

DISPERSE POWDER EFFECTIVELY AND GENTLY IN DAIRY PRODUCTS



Conti-TDS with hopper table for manual, ergonomically powder addition

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With the Conti-TDS technology from ystral, food manufacturers can effectively and gently disperse powder into dairy products. In this way you reach maximum texture without negative influence on the milk fat. The results are optimised processes, savings in raw materials, as well as consistently high product quality thanks to an improved use of ingredients.

In Dairy industry there are numerous different machines and processes, in which powder is added into liquids. The variations range from simple addition on the liquid surface, either directly in the process tank or in a separate small external blending tank, via injectors and in-line blenders, right through to the machine presented here.

The viscosity, texture and mouth feel of dairy products, such as stirred yoghurt, desserts and creams is adjusted and optimised with the addition of thickeners, stabilisers and milk protein

concentrates. The final product quality is significantly influenced by the method of addition and dispersion of these powders.

Excellent desagglomeration

When using the Conti-TDS for powder addition, users can achieve up to 30 percent higher viscosity with the same concentration of thickeners or proteins. Main reason for the higher viscosity is the improved and complete desagglomeration of the powder and the fact, that already hydrated thickeners are not destroyed by shear. Even porous particles with internal structures and inner surface, such as spray-dried milk powders or proteins, are immediately completely wetted inside and outside thanks to the wetting and dispersion under a vacuum. Further additional dispersion, which is required in all other systems to break down powder agglomerates that are created and which destroys the gel structures already formed after hydration, is not required when using the Conti-TDS.

Thanks to the improved disintegration, the minimum shearing of the gel structure and the maximum utilization of the applied raw materials, the concentration of thickeners and protein may be reduced by up to 25 percent.

This is positive not only from a financial point of view, but also has an effect on quality. The flow properties of the product are improved substantially and the optics are more pleasing thanks to the reduced amount of thickeners. Thickeners are hiding taste and flavour. A reduced thickener concentration allows the flavours to develop much better.

Powerful and Effective

A further advantage of the Conti-TDS machine is the high induction speed, which reaches from around 70 kg/min for machines with an exclusively manual powder induction up to 400 kg/min in systems with fully automated powder handling. If taking into account that there is no subsequent dispersing time and that hydration times are substantially reduced thanks to the intensive powder wetting, the effectiveness is 300 to 500 percent higher than with previous systems. In other words: one machine can replace three to five existing powder addition systems and the same number of process tanks.

In this way a user can carry out all of the powder handling for a production line with a capacity of more than 200 million litres of yoghurt and dessert per year with just one single Conti-TDS. In such a system, the complete powder quantity for one batch can be pre-loaded in one hopper or scale. Systems like that are often equipped with two of these powder containers. While the Conti-TDS is inducting the powder from one container, the powder for the next batch is already prepared in the second one. Alongside this production machine, a standby machine is permanently ready to step in immediately for the other machine in case of maintenance works or an unexpected failure. In fact, however, there is always only one machine connected to the production cycle.

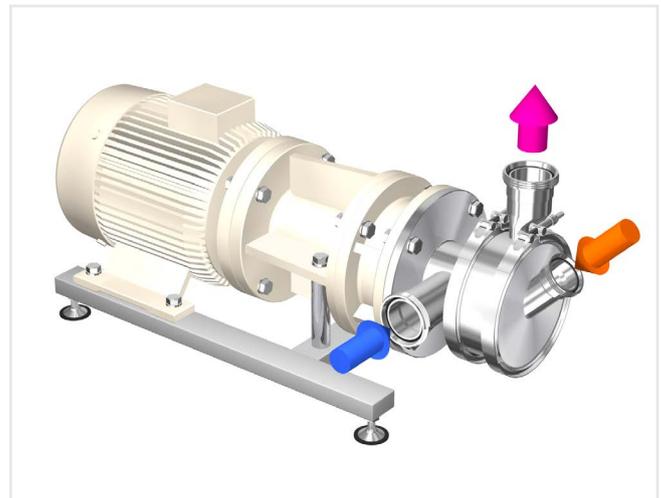
Adjustable induction speed

In many production systems a part of the powder is added manually from paper bags, while another part is fed automatically. The speed of the manual powder addition determines the process speed. The Conti-TDS adjusts its induction speed continuously to the refilling speed of the operator. The adjustment is very important, as no false air is allowed to be drawn in.

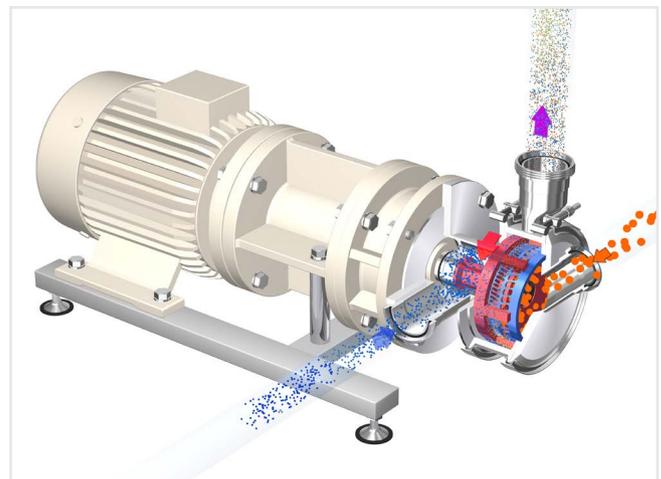
For example, the operator fills three sacks per minute into the powder hopper, then the machine draws in exactly these three sacks per minute. If the operator then refills one sack per minute, the machine reacts immediately and throttles its suction speed accordingly. The powder hopper never gets completely empty – only that means, that the duration of the powder input is determined only by the working pace of the operator. To accelerate the powder addition process, two operators can stand opposite each other and work at the powder feed table together. In this way, the machine can draw in on average 6 bags per minute.

Another advantage of the Conti-TDS is the minimized air input. As already stated, no additional false air is fed in. What cannot be avoided is the air already contained in the powder. Using the Conti-TDS this internal air contained in the powder is not finely dispersed, as in other systems, but is coagulated to large bubbles by centrifugal effects. Large bubbles rise up more quickly in the vessel and also disintegrate more quickly. With products containing cocoa or chocolate you can tell significant difference in colour and structure of the rising air bubbles compared to other systems. The foam is very dark, large-pored and breaks up easily at the surface.

In dairy industry Conti-TDS machines are often installed in a separate powder handling area, far away from the process tanks. The batch sizes range from about 5 to 80 m³. The distance, the number and even the size of the process tanks doesn't matter. Because of the 3 to 5 times faster process you need less process tanks and less space.



Wetting and dispersion of the powder under vacuum



Injection of powder (orange) into liquid (blue)



Combination of Conti-TDS in a process system with powder handling and vessel

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