

COLD BREW COFFEE



Cold brew coffee

Step inside any modern coffee shop today and the choice of brews should be enough to satisfy any taste or mood. And in many home kitchens we can find a wide range of equipment for brewing or preparing coffee using different methods.

We all have a favourite brew. Some of us can't resist the aroma of a pot of filtered or percolated brew made with freshly ground beans, others love the choice available for counter-top pod machines. And there's always the option of a quick, boiled-kettle instant from a jar, or a refreshing, refrigerator-cold can or bottle of ready-to-drink.

Giving it time...

Cold brewing coffee is another, perhaps less familiar brewing method that – having been popular in Japan some 400 years ago – is today being embraced enthusiastically by consumers at home, cafes and other outlets, and the global coffee industry. As its name suggests, cold brewing is a method of extracting the flavor and aroma from roasted beans that doesn't use any heat. But it's not a fast option. Rather, the roasted ground coffee is percolated through or steeped in water at an ambient or cold temperature, over a period of perhaps 12-24 hours. It's generally agreed that cold brewed coffee extract has a smooth, rich, bright and pleasant acidity, and a less bitter flavour than traditionally hot brewed coffee.

Prepared at home or in our local coffee shops, the cold brewed coffee extract can be diluted to make a tasty, smooth cup of coffee, that is often enjoyed over ice, but can also be heated up for a rich, warming pick-me-up. Industrially, a cold brewed extract may be diluted to manufacture RTD products, sold as a concentrate in cartons, or processed into instant coffee products. And its industry that, listening to consumers love of the cold brew trend, is developing new processes and recipes to meet a growing demand for spray dried, and freeze dried cold brewed coffee products, alongside RTD cartons, cans and bottles.



Not necessarily complex

What are the options for coffee producers new and established who might be considering setting up a cold brew facility? You might be surprised to know that for existing producers, setting up a cold brew plant does not always mean starting from scratch.



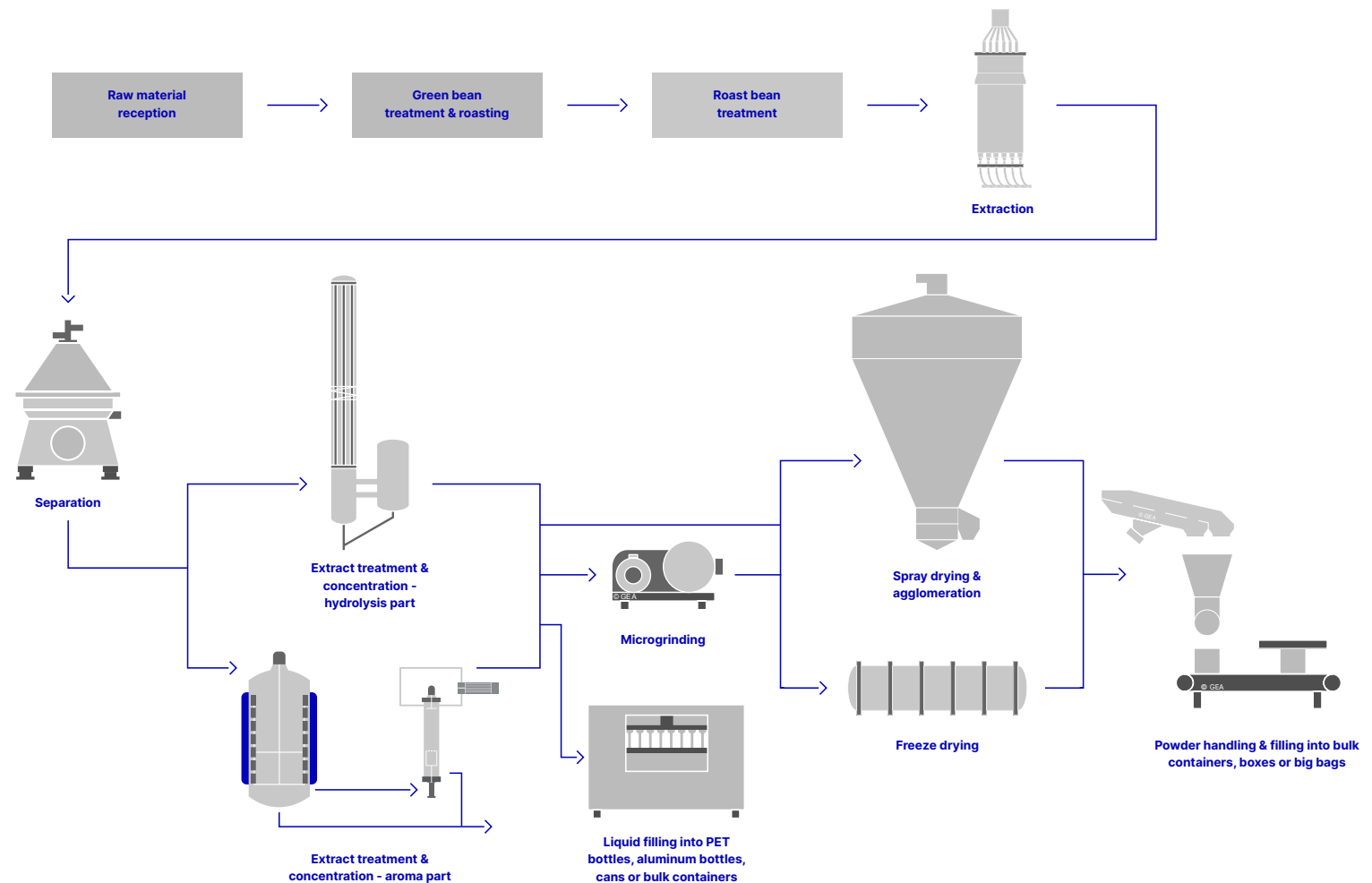
Experts here at GEA can work with you to design and configure equipment and end-to-end lines for processing cold brewed coffee, whether you are building a new, turnkey facility from the ground up, or whether you want to add cold brew capabilities to a more traditional established hot brew coffee plant.

In fact, adding cold brew capacity to an existing hot brew set up may generate less disruption than you might expect. And whatever your starting point, you can trust GEA to help you select the optimum solutions for your needs. We'll partner with you to tailor equipment that fits in with an existing

plant setup or new build plans, and that will efficiently and sustainably match your recipe and process requirements. Our aim is to give you solutions that will keep your coffee business versatile and agile to allow future diversification and expansion.

And with day to day flexibility a key requirement for businesses striving to meet changing market demands, GEA solutions can let you switch from one production method to another, easily and swiftly, so that you can deliver top quality products and stay competitive.

Options for extraction at low temperatures



Because we realise that no two customers have the same expectations, we've developed a range of configurable equipment that is ideal for cold, and hot brew coffee processing. The basic process of cold brewing is shown in the flow diagram to the right. GEA can offer equipment for the complete process, from extraction, to filling and packaging. And for systems upstream of extraction, we can provide equipment from our trusted partners in coffee bean handling and roasting, to give you a complete, end-to-end plant for cold brew coffee manufacturing.

GEA extractors

All of our extraction systems are designed to help you maximize yield, and extract as much of those key aroma and flavor compounds as possible from your valuable beans.

For extraction, we offer two different methods and a range of versatile systems. The 8-column **FIC®** and 10-column **CARINE** units are compact, fully automated percolation battery systems that can be configured to operate in a variety of different modes, and at precise temperatures, to generate different coffee types, including high quality cold brew.

These systems are designed to give you confidence in highly reproducible processing that meets the world's highest standards. Featuring integrated PC/PLC (programmable logic controller) technology, the FIC® and CARINE units are user friendly, and easily programmed by our experts.

In contrast with the pressurised FIC® and CARINE systems, our **CONTEX** horizontal helix extractor uses a continuous counter-current flow system, at atmospheric pressure and at low temperatures, to extract the richest aroma fractions. The versatile CONTEX is available in six different sizes, and can give you the highest quality cold brew extract.

GEA experts can give you a deeper insight into the features of each type of system, so you can be confident in selecting the right solution. Our aim is always to give you the highest quality equipment and build in versatility that will help you to stay agile, so you can adapt to changing markets, and add new products and recipes, whether that's a hot brew, or a cold brew.



FIC® extractor – Fast extraction, high quality



GEA CARINE extractor – Flexibility, high quality and yield

Extract concentration at its gentlest

GEA offers different concentration systems for processing cold brew coffee. Which is selected will depend on factors including existing setup and final products. Our experts are always on hand to advise.

Following extraction, the coffee extract undergoes clarification to remove any suspended particles, and the next stage of processing will then depend on the final product. The extract can be diluted and filled into PET bottles as a great-tasting RTD cold brew, or it can be further concentrated, then spray dried or freeze dried into an instant product.

We offer different methods for concentration, all of which are designed to keep processing as gentle as possible, so as not to destroy key flavour and aroma compounds. Freeze-concentration using our IceCon® system can be an ideal method for concentrating cold brew coffee extracts, as it works at subzero temperatures, and with no detectable aroma losses.

GEA can also configure thermal evaporators that work at vacuum, so the temperature of the concentrate is kept as low as possible. For cold brew coffee an evaporator configuration with MVR is generally favoured due to the low heat impact on the product.

And as a third option, we offer membrane filtration systems that can filter out water from the extract.

Aroma stripping and recovery before the evaporation stage will preserve aromas. The recovered aroma is then added back to the concentrate as a strong aroma liquid, after the evaporator stage and before the dryer.



GEA's IceCon® freeze concentration system

Versatile spray drying and freeze drying solutions

To produce an instant cold brewed coffee, the concentrated extract can be processed either using spray drying, or freeze drying technology. Here at GEA we are recognized worldwide for our portfolio of solutions.

The GEA FSD® spray dryer with integrated fluid bed uses relatively low temperatures, and is one of our most widely used systems for spray drying food and dairy products. The RAY® batch freeze dryer unit may be a great option for processing small-to-medium sized quantities, while the fully automated, CONRAD® freeze drying system for continuous processing can be the ideal solution for high volumes. Whatever your scale and throughput, we can help to configure the best system for your new, or existing plant.



GEA CONRAD® freeze dryer



GEA FSD® spray dryer

Product handling and filling solutions

GEA expertise doesn't stop at processing the coffee. Our product handling and filling systems will safely transfer your valuable products into a range of bulk or consumer containers.

We know that you want to be confident of your final product quality right up to the point of delivery to your customers, so we have developed a range of solutions for liquid filling into PET or aluminium bottles and cans, or into bulk containers. We can also configure efficient solutions for low- and high-volume powder handling, sifting, and filling into bulk containers, boxes or big bags. Our automated palletizing and depalletizing systems are designed for safety, and efficient handling, to help reduce delays and bottlenecks.

From low-capacity manual systems to automated high-volume lines, our machinery can be tailored to meet specific production requirements, while always aiming to minimize product loss or damage, and so protect quality.



GEA Smartfil® – Vibratory feed system with sealing and sewing integrated



GEA Aseptic Blow Fill System ABF

Test centers of excellence

At our dedicated GEA test sites in Copenhagen, Denmark and Ahaus, Germany, GEA experts and engineers are on hand to help you configure and test our equipment for manufacturing your cold brew coffee products. Just contact your local GEA representative and let's start talking.

At the GEA center of excellence in Copenhagen, Denmark, we can offer laboratory and pilot plant facilities, and a wide range of GEA technology so that you can focus on process validation and optimization, and evaluate new ideas. Our experts will help you test out equipment for a wide range of cold brew coffee processes, including extraction, aroma recovery, evaporation, freeze concentration, freeze drying, spray drying and agglomeration. Why not ask about our state-of-the-art aroma management equipment, which can monitor 50 of the most valuable aroma compounds, to help generate new insights for further optimizing product quality and, ultimately, user experience.

The GEA Test Center for Aseptic Processing & Filling is located in Ahaus (Germany) and offers customers the opportunity to replicate a real end-to-end production plant process for sensitive beverages. Merged with a modular approach and real GEA commercial technologies in one connected process, customers can test and refine the formulation of sensitive beverages like cold brew coffee, verify the effectiveness of the treatments and processes and optimize them so to quickly and reliably apply it from the test center configuration to full-scale production.



Coffee analysis at test center in Soeborg, Denmark

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