Drying systems for grain and oil seeds.

Schmidt-Seeger Eco Dry, Eco Cool, Eco Dry Flex.
Proper conservation safeguards the quality and, with it, the value of grain for the producer. In addition to thorough cleaning and the method of storage, the ideal drying process plays a key role in conservation. Bühler’s top quality drying systems ensure optimum product conservation and are also employed in process technology, e.g. at oil mills or in the production of parboiled rice.

Bühler dryers are capable of drying grain, oil seeds and all types of pourable special products. The most commonly dried goods include maize, wheat, rice and sunflowers.

At reception plants, the drying of grain and oil seeds to attain the proper storage moisture level usually occurs directly after initial cleaning. Especially when goods are received from the field, dryers are also used at terminal facilities for grain trade. In addition to making goods storable, the dryer’s main function is to prevent the product from spoiling during subsequent transport.

At oil mills, oil seeds are dried prior to extraction so that the remaining moisture content is precisely the amount necessary for subsequent processing. In the rice industry, rice must be dried to the storage moisture level following the parboiling process.

In each individual application, systems must meet the demand for a drying process that is as gentle as possible, yet also energy efficient. The cost of drying represents a central criterion for the competitiveness of grain producers. The impact is particularly strong with products that have a high crop moisture content; with maize, for example, moisture content can be even above 30%. Since energy consumption is becoming an ever more critical factor, from an economic standpoint, being able to rely on efficient drying systems is increasing in importance.

Thanks to their sophisticated and time-tested technology, Bühler’s patented Schmidt-Seeger Eco Dry systems meet all the demands today’s customers put on modern drying systems.
Product overview.
The ideal dryer for every application.

Schmidt-Seeger Eco Dry.
The continuous flow dryer is used at reception plants, storage facilities and in processing industries. Air is heated either directly or indirectly. Heat can come from conventional sources like oil or gas as well as from alternative energy sources such as rice husks or other biomass fuels. An environmentally-friendly dedusting system is optionally available.

Schmidt-Seeger Eco Cool.
The Schmidt-Seeger Eco Cool can be combined with a continuous flow cooler for drying maize (reception moisture > 25%). The Schmidt Seeger Eco Cool contributes to significantly reducing operating costs. The continuous flow cooler can also be equipped with a dedusting system.

Schmidt-Seeger Eco Dry Flex.
The Eco Dry Flex, the mobile version of the Eco Dry, is employed primarily in agricultural operations and at smaller reception facilities. The customer can choose direct or indirect heating with oil or gas. Environmentally-friendly dedusting solutions are also available for this mobile member of the Eco Dry family.

Schmidt-Seger Eco Dry™.
Intelligent operating principle.

With Eco Dry, ambient air is drawn in through the main fan and conveyed to the hot air generator through the main fan on the suction side produces negative pressure inside the dryer and conveys air from the hot air generator through the drying column and the downstream dedusting before it is discharged via the rain flap.

Following hot air drying in the upper section of the drying column, the previously heated dried product is cooled in the lower section of the column. In order to increase the system’s energy efficiency, non-saturated exhaust air and non-saturated cooling air which has been heated by the product are added to the hot air through an air recirculation fan.

The v-shaped ducts are open on the bottom. Air flows from the heat source through the open inlet air ducts (red) to the product and escapes via the exhaust air ducts (blue). In the process, the product is heated and releases moisture into the warm air. The warm air absorbs the moisture given off by the grains and cools down through evaporation. One special feature of the Schmidt-Seeger Eco Dry line of dryers is the conical shape of the ducts. This allows for higher capacity columns and uniform air distribution inside the dryer. The conical shape also prevents unintentional product discharge via the ducts.
Schmidt-Seeger Eco Dry™.
Energy efficient and gentle heating technology.

Variable configuration of the heat source.
The system can employ hot air generators with gas or oil burners, gas line burners or biomass incinerators (e.g. rice husks in combination with steam heat exchangers). The hot air generator is available for direct and/or indirect heating.

Greater efficiency through diagonal duct arrangement.
Due to the diagonally duct arrangement the product is passed through with alternating hot and already cooled air. This leads to an increase in energy efficiency and a reduction in thermal stress to the product. This in turn makes the drying process extremely gentle.

The product flow separation ensures gentle handling of the product.
The product flow separation further reduces energy consumption while allowing heat to reach moist kernels in the middle of the product flow more efficiently. Besides lower operating costs, the system thus achieves perfectly uniform drying results. In addition, thermal stress to the product is reduced by nearly 50%.

Key advantages in drying:
- Seeds (maintains germination capacity)
- Malting barley (maintains germination capacity)
- Paddy rice (less breakage)
- Bread grains (maintains baking characteristics)
- Maize (less energy consumption)

Waste heat recovery as a potential source of savings.
By recirculating warmed cooling air and warm, non-saturated drying air, operational costs of the drying system can be significantly reduced. The size of the cooling zone is variably adjustable and allows the system to be ideally adapted to the specific nature of the raw goods and drying process.

Product supply
Product flow separation
Uniform drying result

Schmidt-Seeger Eco Dry™. Product flow separation for a more homogeneous drying result.
Schmidt-Seeger Eco Dry™.
Product design.

Effective aspiration technology.
Thanks to the highly efficient central separator, dust emissions can be reduced to levels below the legally required limits. In contrast to filters, the central separator eliminates the risk of clogging, even with moist exhaust air.

Efficient safety features.
Safety functions such as automatic dryer shutdown when pre-defined limits are exceeded, overheating protection on the burner and additional grain overheating protection can be enabled via the control system.

Proven pneumatic discharge.
The discharge design ensures even feeding and uniform product dwell times in the dryer. The jerking motion of the discharge also results in a kind of self-cleaning of the columns. The use of pneumatic technology instead of electricity improves safety standards in the dust zone.

Control unit with convenient operation.
The control unit ensures convenient adjustment and monitoring of the burner, fans, discharge and feeding. The proven control system guarantees the desired final moisture content in combination with maximum uniformity and dryer performance.
Schmidt-Seeger Eco Dry™ with Schmidt-Seeger Eco Cool™. The power package for maize.

The drying process is similar to that of the Eco Dry. A difference is that the dryer does not have its own cooling zone and that the warm product is transferred into the Eco Cool with a remaining moisture content of approx. 17%. There, the product “sweats” additional moisture. Moisture is removed from the kernel surface exclusively through the addition of fresh air. The result is a homogenous storage moisture level of approx. 15%.

**Customer values of the Eco Dry – Eco Cool combination:**
- High potential energy savings
- Eliminates dryer cooling zone and increases dryer capacity
- Reduces the flow time in the dryer by roughly 1 hour
- Reduces the impact of heat on the product
- Eliminates moisture variations through sweating in the Eco Cool

In cases where reception moisture is 25% or higher, the Eco Cool system helps to reduce the operating costs significantly.
Schmidt-Seeger Eco Dry™ for paddy rice.
Extremely gentle drying.

The diagonal duct arrangement and permanent alternation of air flow direction in Schmidt-Seeger Eco Dry dryers significantly reduces thermal stress to paddy rice. Nevertheless, the drying process has to be carried out in several stages, between which the rice is allowed to rest. Bühler’s drying technology and processing know-how guarantee ideal solutions for product-friendly handling of paddy rice.

**Customer values of Eco Dry solutions for paddy rice:**
- Low heat impact on the product: gentle handling and reduction of losses and breakage through stress cracking
- Uniform drying results thanks to duct arrangement and separation of the product flow
- Elimination of variations in moisture in the tempering bins

Paddy rice requires particularly gentle handling in order to prevent breakage.
Schmidt-Seeger Eco Dry™ for parboiled rice. Economical and gentle.

Parboiling represents a unique task in the field of industrial rice processing. During parboiling, paddy rice is softened in various stages and treated with steam.

The three-stage drying process employed by Bühler is extremely fast and nevertheless gentle to the product. It reduces moisture content from approx. 30 % to about 12 %. Different temperature settings and „rest periods“ in so-called tempering bins increase throughput capacity without any damage to the product.

Customer values of Eco Dry solutions for parboiled rice:
- High capacity through optimized three-stage process
- Low heat impact on the product: gentle handling and reduction of losses and breakage through stress cracking
- Uniform drying results thanks to duct arrangement and separation of the product flow
- Elimination of variations in moisture in the tempering bins
Schmidt-Seeger Eco Dry Flex™.
The mobile solution.

In addition to excellent drying results, flexible application possibilities represent a key aspect. With its Eco Dry Flex, Bühler offers the perfect solution. This mobile dryer excels through its rugged chassis and literally delivers valuable support at any location.

Customer values of the mobile Eco Dry Flex:
- Mobility, easy transport between various locations
- Delivers the same excellent drying results as stationary Eco Dry dryers

Drying of raw goods is also required in agricultural operations and at smaller reception plants. Such facilities generally expect the same standards of drying quality as large-scale operations.
Global presence.
Worldwide technology and service partner.

In the region – for the region. Today, Bühler produces machines and systems in more than 20 production facilities in 11 different countries: the USA, Brazil, Germany, Switzerland, Great Britain, the Netherlands, Spain, South Africa, Iran, China and India.

As a dependable technology partner with over 70 branch offices and presence in more than 140 countries, the company is always there for its customers. 1,500 sales and service representatives, who understand the respective local culture and language, devote themselves to maintaining personal contact with clients.

Strong, constructive partnerships form the foundation of a comprehensive range of products and services. Through its diverse business activities, Bühler meets the individual needs of its national and international customers.