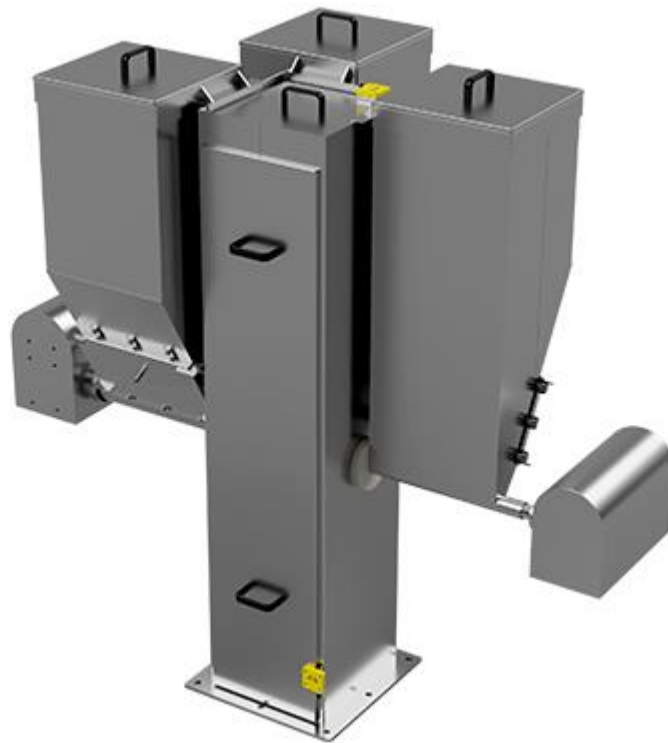


Multi micro-dosing unit



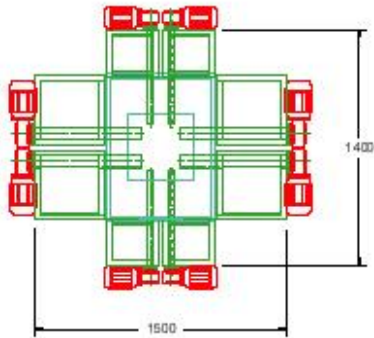
TEKFA's micro-doser for multiple ingredients fits into all industries. Both foodstuffs, for example bakeries and bread factories, but also chemical industries, such as manufactures of detergent powders etc., where powders and granulates from few grams to many kg are weighted and mixed. And all other.

The micro-doser is very flexible in its constitution, as it is produced of standard equipment that is assembled after the customers demands. Thus, between 2 and 8 small containers may be combined in forming one micro-doser. Depending on construction and size of containers, a micro-doser for e.g. 2 ingredients may be extended to more ingredients when the need arises.

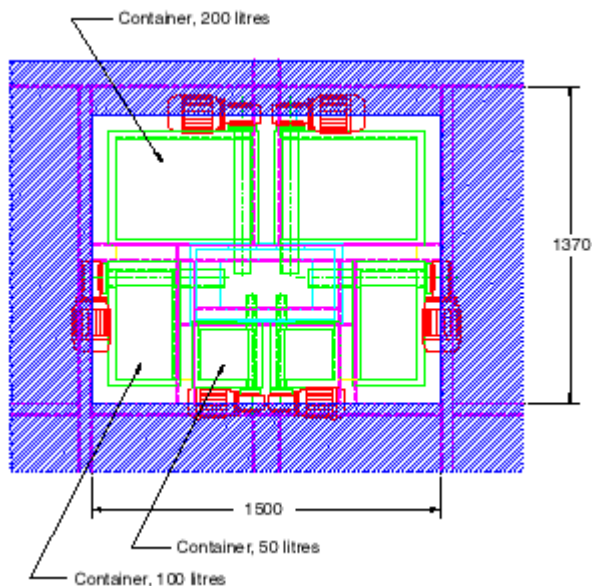
No matter how many containers are part of the system, the principle is still the same: The micro-doser consists of store containers with built-in dosing screws (in special cases different dosing equipment, like vibrators, may be used), a weighing bin hanging on load cells, and a control unit, which allows optional recipe mixes.

The micro-doser for multiple ingredients is manufactured in many variations

Depending on demands and version a micro-doser may be equipped with up to 8 store containers. However, the weighing still takes place in one weighing bin. The dosing into the weighing bin is done by means of dosing screws, but for components where dosing screws do not suit, other dosing equipment can be used, for example belt feeders or vibration feeders.

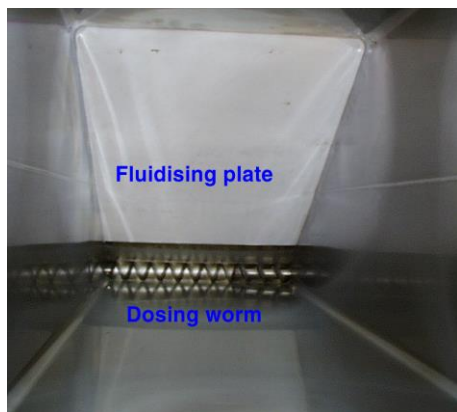


Micro-doser for 8 components – seen from above. All components are dosed to the same weighing bin in the middle of the system. As the single store containers may be built in as modules, they can also be removed one by one or leaved out from the beginning. In that way you have a very flexible system that can be adjusted to special or even difficult room sizes.



Micro-doser with 6 store containers in 3 different sizes: 200 litres, 100 litres and 50 litres.

How the micro-doser works



Each store container has a fluidising plate and a dosing screw.

The fluidising plate helps if you have products that tend to bridge over the dosing screw and therefore are difficult to dose.

Depending on the product characteristics the dosing screws may be chosen bigger or smaller, and for few products where a dosing screw does not suit, another mechanism may be used (E.g. a vibrator).

From the store containers the powders are dosed to the weighing bin.

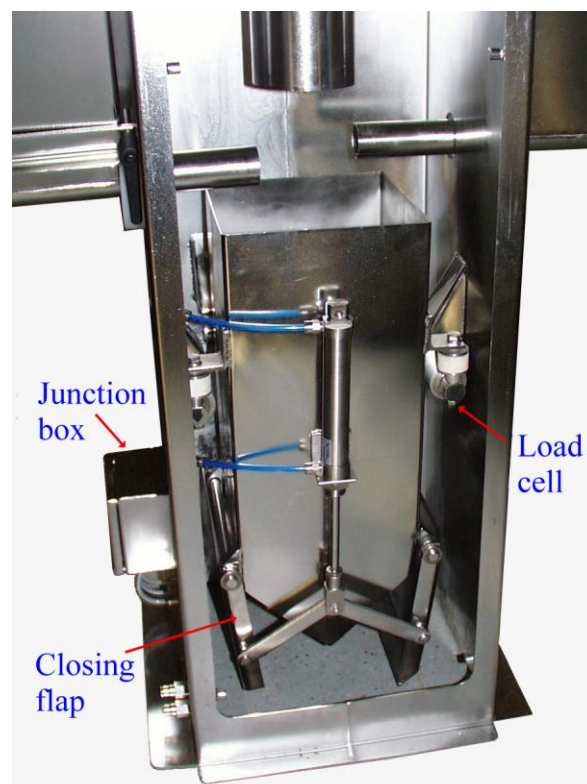
The weighing bin rests on 3 load cells that are connected to a junction box outside the unit.

Through the junction box the signal goes from the load cells to a weighing computer.

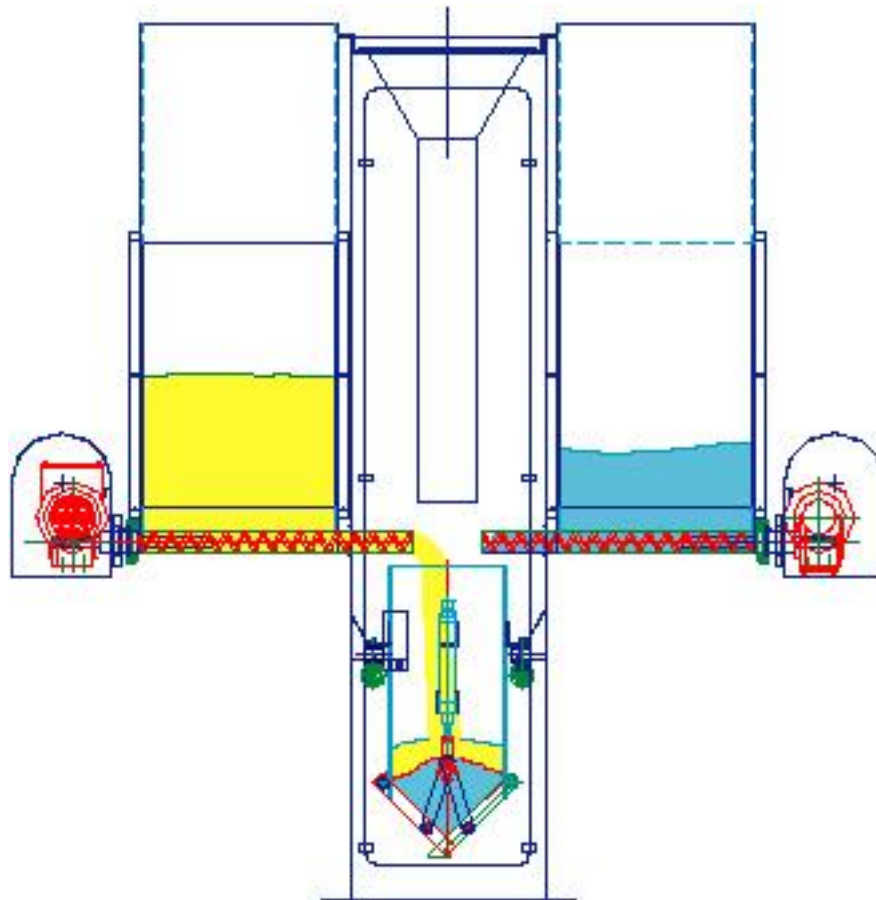
By means of two pneumatically controlled closing flaps (here in open position) the weighing bin can be opened or closed in its bottom.

When all ingredients are weighed, the weighing bin opens and the product falls to a mixer or directly to another production process (E.g. a pneumatic transportation system).

The load cells are supplied with vibration dampers that reduce the influence of disturbances from outside.



Example



In the example above you see a micro-doser with two powder containers. To this micro-doser the possibility also exists manually to dose very small amounts (E.g. salt) directly into the weighing bin.

When the demanded recipe has been found in the weighing computer, the process starts. First the powder from the right container is dosed (it could be from the left one as well) until the weight is reached. In order to account for the material in mid-air between the dosing screw and the weighing bin, the dosing screw stops just before the weight is reached. This has been/must be adjusted beforehand in a dosing test of the material as different powders have different physical properties. In addition, a frequency converter may make the dosing screw rotate slower during the last part of the dosing.

Powders that bridge (i.e. block, stop) over the dosing screw is fluidised with a device for compressed air in the container wall (see previous page).

Second the other dosing screw starts automatically after the same principle and like that the process will continue (if there are more than the two shown containers) until all the wished ingredients have been dosed and weighed.

If you have more containers than you need for the actual recipe, you are free to omit dosing from one or more containers.

At the end a pneumatically controlled piston makes sure that the weighing bin is emptied – typical into a mixer.

The whole process is controlled by a weighing computer.

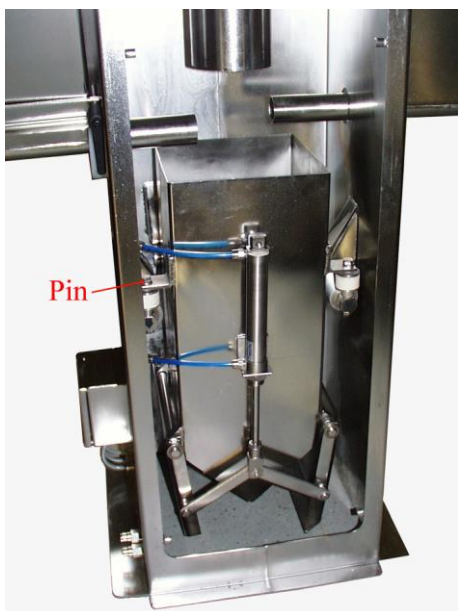
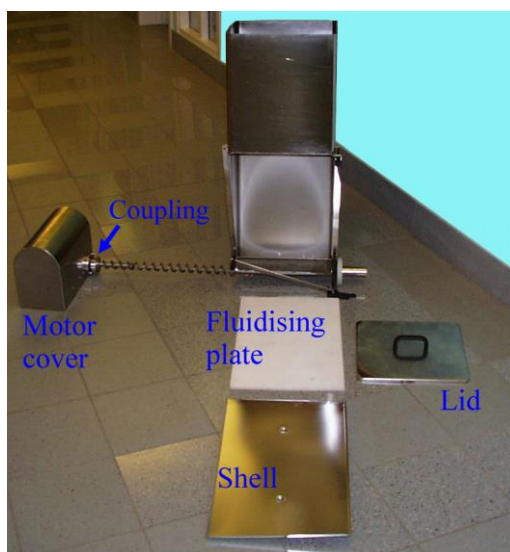
Cleaning and maintenance

The micro-doser can be dismantled very easily. This holds for the smallest as well as the biggest versions.

Those parts of stainless steel that comes directly in touch with your product, can be vacuum cleaned or you can dry them with a cloth or wash them. However, after washing you should make sure that the parts are dry before you put them together. Moisture may cause your product to increase its weight and reduce accuracy of the dosing.

A store container can easily be removed from the micro-doser and dismantled. Thus, it only takes a few minutes for one person to dismantle the container on the photo.

In that way, the unit may be cleaned both very easy and very thoroughly at the same time. The assemblage is just as easy as the dismantling. In order to get access to the motor the motor cover may also be easily removed.



The weighing bin may also be removed from the unit. First, you removed the air connection (the two blue tubes) and after that the 3 pins that hold the load cells.

If your micro-doser has more store container it could be necessary that, depending on the construction, that one or more store containers must be removed first. But as you saw before, this is very fast and easy.

Applications

TEKFA's micro-dosers for small ingredients apply to both independent units as well as in connection with bigger plants, as the following examples show.



Ice cream production.

In order to improve the dosing process, the store containers are supplied with either fluidising or vibrators.

Examples of ingredients:

Milk powder, citric acid, vanilla powder, dextrose, glucose powder, stabilizers.

Production of animal feed.

5 weighing units with each 8 store containers.

Examples of ingredients:

Vitamins, flour, minerals, lime, salts.



Typical products from TEKFA's micro-dosers for small ingredients

- Biscuit
- Ice cream
- Seasonings mix
- Bakery ingredients
- Detergent
- Multi vitamins
- Animal feed
- Road markings
- Plastic products
- Candy
- Bread mix
- Tea mix



Micro-doser for the chemical industry.

Examples of ingredients:

Enzymes, zeolithe, phosphates etc. for detergent.

Pigments for the production of dye.

Omyolite, ABS, Dicalite, chalk powder types for the production of plastic.

Micro-doser for 6 components in chemical industry. In the background you see the control unit.

Examples of ingredients:

Stearin acid, Vestoplast, Anox powder, wax granulate, resin granulate, talcum powder.



Some powder examples from TEKFA's micro-doser for small ingredients

- Salt
- Pepper
- Powdered cinnamon
- Vanilla
- Citric acid
- Wine acid
- Glucose
- Dextrose
- Enzymes
- Zeolithes
- Phosphates
- Vitamins
- Minerals
- Lime
- Baking powder
- Flour
- Sugar
- Talcum powder
- Pectin
- Casein
- Sulphates
- Iron powder for welding
- Lactose