

Roller compactors for the chemical industry

PP 150 C • PP 175 • PP 250 • PP 350 • PP 500



Alexanderwerk

Roller compactors for the chemical industry

Compaction and granulation in the chemical industry

Increasingly complex applications of raw and basic materials as well as special chemistry requirements need to formulate the chemical and the physical properties of a product. Raw materials, which are processed in the chemical industry, have predominantly a solid state, so that the defined particle size is of great importance. The defined particle size at the microscopic level has certain limits which may not be exceeded or underachieved. In many cases a roller compaction and granulation process is required since frequently the raw materials are not suitable for further processing or end use.

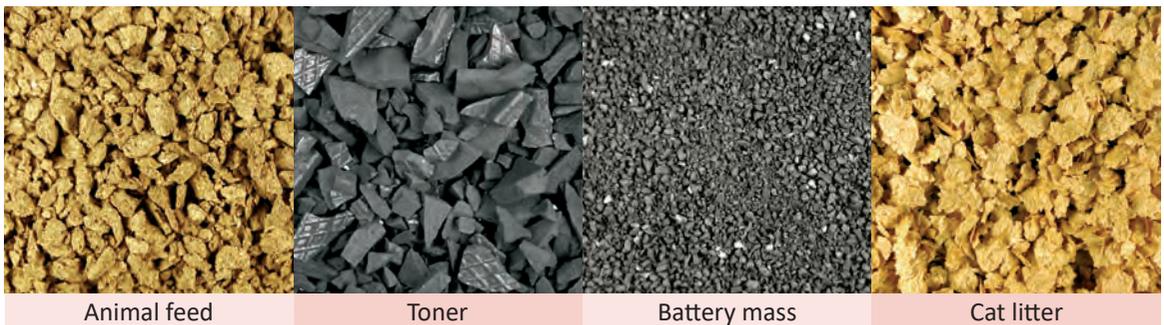


With both processes, the physical properties (granule size, granule particle distribution, bulk density, granule hardness and active surface) can be influenced producing a marketable granule or a granule which can be further processed. Compared with powder, granules are characterized by a greatly improved flowability and higher density (volume reduction).

This provides the following advantages:

- reduction of health hazards by reduction in dust formation at the workplace
- improvement of the dispersion and solubility characteristics
- lower transport, packaging and storage volume
- optimized conveying characteristic
- accurate and precise dosage
- recirculation of very fine particles in the production process

Examples of granules:



Applications

From large single product applications to special products and/or toll manufacturers: The solutions from Alexanderwerk are especially suitable for the production of soda, fabric dye, battery mass, salt, fertilizer, animal feed, silica, additives and many more.

The processing principle of roller compaction and granulation is well known. However, only the usage of modern production technology in connection with highly-developed feeding and control technology enables an accurate and economic production of high-quality roller compacted and granulated products, which meet chemical requirements.

Granulation using roller compaction is commonly known as dry compaction. There are no chemical substances which are not contained in the finished product. Furthermore there are no binders or liquids required for the processing. The compaction of the materials is realized by high mechanical pressing forces, which results in the production of a compressed ribbon.

The high quality of the final product is determined by the quality of the ribbon and is achieved in three consecutive steps:



1. Feeding

Using a suitable feed-in system, the raw material (powder) is routed through a horizontal screw feeding section. This has the function to provide the raw material precisely dosed, constantly and accurately to the rollers.



2. Compaction

With the help of a mechanical pressure force the powder is compacted between two rollers to a homogenous solid flake, whose bulk density is significantly higher than the bulk density of the bulk material. The air, which is displaced during compaction, must be allowed to leave the process properly.



3. Granulation

The flakes, which were produced through the compaction process, are granulated using a suitable single or multistage granulation system. In this way, granules are created to the defined granule size required.

Why Alexanderwerk?

Vertical roller arrangements

The vertical arrangement of the rollers from Alexanderwerk has many advantages compared with the horizontal. To realize a targeted conveyance and de-aeration, the raw material is supplied independently from the effects of gravity.

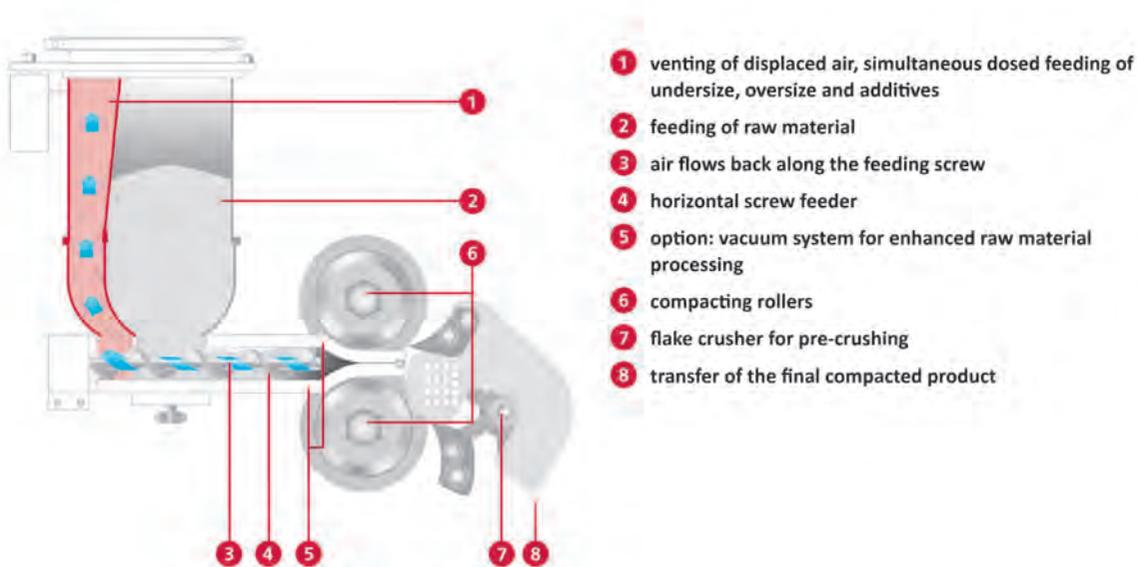
Combi-Vent-Feeder®

When using roller compactors, it is generally accepted to use a screw feeding system for feeding raw material. As well as requiring the highest quality in the final product, our customers are also looking to achieve financial targets (improved cost per tablet). To support our customers with the best possible solution, Alexanderwerk has devoted itself to the optimization of the feeding system and so has developed the patented Combi-Vent-Feeder®.

Through feeding using the Combi-Vent-Feeder®, the air which is displaced during the compaction process can escape properly through a 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 chamber 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 housing. This greatly improves the processing of fluidizing products with low bulk density.

Overall this provides the following advantages:

- direct, positive influence on the compaction
- defined, reduced resistance to venting of the product through the screw housing and through the “clear” smaller chamber
- constant quality of flakes and granules
- gentle process both in compaction and granulation units
- protection of the sealing between screw shaft and housing
- simple control of raw material feeding



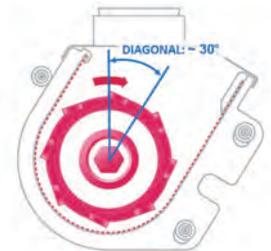
Optimized feed through the Combi-Vent-Feeder® technology illustrated on the example of a WP 200 Pharma

Two-stage granulation in Diagonal-Design®

Rotor screen granulators are commonly used as a crushing unit in the chemical, food and pharmaceutical industry for sizing of soft to medium hard products.

Conventional designs consist mainly of a rotor with angled granulating bars, which run in a U-shaped frame and push the product through a supported screen mesh or perforated plate. The rotor pushes the lumpy product against the screen mesh, so that the final product is smaller than the perforation of screen being used.

In comparison, Alexanderwerk has developed a patented granulator in Diagonal-Design®, that raises the capacity up to 100 % by increasing the effectiveness of the working area of the screen. This leads to a doubling of throughput and in turn to a very gentle granulation with minimal fines generation. Additionally investment costs are reduced and the quality of the final product is increased.



All-round support

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

Keeping at the forefront of technology

The processing of chemical products places extremely high demands on the techniques used and must often be linked with individual and innovative solutions. For many years international chemical 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 sub-supplied components from a single source. We are ready to face your challenge!

Trial/Test center

To guarantee the optimal processing of each product, Alexanderwerk offers its customers the test center for different trials 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!



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 people behind the technology.

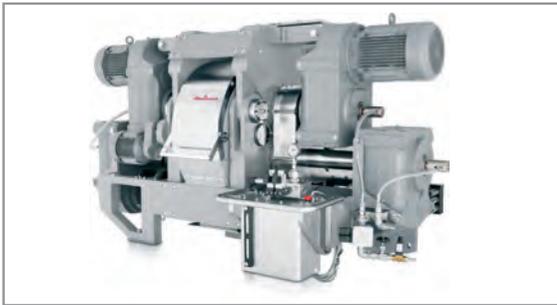
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Roller compactor PP 150 C
Throughput up to 400 kg/h



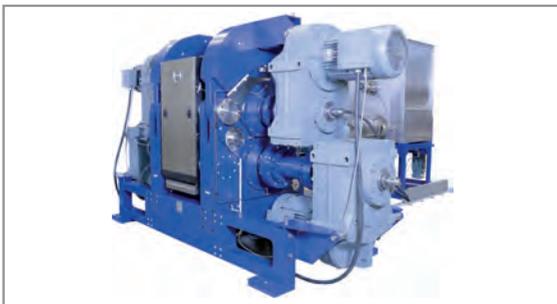
Roller compactor PP 175
Throughput up to 1.000 kg/h



Roller compactor PP 250
Throughput up to 5.000 kg/h



Roller compactor PP 350
Throughput up to 15.000 kg/h



Roller compactor PP 500
Throughput up to 25.000 kg/h

Special models as well as custom adaptation constructions are possible on request.
If required, the roller compactors of Alexanderwerk can be supplemented with downstream crushing using single- or multi-stage granulators.