

FE CPS: continuous direct compression as a turnkey system

Schwarzenbek, June 10, 2024. Continuous processes have made enormous progress in the production of pharmaceuticals and food supplements. While manufacturers still had reservations about expensive conversions, time-consuming revalidation and highly complex systems with large space requirements only a few years ago, it is now obvious that continuous manufacturing can also be compact, simple and efficient.

Fette Compacting has reinterpreted continuous manufacturing in tablet production from the ground up using a quality-by-design approach. The focus is on the continuous direct compression process, which offers a wide range of applications that can be combined with both space- and resource-saving system planning and integrated process analytics. A continuous processing system (FE CPS, Continuous Processing System) feeds the powder into the FE55 tablet press without additional granulation. Compared to granulation-based production, several steps are now eliminated, which reduces both space and energy requirements and makes the process leaner.

“With the FE CPS, we have moved even more strongly in the direction of process development,” reports Dr. Marten Klukkert, Vice President Customer Development Center at Fette Compacting. *“With a flexible process arrangement and a variable throughput range of five to over 200 kilograms per hour, we support our customers in their various development and production scenarios. The FE CPS can be easily integrated into existing production areas, works in a resource-saving manner, is highly digitized, and easy to operate. In addition to large-volume production, it also forms a bridge for smaller manufacturers*



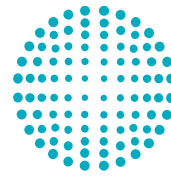
without their own development department who require a standard system for small to medium-sized batches.”

Innovative process analysis ensures continuous quality control. For the first time, Fette Compacting has fully integrated the associated sensor technology into the system and control unit. With this embedded process analysis technology (ePAT), highly-developed near-infrared sensors are integrated into the process units and continuously monitor the most important quality features. Measurements are taken directly in the product flow and allow direct control of the production process. Product quality can be monitored in real time using near-infrared spectroscopy (NIRS). NIRS detects most active ingredients in the spectral range from 750 to 2,200 nanometers through deep but damage-free penetration of the beams. This provides companies with a tool featuring ultra-short measurement times that is ideal for the large sample volumes of continuous direct compression.

Proven in product trials

The continuous processing system recently impressed an international pharmaceutical company that produces OTC drugs for the global market in product trials. Numerous product trials with the manufacturer clarified the extent to which continuous direct compression was suitable for two important over-the-counter medicines. The manufacturer wanted to achieve a stable and consistent product quality while simplifying the formulations – without wet or dry granulation. The direct compression line fulfilled this requirement straight away. Other tests showed that, compared to batch production, around 90 percent of material could be saved in order to achieve the same meaningful results – with a test period of just one day instead of the usual three months for batches.

The ease of operation of the entire line via a central interface (Human Machine Interface, HMI) was also highly relevant. Many operators are already familiar with the intuitive control of the Fette Compacting tablet



press and can quickly familiarize themselves with the additional functions for dosing and mixing as well as for process analysis. [More information in the video.](#)

Turnkey complete system

The combination of lean system design and integrated process analysis has already won over several companies. Numerous tests with different materials have confirmed the key benefits: simple setup, high product quality, and consistent throughput. It has also been shown that batch production recipes can often be processed on the continuous system without changing the ingredients. This provides users in tablet production with a complete turnkey solution for continuous manufacturing.

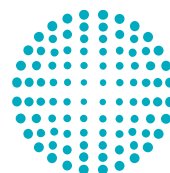
About Fette Compacting

With more than 6,000 installed machines, Fette Compacting is the world technology leader in integrated solutions for industrial tablet production. The company has specialized in high-performance machines for the pharmaceutical, nutrition, and chemical sectors for more than 75 years.

The company has its headquarters in Schwarzenbek near Hamburg. A second technology and production site is located in Nanjing (China) and another development location is in Mechelen (Belgium). Fette Compacting is represented in more than 50 countries around the world and is a member of the LMT Group, a medium-sized, family-owned group of companies. Around 1,800 people are employed at more than 20 locations worldwide. The Group achieved sales of around 380 million euros in fiscal 2023. www.fette-compacting.de

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