DRYING SYSTEM

GENTLE DRYING, MIXING TO PERFECTION, ADDING OF POWDERS AND LIQUIDS

TOSHNIWAL Drying System FT
DRYING OF POWDERS, BULK MATERIALS, FILTER CAKES, GRANULES AND LIQUIDS

Introduction
The TOSHNIWAL Drying system has been especially developed to dry products very gently and to achieve the best possible drying economy. The drying system is the ref5r ideal for drying of powder. all kind of bulk materials, filter cakes and granules. The drying process can actually start from a liquid product to a dry extract of powder.

Drying Concept
The TOSHNIWAL Dryer is a modification of the well known TOSHNIWAL Mixer into a drying unit. The target is to mix energy and product in the best possible way. This is achieved by combining drying technology with the mixing technology of the TOSHNIWAL Mixer, where homogenous mixing is achieved in a few seconds. The mechanical fluidisation ensures that all particles are surrounded by drying medium (cold/warm/hot air, inert gas etc.) and an effective transmission of energy occurs. Moisture is thereby extracted from the product.

Technology
The TOSHNIWAL Drying Technology is built on well known components and principles, which ensures a well arranged and reliable process. It consists of a modified TOSHNIWAL Mixer, a heater (electric, steam or combustion), a cooler (for condensati on and cooling of air), a heat exchanger a centrifugal fan, and a 2-step filter system. The primary filter with continuous cleaning and the secondary filter for collection of fine particles. Heat pump can also be offered to increase the total thermal efficiency.

Process Function
Heated air is blown into the mixer and mixed with moist product. During this heat exchange, the moisture will evaporate from the product. Moist air passes through the filter before it is sucked into the fan. The air is thereafter blown through the cooler for condensation before it is reheated. When drying very moist products the wet product is mixed with dry products first to ensure that the fluidisation and the high drying rate is maintained.

Type of drying systems
Today TOSHNIWAL offers the drying system as a closed or open system. The system usually operates with a batch dryer, producing multiple batches. For special applications the dryer can operate continuously where product is separated from the exhaust air in a cyclone or a filter system.
ADVANTAGES:

Homogeneous Drying:
- No local overheating.
- No local overdrying.
- Gentle drying.
- Low drying temperature possible
- Good correlation between product temperature and exhaust temperature.
- The integrated mixing technology always ensures a homogeneous batch.

Capacity:
- High thermal efficiency.
- Can operate close to the products maximum temperature, increasing the drying efficiency.
- Constant and controlled air supply.
- No change of fresh air
- Increased total themla efficiency with the optional use of a heat pump.
- Batch or continuous drying.
- Possible drying to absolute dryness.

Inertgas Drying:
For special applications TOSHNIWAL offers the drying system with inertgas as a drying medium. Advantages are:
- Prevents oxidation of the product.
- Drying of solvent based products.
- Reduces the possibility for explosion.
- Closed loop reduces inertgas consumption.

Closed loop:
- No odour to the environment.
- Constant drying conditions.
- No effluent gases or dust.
- Condensation of water vapour.
- Energy saving due to recuperation of heat.
- inertgas drying as an option.
- Open system as an option.

CONTROL SYSTEM:
- Customized control system
- Temperature monitoring, together with homogene mixture avoids variations
- Easy definition of stop parameters for batch process.
- Overfilling and overdrying are automatically avoided.
- Filter cleaning and monitoring give no effluent dust.
- Automatic operation possible.

Toshniwal Mixer/Dryer FT-500 installed

UNIVERSAL MACHINE:
The Toshniwal Dryer is a universal machine where the following processes can be achieved:

→ MIXING
→ SPRAYING/COATING
→ HEATING
→ DRYING
→ COOLING
→ GRANULATION

For more details regarding the Toshniwal mixer, We refer to our separate mixer brochure. The Toshniwal Drying System is Patented.
DIMENSIONS OF THE DRYING SYSTEM

<table>
<thead>
<tr>
<th>Model/ volume</th>
<th>MIXER MOTOR kW</th>
<th>AIR FLOW M³/h</th>
<th>FAN MOTOR kW</th>
<th>FILTER AREA m²</th>
<th>HEATING* kW</th>
<th>LENGTH mm</th>
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To receive a quotation please submit us the following data: Product, initial and final moisture content, desired capacity etc.

* Heating air from 20°C to 150°C

Cross section of the Toshniwal Drying System

Typical temperature and humidity reading

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The ultimate in mixing technology...