

DRYING SYSTEM

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



TOSHNIWAL Drying System FT

DRYING SYSTEM

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 reform 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

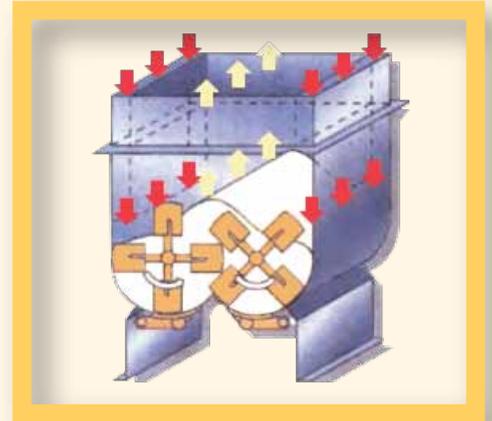
The TOSHNIWAL Dryer is a modification or the well known TOSHNIWAL Mixer into a drying unit. The target is to mix energy and product in the best possible way. This is achieved by combining drying technology with the mixing technology of the TOSHNIWAL Mixer, where homogenous mixing is achieved in a few seconds. The mechanical fluidisation ensures that all particles are surrounded by drying medium (cold/ warm/hot air, inertgas 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 condensation 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

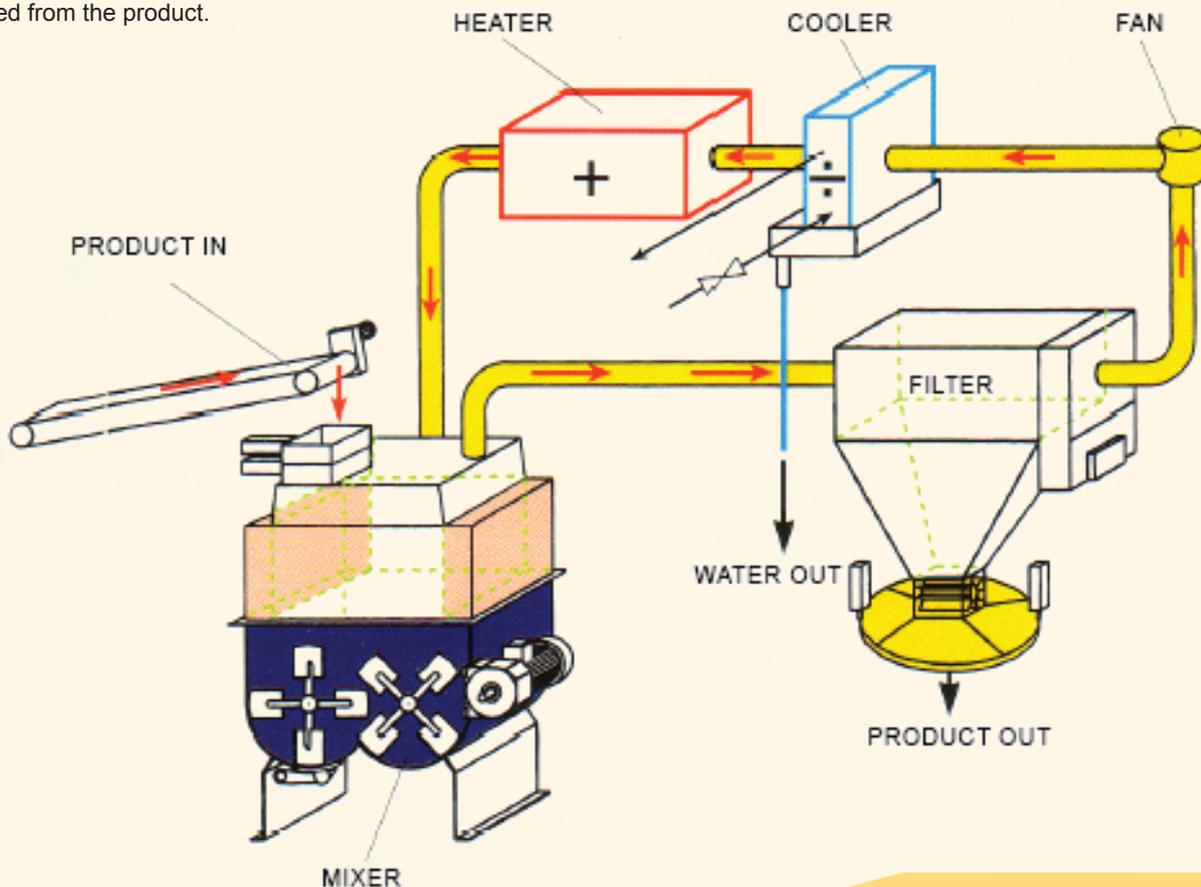
Heated air is blown into the mixer and mixed with moist product. During this heat exchange, the moisture will evaporate from the product. Moist air passes through the filter before it is sucked into the fan. The air is thereafter blown through the cooler for condensation before it is reheated. When drying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



Mixing energy and product in the best possible way

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.



DRYING 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 thermal 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:

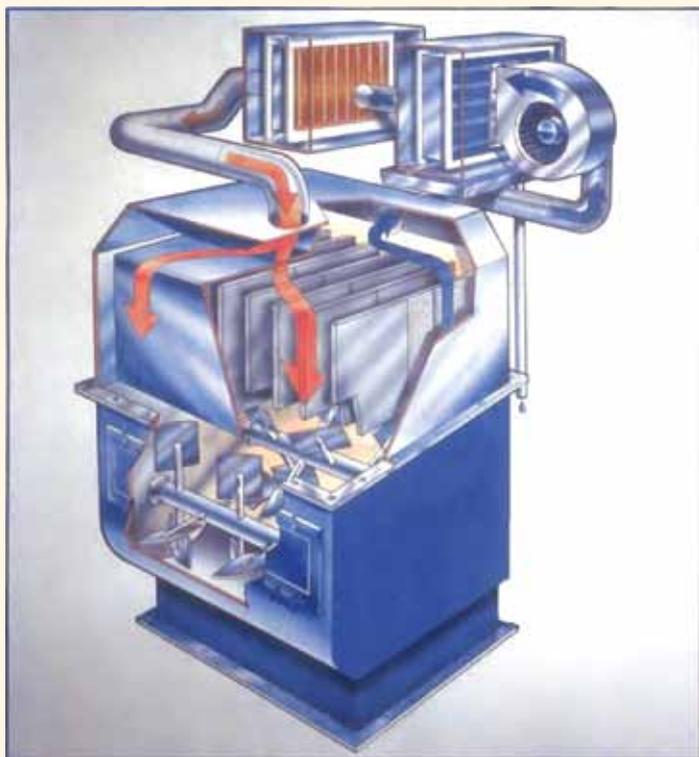
- ➔ **MIXING**
- ➔ **SPRAYING/COATING**
- ➔ **HEATING**
- ➔ **DRYING**
- ➔ **COOLING**
- ➔ **GRANULATION**

DIMENSIONS OF THE DRYING SYSTEM

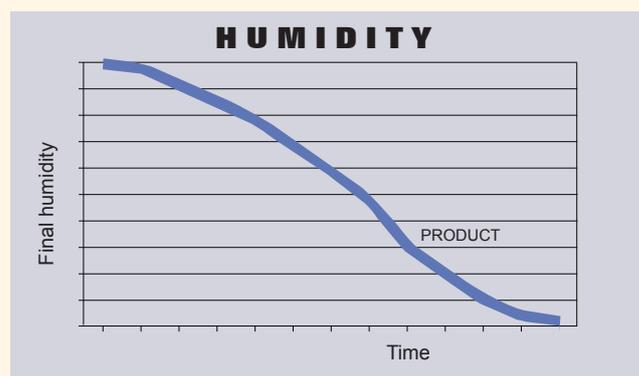
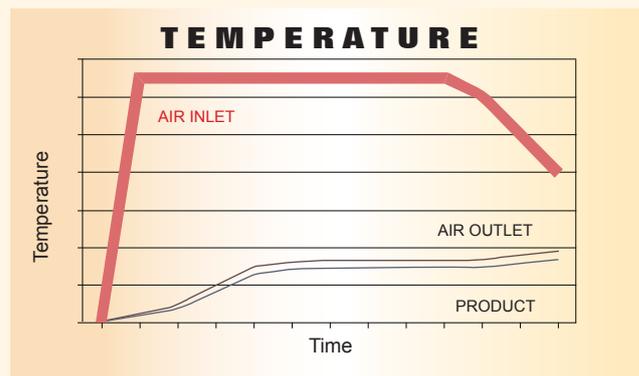
Model/ volume	MIXER MOTOR kW	AIR FLOW M ³ /h	FAN MOTOR kW	FILTER AREA m ²	HEATING* kW	LENGTH mm	WIDTH mm	HEIGHT mm
FT-20	1.1	250	0.25	3	11	2000	700	2400
FT-60	3	850	1,1	11	37	2900	2500	2300
FT-120	4	1400	2,2	18	60	3400	2400	3300
FT-200	2x3	2400	3	30	105	3600	3900	3500
FT-350	2x4	3300	4	40	144	3600	4200	3900
FT-500	2x5,5	4800	5,5	60	210	3800	4300	4200
FT-750	2x11	6300	7,5	80	275	4000	4400	4800
FT-1000	2x15	9300	11	120	407	5800	4500	5300
FT-1500	45	12400	11	160	540	8900	6100	6000
FT-2000	75	15500	15	190	680	9600	6800	6900
FT-2500	75	16500	22	210	720	11000	7200	7500
FT-3600	90	24000	30	300	1050	13000	7600	7900
FT-5000	110	27000	37	340	1180	15500	8100	8500
FT-10000	250	38000	55	365	1660	8000	6000	12000

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

Toshniwal

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