

Contained compaction and granulation machine

WP 150 Pharma



Alexanderwerk

WP 150 Pharma:

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The Alexanderwerk WP 150 Pharma is especially designed as a production model which meets the highest requirements and standards of the pharmaceutical industry. With its sealing system customized for containment and a throughput of up to 250 kg/h, it is highly suited when it comes to compacting and granulation of both standard and potent products.

Moreover, the machine is equipped as standard with the patented Combi-Vent-Feeder®. Through the improved de-aeration capability more raw materials can be processed in a given period, which leads to a more efficient and therefore profitable operation.

Because of its modular design, the process parts can be almost completely disassembled without the need of special tools. Due to its cantilever bearing design the rollers can be easily replaced and cleaned, which provides efficient and flexible production and product changeover. To ensure a compact design, the machine has a low overall height and the control system is integrated in an external control cabinet (1).

The design and construction are orientated around the strict requirements of the pharmaceutical industry and provide the following advantages:



- cGMP design
- consistent separation between process material and technical equipment
- drive shaft sealing system optimized for containment
- rollers in cantilever design
- equipped with the patented Combi-Vent-Feeder®
- roller gap measurement
- roller gap control
- amply dimensioned single-stage rotor fine granulator in Diagonal-Design®
- made completely of high-quality stainless steel
- non-metallic parts FDA approved
- minimum feed rates of up to 1 rpm available from servo motor
- automated PLC
- URS-conformity as required
- tool free disassembly



Options:

- circumferential side seals (2)
- WIP (wash in place)
- 21 CFR Part 11
- containment solution with isolator technology
- additional roller surfaces (smooth/grooved/knurled/squared or a desired combination) (3)
- pressurized cooling for rollers
- closed cooling circuit by the means of recooling unit
- hopper with level-limit switch
- pneumatic conveyer for raw material/final granule
- integration with and/or enlargement to a plant concept
- mobile machine base



Applications

For many years pharmaceutical companies as well as specialized providers all over the world have been using solutions supplied by Alexanderwerk to produce a large range of products, including tablets, capsules, life science products, flavours, instant powders, intense sweeteners and many more.

Why Alexanderwerk?

Vertical roller arrangements

Because of the vertical arrangement of the rollers it is possible to feed the product horizontally to the rollers, which allows greater control of feed flow without the influences of gravity as well as a more gently handling of the product. This leads to a minimization of fine material in the finished product without having any negative influence on the consistency and quality of the batch.

Combi-Vent-Feeder®

An essential characteristic of the patented Combi-Vent-Feeder®-system are the two chambers, which are located in sequence directly above the feeding screw. In the first chamber the raw material is fed uniformly through the feeding screw into the rollers. The air which is displaced during the compaction process is allowed to escape efficiently through the second chamber of the feed hopper without disruption of the feed. Furthermore the second hopper can be used to recycle undersize and oversize granule, if required, which is homogeneously added to the raw material feed.

Granulation in Diagonal-Design®

Rotor screen granulators are commonly used in the chemical, food and pharmaceutical industry for sizing of soft to medium hard products. Alexanderwerk has developed a patented granulator in Diagonal-Design® which increases the throughput by up to 100 percent by increasing the effectiveness of the working area of the screen. This leads to a doubling of capacity and in turn to a very gentle granulation with minimal fines generation. In contrast to a high-speed crushing unit, the reduced speed of rotation of the Diagonal-Design® leads to a reduction of the required energy and temperature produced.

All-round support

Beginning with the manufacture and followed by delivery, installation supervision, commissioning, maintenance, reparation and on-site assistance – Alexanderwerk is at your service.

Keeping at the forefront of technology

The processing of dry compaction products places extremely high demands on the techniques used and need often to be linked with individual and innovative solutions. For many years international pharmaceutical companies have been relying on the planning, construction and production of our advanced machines and customized designs as well as on our individual adaptations. In addition we can also support our customers in the area of plant construction. To offer the best possible solution for our customers, we provide the combination of our own and third-party components from a single source. We are ready to face the challenge!

Trial/Test center

To guarantee the optimal processing of each product, Alexanderwerk offers its test center for different tests and process developments. This can be done in the presence of the customer as well as independently through Alexanderwerk. In both cases the customer is given a detailed test report to provide a better basis for further decisions.

Please feel free to contact us – we will be pleased to support you!





Functions and features of WP 150 Pharma

The processing principle of roller compaction and granulation is relatively straightforward. However, only the use of modern production technology in connection with highly-developed feeding and control technology enables an accurate and economic production of high-quality granules.



Patented screw feeding via Combi-Vent-Feeder®

By feeding using the patented Combi-Vent-Feeder®, the air which is displaced during the compaction process is allowed to escape effectively through the second chamber of the feed hopper without disruption of the feed. This leads to a uniform feed of raw material into the rollers. Furthermore the second hopper can be used to recycle undersize and oversize granule, which can be homogeneously added to the raw material if required. In addition, the feeding unit can be assisted by using a vacuum system which provides a minimal product layer on the inside of the screw casing. This greatly improves the processing of fluidizing products with low bulk density.



Amplly dimensioned single-stage granulation for small tolerances

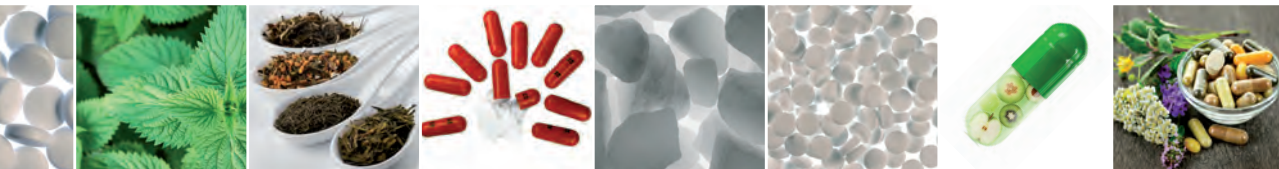
After the pre-crushing the flakes are much larger than the oversize of the end product. Only with the granulation unit in the Diagonal-Design® the final size of the granules can be achieved within previously defined tolerances. Moreover, it provides a very gentle granulation combined with optimal utilization of the screen.



Pre-crushing for optimal further processing

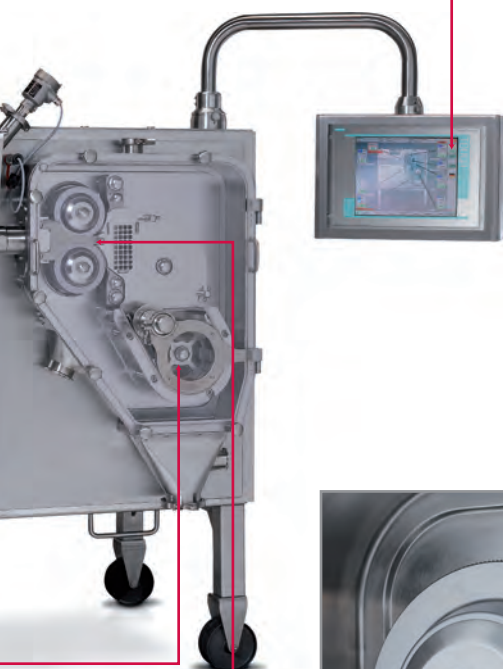
Granules are characterized by a defined grain size which varies between a fixed upper and lower limit (undersize and oversize). Depending on product properties the compacted product often leaves the compaction area as flakes. The pre-crusher breaks the large flakes into smaller pieces suitable for handling in the downstream granulator.





Interface for comprehensive control

The modern control and advanced technology of the WP 150 Pharma enables a stable and continuous process whereby the compaction pressure and roller gap are kept constant while the automatic feed control will compensate for any physical fluctuations in the product. Process parameters such as throughput, flake density, compacting pressure, roller RPM and others can be precisely and repeatably adjusted.

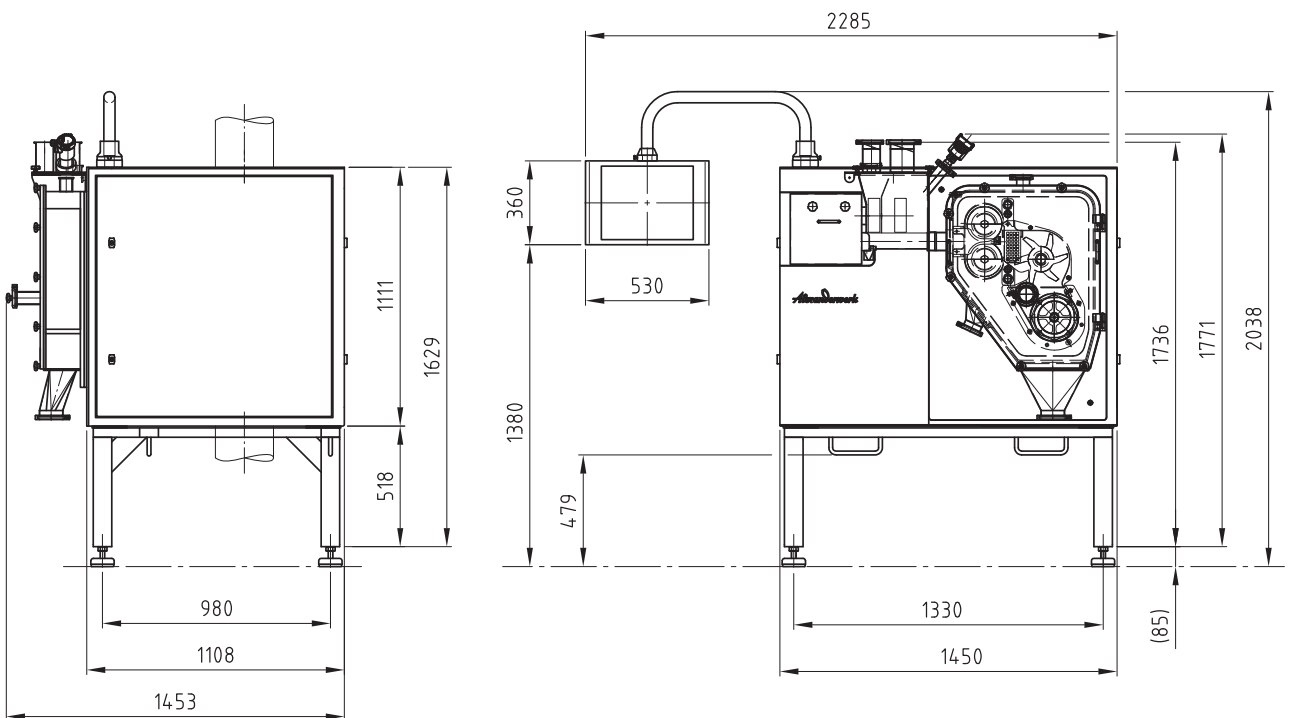


Individualized compaction unit

The thickness of the flakes (compacted material) produced on the roller compactor is measured by position transducers and kept constant by a roller gap control unit. The pressure force, a reference value for the degree of compaction, is variably adjustable by the hydraulic system. In case of possible fluctuations in the bulk weight, these are compensated by the screw speed. Furthermore there are different roller combinations available to ensure the optimal compaction. Depending on the product, roller patterns in different widths are available. Circumferential side seal design prevents excessive side seal powder leakage during compaction which leads to an increased quality of the granule and a minimization of undersize, fine material.

Technical data

roller diameter	150 mm
roller width	50 mm
throughput, continuous operation	250 kg/h (Lactose)
maximal pressure force	20 kN/cm
maximal roller gap	5 mm
maximal roller speed	40 rpm
weight	approx. 1.700 kg (without control system)
weight control cabinet	approx. 400 kg
dimensions	1.460 mm x 1.470 mm x 1.820 mm
dimensions control cabinet	800 mm x 600 mm x 2.100 mm



Alexanderwerk: The Compaction People

Alexanderwerk is a world leader in producing advanced compaction and granulation solutions for the pharmaceutical and chemical industry. For over 125 years Alexanderwerk has been dedicated to its customers and offers a wide range of custom made solutions. From stand-alone equipment to complete integrated, state of the art compaction plants – we aim to exceed our customer expectations by meeting the markets growing demand for higher quality and higher performance equipment.

So, whatever you need, just ask the compaction people.