Bimech

POWDER BLENDING

The mixing of powders and/or granules is one of the most common processes in the chemical and pharmaceutical industry.

The same process can be carried out using different machines that have some common characteristics:

» all are designed following cGMP criteria.
» product is blended by batches.
» the controls are based on Siemens technologies with an S7 series PLC and a 7 “touchscreen HMI or on request Rockwell Automation with 7” HMI.
» in all of them there is the possibility to manage recipes and accesses are protected with different password levels.
» the machine has contacts to manage the safety devices inside the power panel to protect the operators during the movements of the machine itself.
» from a constructive point of view, the machine is composed of:
  ▸ supporting structure group with main motor and power panel;
  ▸ rotating group that contributes directly to the blending of the product;

» all blending machines can be equipped, on request, with:
  ▸ CFR21 part 11
  ▸ laser scanner system
  ▸ report printer on control panels
  ▸ electric voltage different from the standard
  ▸ safety barrier for mixing area
  ▸ rockwell Automation PLC and HMI
  ▸ validation documents

The choice of the most suitable machine for the purpose is based on the characteristics of the plant and the process such as:

» type of handling of powders that the customer is already adopting
» batch size
» spaces available for the installation of the new machine.

To meet most production needs, Bimech offers a wide range of choices:

» bin tumblers.
» double cone or “V” blenders.
» ribbon blenders.

Bin tumbler

The tumbler, in its basic execution, carries bin containers in stainless steel in rotation.

This machine is supplied in two versions:
» **BIN TUMBLER “Stand-Alone”**
» **BIN TUMBLER “Through-Wall”**

Both versions can be divided into the following categories:
» **LAB (2-30l)***
» **MINI (30-300l)**
» **MIDI (300-1000l)**
» **MAXI (1000-2000l)**

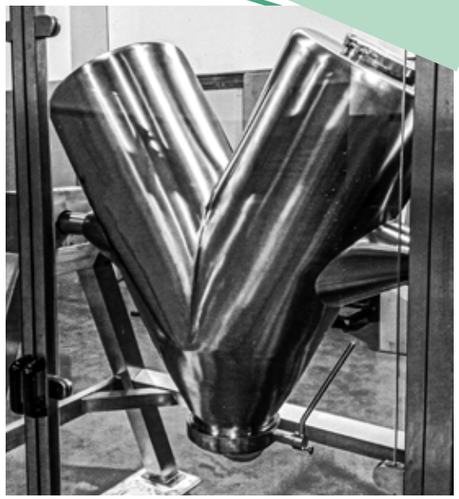
** The LAB version is produced only in the stand-alone version.*

The bins are placed in the cradle of the structure by the operator, and the machine will move the lower platform bringing the container to the mixing start position.
The machine consists of:
» bearing structure assembly as described above;
» bin blocking group.

The supporting structure group consists of a frame in painted carbon steel profiles.
The frame is designed to be anchored to the floor.
The front structure is built in AISI 304 stainless steel.
The lower part of the structure is sized in such a way as to be able to accommodate the bins and bring them in contrast with the upper part, also giving them an inclination on the vertical axis of 15 °.
The upper blocking of the bin is made by binding the upper supports of the container to the rotating structure.
The finish of all the stainless steel parts of the fixed and mobile frame are in fine satin finish.
The rotation speed ranges from 4 rpm to 20 rpm.

As a distinctive option of this type of machine we offer:
» The double inclination to maximize mixing efficiency while also reducing the blending times. In this case, in addition to the 15 ° angle on the vertical axis, the rotating structure is inclined by a further 15 ° with respect to the rotation axis. The powder receives a turbulent movement inside the container in a variable direction, optimally homogenizing the compound.

Double cone or ‘V-blenders”



This category of mixers differ from the previous one essentially due to the fact that the tank containing the powders is an integral part of the machine and is not removed for loading/unloading and cleaning.

The advantage over the bin tumbler solution is the ability to process larger batches and in the specific case of the “V-blender” efficiency is guaranteed by the 50/50 physical separation of the product at each rotation of the container.

As for the double cone, on the other hand, Bimech proposes the eccentric cone solution as a standard to increase the level of turbulent motion of the powders during mixing. The maximum rotation speed varies according to the volume of the tank and is in any case controlled by inverters as in the bin tumbler.
Internal elements of the tank such as reels, crushers or other can be evaluated on request based on the characteristics of the product.
The family of mixers is divided into the following categories of volumes:

» **LAB** (2-30l)
» **MINI** (Bin 300l, 150l maximum useful volume)
» **MIDI** (Bin 600 l, maximum usable volume 300l)
» **MAXI** (over 1000l for the Bin)

In this family of machines the distinctive options are:
» powder loading through vacuum transport systems with controls integrated in the same HMI interface
» exhaust with butterfly valve of customizable typology according to the needs
» automatic CIP container washing with controls integrated in the same HMI interface

Ribbon blenders (four ways)

This blender exploits the synchronized movement of reels which, thanks to their involute helix geometry, generate a forced movement of the powders homogenizing the composition.

The production capacity of the Bimech belt mixer ranges from a minimum of 20 kg of powder to a maximum batch of 2000 kg.

The machine is equipped with a set of safety devices that prevent accidental direct contact between the moving parts and the operators.

In this family of machines, customization is essentially centered on the ability to manage the type of drain valve and its position and the manual or automatic CIP-type washing of the container.

CONTACTS

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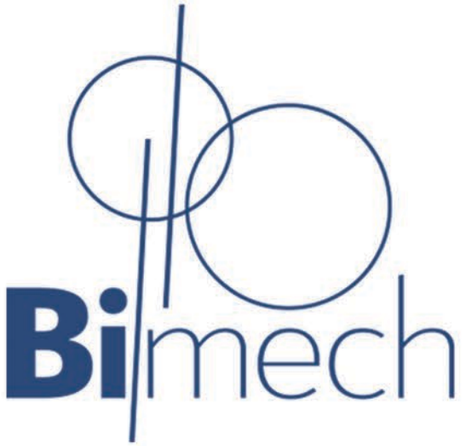

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