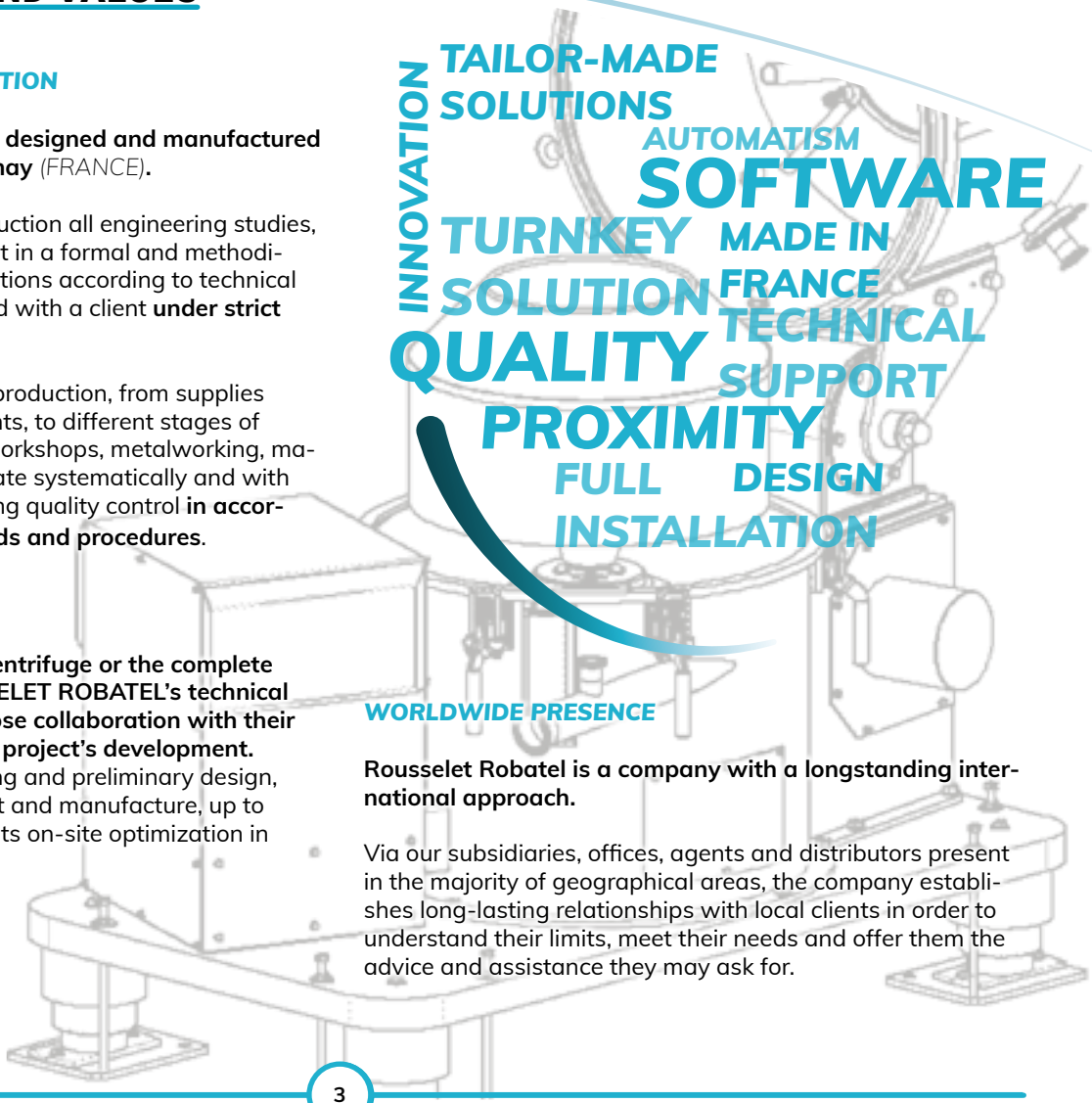
All our centrifugal systems are designed and manufactured internally in our plant in Annonay *(FRANCE)***.**

Due to the fully integrated production all engineering studies, and manufacture are carried out in a formal and methodical way in order to offer installations according to technical specifications previously defined with a client **under strict quality and safety standards.**

This way, at each key stage of production, from supplies of raw materials and components, to different stages of production in our preparation workshops, metalworking, machining and assembly, we operate systematically and with appropriate and uncompromising quality control **in accordance with established methods and procedures**.

EFFECTIVE COOPERATION

Whether it's about a special centrifuge or the complete turnkey solution, work ROUSSELET ROBATEL's technical and commercial advisors in close collaboration with their customers at every step of the project's development. from laboratory feasibility testing and preliminary design, through pilot scale development and manufacture, up to equipment commissioning and its on-site optimization in industrial production.



WORLDWIDE PRESENCE

Rousselet Robatel is a company with a longstanding international approach.

Via our subsidiaries, offices, agents and distributors present in the majority of geographical areas, the company establishes long-lasting relationships with local clients in order to understand their limits, meet their needs and offer them the advice and assistance they may ask for.

OUR ACTIVITY SECTORS

Chemistry, Pharmaceutical and Biotechnology

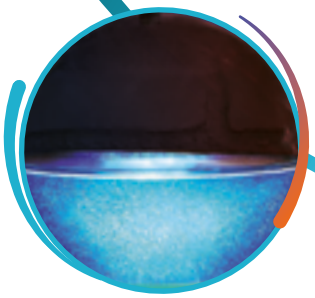
Food industry

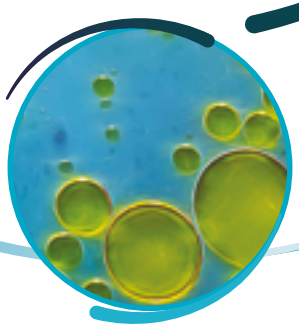
Metalworking and metallurgy

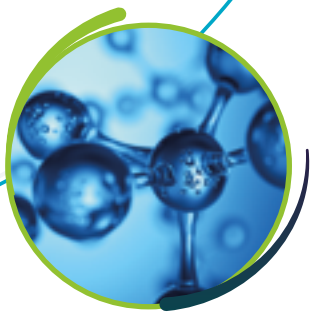
Textile

Environmental, recycling and specific applications

OUR CENTRIFUGAL TECHNOLOGIES







SOLID/LIQUID SEPARATION

Solid/liquid separation: separation of mixed suspension of solid phase in liquid.

It consists of two distinct methods:
- Filtration (or spinning)
- Decantation

LIQUID/LIQUID EXTRACTION

Commonly known as solvent extraction, it consists of transfer of a substance contained in the dissolved state (or solute) in a liquid phase to another liquid phase immiscible with the first one and of a different density, thanks to the difference in affinity of this solute in relation to these two phases.

CENTRIFUGAL PARTITION CHROMATOGRAPHY:

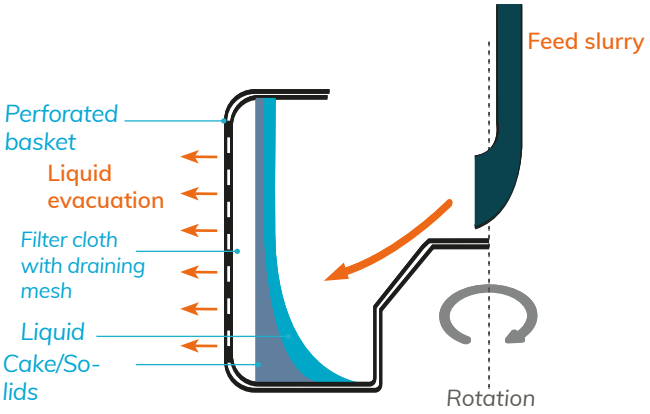
Technique for purification and/or separation of compounds/molecules with high added value. This chromatographic technique implements a two-phase liquid system.

SOLID/LIQUID SEPARATION

The solid/liquid separation by centrifugation can be achieved by two different technologies: centrifugal filtration (or spinning) and centrifugal decantation.

Centrifugal filtration

Separation of solid and liquid phases of one solution is achieved by the liquid flowing through the filtration media under the pressure generated by centrifugal force. Filtration media, perforated basket wall, with eventual filtration cloth covering it, allows solids retention inside the rotating basket.



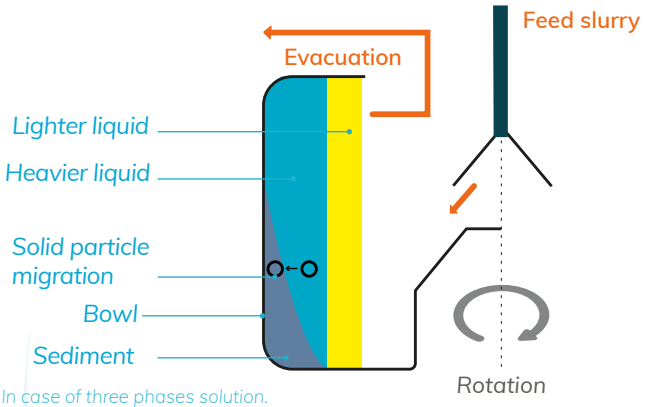
In this case the slurry can be fed into rotating basket.

- *Chemistry: Powders, crystals, dispersions, API...*
- *Food Industry: Vegetables, fruits, market garden seeds, starch...*
- *Recycling: Plastic and metallic waste products for recycling...*
- *Metalworking: Swarf and components de-oiling, components spinning and drying after surface treatment.*
- *Textile: Spinning of textile materials and products after dyeing, washing or bleaching*

Centrifugal decantation:

The centrifugal decantation (or sedimentation) is performed thanks to the difference in densities of the phases of the solution, which under centrifugal force, will be separated. Solids with higher densities, radially flatten against the wall of the rotating bowl and the liquid phase, the lighter one, is concentrated towards the axis of rotation of the bowl, so towards the center.

Thus clarified liquid is removed from the centrifuge bowl by overflowing or through a skimmer pipe.



In case of three phases solution.

- *Chemicals/Pharmaceuticals: Vaccines, enzymes, hydroxides...*
- *Parapharmacy/Parachemistry: Cosmetic products, collagen, nanoparticles, pigments ...*
- *Food industry: Clarification of frying oils, Arabic gum, wine yeast...*
- *Recycling: Clarification of glass polishing and shaping liquids, of detergent products and lye...*
- *Metalworking: Electrolyte cleaning and recycling in electrochemical machining lines, recovery of metal powders from coolants or solvents...*

- **Axis design:** *vertical or horizontal*
- **Operating process:** *continuous/semi continuous/batch*
- **Discharge principle:** *automatic or manual*

If the solution is composed of three phases with two immiscible liquids, the separation would follow the same principle, where a heavier liquid phase will collect in between the sediment and the lighter liquid phase.
Separated liquids are removed from the centrifuge bowl through dedicated skimmer pipes.

LIQUID/LIQUID EXTRACTION

Liquid/liquid extraction or solvent extraction, consists in transferring one (or more) solute(s) contained in a feed solution to another immiscible liquid (solvent). The solvent that is enriched in solute(s) is then called extract and the feed solution that is depleted in solute(s) is called raffinate.

The general principle consists first of mixing the initial liquid solution containing the solute with solvent which has been chosen for its affinity with the solute.

These two phases must be immiscible and of different densities and their contact should allow at least partial solute transfer.

After that, the created dispersion is decanted statically (by gravity) in mixer-settlers or dynamically under the centrifuge force developed by centrifugal extractors.

Each extractor combines the operations of mixing and separation and presents one stage of extraction.

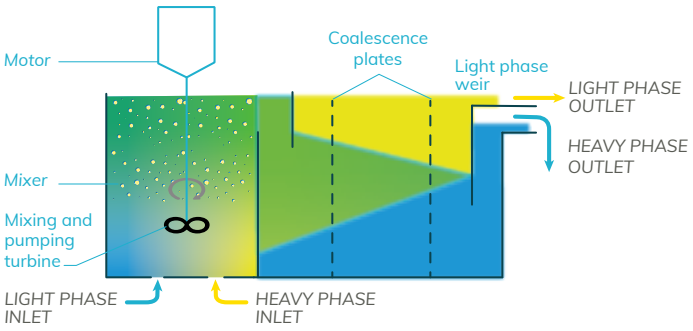
Optimization of solute's transfer usually requires several stages and extraction is achieved by counter current through the required number of stages.

MIXER-SETTLERS

One stage of mixer-settler consists of two zones:

• Mixing zone where the turbine mixes and pumps. The turbine sucks the phases from the adjacent settlers and after contact transfers the formed dispersion into the settler.

•Zone of static separation **(by gravity).** Coalescence grids help the separation and the transfer of the separated phases is via overflowing the weirs of which one is adjustable.

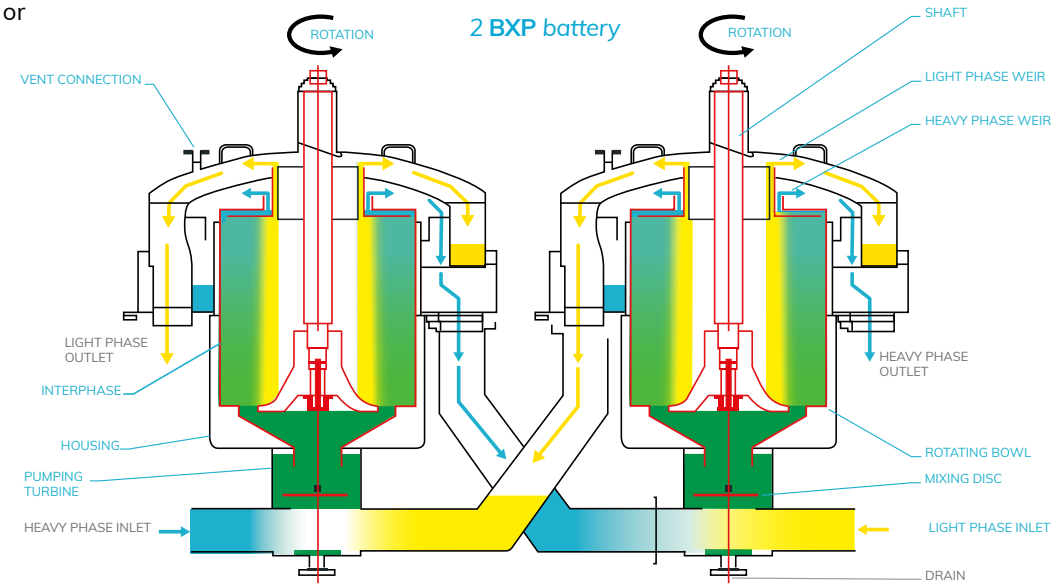


CENTRIFUGAL EXTRACTORS

One stage of centrifugal extractor has two zones:

•Mixing zone where a disc (rotating or fixed depending on the type of extractor) allows a thorough mixing.

•Separation zone (bowl or decantation chamber) where, under the centrifugal force generated by rotation, the two phases of dispersion will be dynamically separated and transferred by overflowing at the level of two weirs one of which is interchangeable.



Our extractors are available in two versions:

• Mono-stage (**BXP type**) mounted in battery
• Multistage (**LX type**)

Mono stage extractor in certain cases may be used for liquid/liquid separation.

- *Chemistry: Purification of active principles, washing of polymers...*
- *Parapharmacy: Extraction of aromas, essential oils...*
- *Food industry: Purification of food components...*
- *Recycling: Effluent treatment, solvent recycling...*
- *Metalworking: Purification of precious metals...*

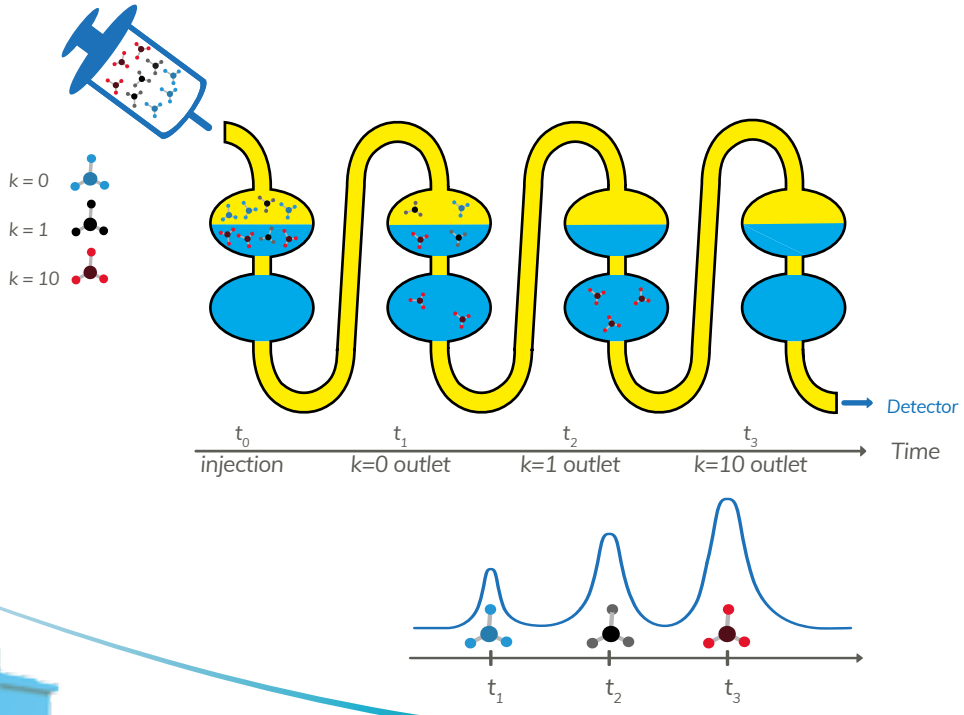
CENTRIFUGAL PARTITION CHROMATOGRAPHY

Operating principle of the centrifugal partition chromatography is very simple.
A system composed of 2 liquids constitutes the core:

- One of the phases is chosen to be **stationary**.
This phase is maintained stationary by centrifugal field.

- The other phase is **mobile.**
This phase, by means of a pumping system, goes through the column created by the centrifugation.

The solutes of interest are injected on the top of column and will migrate along it. They are carried by the mobile phase and will be distributed along the column between two liquids, according to their partition coefficients (ratio between the concentration of the compound in the stationary phase and the concentration of the solute in the mobile phase).



CUSTOMIZED SOLUTION IS OUR DAILY MISSION !

The diversity of the industrial sectors that we cover, the variety of applications our equipment is suitable for, the number of specific requests that our customers around the world have submitted to us, allow us today, in case of a particular demand, **to rely on a solid base of previous achievements, combinations of solutions and track records, unique in the world** of designers and manufacturers of centrifuges, ***to offer THE centrifuge or THE centrifugation module YOU require.***

CERTIFICATION
RELIABILITY EEX... IP... UL... CSA
CE EN ISO EU DIN
SAFETY ATEX II 2 GD
ATEX II 2 G
CONFORMITY

LISTED

MADE IN FRANCE

A WORLDWIDE INFLUENCE

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