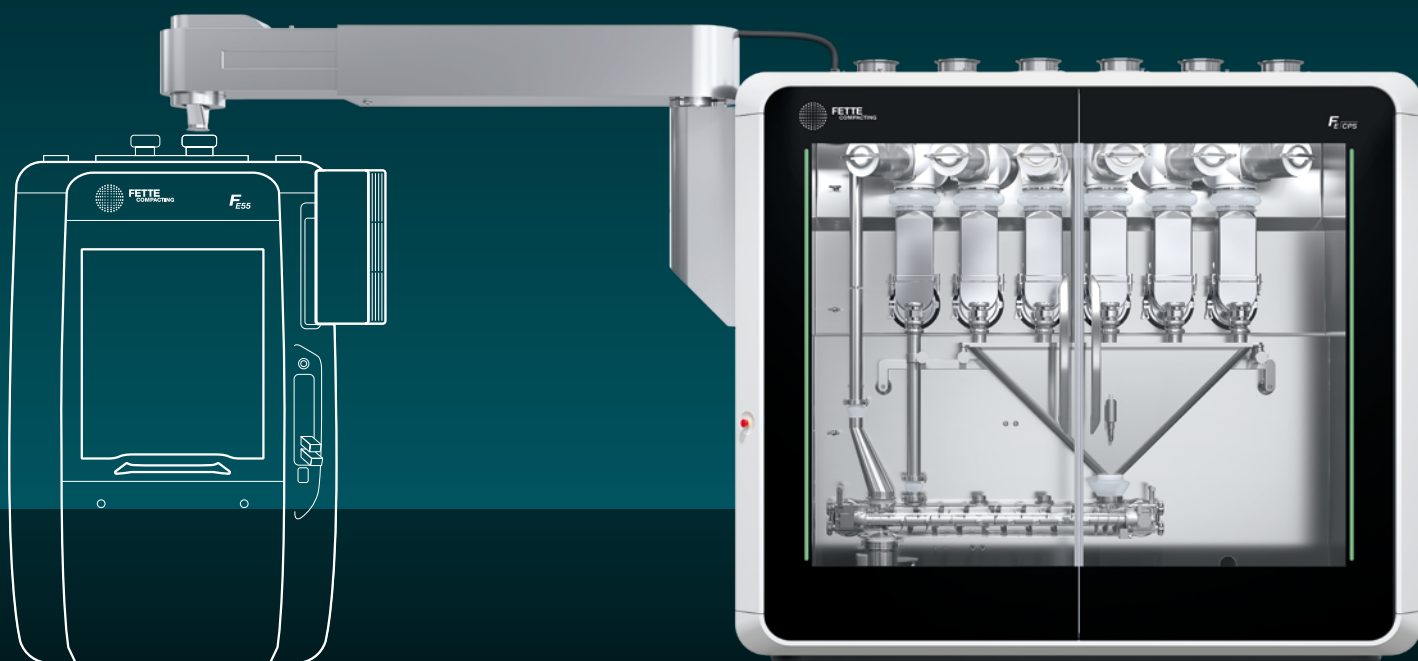




FE CPS

The New Standard in
Continuous Direct Compression



FETTE
COMPACTING

together

from lab to production

Better together – from lab to production

For more than 75 years, Fette Compacting has been redefining precision in industrial tablet production. As the world market leader in integrated solutions for OSD (Oral Solid Dosage) manufacturing, we deliver decisive competitive advantages. Our portfolio ranges from high-performance tablet presses to specialized Containment solutions and process equipment.

But technology is only one part of our DNA. Guided by our principle “Together – from lab to production”, we support you throughout the entire life cycle of your products: from initial formulation in the lab through technology transfer to commercial production.

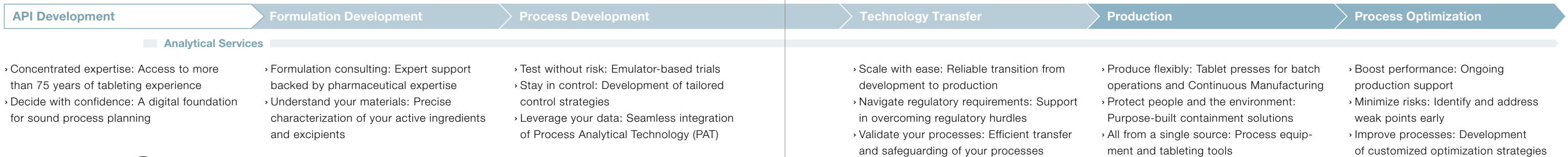
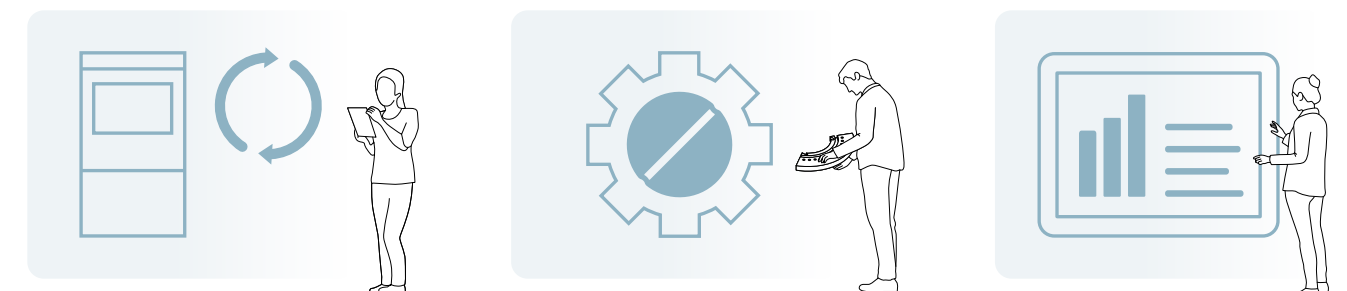
That way, you find the right solution for every product and get it to market faster. With our global network of five Competence Centers in Germany, China, the USA, India, and Brazil, along with 13 subsidiaries and representatives in 50 countries, we are always right where you need us.

As your holistic process partner, we provide complete solutions. Whether pharma, nutrition, or chemical: We combine tailored consulting with deep technological know-how. The result: customized, efficient solutions for every phase of your product life cycle – and a partnership that delivers real value.

Research & Development



Production



Extended range of services along the process chain:



Continuously Better Production

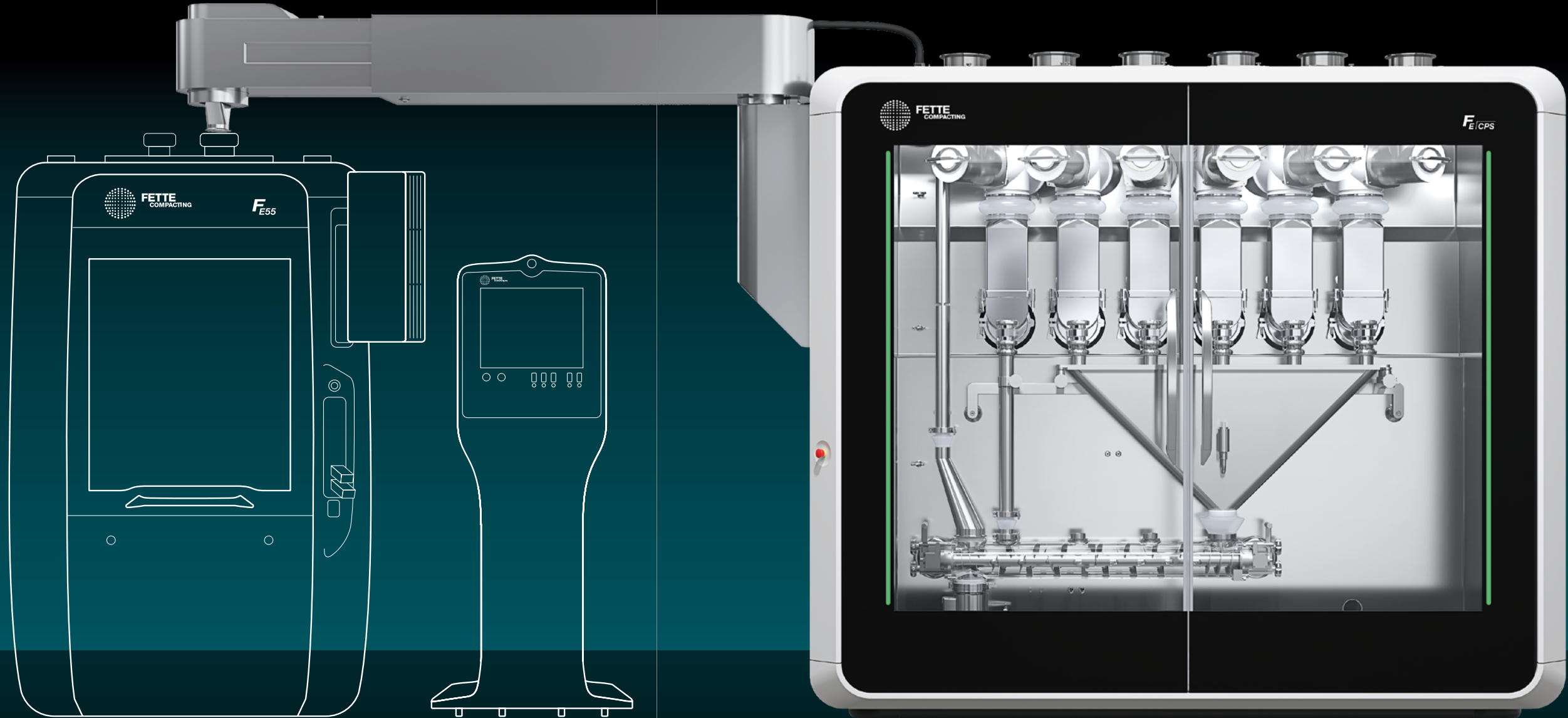
The most economical solution
for OSD production –
compact, safe, and efficient

The production of pharmaceutical solids is undergoing a paradigm shift: The transition from batch processing to Continuous Manufacturing delivers efficiency and quality advantages but has been held back, among other things, by complex system design. With the FE CPS, Fette Compacting presents a solution that rethinks Continuous Direct Compression from the ground up.

Thanks to these advantages, the FE CPS paves the way from lab to series production. For the first time, it makes Continuous Manufacturing economically attractive for companies of any size – from smaller production facilities to global pharma corporations.

Based on a Quality by Design approach, we have integrated all process steps into a compact, standardized machine concept. The result is a groundbreaking solution for Continuous Direct Compression: easy to install on a small footprint, intuitive to operate, and flexible enough for product changeovers and formulation development.

FE/CPS



The Process: Efficiency in Flow

Dosing and blending without deviations

The FE CPS redefines material flow. Instead of blending tanks and complex transfer systems, the machine relies on a lean, continuous stream. Using Loss-in-Weight feeders, the FE CPS doses different powders with precision. The intelligent control system synchronizes dosing, blending, and transport in real time, ensuring that the material is always correctly blended before it reaches the tablet press.

0. Raw material feed

It all starts with the right infeed: a broad range of solutions is available for charging the FE CPS with raw materials, from simple poly-bottle or gravity feeding to advanced big-bag infeed systems using dilute-phase or dense-phase conveying. Fette Compacting offers project-specific support in selecting the best upstream solution to match the material, throughput, and system concept.

1. Material feed

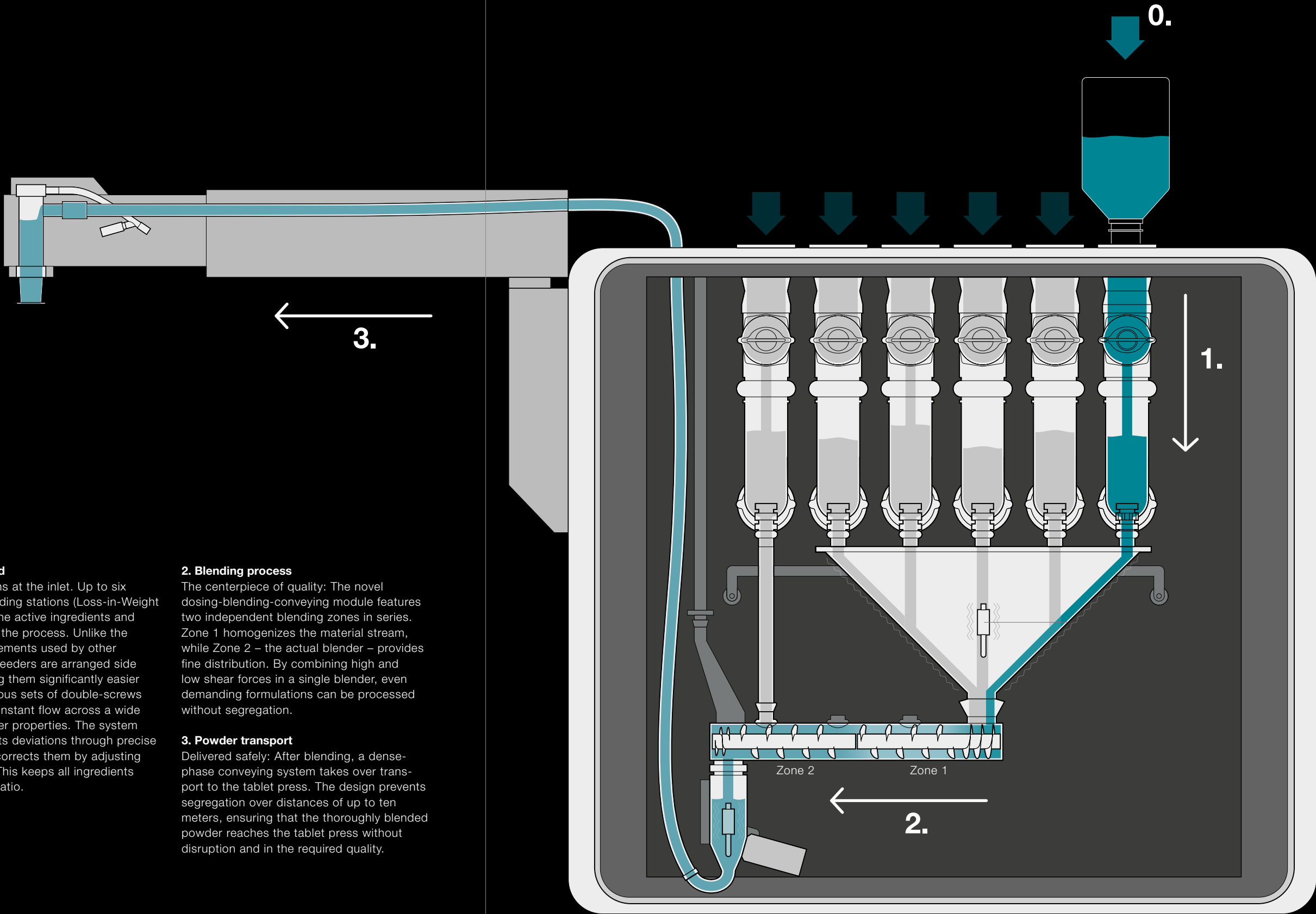
Precision begins at the inlet. Up to six gravimetric feeding stations (Loss-in-Weight feeders) feed the active ingredients and excipients into the process. Unlike the circular arrangements used by other suppliers, the feeders are arranged side by side, making them significantly easier to handle. Various sets of double-screws guarantee a constant flow across a wide range of powder properties. The system instantly detects deviations through precise weighing and corrects them by adjusting screw speed. This keeps all ingredients at the correct ratio.

2. Blending process

The centerpiece of quality: The novel dosing-blending-conveying module features two independent blending zones in series. Zone 1 homogenizes the material stream, while Zone 2 – the actual blender – provides fine distribution. By combining high and low shear forces in a single blender, even demanding formulations can be processed without segregation.

3. Powder transport

Delivered safely: After blending, a dense-phase conveying system takes over transport to the tablet press. The design prevents segregation over distances of up to ten meters, ensuring that the thoroughly blended powder reaches the tablet press without disruption and in the required quality.



Fette Compacting Powder Transfer System

FPTS (by Dec)

The last mile is decisive

The quality of continuous processes hinges on the interfaces within the overall system. The FE CPS already integrates dosing and blending with maximum precision. To prevent the homogeneous mixture from segregating on its way to the tablet press and to keep every particle within the closed process chain, Fette Compacting has developed the FPTS (Powder Transfer System) in collaboration with the specialists at the Dec Group. The FPTS delivers the finished formulation to the tablet press using a vacuum-based, segregation-free, and fully enclosed process. The technology is based on the principle of Dense Phase Conveying.

Advantages of the FPTS at a glance

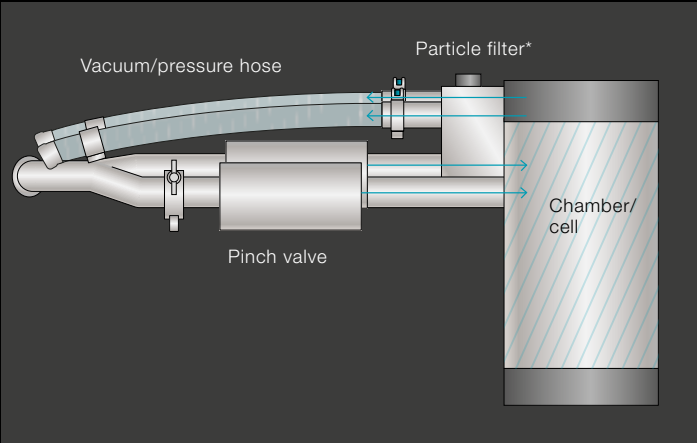
- + **Gentle product handling:** Low conveying speed prevents particle breakage and material degradation.
- + **No segregation:** The homogeneous mixture is maintained over the entire conveying distance.
- + **Containment:** Complete dust-tightness prevents the release of active ingredients.
- + **Low wear:** Low flow velocity minimizes abrasion in pipes and valves.
- + **Minimal electrostatics:** By avoiding rapid air turbulence, the system reduces electrostatic charging of the powders.
- + **Energy efficiency:** A high product-to-air ratio allows conveying with a low total gas volume.



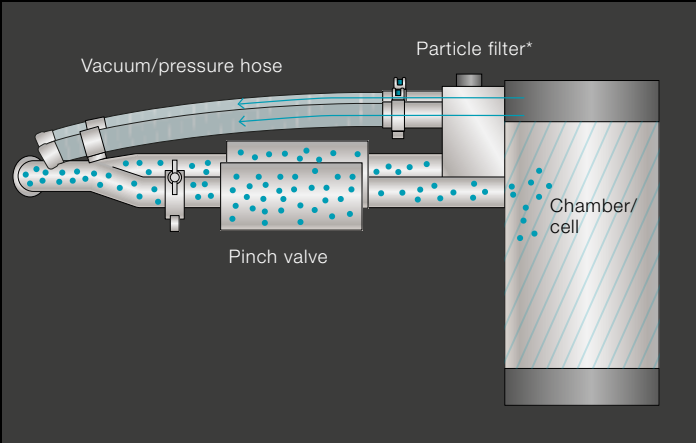
How the FPTS works

A controlled negative pressure draws the powder mixture at low velocity through a hose into one of the two conveying chambers of the FPTS unit. Rather than being swirled, the mixture is gently transported, largely following the first-in-first-out principle. Several pinch valves control the powder flow. A two-stage filter system consisting of a pre-filter and a particle filter* separates the transport air from the powder inside the chamber: the air escapes via the filter cover, while the powder remains behind.

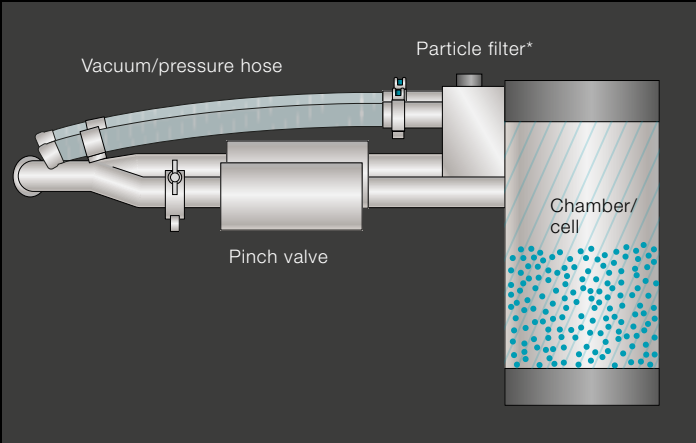
As soon as the discharge flap opens at the bottom, the powder falls into the funnel of the tablet press in a controlled manner. After each cycle, a short blast of compressed air automatically cleans the filter. While one chamber empties, the second is already being filled. The result is a virtually continuous material flow.



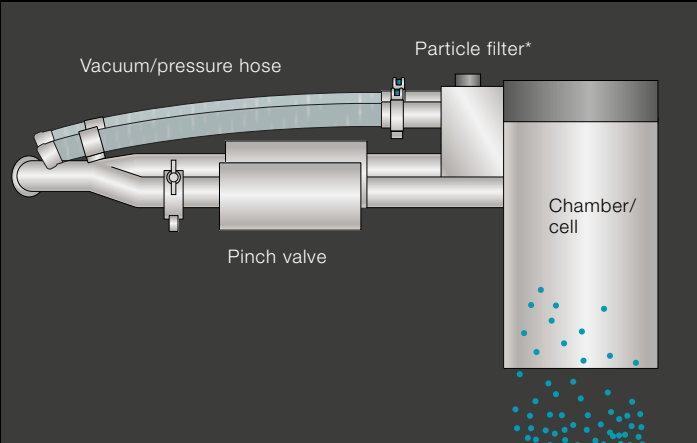
Compressed air closes the pinch valves. A vacuum forms in the chamber / cell, and air escapes through the vacuum hose.



The compressed air is released via the pinch valve. Powder is drawn in and falls into the chamber/cell.



The vacuum closes. The chamber / cell is filled. (A new cycle can begin)



The vacuum is released. The chamber / cell opens, and the powder falls into the funnel. The compressed air is released, and the discharge flap closes.

* Filter for microorganisms and particles with a filtration performance of 99.99 % (at 0.01 µm) – comparable to HEPA classification. (HACCP guidelines and FSSC22000 standards)

Fette Compacting Powder Transfer System

FPTS (by Dec)

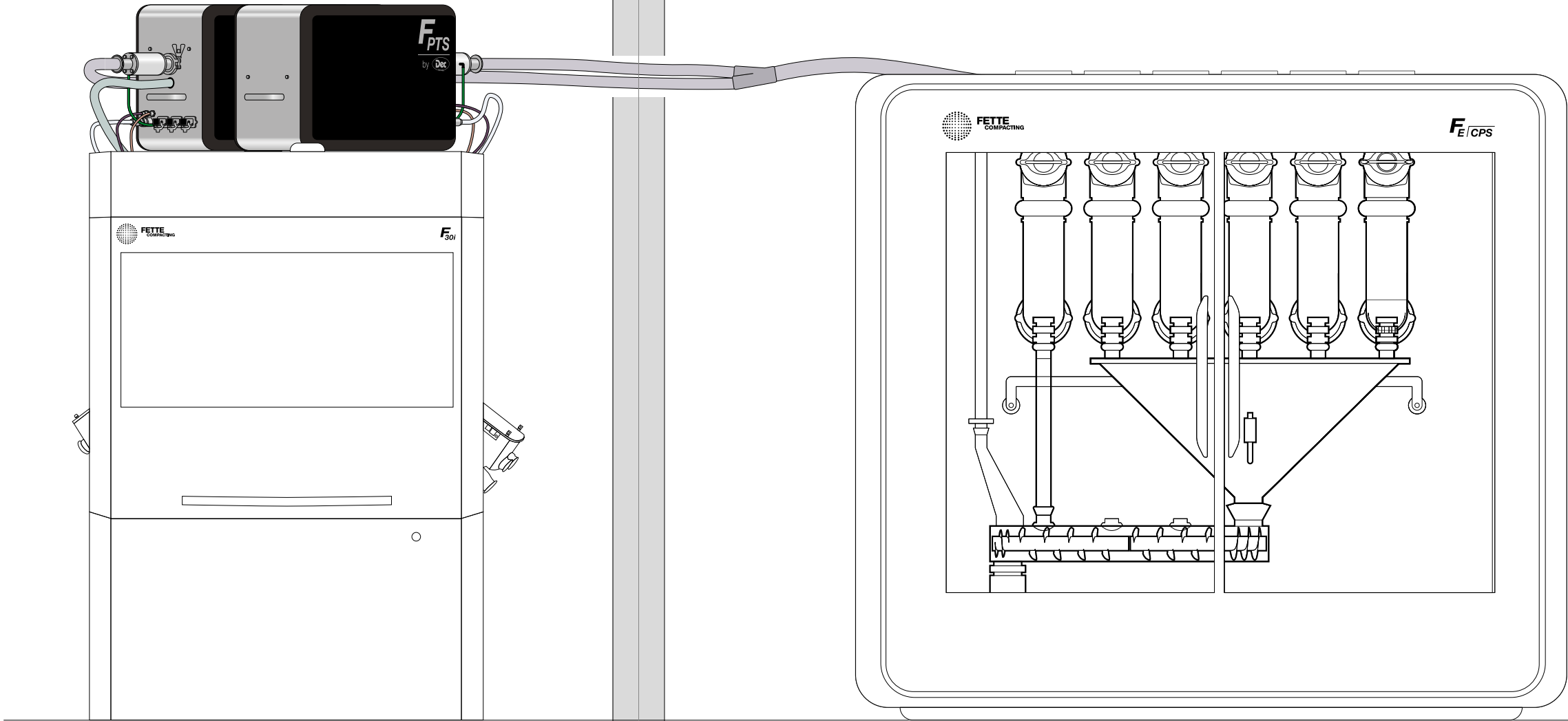
The FPTS is available in two versions: the FPTS single for single rotary tablet presses and the FPTS double for double rotary tablet presses. Both versions share the same benefit: segregation-free, safe, and gentle conveying of the finished powder mixture from the FE CPS to the tablet press.

Single rotary tablet press – precisely supplied

With a single rotary tablet press, one FPTS unit supplies a single feed point on the tablet press. The powder line can either be routed permanently via a cable duct or run inside an arm that combines the FE CPS and tablet press into a closed, visually integrated unit.

Double rotary tablet press – double the output

The double rotary tablet press compacts at two points simultaneously, doubling the tablet output per turret rotation. To supply both feed points reliably and at the same time, a Y-piece splits the powder flow from the FE CPS between two FPTS units. Each FPTS unit supplies one side of the tablet press through its feed point, independently of the other. The result: twice the throughput in continuous production.



Reinvented in Seven Areas

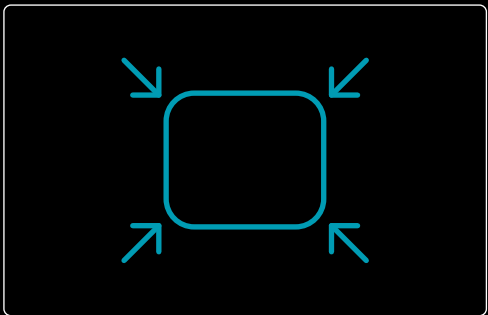
Key advantages of the FE CPS at a glance



Modular

Maximum flexibility in installation and use:
As stand-alone or integrated into a line

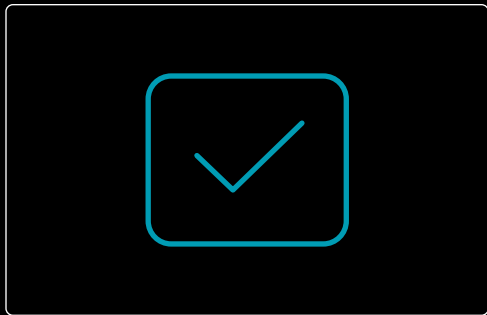
See page 10



Compact

Single-level setup – no elaborate
modifications or platforms required

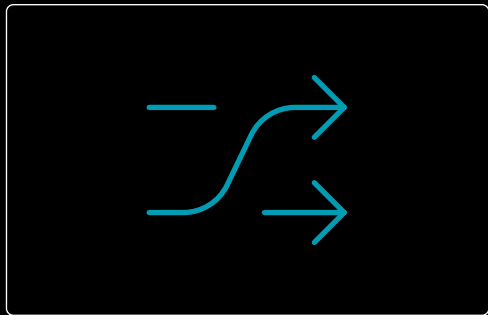
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Simple

TRI.EASY Operating Concept makes
operation, maintenance, and changeover
easy, safe, and fast

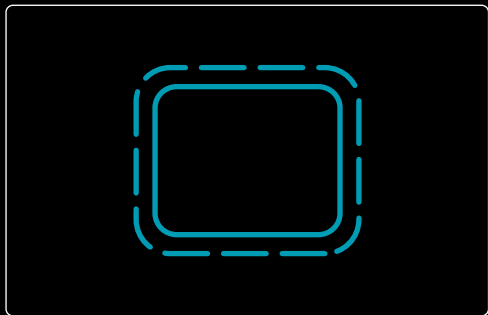
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Flexible

Universal process design for processing a
wide range of formulations from 5 to 800 kg/h*

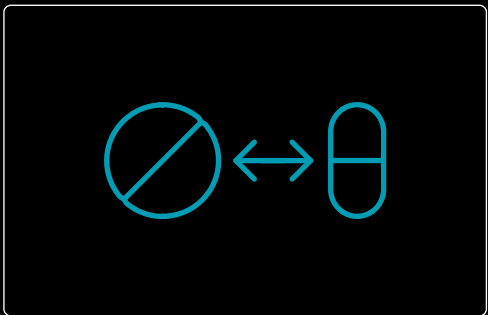
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Safe

Dust-tight enclosures and strict
separation of process and technical
areas for effective Containment

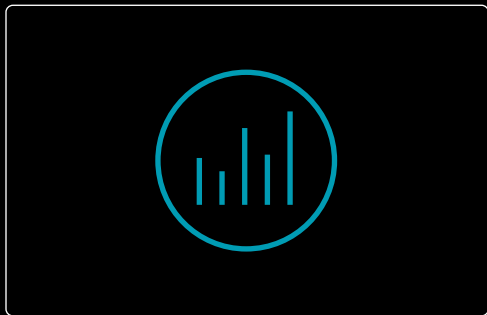
See page 18



Fast

Minimal changeover times: Cleaning and
product changeover in less than one shift

See page 20



Controllable

Fully integrated embedded Process Analytical
Technology (ePAT) for seamless quality control

See page 22

* Limits depend on product, process, and setup.
Single rotary tablet presses achieve an output of up to
400 kg/h, double rotary tablet presses up to 800 kg/h.

Modular

Adapts to your facility and your process



The modular design of the FE CPS provides enormous versatility – both during installation and across various manufacturing processes. It integrates seamlessly into any type of downstream powder processing, be it a tablet press or a granulation system. The FE CPS is equally efficient in stand-alone mode, producing high-quality powder blends fed directly into Intermediate Bulk Containers (IBC).

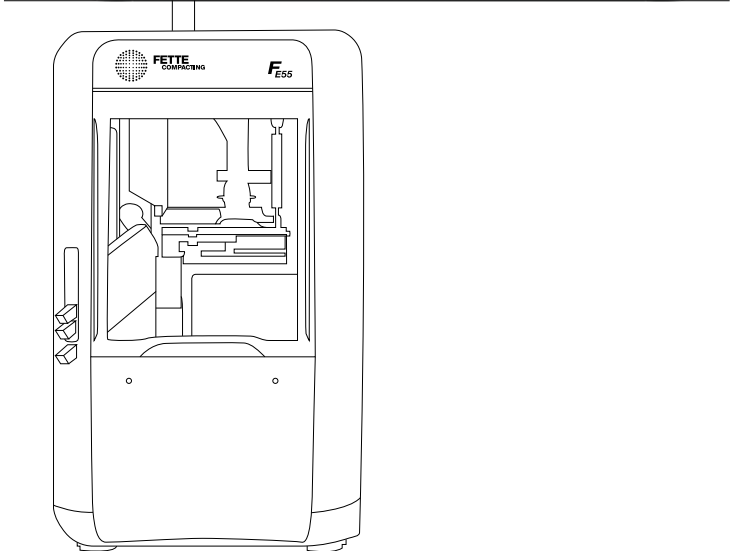
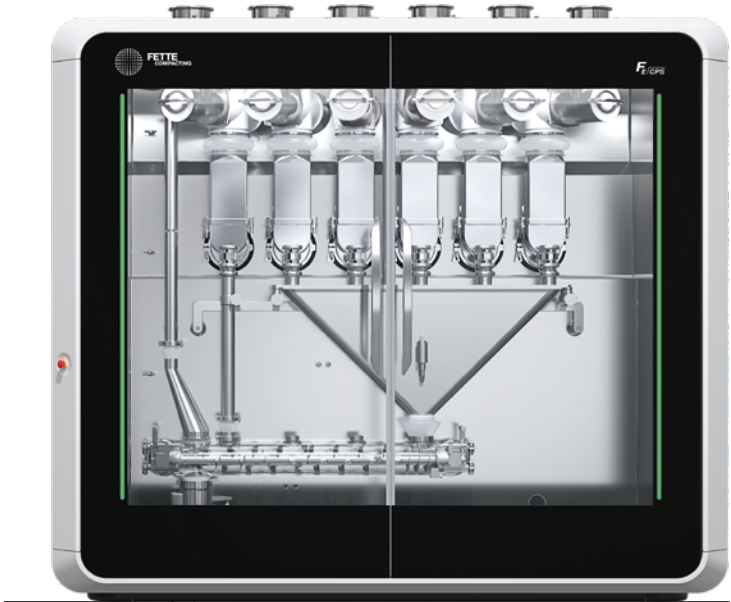
Flexible installation options

For integration into existing facilities, the FE CPS offers maximum flexibility:

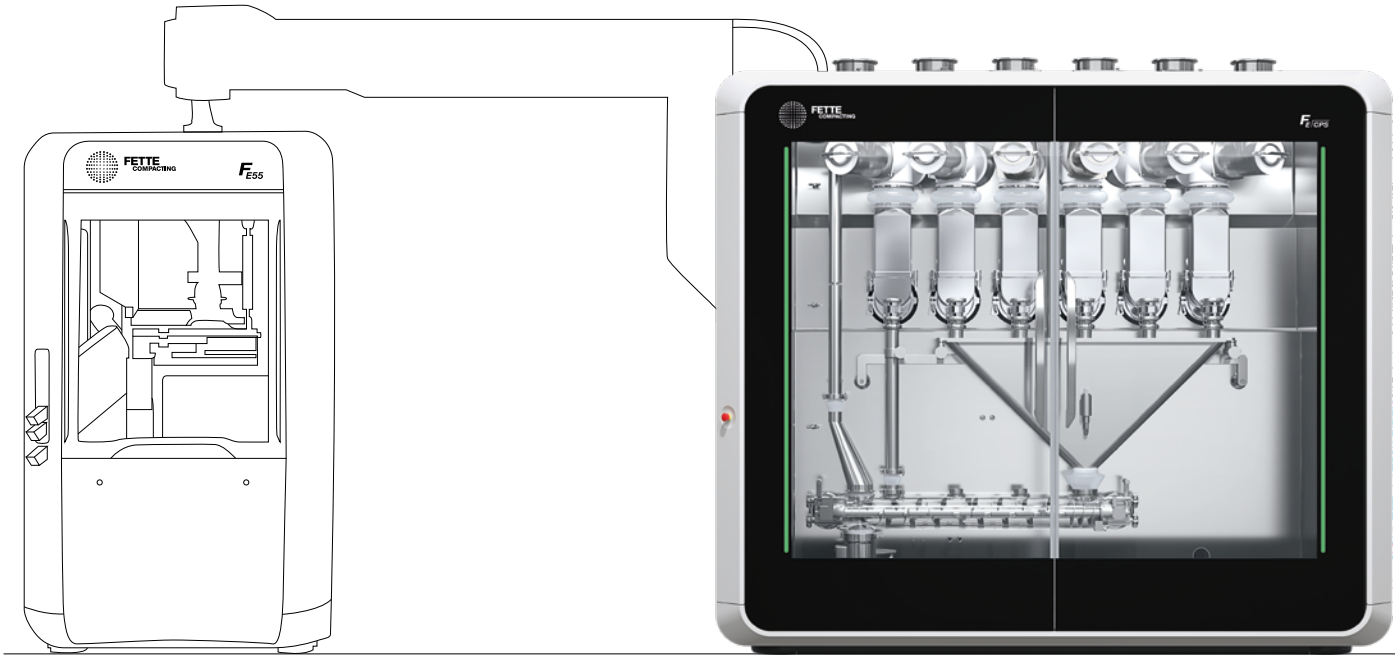
- + Horizontal setup (1 level): The machine can be installed on the same level as the downstream equipment. A dedicated conveying system transfers the mixture safely, with no risk of segregation. This option can be implemented in a single room (1-floor/1-room concept) or across two rooms (1-floor/2-room concept).
- + Vertical setup (2 levels): Alternatively, the FE CPS can be positioned above the processing machine, if your facility layout favors a two-level configuration.

The ideal line

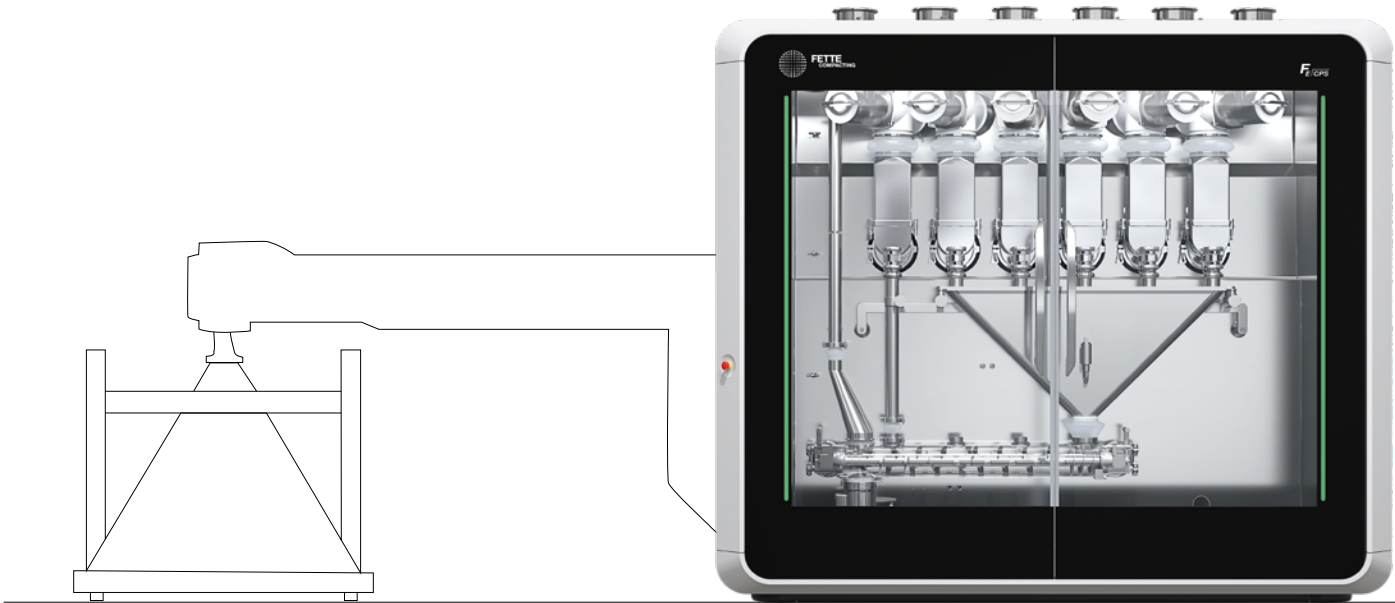
Connecting the FE CPS directly to a tablet press creates a high-performance system for Continuous Direct Compression. The recommended combination is the FE55 from Fette Compacting: With its three compression stations and high output, it pairs perfectly with the process dynamics of the FE CPS. **Combinations with tablet presses from the i Series are also possible and may be the ideal solution depending on the application. Fette Compacting's experts are happy to advise.**



Vertical installation with tablet press



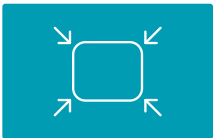
Horizontal installation with tablet press



Stand-alone: Production of blends for Intermediate Bulk Containers or other downstream processes such as capsule, sachet, and stick filling.

Compact

Achieve great things
in a small space

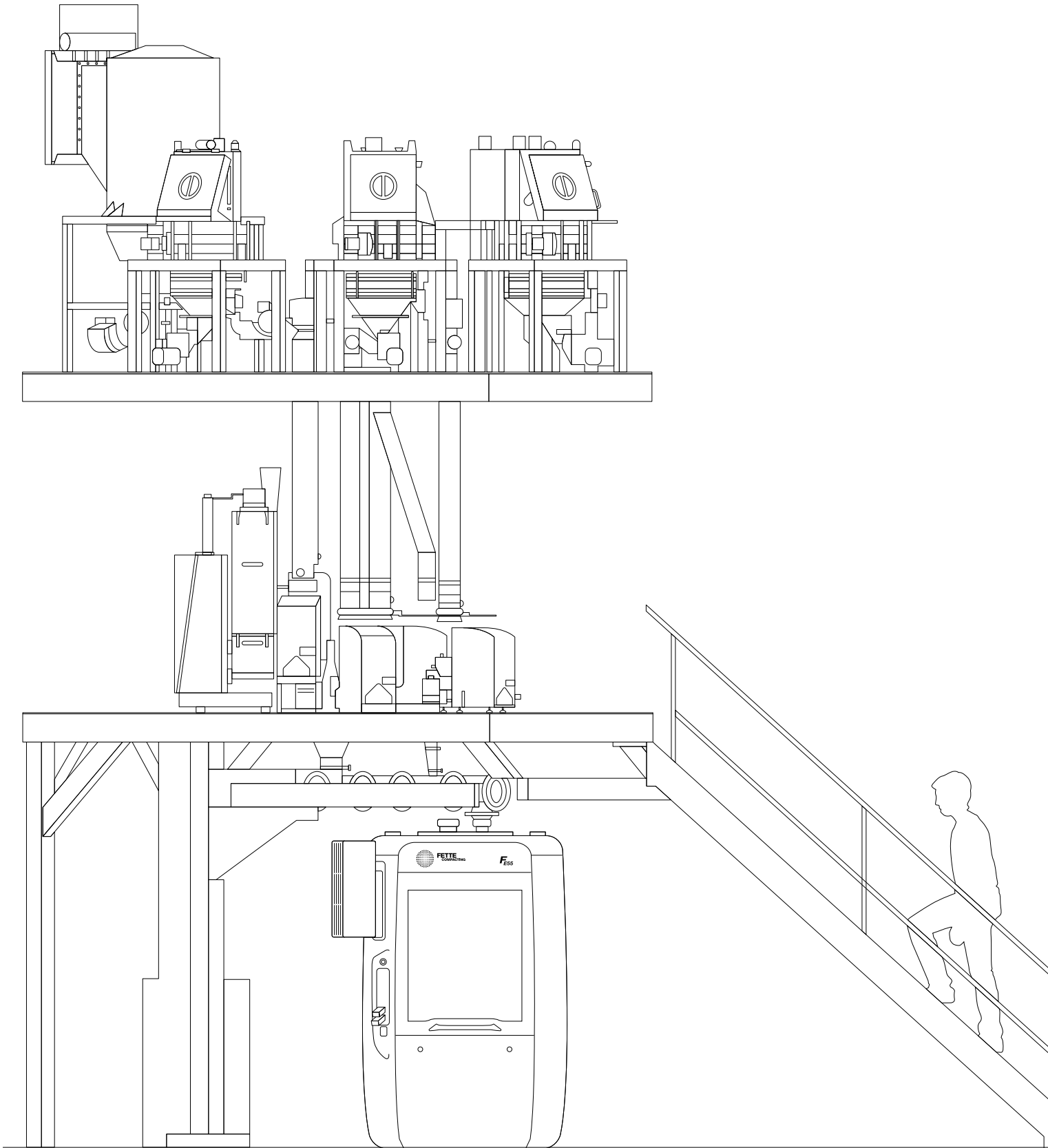


Space is expensive – especially in clean-rooms. The FE CPS is an extremely compact unit that fits into a standard production room. Expensive modifications, high ceilings, or complex operator platforms and stairs are a thing of the past.

Easy installation cuts costs
The machine can be moved through standard doors and is ready to operate with a simple plug-and-play connection. This dramatically reduces initial capital expenditure (CAPEX) while also lowering ongoing operating expenses (OPEX) due to a smaller floor area and simpler climate control. Whether it's a greenfield project or a retrofit of existing facilities – the FE CPS is the right fit.



Less is more: Compared to conventional Continuous Direct Compression systems (right), the FE CPS significantly reduces floor space and room height requirements.



Conventional setup

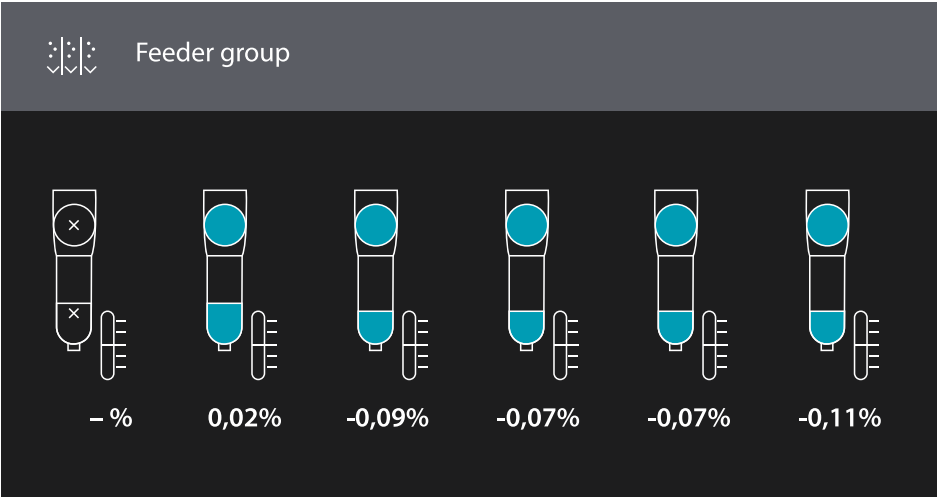
Simple

Less complexity,
more operability

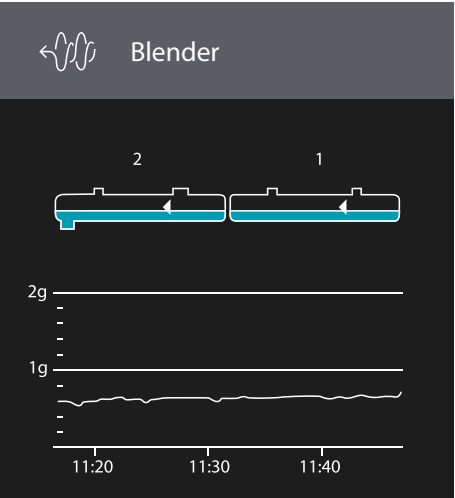


Continuous Manufacturing does not have to be complicated. In line with the TRI.EASY Operating Concept from Fette Compacting, the FE CPS is so streamlined and standardized that personnel with tableting experience can start working with it right after an introductory training session. Operators start, run, stop, disassemble, and clean the FE CPS the same way they would a tablet press. This also makes product changeovers safe and swift. All necessary calibration and maintenance tasks are carried out in the technical area – with no product contact.

HMI makes operation intuitive
The HMI operating terminal lets you control the entire line – from the feeder to the tablet diverter. Clear visualization guides you safely through setup, production, and cleaning. Recipe management and methods for Process Analytical Technology (PAT) are fully integrated. This reduces training requirements and minimizes the risk of operator errors.



The user interface provides a quick overview of all Continuous Production Parameters.



Full control: The intuitive interface visualizes the entire process flow and all quality parameters at a glance.

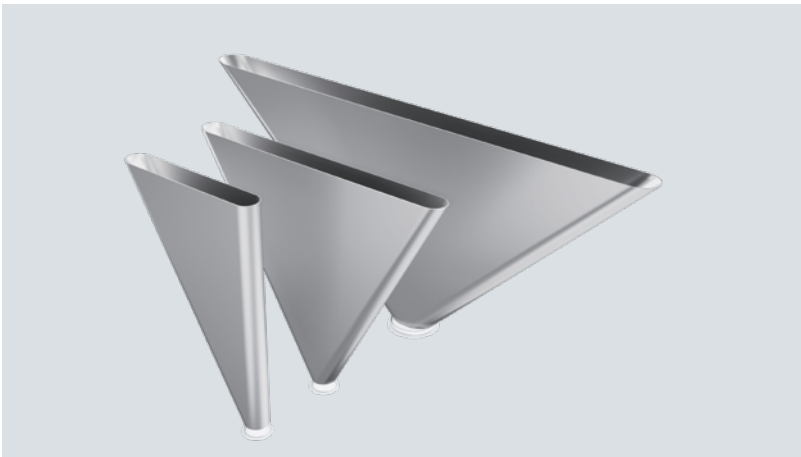


Flexible

From lab trial to
series production



Ultrasound sets powder into vibration, contributing to a uniform, stable material flow.



Adaptable: Depending on the formulation, various double-screws and funnels optimize the infeed.

Thanks to Quality by Design (QbD), the FE CPS is a true multi-talent. Based on the design criteria established during development, throughput of 5 to 400 kg/h* with a single rotary tablet press and 5 to 800 kg/h* with a double rotary tablet press can be achieved.

By swapping just a few format parts, the FE CPS can be adapted to the widest range of formulations. Various sets of double-screws, multiple funnel configurations, and the combination of blending processes deliver the desired solution.

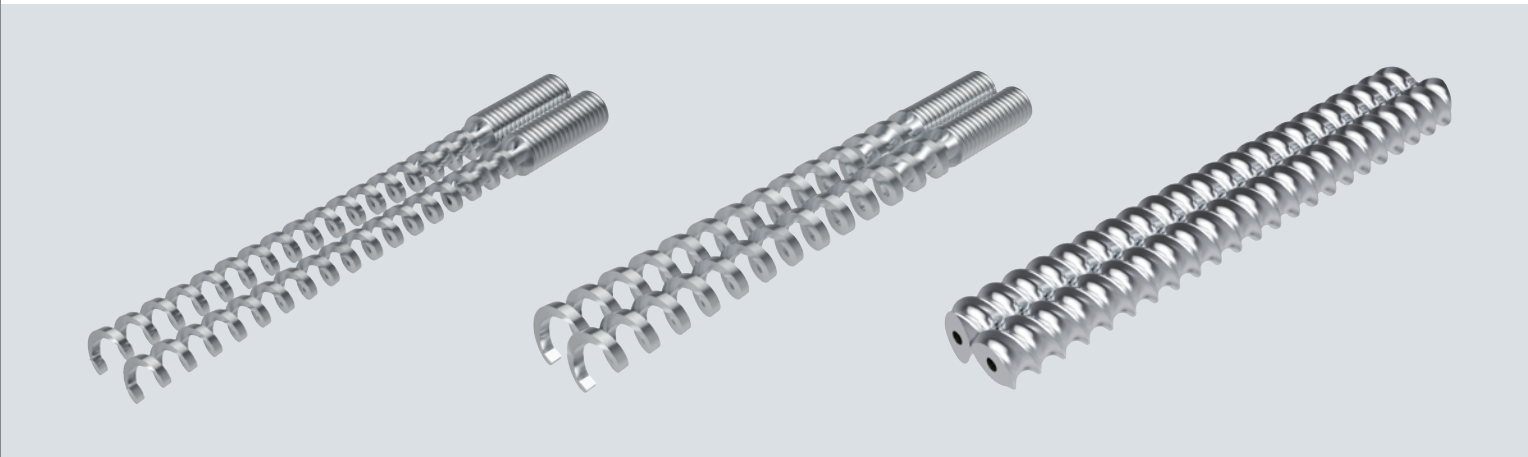
The FE CPS is designed for both production and R&D, deepening product and process understanding at every stage of development.

The FE CPS Process Emulator lets you test screw types, refill strategies, and the flow behavior of new powders without interrupting ongoing production. It provides a physically accurate replica of the FE CPS dosing process. Recipes and parameters transfer directly to the FE CPS without conversion factors. This saves costly active ingredients, minimizes scale-up risks, and enables process development with minimal raw material consumption.

Learn more about emulators in our “R&D Solutions” brochure.



Brochure: R&D Solutions



*Limits depend on product, process, and setup.

Safe

Protection through strict zone separation

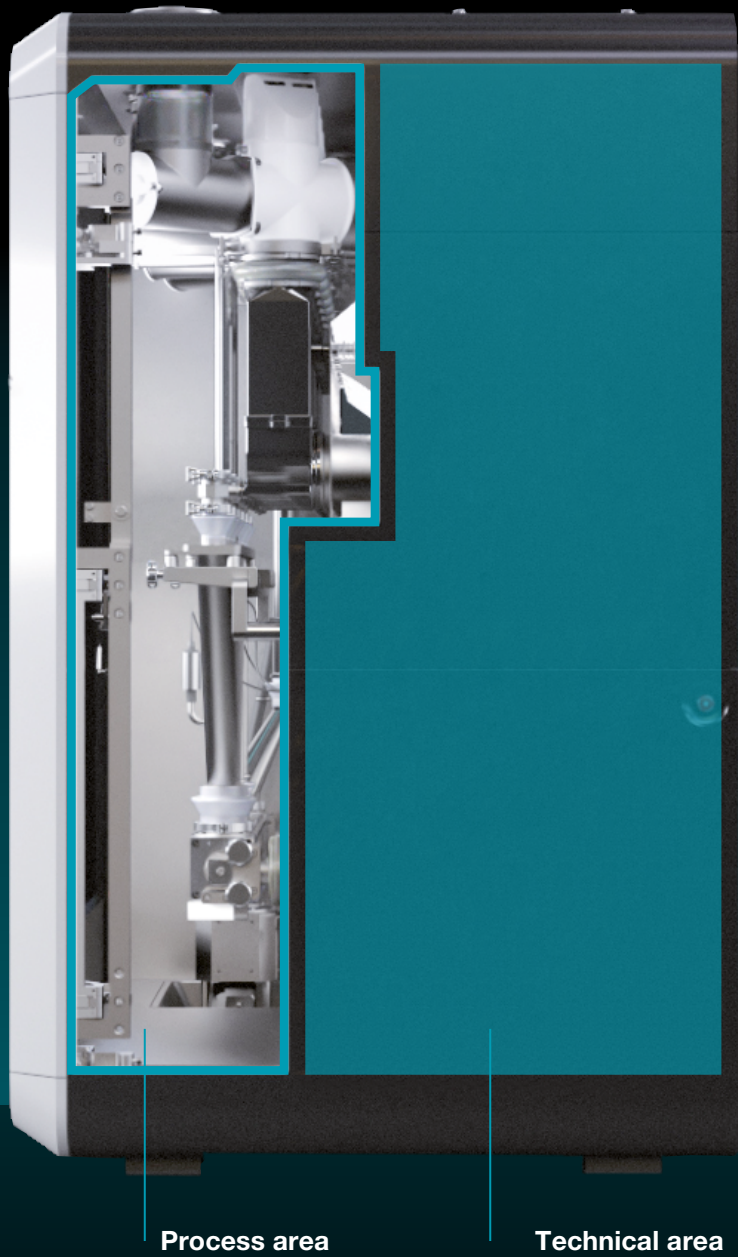


The FE CPS is fully prepared for processing potent active ingredients. The innovative and patented design uses a stainless steel wall to strictly separate the process area (front) from the technical area (rear). All product-contact parts are located in the isolated process area, secured by controlled negative pressure.

All assemblies (Automatic Refill System/ARS, Loss-in-Weight feeder, blender, etc.) are inherently dust-protected, with dust-tight connections using bellows. This forms the first Containment barrier. The isolated process area constitutes the second barrier. This self-contained double barrier provides maximum operator safety.

Maintenance without entering the process area

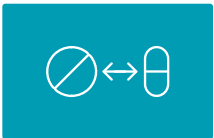
The technical area of the FE CPS houses all drives, motors, sensors, valves, electrical and pneumatic components – essentially everything that does not come into contact with the product. It is easily accessible from the rear of the machine for inspections or maintenance work, all without opening the process area. Technical personnel can carry out their tasks without breaching Containment.



Safe access: Maintenance in the rear technical area is possible without opening the contaminated process chamber.

Fast

Product changeover and cleaning in record time



Time is money – and that goes for product changeovers too. The FE CPS enables a complete changeover including cleaning in less than one shift. Thanks to the TRI.EASY Operating Concept, all product-contact parts (feeder, blender, funnel) are lightweight and can be quickly removed by a single person without tools. The total number of removable elements is kept to a minimum and they are easily transported to a wash room.

Continued operation with a changeover set
The empty process area that remains is easily accessible, compact, and has smooth walls, making cleaning straightforward. With a second set of changeover parts (Fast Changeover Set), the machine can resume production immediately while the used parts are being washed. It doesn't get more efficient than that for multi-product manufacturing.

Components removable from the process area

Automatic Refill Systems (ARS)

Quick-release section of the Loss-in-Weight (LIW) feeders

Funnel configuration

Blend conveyor inlet hopper

Blender



One person is all it takes for a swift changeover and to prepare for the next production run.



Tool-free: Components such as the blender, funnel, and feeder can be removed with just a few simple steps.

Controllable

Integrated process analytics for Continuous Manufacturing and batch production



With embedded Process Analytical Technology (ePAT), Fette Compacting adds a powerful solution for in-line quality control to its portfolio. The fully integrated system monitors critical quality attributes directly during tableting without interrupting the production process. This enables users to detect deviations early, optimize processes precisely and ensure consistently high product quality. Integration into the machine control system reduces validation effort and supports safe, efficient and data-driven production.

Precise analysis during production
ePAT is based on near-infrared (NIR) spectroscopy. This non-contact measurement technology monitors powder blend uniformity (BU) and tablet uniformity (TU) directly in the process stream. Critical quality attributes are monitored continuously in real time. This makes it possible to detect process deviations immediately and prevent production downtime. At the same time, continuous in-line analysis conserves resources, shortens release cycles and supports cGMP-compliant production.

ePAT

ePAT, embedded Process Analytical Technology



- **TU sensor**
- + Measures tablet uniformity
- + Inspects every single tablet
- + Measures up to 120 tablets per second
- + Rapid rejection of individual tablets
- + Internal white reference calibration
- + In-line cleaning concept
- + Robust construction
- + Easy handling and installation



- **BU sensor**
- + Measures powder blend uniformity
- + Up to 10 independent measurements per second
- + Flexible positioning options
- + Internal white reference calibration
- + Robust construction
- + Replaceable halogen lamps
- + Easy handling and installation



Possible positions of the ePAT sensors in an FE55 with FE CPS. Real-time data on blend uniformity and tablet uniformity are sent directly to the HMI operator terminal.

Technical Data

Facts and Figures about the FE CPS

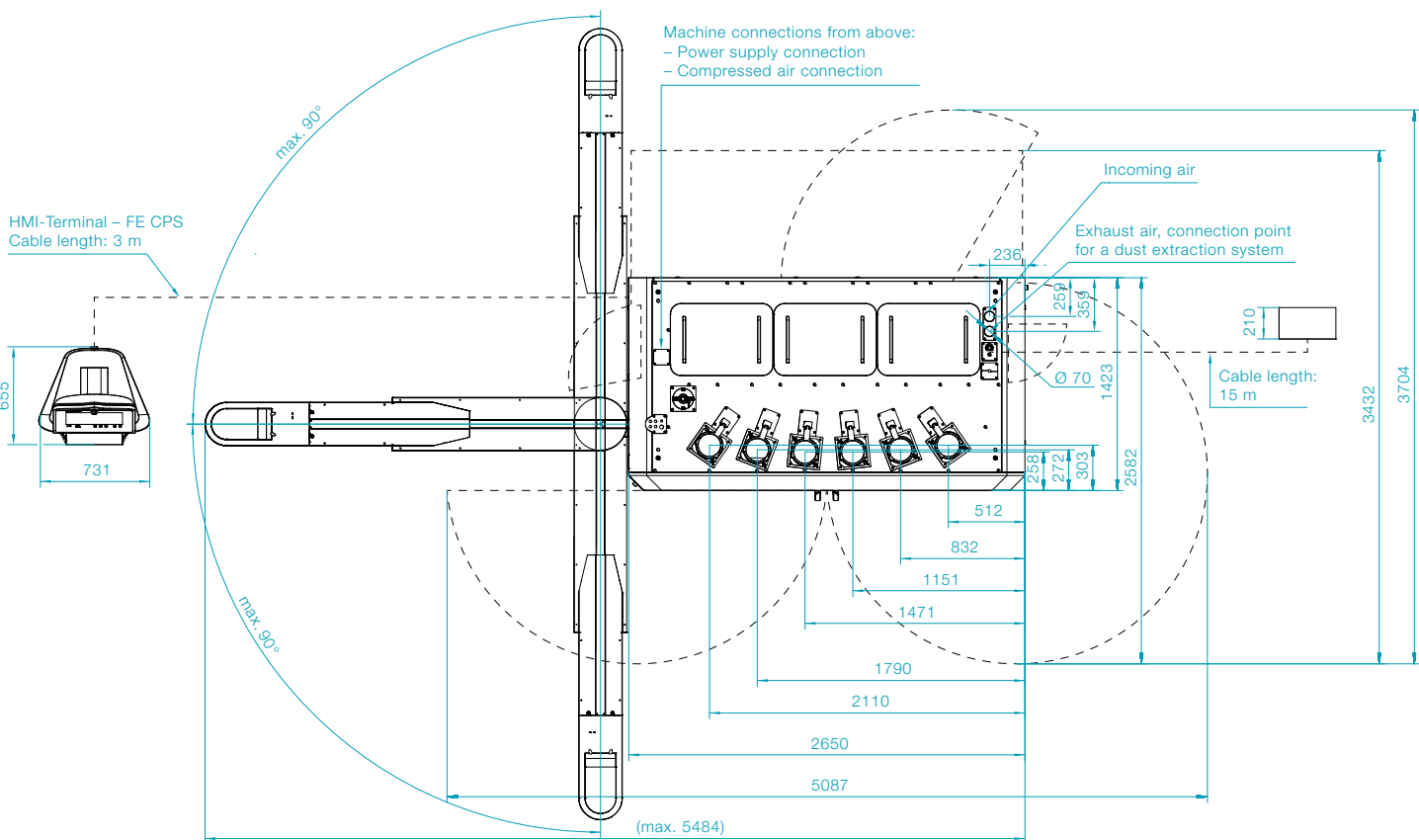
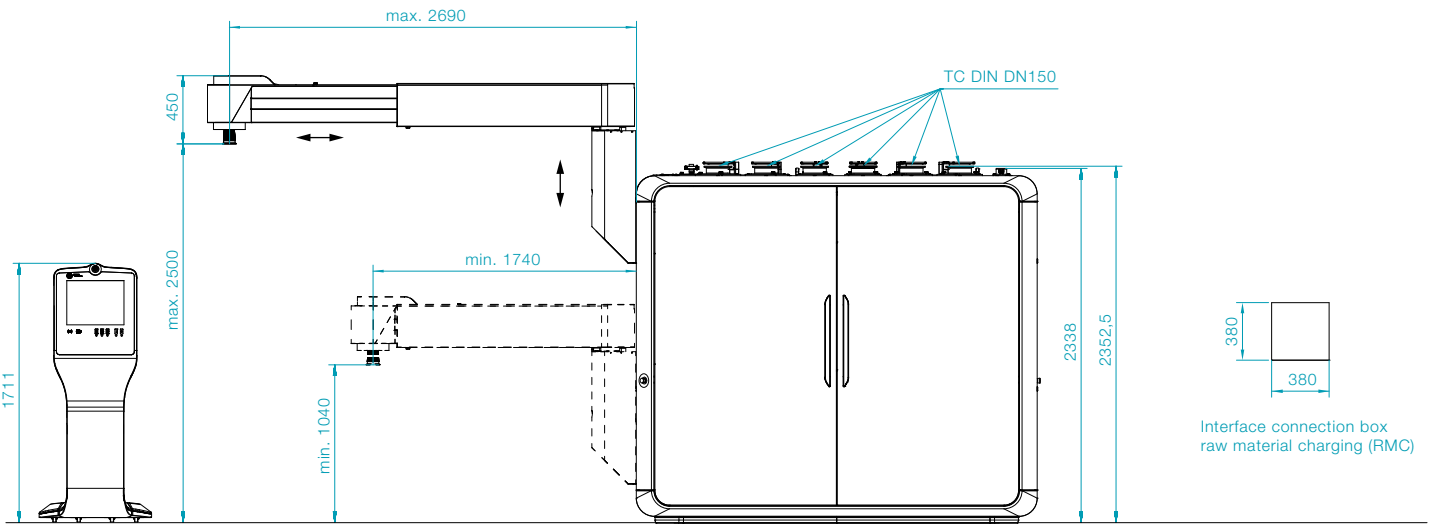
For questions about technical data or your specific challenges, please contact us. Based on our experience with a wide range of products in continuous production, we will find the right solution for your application.

 $F_{E/CPS}$

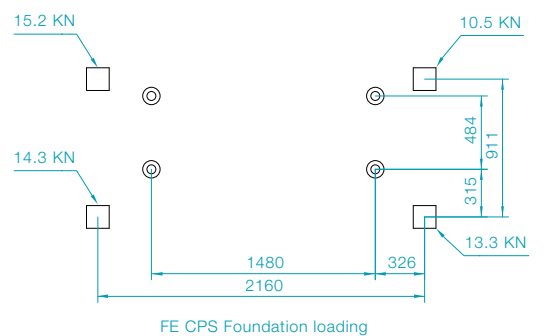
Throughput capacity	5–400 kg/h with a single rotary tablet press 5–800 kg/h with a double rotary tablet press (depending on product, process, and setup)
Number of dosing stations	1 to 6
Number of blender mixing zones	2
Feeder-blender funnel configuration	Various configurations – formulation dependent
Ingredient characteristics	Powder density: 0.2 ~ 1.0 kg/l *
Ingredient inlets	DN150 tri-clamp connection (DIN32676A)
Electrical supply parameters	Operating voltage 400–480 V, frequency 50/60 Hz ±5%
Power supply	3 phase + PE
Power	9 kW
Compressed air supply	6 bar / 300 l/min peak volume flow
Air extraction rate	50 m³/h
Air extraction negative pressure	–10 hPa
Air extraction unit connection	70 mm
Dimensions	Machine height: 2,300 mm, Ingredient inlet: 2,355 mm Total height including blend conveyor arm: 3,000 mm
Weight	Approx. 4,900–5,200 kg **

Subject to technical changes.
 * Assumption of typical values; others on request
 ** Depending on the exact configuration

Dimensions

FE CPS*

*The FE CPS with FPTs requires a customized installation plan. Detailed plans for both FPTs versions are available on request.



M 1:50 | All dimensions are in mm, unless otherwise specified.

Explore More Products and Services

Complete brochure overview:
www.fette-compacting.com/en/downloads



FE Series

The FE Series stands for high performance, flexible applications, and process-reliable production. It ensures quality and efficiency in tableting and, combined with the FE CPS, enables reliable continuous production. The FE Series unites innovation and user-friendliness.

- + FE35: Specialist for small batches and fast product changeovers
- + FE55: The all-rounder – productive, efficient, and flexible
- + FE75: Double rotary tablet press for maximum output



Brochure: FE Series

Together – from lab to production

With us, your product reaches market readiness faster. As an experienced R&D and process partner, Fette Compacting supports manufacturers with decades of expertise across the entire product lifecycle – from the first formulation concept to market launch and production.

- + Effective consulting and testing under GMP conditions
- + Services from formulation to process optimization
- + Faster time-to-market for your product



Brochure: Together – from lab to production

together 
from lab
to production

i Series

The i Series delivers solutions for higher performance and easy handling – even in demanding productions. With cross-generation system compatibility and intuitive controls, the i Series simplifies manufacturing and boosts productivity – from start-ups to major pharmaceutical companies.

- + F10i: Easy to adapt and ideal for smaller batches
- + F20i: High-performance across a broad range of applications
- + F30i: Double rotary tablet press for large batches



Brochure: i Series

R&D Solutions

Our R&D Solutions guide you from the first powder analysis all the way to validated serial production. Based on the Quality by Design (QbD) principle and cutting-edge technology, we minimize scale-up risks and shorten your time-to-market – for robust, scalable, and reliable tableting processes.

- + Efficient formulation development
- + Production-like process development
- + Seamless scale-up and secure technology transfer
- + Global training program



Brochure: R&D Solutions



Production Services

Our Production Services provide comprehensive support for your tablet production – from initial commissioning to process optimization in day-to-day operation. Our experts ensure maximum machine availability, minimal downtimes, and future-proof systems.

- + Technical support and fast spare parts management
- + Data-driven process optimization and fleetmanagement
- + Machine modernization and refurbished pre-owned machines
- + Global training program



Brochure: Production Services

Global Training Program

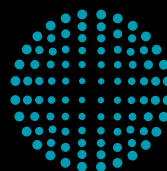
With our global training program, we bridge the gap between theory and practice and help you unlock the full potential of your tableting processes. We offer tailored modules for every phase of your process – from development to maintenance.

- + Standard modules and customized training programs
- + Certification according to 21 CFR
- + Flexible delivery at your site or at our Competence Centers
- + Global training program in six languages



Brochure: Global Training Program




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