Liquids to Value

Instant Coffee

Maximum coffee enjoyment with separators and decanters
from GEA Westfalia Separator

GEA Westfalia Separator – Competent Partner of Instant Coffee Manufacturers

Growth enhancement due to innovative instant coffee beverages.

The fast world of modern society launched its appropriate beverage, instant coffee onto the market during the 1930's. Nowadays, the concept of convenience dominates consumer behaviour to an even greater extent than was the case at that time. The example of instant coffee demonstrates that centrifugal separation technology from GEA Westfalia Separator occupies an extremely important position in the production process. The growth enhancement of soluble coffee is mainly attributable to the flavoured specialties such as cappuccino, espresso, vanilla, chocolate or amaretto. The market momentum of these specialties is fascinating. The desire of the consumer for innovative taste experiences and change will enhance this trend.

Where such strong emphasis is placed on enjoyment, process technology that ensures gentle product treatment is extremely important.

Because decanters and separators from GEA Westfalia Separator simultaneously ensure the quality standard in a particularly effective manner, the company has become the partner of brands known throughout the world. Centrifugal separation technology from GEA Westfalia Separator supports the coffee industry in the process of separating the insoluble coffee bean components from the valuable coffee extract. At the same time, product purity is encouraged. The areas of application for decanters and separators are summarised as follows.

- Clarification of thin extract
- Clarification of thick extract
- Clarification / de-oiling of coffee press water
- Optimising yields using decanters
- Cleaning with CIP solutions

Raw coffee

Mixing

Roasting

Grinding

Aroma recovery

Extraction

Residues to further centrifugal processing

Separator: clarification of thin extract

Decanter: extract recovery from separator discharge

Solids for recovering energy Incineration

Concentration

Separator: clarification of thick extract

Spray drying

(Agglomeration)

Recycling of aroma

Packaging

Freeze-drying

Recycling of aroma

Packaging

Clarification of Coffee Thin and Thick Extracts for Maximum Coffee Enjoyment

Decanters and separators – Guarantees for maximum coffee yield.

Instant coffees have now been on the market for many decades. The hot-soluble instant beverages enjoyed initial popularity in the first half of the 20th century. Following blending, whereby different coffee beans from different countries are mixed together, the beans are roasted and are then ground relatively coarsely, so that good penetration with hot water can be achieved in the downstream extraction columns. Extraction under pressure and temperatures of 190 °C to 200 °C result in comparatively higher yields than is the case with traditional coffee-making methods.

Clarifiers are then used for separating the insoluble components. This clarifying stage is not only responsible for ensuring that there are no sediments in the end product; it also increases the operating life of the downstream evaporator – which is the bottleneck in the entire instant coffee production process.

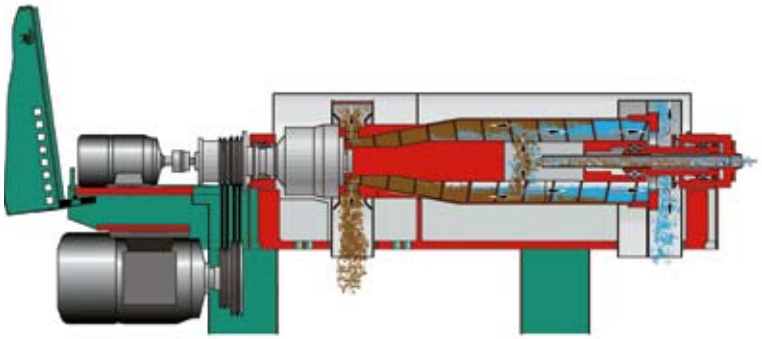
Further substances are precipitated while the so-called thin extract is being concentrated to 50 – 60 percent dry matter. These are also removed from the so-called thick extract with clarifiers by further clarification. After the second clarification stage, the thick extract is dried either by means of a spray drying solution with a counter-stream hot air arrangement, or in a more gentle and more complicated manner by freeze-drying at -40 °C. During the production of instant coffee, the aroma which is released is extracted and then added back to the finished product. This measure ensures that very aromatic instant coffee is produced.

Characteristic advantages of centrifugal separation technology:

- High clarifying efficiency, i.e. the insoluble coffee bean particles are removed from the extract
- High reliability of the centrifuges
- Continuous clarification of the coffee extracts
- Reduced energy costs for drying the powder and granulate
- High yield
- More marketable product
- Minimum losses of coffee extract thanks to the
- Westfalia Separator hydro**stop** bowl discharge system
- Optimum integration into existing CIP systems
- Integration into automatic processes with programmable control

GEA Westfalia Separator offers its customers support in terms of planning, installation and commissioning.

Decanters such as the CE 305 illustrated at this point handle a wide range of tasks in the production process. These include the recovery of coffee extract as well as the efficient processing of coffee press water.



Separators from the GSC and GSE series are used in the clarifying stages for thin and thick extract. They are characterised by unusually high clarifying efficiency, and can be easily and quickly integrated into existing production lines.

Westfalia Separator hydro**stop** Enhances Operating Reliability

Clarifiers ensure high product quality and yield.

In addition to excellent taste and aroma of the high quality instant coffee beverage, the appearance is also very important. This is why the instant coffee powder also has to be soluble without any sediments.

The insoluble and glutinous particles in the coffee extract are separated from the liquid in the disc stack of the separator bowl, and collect in the solids holding space. GEA Westfalia Separator supplies special clarifiers from the series GSC (Westfalia Separator hy**dry**) and GSE (Westfalia Separator hy**vol**), to enable these solids to be completely discharged at intervals. The clarifiers are characterised by high-speed bowl discharge technology and a large clarification area. The special discharge requirements have meant that the "coffee extract clarifiers" are equipped with a special opening system. These ensure a much longer bowl opening time during total ejections, and thus ensure that the glutinous and insoluble sediments are completely discharged. Subsequent flushing of the still open bowl achieves an optimum cleaning effect of the wall of the bowl. The combination of controlled and high-speed partial ejections and a total ejection can also be installed if such a solution is permitted by the product characteristics of the coffee extract.

Advantages at a glance:

Clarifiers GSC and GSE ensure:

- Optimum dry matter in the discharged solids in the case of partial ejections
- Higher clarifying efficiency
- High product yield

Coffee Press Water De-Oiling Maintains the Full Aroma

Coffee oil recovery for a broad aroma in the end product.

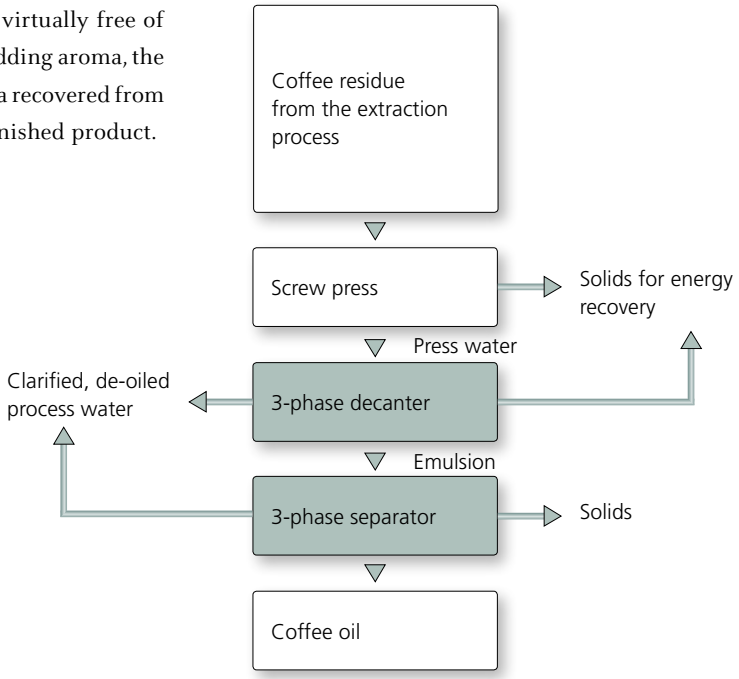
Whether we drink traditional soluble coffee or specialties such as cappuccino: the aroma is extremely important for the end product. In order to recover coffee oil which is used as the aroma medium, the residues from the extraction process are pressed and the so-called coffee press water which is released in this way is de-oiled using 3-phase decanters. After it has passed through the decanter, the press water is discharged without any press oil and insoluble solids. The oil phase is discharged from the decanter in the form of an emulsion, i. e. with a certain amount of process water. A 3-phase separator is used for separating the oil from the emulsion.

The coffee oil which is recovered is virtually free of water and insoluble sediments. For adding aroma, the coffee oil can be mixed with the aroma recovered from the process and added back to the finished product.

The 3-phase decanters are equipped with a patented two-gear drive and guarantee high dry matter values in the separated solids.

3-phase decanters ensure:

- Coffee press water free from oil and solids
- Extremely dry solids
- Recovery of coffee oil free from press water and sediments

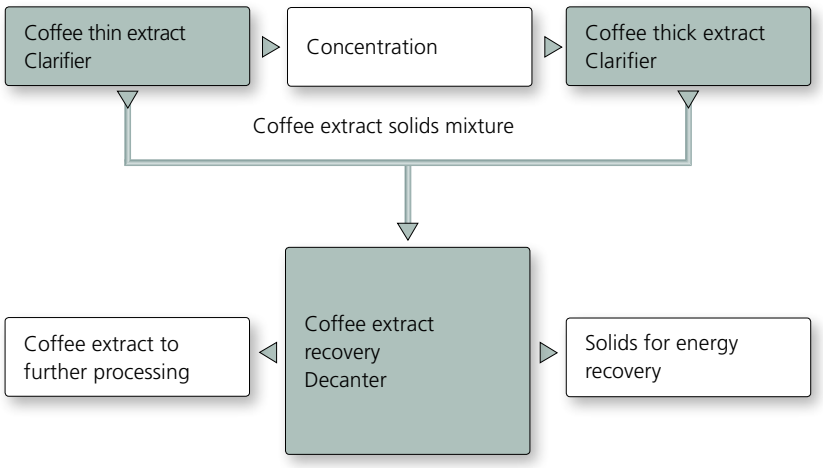


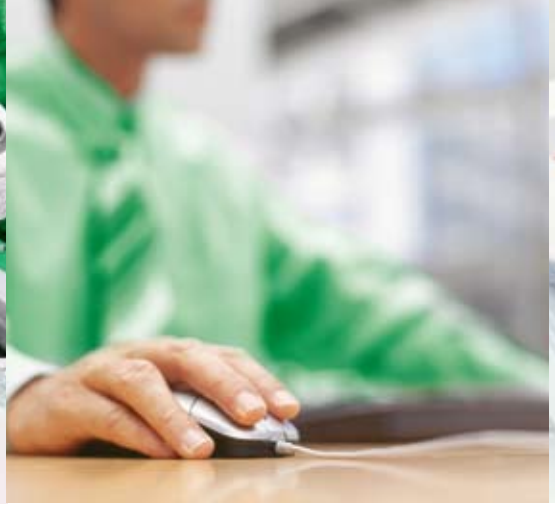
High Yield Due to Extract Recovery

Systematically optimising value creation.

To optimise the yield, the coffee extract-solids mixture recovered from the separators is fed to a decanter. This separates the coffee extract from the solids. The recovered coffee extract is recycled back into the process, and the very dry solids are used for energy recovery (incineration). Decanters for this application are equipped with the patented two-gear drive, which ensures a high level of dry matter in the separated solids.

- Optimum value creation due to recovery of coffee extract
- High level of dry matter in the separated solids




Westfalia Separator capital**care** – Maximum Process Efficiency, Installation Availability and Budget Security

Westfalia Separator capital**care** combines decades of service experience for mechanical separation technology.

Wherever separating technology tasks have to be carried out, Westfalia Separator capital**care** assures comprehensive services right from the very beginning. In close cooperation with the customer, solutions are identified to meet their needs.

The partners benefit not only from traditional services such as inspection, maintenance, original spare parts and repair work provided by the original manufacturer; they also benefit from pro-active solutions which avoid risk, e.g. online and offline monitoring with Westfalia Separator we**watch**.

Accompanying modernisation or upgrading to state-of-the-art technology also offer the option of boosting performance as required.

Training provided on site or in the modern training centre of GEA Westfalia Separator ensures that the customer's employees receive training in the proper handling of the high-tech installations. This provides additional safety.

Authorized workshops worldwide

And if problems occasionally occur or if a spare part is required at short notice, the specialists are able to attend to the customer quickly. This is ensured by a global network with more than 50 sales and service companies as well as 60 further sales partners. Authorized workshops are able to service every location in the world at short notice.

Maximum availability

Absolute budget reliability

Permanent efficiency

Westfalia Separator capital**care** accordingly makes for maximum process efficiency and installation availability as well as budget security. And these benefits are provided throughout the entire life cycle of the entire installation.

Service from the original manufacturer:

- Service engineers quickly on site
- Extensive service network
- Risk avoided by service provided by the original manufacturer
- Pro-active solutions which avoid risk
- Upgrading to boost performance
- Staff training

In addition to traditional services such as maintenance or repair, Westfalia Separator capital**care** also provides solutions which avoid risk and with which the installation availability can be pro-actively assured.

- Beverage Technology
- Dairy Technology
- Renewable Resources
- Chemical / Pharmaceutical Technology
- Marine
- Energy
- Oilfield
- Fluids & Water
- Engineering
- Second Hand Machinery
- Cross-Flow Filtration with Ceramic Elements
- Original Manufacturer Service

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