Universal Applications

Main Features
- Flexible and efficient high shear mixer and granulator
- Total Containment and GMP compliant design
- Use of aqueous and organic binder liquids
- Top driven agitator blades and chopper
- Process-optimized gap between vessel wall and agitator blades
- Chopper fully adjustable in height respective to the process and removable from the product bed
- Product bowl lowers for access
- Improved cleaning of all product contacting parts
- Space-saving by the through-the-wall installation design
- User-friendly EcoView or MegaView PLC panel
- Camera monitoring (optional)
- Single pot technology with short drying sequences (optional)
- Production units in 12 bar PRO version (optional)
- CIP-able in SC Superclean design (optional)
- Charging by gravity or vacuum (optional)

Design:
High shear mixer represent in the history of granulation one of the oldest and best established process technologies in the pharmaceutical and life science industries. In comparison with normal high shear mixers, the Top Drive Granulator adopts a different design concept with the mixer bearing and drives for the agitator and chopper positioned above the process vessel, and separated from the clean room. The design completely overcomes the usual design shortcomings of difficult to clean apertures and undercuts in the product bowl. If required, the chopper can be raised or lowered to different heights of the product according to the product and process specific requirements of the application. Furthermore the working vessel can be lowered and allows for easy manual charging and/or cleaning and inspection. The finished granulates are emptied into the swivelling discharge port with the option to connect to an in-line wet mill. The TDG is available in eleven nominal sizes starting with the small lab unit through to the production size machines. The PRO option (12 bar pressure shock resistance) is available for the production units from the TDG 100 through to the TDG 1500.

Technologies:
In addition to classic wet granulation, further process variations are possible, including hot-melt granulation, pellet production or single pot processes with solvent recovery.

TDG units, depending on machine size, are well suited for the development of new formulations, scale-up and innovative manufacturing processes.

TDG PRO 600 with top driven agitator and chopper, process vessel lowered
**Flexibility in Application**

Production of solid particles from powder.

In wet granulation, powder is charged into a TDG process vessel and the product is vigorously mixed by an agitator and a chopper. As mixing continues while it is then wetted or sprayed with a melt, maximum efficiency is achieved by adjusting the gap distance between the rotor and the product bowl, thereby ensuring an optimal wet mixing process. In many cases, the granules are discharged into a rotor sieve (e.g. a Glatt sieve) to reduce oversized particles before they are dried or cooled in a fluid bed dryer (WST).

**TDG single pot version for individual batches.**

If only single batches or a small number of batches, (e.g. highly active substances), have to be granulated, then the drying process can also take place in a Top Drive Granulator specifically designed for this purpose: using the Glatt TDG single pot. With this design, the drying can be effected via heated wall surfaces, gas stripping and vacuum. The single pot variant is a popular choice, where small and medium sized batches exist which are frequently changed.

Quick and efficient granulation and drying in integrated granulation lines.

An efficient standard design for mass produced products can be achieved by the coupling together of the Top Drive Granulator with fluid bed units, vacuum conveying and/or container systems. The Glatt group can supply all necessary core technologies for granulation and tablet production, with a wide range of equipment including fluid bed processors, coaters, systems for product handling as well as total containment equipment for processing of highly potent and critical / demanding products. Depending on specific product requirements, a TDG may be configured with different design options in order to ensure the highest levels of operator protection and plant safety. Total containment features help to ensure compliance with operator exposure OELs and the 12 bar (PRO) design provides maximum safety in cases where explosion risks may be present in the system.

**Main Features of “Glatt”s wet granulation lines:**

- Manufacturing of dust free granulates with excellent flowability.
- Granulates with narrow particle size distribution.
- High product yield rate.
- Excellent cleaning efficiency (CIP able).
- Total containment solutions.
- 12 bar pressure shock resistant design

**Applications for wet granulates:**

- Pharmaceutical
- Cosmetics.
- Fine Chemicals.
- Bio Technology.

**Spraying** | **Wetting** | **Solidifying** | **Final granule**
---|---|---|---
binders | powder | liquid bridges | solid bridges | “Snow ball” structure

Horizontal granulation line consisting of a TDG and a Fluid bed Dryer WST (G)

Vertical granulation line with TDG and WST (G)
Technical Data / Addresses

(technical data subject to change)

Technical Data / Addresses

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<th>TDG type</th>
<th>Dim.</th>
<th>Lab units</th>
<th>TDG 100</th>
<th>TDG 200</th>
<th>TDG 400</th>
<th>TDG 600</th>
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<td>TDG 20</td>
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<td>12 - 250</td>
<td>10 - 200</td>
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<td>150 - 1800</td>
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