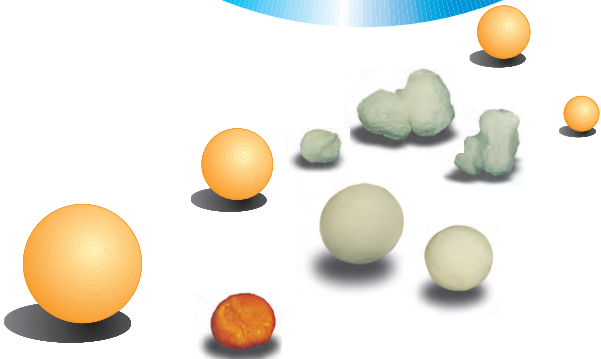
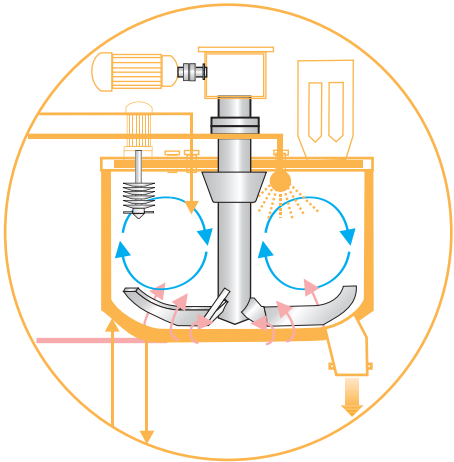
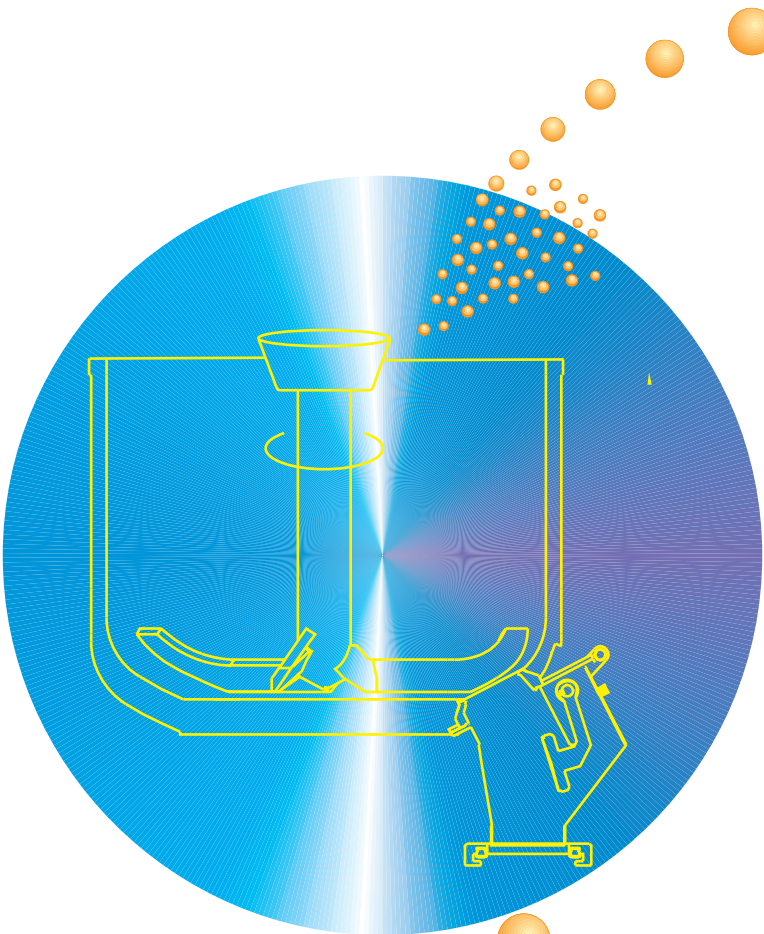


Top Drive Granulator

TDG / TDG PRO



Laboratory Units

Production Units

Top Drive Granulator



Universal Applications



TDG PRO 600 with top driven agitator and chopper, process vessel lowered

Design:

High shear mixers 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.

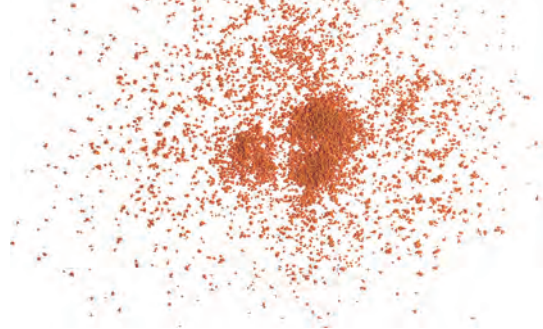
Main Features

- 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)

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.



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.

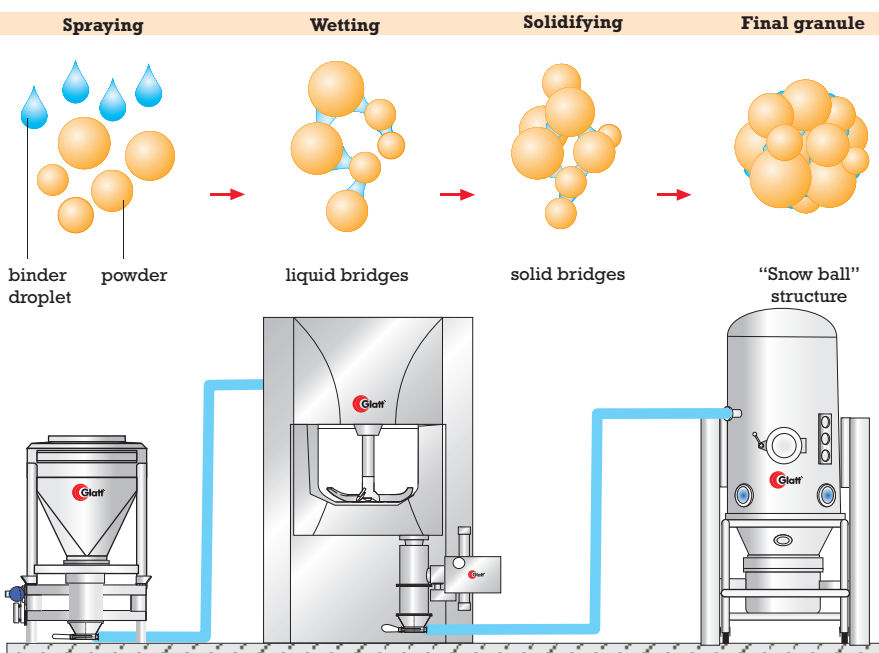
Total containment features help to ensure compliance with operator exposure OELS and the 12 bar (PRO) design provides maximum safety in cases where explosion risks may be present in the system.

Main Features of "Glatt's" wet granulation lines:

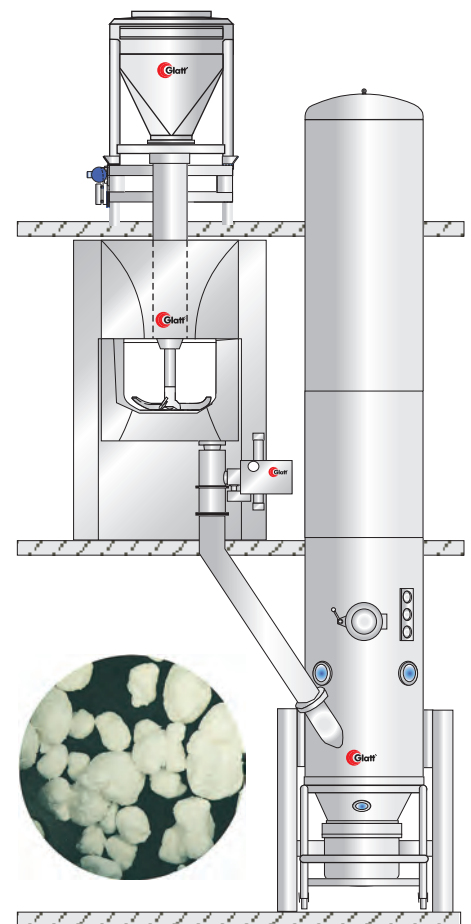
- Manufacturing of dust free granulates with excellent flowability.
- Granulates with narrow particle size distribution.
- High product yield rate.
- Excellent cleaning efficiency (CIP able).
- Total containment solutions.
- 12 bar pressure shock resistant design

Applications for wet granulates:

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



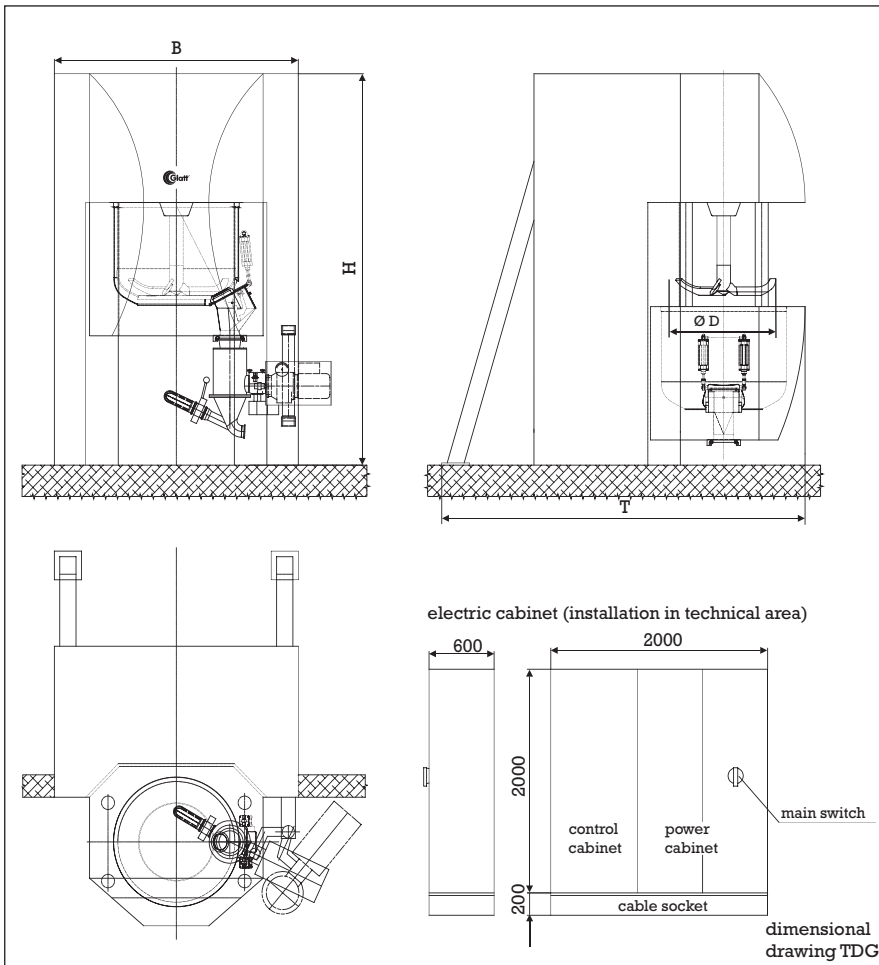
Horizontal granulation line consisting of a TDG and a Fluid bed Dryer WST (G)



Vertical granulation line with TDG and WST (G)

Technical Data / Addresses

(technical data subject to change)



TDG100 with through the wall installation



TDG type		Dim.	Lab units		TDG 100	TDG 200	TDG 400	TDG 600	TDG 800	TDG 1000	TDG 1200	TDG 1500
			TDG 25	TDG 65	TDC ^{PRO} 100	TDC ^{PRO} 200	TDC ^{PRO} 400	TDC ^{PRO} 600	TDC ^{PRO} 800	TDC ^{PRO} 1000	TDC ^{PRO} 1200	TDC ^{PRO} 1500
Process vessel	Nominal volume	dm ³	24	64	114	231	464	710	946	1198	1499	1853
	Process volume	dm ³	6 - 20	16-52	25-80	50-160	100-320	150-480	200-640	250-800	300-960	375-1200
	Diam. anchor rotor	mm	326	446	576	726	920	1068	1168	1264	1364	1464
Drives	Anchor rotor speed	r.p.m.	30 - 600	25-500	12-250	10-200	8-160	8-150	6-130	6-110	6-110	5-100
	Motor power	kW	5.5	7.5	15	22	30	37	45	45	55	55
	Chopper speed	r.p.m.	300 - 3000		300 - 3000				150-1500			
	Motor power	kW	0.75	0.75	1.5	4	4	4	5.5	5.5	7.5	7.5
Dimensions	Width B [ca.]	mm	1400	1400	1790	1950	2050	2250	2450	2700	2700	3000
	Height H [ca.]	mm	2000	2000	2600	3000	3200	3700	3915	4300	4300	4500
	Depth T [ca.]	mm	1500	1500	2800	2800	3000	3700	3700	3960	3960	3960

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