Drying Technology for Mineral Raw Materials

Fluidised-bed and drum driers add quality to your process
ALLGAIER Fluidised-bed and drum driers make processes more productive.

Today, ALLGAIER driers are used successfully in almost all industrial sectors. Particularly in the non-metallic mineral processing industry and in recycling operations, the rotary drum driers and fluidised-bed driers prove their extraordinary abilities.

The safe use of the ALLGAIER processes is ensured, above all, by the company’s branch-specific expertise.

ALLGAIER drying systems are extremely adaptable. Their design features and the large number of available options permit the design of extremely productive processes.

<table>
<thead>
<tr>
<th>Application areas</th>
<th>Fluidised-bed and drum driers</th>
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<tbody>
<tr>
<td>non-metallic mineral processing</td>
<td>Chemical substances</td>
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<tr>
<td>Building materials</td>
<td>Pigments</td>
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<tr>
<td>Sand</td>
<td>Clay</td>
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<td>Minerals</td>
<td>Agrochemicals</td>
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<td>Glass</td>
<td>Recycling</td>
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<td>Moulding sand</td>
<td>Waste materials</td>
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<td>Ceramics</td>
<td>Sludge</td>
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Features

Filter cakes
Iron sulphate
Titanium dioxide
Limestone
Magnesite
Metal chips
Wood chips
And many more

- High thermal efficiency
- Few parts subject to wear
- Product-optimised drying
- Large number of process options
- Easy access, and thus easier replacement of spare parts
- Variable design permits rapid conversion for different products
- High degree of energy utilisation

For every requirement

Regardless of whether a single unit or a complete system is needed – ALLGAIER can meet every requirement. With complete solutions, including engineering, installation and commissioning, ALLGAIER prove their competence in the area of plant construction.
Drum driers, system **MOZER**

**Single-shell, double-shell and triple-shell drums**

**ALLGAIER drum driers** are used, particularly in the minerals industry, for drying pourable and abrasive wet materials. Their main features are high throughput rates and the ability to process solid materials with widely differing granulometric properties.

The drum driers are available in single-shell, double-shell and triple-shell versions. The design ensures high performance in a small space. Special versions also permit the use of combined processes.

**ALLGAIER outside – MOZER inside**

The users of drum driers do not need to give up the proven MOZER technology. ALLGAIER still produces and develops the drum driers system “MOZER” with their unbeaten quality and performance.

**Single-shell drum TTD:**
For use in the areas of non-metallic mineral processing, for coarse-grained materials and clay products.

**Double-shell drum TT:**
For drying fine-grained materials in the sector of non-metallic minerals.

**Triple-shell drum TT-TR:**
For drying materials which require long dwell times. For easily pourable materials with fine to medium grain sizes.
ALLGAIER have extended and perfected the use of drum driers. The result of this work is a range of designs for new combined processes in a single system which are therefore very effective and economical.

A technical highlight is the sand drier “TKplus”, which dries and cools the sand in a single step and, at the same time, consumes up to 20% less energy.

**Combined processes.**

**Driers / crushers**

The system TTM with grinder dries and crushes lumpy materials such as filter cakes. This obviates the need for separate crushers or grinders for crushing before or after drying.

**Drying / cooling**

**System TK**
Double-shell drum with cooling path, for grain sizes up to 32 mm (sand, crushed rock, clay, sludge,...). Cooling with air.

**System SK**
Drum driers can be combined with sand coolers in order to achieve uniformly low outlet temperatures, regardless of the ambient temperature.

**Cooling**
Drying of wood chips can be dried quickly and economically in drum driers. Wet or moist wood chips can be dried quickly and economically in drum driers.

**Drying / screening**

**System TTT with screening unit**
This system dries and screens many types of materials with reasonable good separation (aluminium scrap, broken glass, slag...). There is thus reduced need for a separate screening stage.

**Drying / cleaning**

**System TRH with cleaning zone**
This system increases the amount of raw materials extracted by dry cleaning of the materials before screening. There is thus reduced need for washing stages.

**Drying of granulates**

**System KST**
This system converts industrial and municipal sludge into stable, unscented granulates which can be used for many purposes.

**Drying / cooling of sand**

**System TK plus**
Double-shell drum for combined drying and cooling of sand. Well proven in the manufacture of dry mortar.

**Reduce energy consumption by up to 20%!**

**Drying of wood**

Wet or moist wood chips can be dried quickly and economically in drum driers.
Fluidised-bed driers.

Features

- Low temperatures of the dried materials
- Careful drying of sensitive products as granules and pellets
- Exhaust-air heat recovery systems available
- Simultaneous dust removal from the fluid bed
- The product residence time and the quality can be adjusted by regulating the height of the fluidised bed

ALLGAIER fluidised-bed driers can be used advantageously for the treatment of many mineral substances, such as sand, limestone and ceramics, and also for pastes, sludges, filter cakes and mineral fertilizers.

The high rate of heat transfer and material transport in the fluidised bed means that small driers can be used, permitting economical solutions.

The driers are extremely robust and have no moving parts inside the process space. This results in minimal costs for maintenance and spare parts.

Black diagram of a fluidised-bed drier:
## Application areas.

<table>
<thead>
<tr>
<th>Drum driers</th>
<th>Fluidised-bed driers</th>
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<tbody>
<tr>
<td><strong>Materials to be dried</strong></td>
<td>Pourable to sludgy materials with large grains or lumps and major variations in the grain size and moisture content</td>
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<tr>
<td><strong>Application areas</strong></td>
<td>Mineral substances, sand, sludge, limestone, gypsum, fertilizers, animal fodder, coal, waste materials, wood, domestic garbage, ...</td>
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<tr>
<td><strong>Processes</strong></td>
<td>Drying, cooling, mixing, Pyrolysis, calcination</td>
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<tr>
<td><strong>Combined processes</strong></td>
<td>Drying / cooling (sand, limestone, broken rock, clay, ...)</td>
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<td>Drying / cleaning (dirty natural stone)</td>
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<td></td>
<td>Drying / screening (shredded material)</td>
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<td></td>
<td>Drying / crushing (filter cakes)</td>
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<td></td>
<td>Drying of granulates (sludge)</td>
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<tr>
<td><strong>Models and versions</strong></td>
<td>Single-shell, double-shell and triple-shell drums</td>
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<td><strong>Heat-transfer media</strong></td>
<td>Direct heating with flue gases produced by the combustion of natural gas, mineral oil or coal.</td>
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<td>Indirect heating with saturated steam, thermo-oil, etc.</td>
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</table>
Reliable after-sales service

Allgaier is a reliable partner from the start of a project to the after-sales service – with very competent consultant engineers, a high level of mobility and a dependable spare-part service.

Process knowledge for better processes

Since the drying behaviour of moist products varies widely, the drying systems must be designed and adapted accordingly – a task which requires a lot of expertise, experience and instinct and is not easy. The Allgaier Technology Centre is attuned to this and finds the best solution with the aid of practical tests.

With the support of experienced specialists, the centre carries out product-development work for customers. It goes without saying that this work is kept absolutely confidential.