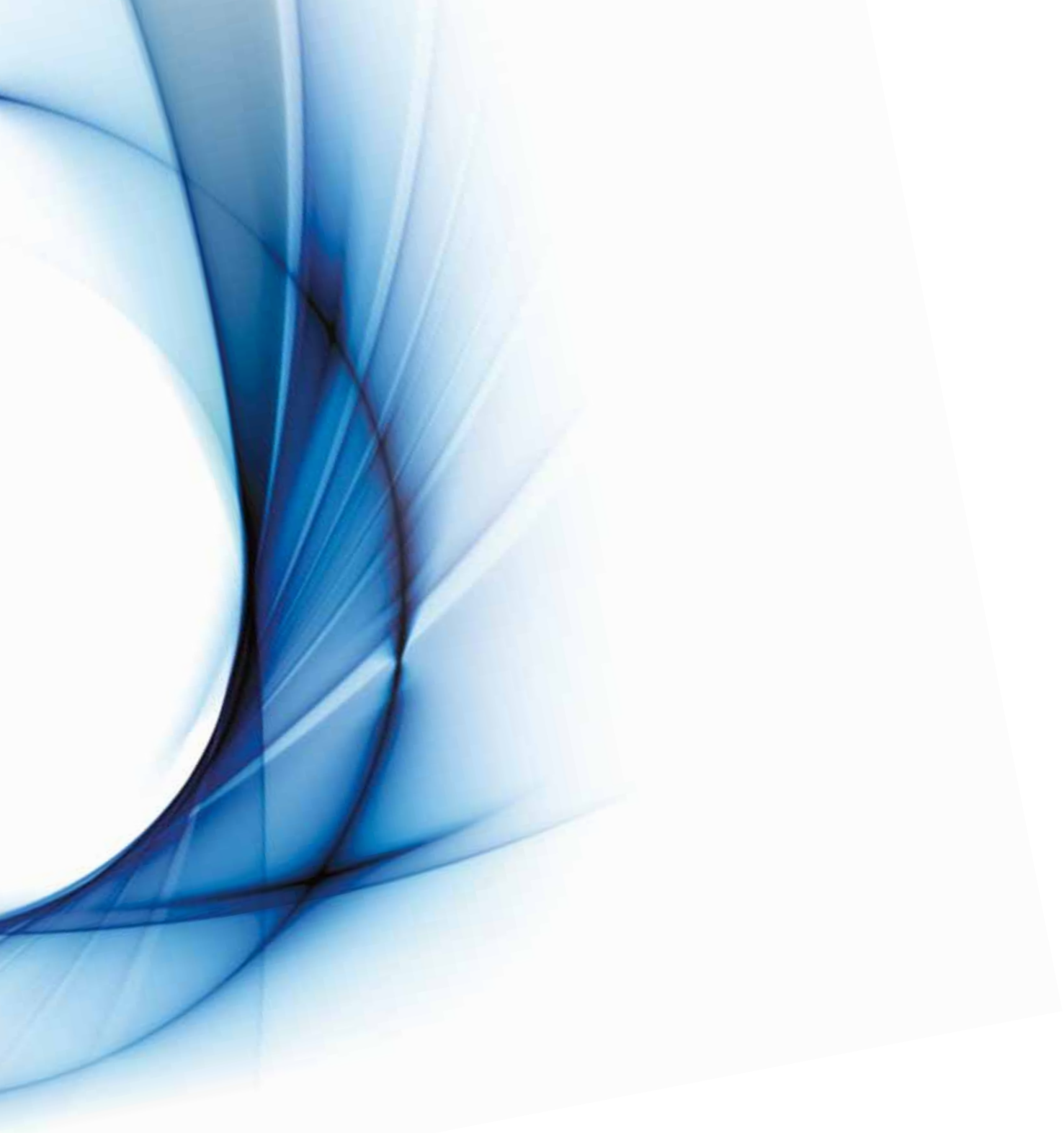




Pressing & Refining
Spare parts & Service



Press+LipidTech

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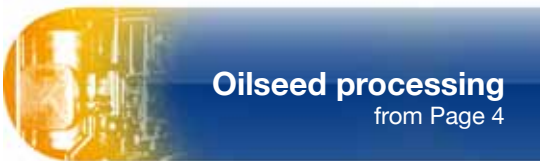
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HF Press+LipidTech

In the long run, it's always the most efficient solution

We have been dealing with oilseed processing in its many facets since the company was first established. Our product portfolio ranges from individual machines up to complete systems for oilseed preparation, oilseed pressing and crude oil refining. We also supply special presses for animal waste products or special applications in the dewatering

sector. What we have to offer is more than just economic and environmentally-compatible standard concepts in line with the market. Our strength predominantly lies in designing individual and customised solutions. And we have persuasive arguments that will convince you:



The preparation of different kinds of seed to attain maximum pressing results is a science in its own right. And this is where you can profit from our many years of experience. Quality is crucial for the overall result.



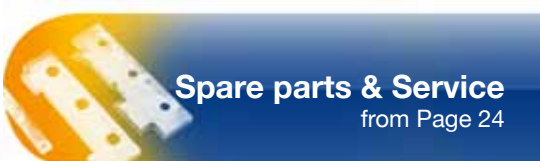
Overall profitability is not just influenced by oil yield. In order to have a lasting effect, reliability and availability must both play a key role too. Quality from HF is a guarantee for profitable business.



HF has developed own technologies following the specified boundary conditions in order to be able to provide the user with systems that are cost-effective and economic. From crude oil to edible oil with state-of-the-art, innovative HF technology.




The more compatible the individual parts in your systems are, the easier operation and maintenance become. By putting your trust in the many years experience of our engineers, you can take advantage of our all-inclusive, worry-free service.



Our systems are considered extremely reliable and very low-maintenance in every respect. We are constantly working on refinements and optimisation of our components so that your systems will remain technically up-to-date.

Oilseed processing

Professional preparation for a higher yield



The preparation of different kinds of seed to attain maximum pressing results is a science in its own right. And this is where you can profit from our many years of experience. Whether the sensitive seed is being prepared by mechanical or thermal means, the decisive factor lies in correct design and selection of the system whilst taking process technological and qualitative aspects into consideration, this is crucial to the overall result and, ultimately, to your economic success.



Conditioners

For thermal preparation of oilseed before the pressing process



🔗 Tube bundle conditioner

Drum-type conditioner

- Especially for full-pressing systems and smaller pre-pressing systems
- Indirect heating via double jacket and heatable shaft
- Variable filling level, adjustment during operation
- Option for direct injection of water and steam
- Very good mixing thanks to special agitator
- Very uniform treatment of product

Tube bundle conditioner

- Especially for large throughput performance with pre-pressing systems
- Also extremely suitable for thermal preparation of split soybeans
- Rotary tube-bundle unit
- Indirect heating of the tube-bundle
- Different design lengths planned

Pros

- + Mechanically simple and robust design
- + Large aspiration port

- + Very good drying effect
- + Manufactured according to internationally-recognised standards



Flaking mill

For mechanical preparation of oilseed before the pressing process

- Flaking of fine or pre-crushed oilseeds
- Compact design through integrated engine base




Flaking mill ▶

Pros

- ⊕ Extremely robust design
- ⊕ Low vibration thanks to high deadweight
- ⊕ Very good intake behaviour thanks to large diameter rolls
- ⊕ Uniform feeding of seed by vibration chute
- ⊕ Simple drive system through separate motors
- ⊕ Low differential speed of rolls

Screw presses

Uncompromising press technology for maximum press yield



Presses and pressing systems are used in mechanical extraction of oils from raw plant materials. Overall profitability is not just influenced by oil yield. In order to have a lasting effect, reliability and availability must both play a key role too. Moreover, it is not only the press as core component, it is also the selection, optimal location and installation of all elements associated with it that counts. Quality from HF is a guarantee for profitable business.

Screw presses



Pre-presses from the successful EP family

For processing of mechanically and thermally prepared seeds

EP 07

- Small pre-press
- Capacity (t/day): 130 - 175

EP 09

- Medium-size pre-press
- Capacity (t/day): 200 - 275

EP 20

- Large pre-press
- Capacity (t/day): 450 - 750

Options:

- Material dosing screw (trough and cover made from stainless steel)
- Dosing screw force feeder combination (except for EP-07)
- Motor base, positioned on press



▲ Pre-press EP 20

Pros

- + Simple design for easy access during maintenance
- + Force-free strainer and self-centring, free floating shaft
- + Very long service life of wear parts owing to the use of high-quality armour-plating
- + Low-noise, high-performance planetary gears with belt drive

i Also available: SP 340 as an alternative to EP 20 from the new SP family. Optionally with CMG drive or planetary gears with standard motor.



Full-presses for oilseed preparation

For processing of mechanically and thermally prepared seeds

EP 08

- Small full-press
- Capacity (t/day): 25 - 35*

Options:

- Material dosing screw (trough and cover made from stainless steel)
- Motor base, positioned on press

EP 16

- Large full-press
- Capacity (t/day): 60 - 75*
- Alternatively, also to be used as final press for thermally-treated, pre-pressed cakes



Full-press EP 16

Pros

- ⊕ Simple design for easy access during maintenance
- ⊕ Force-free strainer and self-centring, free floating shaft
- ⊕ Very long service life of wear parts owing to the use of high-quality armour-plating
- ⊕ Low-noise, high-performance planetary gears with belt drive

i Also available: SP 280 from the new SP family. Optionally with CMG drive or planetary gears with standard motor.

* Flow rates may vary when used as a final press by multi-stage pressing processes

Accessories for screw presses for oilseed preparation

In addition to equipment for mechanical and thermal processing of the seed, further components are required to guarantee the function of the screw press in the pressing plant or to prepare the processing products for further process stages. A classic device is the screening tank which is used in preliminary sedimentation of the crude pressed oil contaminated by seed particles.



Screening tank, interior view

Screening tank

For pre-cleaning of pressed oils

- Sedimentation tank with continuous discharge of solids for pre-cleaning of pressed oils
- Sieve bottom cover for oil recovery of the discharged solids
- Revolving drag chain driven by a geared motor
- Integrated screw conveyor with geared motor for discharge of solids
- Flanges for feeding and draining of the preclarified oil
- Large opening for cleaning

Options:

- Heating coil for steam heating
- Available in different sizes



Screening tank, exterior view



Pressing plants for oilseed preparation



Although the screw press is the core element, in the mechanical oil extraction process, it is only through a series of coordinated steps performed in the correct sequence which leads to the desired result of an optimum oil yield.

Our engineering team builds on its decades of experience in designing pressing plants and on its many years of cooperation with long-term relevant suppliers so that success is not left to chance.

A basic distinction is made between pre-pressing systems and full-pressing systems. Pre-pressing systems are used in combination with a solvent-extraction system. In similar process steps, the seed is only partially de-oiled, whereby a compromise needs to be found between high yield and low energy consumption. Pre-pressing systems are usually characterised by a high throughput.

In the case of full-pressing systems, the maximum possible mechanical de-oiling is sought, whereby in this instance, the limits set are not just of a phy-

sical nature but are of economical nature too. The yield must be viewed in light of the equipment's corresponding mechanical stress and the energy consumption.

The two-stage HF full-pressing system from our own development is of particular note. Instead of mechanical seed preparation as used in classic single-stage processes, a second pressing stage is used. Through the double thermal preparation and pressing process, higher yields are attained, maintenance-intensive mills are eliminated, powerful pre-pressing in the first stage is adopted, throughput at the final pressing stage is increased and through moderate thermal stress, a higher quality oil is for the most part extracted.

Regardless of whether a HF pre-pressing system or a HF final pressing-system is adopted: through competent design and execution your project will be successfully implemented.

Presses for rendering of animal by-products

EP 19

- Small press
- Capacity (t/day): 1.5 - 3.5

EP 09

- Large press
- Capacity (t/day): 14 - 18

EP 07

- Medium-size press
- Capacity (t/day): 5 - 7

Options:

- Material dosing screw (trough and cover made from stainless steel)
- Dosing screw force feeder combination (except for EP-07)
- Motor base, positioned on press



▲ EP 09

Pros

- ⊕ Simple design for easy access during maintenance
- ⊕ Force-free strainer and self-centring, free floating shaft
- ⊕ Very long service life of wear parts owing to the use of high-quality armour-plating
- ⊕ Low-noise, high-performance planetary gears with belt drive

i Our screw presses are also used for various special applications, such as dewatering of synthetic rubber and various organic raw materials (wood, etc.) Range of services and data are available on request.



Accessories for screw presses for rendering of animal by-products



Agitator autoclave E 7000

Agitator autoclave E 5000 / E 7000

For thermal processing of all animal by-products

- Hydrolisator for feathers
- Sterilisation of soft tissue and/or bones
- Dry rendering of fats

Agitator autoclave:	E 5000	E 7000
Volume:	12.3 m ³	17.2 m ³
Heating surfaces	60 m ²	80 m ²

Agitator autoclave SSK

For thermal processing of all animal by-products

- Boiling of soft tissue and/or bones
- Screen to separate foreign particles
- Throughput 4-5 t / 5-7 t per hour
- Heating surfaces 31 m² / 51 m²



Meat slurry vessel V40

Meat slurry vessel V40 with agitator

Heated for storage of sterilised, semi-finished products; heated

- Heating surface 40 m²
- Variable operating sizes available

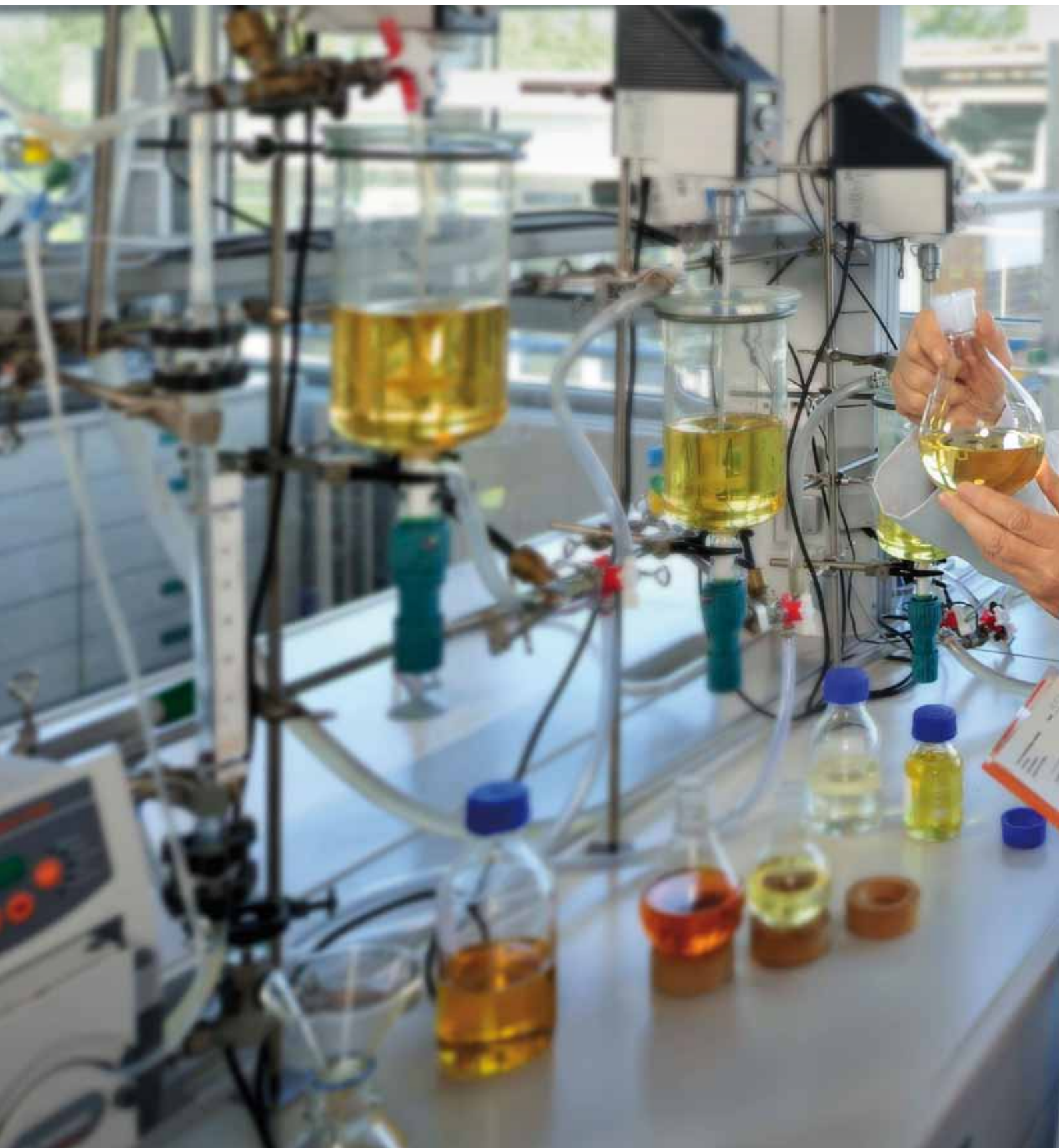
Continuous 2-step dryer 8002

For continuous drying of raw materials and/or meat slurry

- Steam jacket for indirect heating up to 9 bar
- Heatable agitator
- Two processing stages: Upper stage: disc agitator, lower stage: drum agitator
- Heating surface 175 m²

Refining

**From crude oil to edible oil.
A profitable operation thanks
to sophisticated technology.**





In refining crude oils of vegetable origin and animal fats from a pressing or extraction plant, a series of process steps is involved with the aim being to ultimately use the oil for human consumption or to enable it to be used in industrial applications or as preparation for a subsequent processing. For every stage, HF has developed own technologies following the specified boundary conditions in order to be able to provide the user with systems that are cost-effective and economic. The combination of degumming and winterisation developed by HF, for example, not only saves in investment costs, but also leads to a higher product yield as a result of lower losses. From crude oil to edible oil with state-of-the-art, innovative HF technology.

We set value on:

- Customised solutions to meet the specific demands of our customers
- High production availability thanks to selection of high-quality components
- Fully-automated processes for ease of operation
- Optimum layout for good operation and low maintenance requirements
- Manufacturing of process determining vessels and apparatuses.
- A long life-cycle of the installed components

UF-Degumming

The first stage in the refining process is UF-degumming (Ultra Efficiency). It serves to remove gums / phosphatides from the crude oil, while the free fatty

acids remain in the oil. UF-Degumming was developed by HF (KRUPP) in the late 1980s for physical refining.



▲ UF-Degumming

Pros

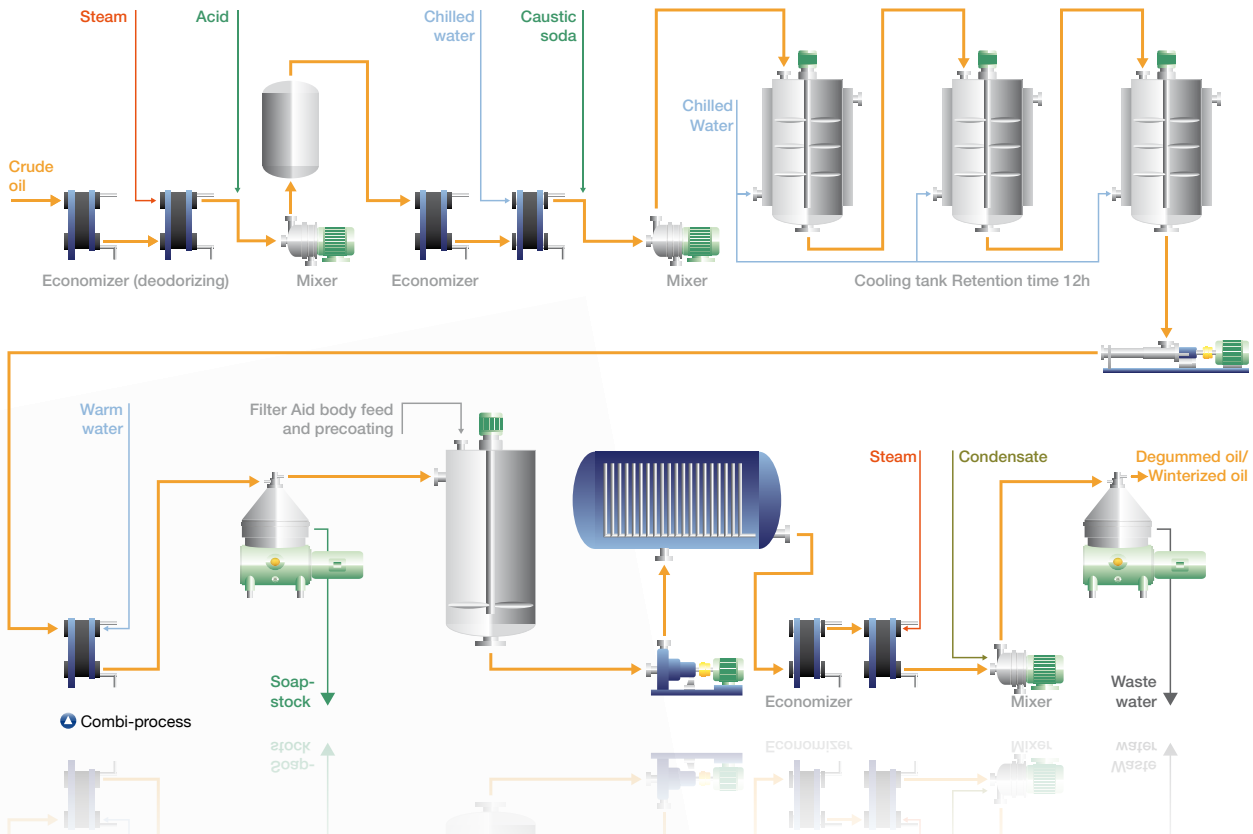
- ⊕ Very gentle oil treatment owing to the low oil temperature
- ⊕ High oil quality <10ppmP
- ⊕ High yield thanks to reduced oil loss
- ⊕ Physical refining leads to low operational costs, low use of chemicals and low amounts of waste water



Combi-process

The combi-process developed by HF is used especially for physical refining of sunflower oil and combines UF-degumming with winterisation into

an optimum process control. It serves to remove the gums / phosphatides in addition to the waxes from the crude oil.



Pros

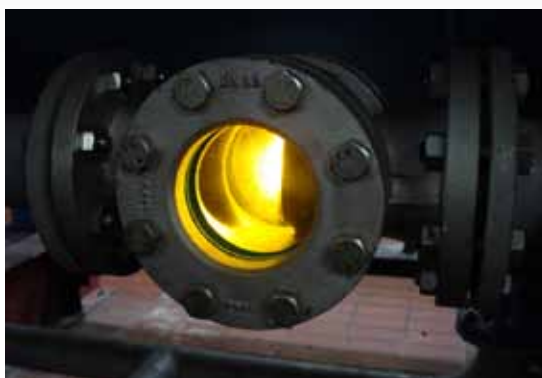
- ⊕ Highest oil quality: cold stability of 72 h at 0 °C, this corresponds to a wax content of <10 ppm
- ⊕ Very good removal of gums / phosphatides: < 5 ppmP
- ⊕ High yield thanks to reduced oil loss*
- ⊕ Greater profitability thanks to significantly lower use of filter aid*
- ⊕ Easier operation and maintenance thanks to reduced plant complexity*
- ⊕ Faster return on investment thanks to lower investment costs*

* In comparison to classic process control

Bleaching

Originally, the purpose of bleaching was solely to lighten the colour of the de-gummed crude oil. In addition to the colour pigments, many other unwanted attendant materials, such as heavy metals, residual phosphatides or soaps are removed from the oil too.

Depending upon the requirements, the bleaching process can be executed in very different ways. HF has developed a standard process that combines a gentle oil treatment with an effective process management.



Bleaching ▶

Pros

- ⊕ Oxidative damage to the product is largely avoided through reduced temperatures and a gentle process management under vacuum
- ⊕ Convenient, reliable process design
- ⊕ Reduced consumption of bleaching earth thanks to a defined retention time in the bleacher

Winterisation

The purpose of winterisation is to remove high-melting components (principally waxes) from the oil as at low temperatures these lead to cloudiness of the oil.

The winterisation process developed by HF as a result of many years of experience and continuous optimisation satisfies the highest standards of quality.

Pros

- ⊕ Highest oil quality: cold stability of 72 h at 0 °C, this corresponds to a wax content of <10 ppm
- ⊕ Optimised use of filter aid leads to lower oil loss
- ⊕ Defined retention time at optimal temperature control



Deodorisation

Deodorisation is the final, quality-defining process step in refining edible oils. Its purpose is to remove odour- and taste-producing substances - in physical refining it removes free fatty-acids at the same time. The two-temperature process by HF allows

efficient separation of the free fatty-acids in a packed column with a sub-sequent, gentle steaming of the product in the proven low-bed deodorisation apparatus.



Deodorisation apparatus

Pros

Deodorisation process:

- ⊕ Gentle oil treatment through different treatment temperatures
- ⊕ Optimum oil quality thanks to long steaming at lower temperatures, trans fatty acids <0.5 %
- ⊕ Complete process management under vacuum
- ⊕ Lower running costs thanks to a high heat recovery rate
- ⊕ Lower stripping steam consumption thanks to the use of a packed column for the physical removal of free fatty-acids

Deodorisation apparatus:

- ⊕ Minor footprint required thanks to integrated heat exchange system
- ⊕ Optimal physical conditions for steaming through low oil levels in the treatment trays
- ⊕ Good accessibility thanks to manholes in every tray
- ⊕ No load transfer into the surrounding steel construction
- ⊕ High degree of separation in the vapour scrubber

Engineering

Complete engineering for worry-free production



The more compatible the individual parts in your systems are, the easier operation and maintenance become. By putting your trust in the many years experience of our engineers, you can take advantage of our all-inclusive, worry-free service. Day-in and day-out we work with our customers' project managers, construction managers, civil engineers and architects across the globe; our common goal being to reach the perfect solution together and to put this into practice. We also train you and your staff in the running of daily operations.





Our engineers will assist you with ...

- Preparation of process flow diagrams and mass balances
- Preparation of layout-drawings or foundation and floor plans
- Plant automation design
- Piping and instrumentation drawings
- Assembly planning
- Assembly supervision
- Personnel training for operation and maintenance of the systems
- Supervision of commissioning and transition to industrial operation
- Compilation of machine, equipment and plant manuals
- Selection and procurement of periphery components



Service you can rely on – 24-hours a day



Wear parts **Precise, high-quality, available**

Our systems are considered extremely reliable and very low-maintenance in every respect. Provided that all wear parts are inspected on a regular basis and exchanged in time when necessary. We are constantly working on refinements and optimisation of our components so that your systems will remain technically up-to-date. We have locations

around the world so that an HF-specialist is always close by. In addition, we also offer a long-term, guaranteed spare parts service for all components. The outstanding level of expertise that you gain with us as your service partner, ensures your machines keep on functioning and delivering excellent results on a continuous basis.



24-hour hotline

We are always at your service : our 24-hour emergency service

If a problem crops up outside regular working hours or an unexpected system defect occurs, just call our 24-hour hotline. This ensures that our technicians can immediately start taking the necessary measures to deal with your problem or make sure spare parts are delivered as soon as possible. In

many cases, initial problem diagnosis and clarification can often be handled directly over the phone. In an emergency, our service staff will be on the ground with you as soon as possible, our technicians are always close by due to our locations around the world.

Service-Hotline: Tel.: +49 40 77 179-270

Maintenance, Repair & Consulting services

Always up-to-date - with professional maintenance and systems optimisation

We provide more than just support in system's design, assembly and commissioning. We offer a wide-range of maintenance and optimisation services, particularly during running operations. Our team of experts provide quality analyses of your system as an integral part of the regular inspection work and are able to target any weak areas revealed

by these results and draw up the necessary measures required for optimising processes.

This pays off in the long run because your systems are continually optimised with regard to a long life-cycle, increased productivity, improved quality and an enhanced service life.

Our service examines whether ...

- energy savings are possible
- your system is working in an environmentally-friendly manner
- enhanced production performance is possible or what adjustments and upgrades may lead to an increase in capacity
- your system is suitable for new applications (such as other seeds), or what measures are necessary for a change-over

Our service conducts ...

- quality analyses and provides suggestions for improvement
- optimisation of your system regarding procedures and processes

Our service develops ...

- suitable concepts regarding conversion, exchange of individual components or for improving process management, on request

Our service provides ...

- repairs to screw shafts, strainer cages, gears and other system parts – and does this quickly, competently, with an eye to the solution and to cost.

By the way, the services we provide are not just restricted to our own plant systems, they may also be used in conjunction with existing systems from other suppliers.



Spare parts

Genuine, precise fit, long-lasting and available for decades



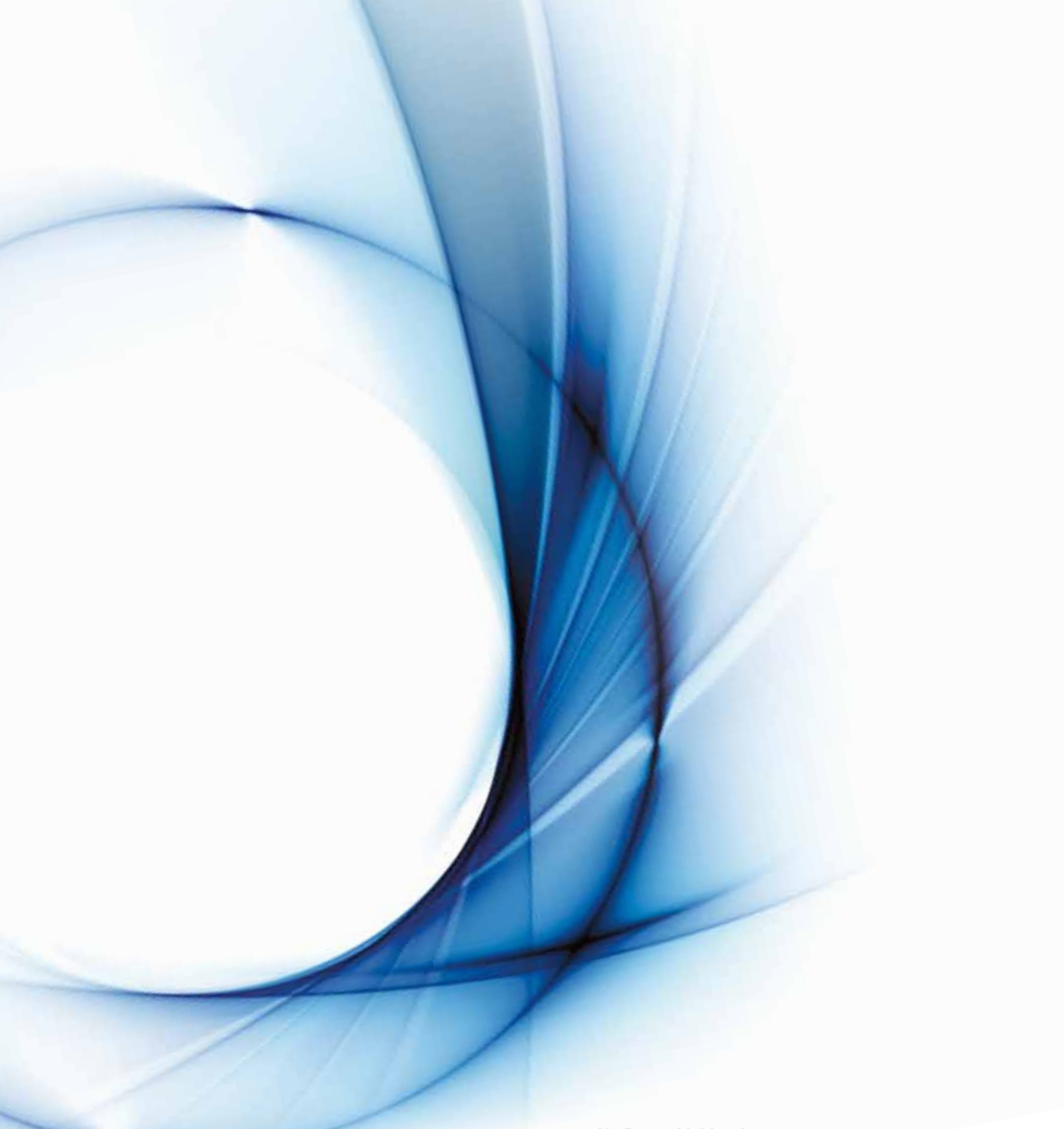
We will supply your system with spare parts for many years to come. All wear parts essential to the screw press are manufactured in our factory in Hamburg. These quality parts are designed to be particularly long-lasting and high-performance so that the functionality of your system is guaranteed over the entire life-cycle.

By the way, we don't just supply spare parts for our own systems, we are also able to supply spare parts for other supplier's systems.

Data sheets:

All data sheets are available from us on request or may be downloaded from our website at:
www.hf-press-lipidtech.com

There you will also find many other helpful documents, such as brochures and certificates.



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