THE EFFICIENT AND SUSTAINABLE DRYING SOLUTION

LEADING SUPPLIER OF ADVANCED DRYING TECHNOLOGY

During the last six decades approximately 4000 drying plants have been delivered and put into service throughout the world. This is an achievement that has increased Cimbria’s experience significantly in the development, design and manufacture of highly efficient equipment and process control systems for the heat treatment of a large number of different crops, cereals and seeds.

Theoretical know-how and practical experience along with full-scale trials and testing ensure the optimization of each drying process, including product care, operator safety, ecological considerations and economical operation - a combination of which makes Cimbria a trustworthy and preferred supplier of drying plants worldwide.

CIMBRIA.COM
Cimbria has a great deal of experience in drying and conditioning numerous products worldwide. A Cimbria dryer represents a safe investment since you are able to dry different grains in the same plant.

**ECO-MASTER™ DRYER**

is the trademark of Cimbria’s new generation of dryers, where extensive knowledge of drying and vast experience with a wide range of different crops, combined with a heartfelt commitment to the environment, product care and customer satisfaction, result in a fully controlled homogeneous and economical drying process. This in turn guarantees quality and capacity thus ensuring fast payback on your investment with the lowest possible impact on the surrounding environment and the world’s energy resources.

The Eco-Master dryers optimize modern technology, improving the already widely acknowledged high standard of Cimbria mixed-flow dryers, including dust-separating exhaust fans which return up to 15% savings on heat energy and up to 45% savings on electrical power.

The dryer stands for the modern way of securing the world’s food and feedstuffs. It is constructed, produced and documented according to the latest EU legislation.

We offer consultation and design of plants for a wide range of drying purposes, as well as various products based on the results of our research and many years of practical experience.

**EXAMPLES OF PRODUCTS DRIED IN A ECO-MASTER**

- **SUNFLOWER**
- **COFFEE**
- **RAPE**
- **MAIZE**
- **PADDY**
- **WHITE RICE**
- **SOYA BEANS**
- **BARLEY**
- **SORGHUM**
- **FLAX**
- **QUINOA**
- **COCOA BEANS**
The drying season is typically short and intensive, and a key factor is the smooth and trouble-free execution of various drying tasks. Ranging from the uniform and gentle drying of sensitive crops such as malting barley to the removal of large quantities of water during extreme climatic conditions, e.g. when drying maize, is a continuous flow dryer that offers a high degree of versatility combined with proven technology.

The Cimbria ECO-Master™ dryer range has been developed to meet the increased demands from the industrial user, and offers intelligent built-in solutions such as:

**EASY ACCESS FOR INSPECTION & CLEANING**

ECO-Master™ dryers are designed with voluminous hot & cold air chambers, thus making inspection and cleaning of critical areas such as burners and air ducts easy, fast and safe thanks to conveniently placed inspection platforms which are accessed via a single centrally located external ladder.
ENCLOSED FAN HOUSING
Environmental care is a vital design parameter in the ECO-Master™ range. Not only does Cimbria offer proven low dust emission levels, but the entire fan system is also completely enclosed and incorporated into the design, thereby ensuring low noise levels and fully operational fans even under difficult climatic conditions.

Self-closing rain caps and roofing on the fan housing keep fans dry and reduce noise to the surroundings.

MODULAR DESIGN
The ECO-Master™ range comprises 7 standard sizes in 3 different widths, thus providing a broad capacity span ranging from 25 - 275 TPH.

As standard, ECO-Master™ is constructed in 2 mm galvanized plate (EN 10346:S250GD+Z275 MA) and supported by heavy-duty hot-dip galvanized profiles.

The ECO-Master™ can also be designed according to EU food regulations and in this case all parts that come into contact with the product are manufactured in stainless steel (EN 10088-2 X5CrNi18-10).

Alternatively, the ECO-Master™ can be manufactured with all parts that come into contact with the product being made in special hardwearing DOCOL 1200 steel when particularly abrasive products need to be handled.

As standard all ECO-Master™ dryers are manufactured in galvanized steel and have hot-dip galvanized supports.

Enclosed fan housing with access through centrally located external ladder and access doors with internal platforms for both hot & cold air sections.
Caring for nature’s limited resources is of great importance to Cimbria, and in the process of developing the ECO-Master™ range of dryers special attention has been paid to further optimizing energy consumption whilst maintaining low dust emission levels as in the case for Cimbria Cyclofan technology that has been proven through decades of use.

Furthermore, since increasing volumes of grain are now being produced in colder climes resulting in later and longer harvest periods, it has become relevant to also look at energy efficiency by means of recycling the hot air – with potential savings of up to 15% of the heat energy.

Finally, form and function must go hand in hand to create a solution that satisfies both the demand for a versatile dryer suitable for most free-flowing crops, while at the same time caring for the environment.

ECO-Master™ dryers are the future-proof alternative offering high-capacity drying with minimal environmental impact.

**SUSTAINABLE DEVELOPMENT IN GRAIN CARE**

ECO-MASTER™ DRYER OFFERS MINIMAL ENVIRONMENTAL IMPACT

**DRYING/COOLING SECTIONS**

Drying/cooling sections are built as standard in galvanized 2 mm plate with inclined and tapered air ducts to ensure homogenous air & grain distribution - a prerequisite for maintaining product quality without undesirable energy loss. ECO-Master™ is constructed in working widths of 3.3, 6.6 and 9.9 m, thus ensuring a wide range of capacities. (see chart p. 10).

**GAS BURNER**

A fully modulating line gas burner adapted to the size of the ECO-Master™ dryer and equipped with integrated blower fans for combustion air ensures uniform drying air to the grain while maintaining unsurpassed flexibility in the choice of drying air temperature due to the modulation range from 1 to 10. Furthermore, changes in ambient temperature are handled without any problems, thus providing better utilisation of the ECO-Master™ dryer and a faster return on investment.

**GAS TRAIN**

Line gas burner - easily accessible for service and maintenance, whilst at the same time protected from the elements.
The discharge section of ECO-Master™ dryers is designed with sector valves with large opening areas that ensure fast and uniform product discharge, as well as allowing even large foreign bodies to be discharged without damage to the discharge section. The discharge is designed with a minimum number of moving parts which are pneumatically controlled.

A dust auger placed at a convenient discharge height ensures that any dust and light particles that may be aspirated from the drying column are automatically conveyed outside the dryer for further disposal. Alternatively, the aspirated matter can be returned to the dried grain if required.

The ECO-Master™ dryer range is equipped as standard with integrated recirculation of the drying air by means of axial fans recovering the air from the lower drying sections and mixing it back into the primary air stream generated by the line gas burner. Depending on climatic conditions and the particular drying task, energy savings of up to 15% can be achieved.

Fully enclosed fan housing with self-closing rain caps ensures low noise levels and minimum service requirements for the fans. Dust emission levels are confirmed by an independent certified company as being exceptionally low - always depending, however, on the quality of the incoming grain.
USER-FRIENDLY CONTROL SYSTEM

IN-HOUSE EXPERIENCE ENSURES A SAFE & CONTROLLED DRYING PROCESS

The ECO-Master™ dryer range is supplied as standard with a highly sophisticated yet user-friendly control system which provides complete dryer status information, including a quick overview of key dryer data such as drying air temperature, grain temperatures, fan status and overall performance of the dryer.

With just a few clicks on the screen, the operator can find all the relevant data on the ECO-Master™ dryer, including:

**CIMBRIA CONTROL PANEL**
- Settings of up to 10 different drying recipes.
- Dryer logging incl. historical trends on all temperatures during the previous 20 hours.
- Alarm log detailing the cause of any dryer stop.
- Drying tables for reference setting of drying air temperature.
- Software for Internet connection from Cimbria to ensure optimum service.

**PROCESS CONTROL**

**OPTIONAL EXTRAS:**
- DCS – Discharge Control System.
- A semi-automatic control system ensuring uniform moisture in the dried product.
- SMS texting facility to inform operator in case of fault.
- OPC connection for remote operation.

A MUST - AND A CIMBRIA LANDMARK

By integrating detailed knowledge of the drying process with a complete electrical panel containing main switch, emergency stop, motor circuit breakers, frequency inverters for all fans, as well as PLC PC complete with all software preinstalled, customized and tested. Cimbria not only supplies all required “hardware”, but a complete solution that ensures optimum process control and minimal environmental impact through proven low dust emission levels.
1-STOP SHOP:
GRAIN CARE STARTS WITH YOUR DECISION

Cimbria designs, develops, manufactures and installs custom-built solutions regardless of whether these are single machines, complete processing lines or large turnkey projects with advanced automation and management information systems. By choosing Cimbria as your partner to solve your grain drying requirements and installing an ECO-Master™ dryer, you will receive professional assistance throughout the entire process all the way from concept to commissioning.

WE WILL PROVIDE YOU WITH USEFUL TOOLS THAT ENSURE SMOOTH INSTALLATION:

- Dimensional drawings in 3D.
- Foundation load drawings.
- Supply to site in pre-packed modules ensuring rapid installation.

Successful implementation and years of continued reliable operation of your Cimbria ECO-Master™ are important to us.

All ECO-Master™ dryers are therefore always commissioned by a Cimbria technician, who will ensure a seamless interface between the mechanical and electrical supply.

THESE SERVICES WILL INCLUDE:

- Check of mechanical supply.
- I/O test of all level and temperature sensors, etc.
- Check of burner.
- Operator training incl. troubleshooting and remedial action.
**ECO-MASTER™ DRYER MODELS AND CAPACITIES**

**CAPACITY AND ENERGY**
**CONSUMPTION ARE BASED ON THE**
**FOLLOWING DRYING PURPOSES:**

1.) Maize (corn) from 30 to 15%,
using natural gas for direct heating
and 110°C drying air temperature
(based on ambient 10°C/85% RH).

2.) Wheat (milling) from 19 to 15%,
using natural gas for direct heating
and 85°C drying air temperature
(based on ambient 15°C/75% RH).

3.) Barley (malting) from 19 to 14%,
using natural gas for direct heating
and 70°C drying air temperature
(based on ambient 15°C/75% RH).

4.) Sunflower seed (oil production) from 13 to 7%,
using natural gas for direct heating
and 75°C drying air temperature
(based on ambient 15°C/75% RH).

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### SINGLE-COLUMN DRYER

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*) Required heat consumption   **) Installed motor power
ECO-MASTER™ DRYER RANGE INCLUDES THREE PRIMARY MODELS

SINGLE (TYPE C), DOUBLE (TYPE D), AND TRIPLE (TYPE E) COLUMN DRYERS, UNIFORM IN CONSTRUCTION BUT VARYING IN WIDTH.

Each model will be variable in size (height) from 14 to 38 sections with intermediate 4-section-steps.

This standard line of industrial dryers covers a performance range from 25 to 275 t/h, when drying wheat at 100°C from 19% to 15% moisture content.

For all models and sizes there is a free choice of 4 potential heating sources: "direct" hot air generators fired by oil or gas (flue gas is utilised in the drying air) and "indirect" heat exchangers for hot water or steam (no flue gases in the drying air).

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