



Technical Documentation

LTG Compact Filter Unit

Type CFU

LTG Compact Filter Unit Type CFU - All-in-one System

The elimination and disposal of air currents containing fibres and dust plays an important role in many industrial applications. When equipment of this type is designed and configured, the following criteria are important:

- Variability
- Functional dependability
- Operational availability
- Compact design

LTG meets these requirements with the compact filter unit type CFU. The modular design allows for a delivery in pre-assembled modules. On site, these modules only need to be bolted together. The modules are optimally matched to one another, the result being a supreme degree of both dependability and safety. In addition, a factory test run is performed.

The modular design ensures a high degree of variability with the potential to meet any specific customer requirement.

Function

The complete Filter Unit CFU is a multi stage dust control system for fibers and dust that satisfies filtration classes G 1 to F 9.

Coarse and fine particles produced in all kinds of production processes are collected, sucked away, divided, filtered, and separated. Depending on the application, separated materials may either be reintroduced in the production process or compacted and disposed of.

The fan module pulls the main air stream through the complete, multi stage filter unit. The clean air leaves the filter unit through the outlet of the fan. Prefilter and fine filter are operating fully automatic and are cleaned by means of suction fans.

Secondary air flow I separates fibers, secondary air flow II dust particles

Dust and short fibers can either be reintroduced in the production process as recyclable waste or separated and compacted. Air from the secondary air circuits is reintroduced in the filter system.



Compact filter unit type CFU-CDF with three modules

- ① Inflow adapter with prefilter
- ② Fine filter, e. g. type CDF-4
- ③ Main fan

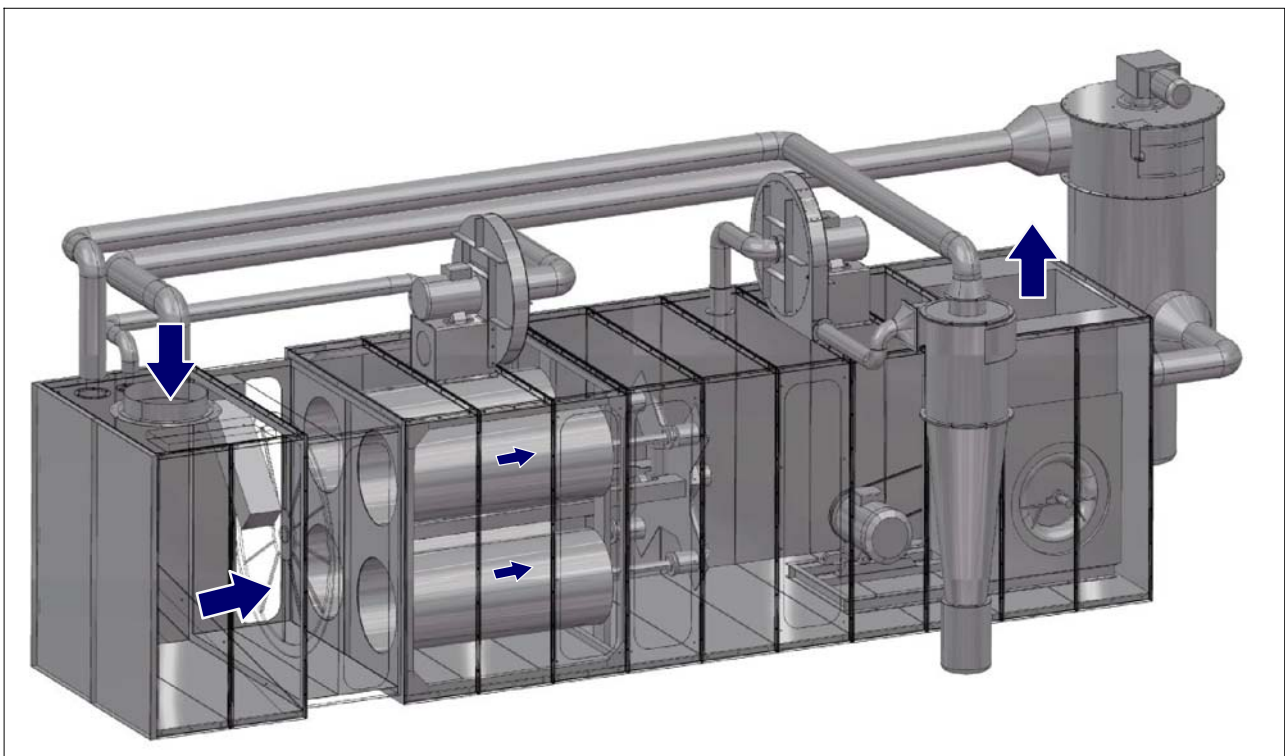
LTG Compact Filter Unit Type CFU

Advantages

- High filtration output
- Steady operation due to continuous cleaning
- Material recycling due to separate fibre and dust return (on request also reintroduction of valuable materials possible)
- Low maintenance
- Energy-efficient
- No system pressure fluctuations
- Individual performance and function settings
- Direct installation where the action is
- High performance density
- Long service life of filter media
- Process temperatures up to 200 °C
- Modular design
- Space saving thanks to compact design
- No need of compressed air
- Savings in drive energy thanks to low pressure loss and short piping distances and aerodynamic air routing inside the chamber
- Assembly on the spot and commissioning within few days

Practical Applications

- Automotive industry
- Building material industry
- Cellulose and personal care industry
- Chemical industry
- Fiber manufacturing
- Food industry
- Insulating material industry
- Metalworking industry
- Nonwoven industry
- Packaging industry
- Paper industry
- Pharmaceutical industry
- Plaster industry
- Plastics industry
- Printing industry
- Process engineering
- Textile industry
- Tobacco industry
- Wood and furniture industry
-



Horizontal flow compact filter unit type CFU-CDF with LTG CompactDrum Filter® type CDF-4.
Consisting of prefilter module, fine filter module, fan module. With conveying fans, fiber compactor, and cyclone.

LTG Compact Filter Unit Type CFU

Designs


Compact filter unit type CFU-CDF with horizontal flow

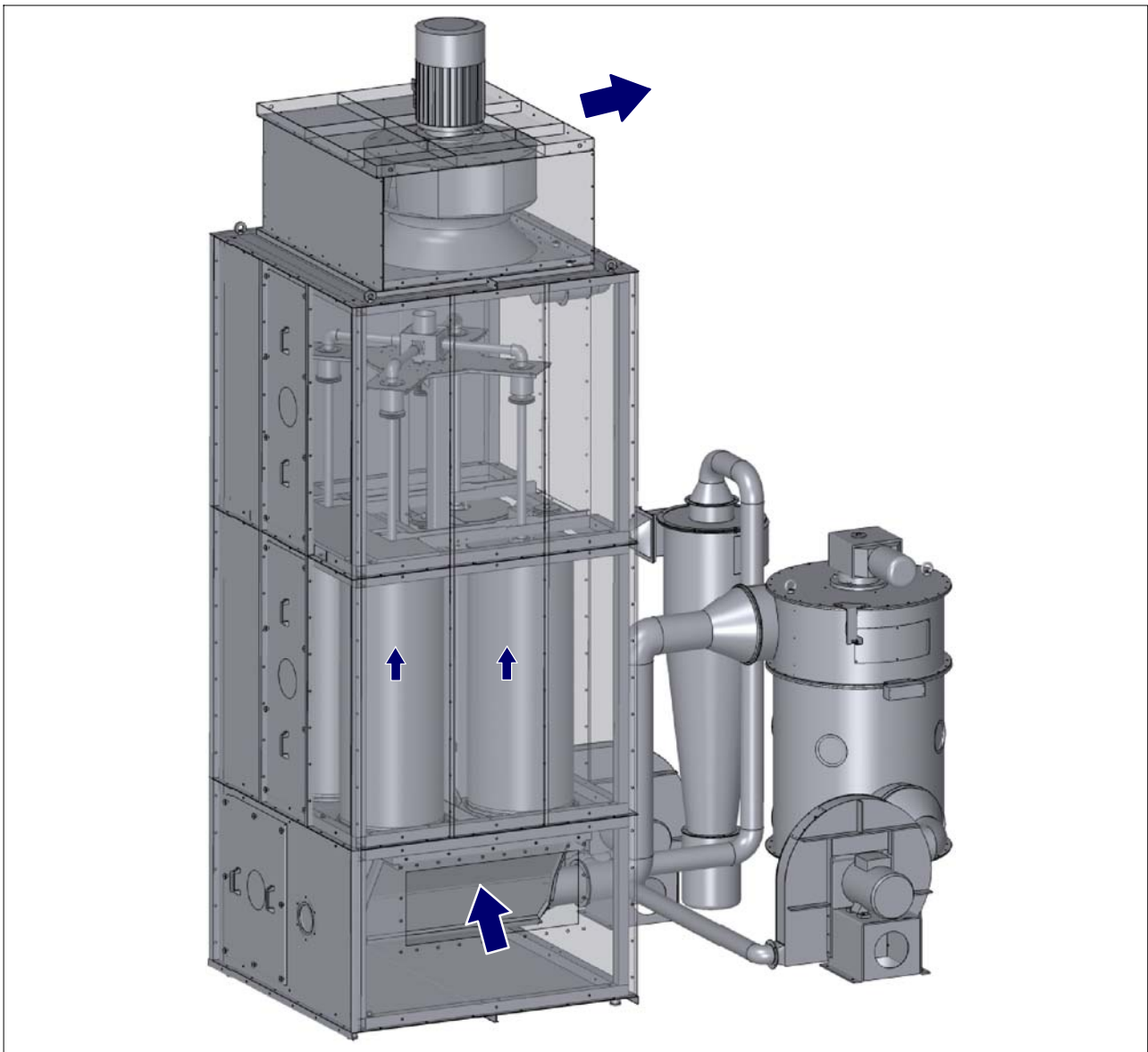
Modular design. Filtration output and flow rate may be multiplied combining several modules next to or on top of each other.

Compact filter unit type CFU-UDF with vertical flow

Smallest possible floor space requirements due to flow pattern. Pre-separation of coarse particles by gravity, without filter media.

Special designs

- Soundproof versions
- Weatherproof versions for outside operation
-  ATEX explosion protected versions
- Customized solutions



Vertical flow compact filter unit type CFU-UDF with LTG UpflowDrum Filter® type UDF.
Consisting of prefilter module, fine filter module, fan module. With conveying fans, fiber compactor, and cyclone.

LTG Compact Filter Unit Type CFU, Arrangement

The compact filter unit type CFU is composed of different modules based on exhaust air shares (fibers, fine dust).

The exhaust air to be processed is conveyed to the corresponding modules via suction-side fan. Fibers and dust particles are removed from the system by separate extraction fans.

Main air stream

- **Inflow adapter:** For connection of e.g. different exhaust air pipes or a manifold. The inflow adapter ensures both uniform distribution of airflow-contained fibers and dusts and optimum inflow into the filter from above.
- **Prefilter module:** The prefilter module includes a self-cleaning coarse filter continuously separating fibers and coarse particles via filter medium. Fibers are conveyed to a separator located outside the system.
- **Fine filter module:** A continuously self-cleaning fine filter (CompactDrumFilter, UpflowDrum-Filter) separates any remaining fine particles from the exhaust air stream. Drums are loaded with dust from the inside. The dust is sucked off via rotating nozzles and conveyed to a cyclone separator located outside the system. All drive elements are positioned on the clean gas side. Depending on requirements, the fine filter may consist of several drums.

- **Microfilter module:** Whenever clean gas requirements are increased the use of non-renewable pocket filter cartridges is mandatory.

- **Fan module:** a high-efficiency centrifugal fan at the intake side pulls the main air stream through the filter unit. Versions with frequency switch or noise-reduced versions are available.

Secondary air stream I and II

Pre and fine filter are cleaned by means of conveying fans. Fibers from the prefilter module may be separated by means of a fiber compactor while dust from the microfilter module will be removed by a cyclone.

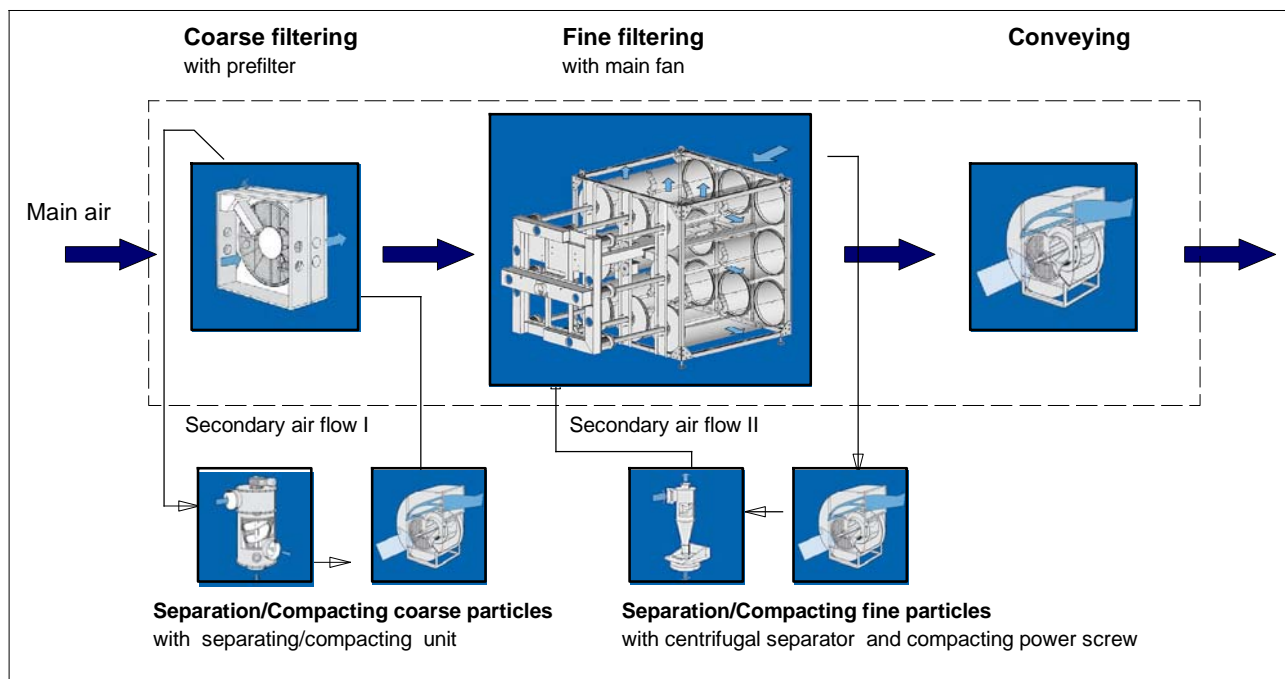
Dust compacting may be performed either by the cyclone alone or with additional use of a dust compactor.

Electrical Control and Regulation

Adjustment of constant flow rate is realized at start-up using an adapter underpressure regulation. It is performed via frequency converter or bypass damper.

The pressure transmitters measure and process various pressures or underpressures. During operation the underpressure in the inflow adapter is defined and maintained. This is done by means of a frequency converter at the main fan.

For further details please see page 9.



Function diagram and structure of the Compact filter unit type CFU

LTG Compact Filter Unit Type CFU, Technical Data

Sizes, Design Data and Dimensions

Designation	Fine filter type	No. of drums	Max. air volume at filtration class F5 [m³/h]	Suction pressure in adapter [Pa]	Dimensions * length x width x height [mm]
CFU-CDF	CDF	2, 4, 8	up to 35 000	0 - 1000	approx. 6500 x 1700 x 170
CFU-UDF	UDF	4	up to 35 000	0 - 1000	approx. 1700 x 1700 x 5500
CFU-TFB 20**	TFB	1	up to 100 000	0 - 2000	approx. 11 350 x 3200 x 2200

* without microfilter, general tolerances according to ISO 2768-cL

** on request as TFB 25 available

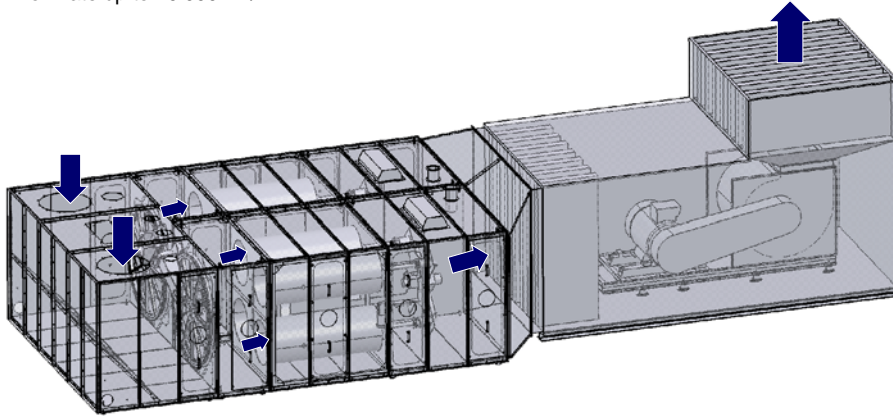
Filtration classes

Filter-level	Media type	Filtration classes										Achievable emission [mg/m³]
Prefilter	Mesh	G2								x	x	
		G3								x		
Fine filter	Pile fabric	F4	x	x	x	x	x	x	x			
	Pile fabric	F5	x	x	x	x	x	x				
	Pile fabric	F6	x	x	x	x	x					> 1
	Needle felt	F7/BIA L	x	x	x	x						< 1
Finest-filter	Needle felt	F8/ BIA L	x	x								< 0.5
		F9/BIA M	x									< 0.2
Pressure loss media min. [Pa]			150	150	150	150	150	100	100	50	50	
Pressure loss media max. [Pa]			800	800	1000	1000	600	600	500	350	350	
Velocity through media [m/s]			0.1	0.23	0.35	0.5	0.66	0.81	1.03	5.5	6.5	

LTG Compact Filter Unit Type CFU, Design Examples

Compact filter unit for exhaust air with fibers and dust

Flow rate up to 40 000 m³/h



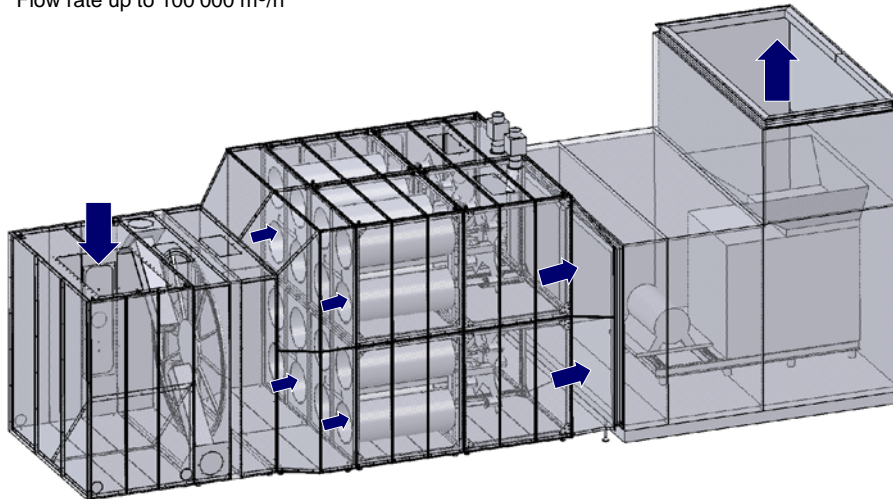
Consisting of:
2 inflow adaptors,
2 prefilters,
2 fine filters,
1 main fan, in soundproof fan module.

L = 10 500 mm
B = 3400 mm
H = 2800 mm

Filtration class F5

Compact filter unit for exhaust air with fibers and dust

Flow rate up to 100 000 m³/h



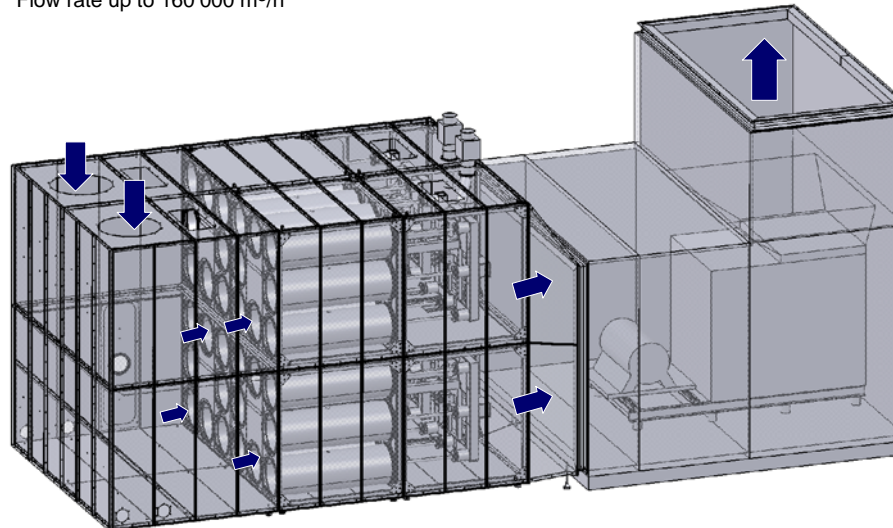
Consisting of:
1 inflow adaptor,
1 prefilter,
4 fine filters,
1 main fan, in soundproof fan module.

L = 11 500 mm
B = 3850 mm
H = 4200 mm

Filtration class F5

Compact filter unit for exhaust air with dust

Flow rate up to 160 000 m³/h



Consisting of:
2 inflow adaptors,
4 fine filters,
1 main fan, in soundproof fan module.

L = 10 500 mm
B = 3850 mm
H = 4100 mm

Filtration class F5

LTG Compact Filter Unit Type CFU, Regulation and Control

Regulation and Control

The compact filter unit type CFU is available including a control unit. The control cabinet houses the adapter underpressure regulation which ensures a constant flow rate.

The control regulates, via frequency converter, the main fan located in the filter unit or a bypass damper at the filter unit

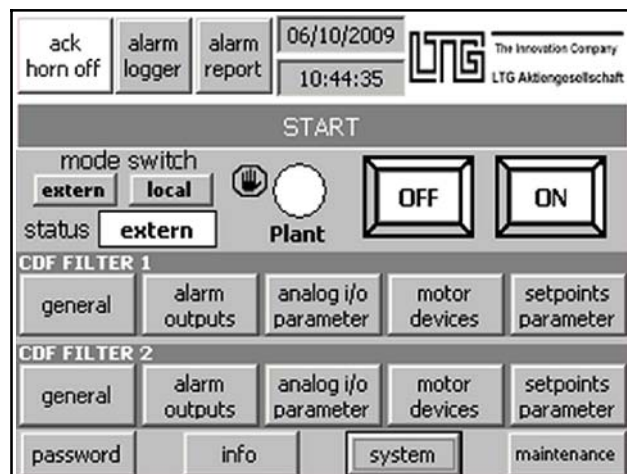
The control has been designed to meet the highest reliability requirements while offering any required settings and a variety of alert and stop functions.

The control may be used worldwide:

- The display is available in any language,
- Any country-specific voltage may be used.

Functions

- Setting of adapter underpressure in the inflow adapter
- Input of alert and stop values for differential pressures (pre- and fine filter)
- Operating hours counter
- Motor protection functions for all components
Heavy starting for fans
- Repair switch
- Speed monitoring
- Emergency switching off function
- Integration of signalling contacts (fire alarm system, machine clearance)
- Error messages



LTG Compact Filter Unit Type CFU, Accessories

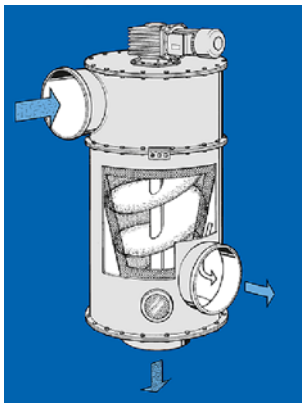
For Fibers

Separating and compacting unit type FKA/FKC

- Separation and compacting of fibers
- Pressureless material discharge
- Wall or feet installation
- Material rates up to 500 kg/h, depending on material density
- Drive 0.55 kW or 1.1 kW
- Deposit in bag or container

High-efficiency conveying fan type VRR

- Up to 10 000 Pa
- Impeller for material conveying
- Compact design
- Flow rates up to 3000 m³/h
- On suction side to FKA/FKC



Left hand: Separating and compacting unit type FKA/FKC

Right hand: High-efficiency conveying fan type VRR

For Dust

Centrifugal separator type ZSA/ZSB/ZSC

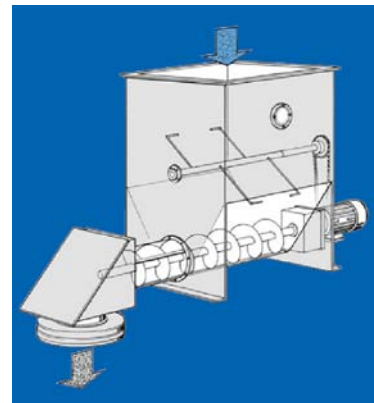
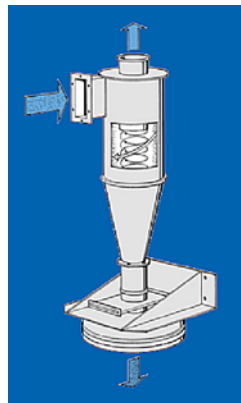
- Pressureless material discharge with rotary feeder possible
- Wall or feet installation
- Material rates up to 500 kg/h, depending on material density
- Deposit in bag or container

Compacting power screw type CPS

- Pressureless material discharge with rotary feeder possible
- Assembly below the centrifugal separator
- Wall installation or on base frame
- Material rates up to 100 kg/h, depending on material density
- Compression ratio 3:1
- Deposit in bag or container

High-efficiency conveying fan type VRR

- Up to 10 000 Pa
- Impeller for material conveying
- Compact design
- Flow rates up to 3000 m³/h
- On suction side to FKA/FKC



Left hand: Centrifugal separator type ZSA/ZSB/ZSC

Right hand: Compacting power screw type CPS



Comfort Air Technology

Air Conditioning Systems

- Decentralized Facade Ventilation Units
- Fan Coil Units
- Induction Units,
Active Chilled Beams

Air Diffusers

- Linear Air Diffusers
- Wall and Floor Mounted Air Diffusers
- Swirl Diffusers
- Industrial and Special Air Diffusers

Air Distribution

- Flow Rate and Pressure Controllers
- Shut-off and Balancing Dampers
- Silencers

Process Air Technology

Fans

- Tangential Fans
- Axial Fans
- Centrifugal Fans
- Fahrtwind-Simulators

Filtration Technology

- Suction Nozzles
- Dampers
- Filters, Dust Collectors
- Separators, Compactors

Humidification Technology

- Air Humidifiers
- Product Humidifiers

Engineering Services

Fluid Engineering

- Flow analysis
- Flow visualization
- CFD-simulations
- Flow optimization
- Air conditioning concepts

Thermodynamics

- Calorimetric performance measurement
- Thermal, dynamic, unsteady,
system simulations

Acoustics

- Sound level measuring
- Vibration analysis
- Echo chamber measurement
- Acoustic optimization

Comfort

- Evaluation
- Optimization

Customer-specific Solutions

- Product development
- Process optimization
- Installation analysis

LTG Aktiengesellschaft

Grenzstraße 7
70435 Stuttgart
Germany
Tel.: +49 (711) 8201-0
Fax: +49 (711) 8201-696
E-Mail: info@LTG-AG.com
www.LTG-AG.com

LTG Incorporated

105 Corporate Drive, Suite E
Spartanburg, SC 29303
USA
Tel.: +1 (864) 599-6340
Fax: +1 (864) 599-6344
E-Mail: info@LTG-INC.net
www.LTG-INC.net