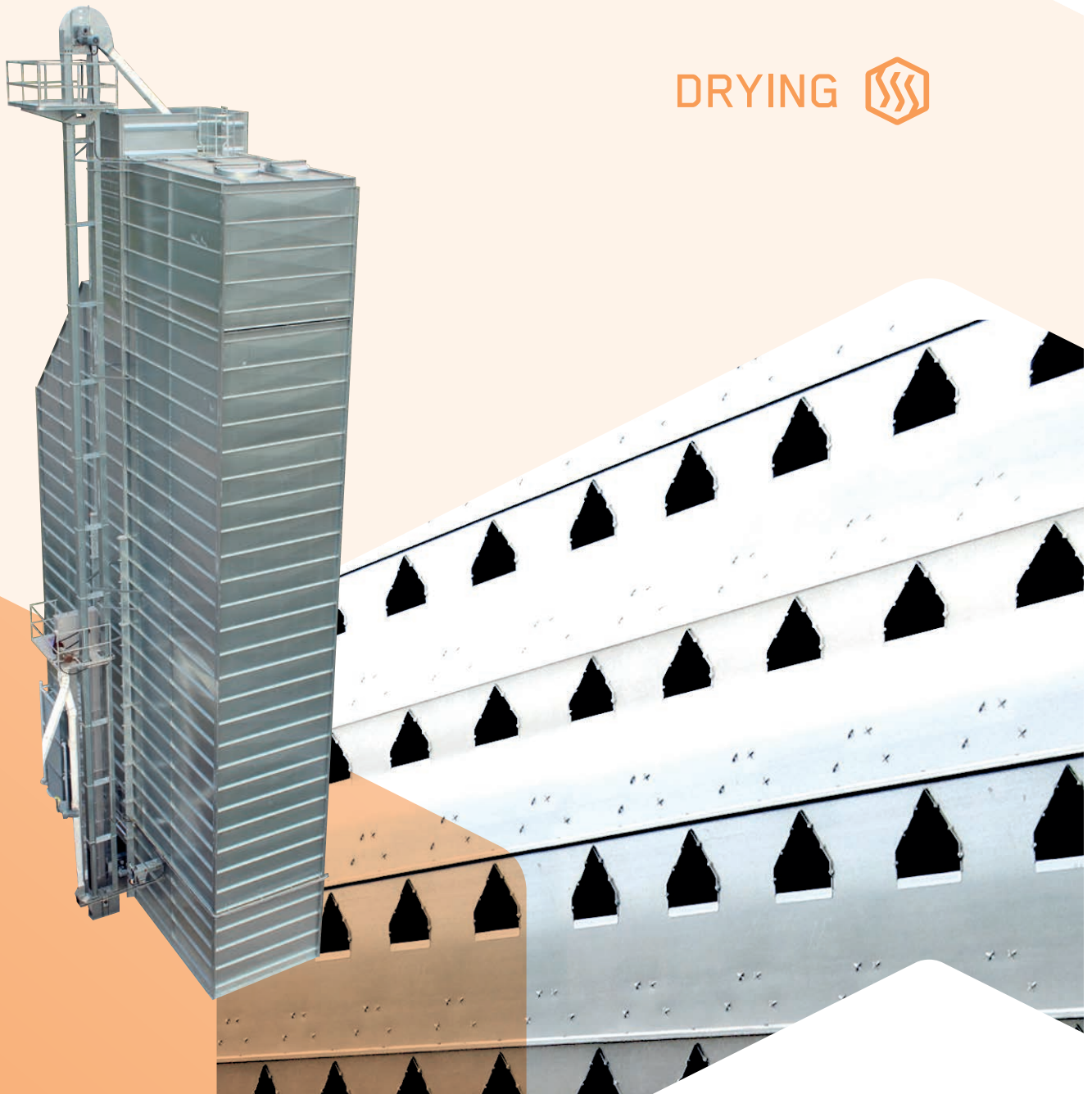


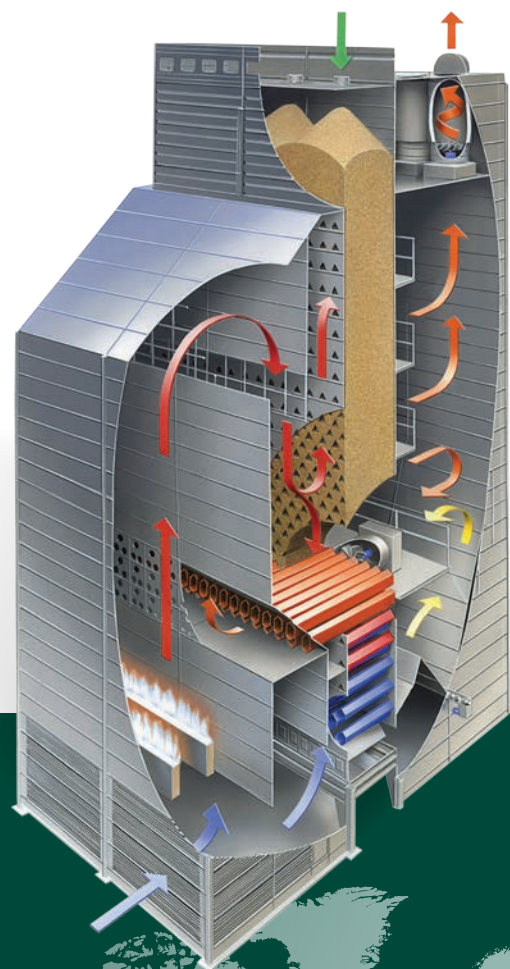
ECO-MASTER™ DRYER

DRYING 





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

WORLDWIDE EXPERIENCE

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.

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.



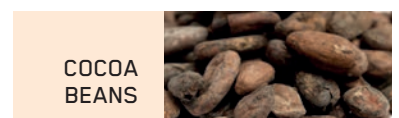
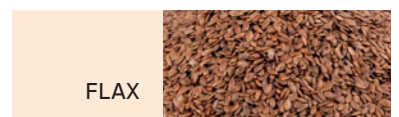
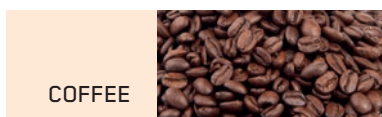
ECO-MASTER™ DRYER

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.

EXAMPLES OF PRODUCTS DRIED IN A ECO-MASTER



ENGINEERED FOR RELIABILITY AND EFFICIENCY

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 Cimbia 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.



Inspection platforms placed at approx. 2.5 m intervals make inspection and cleaning easy.



The exhaust fans are mounted directly on the exhaust air plenum in a closed cabinet protecting the fans against all weather conditions, as well as ensuring

easy operator access. Silencers are optional extras and are also completely covered by the housing.

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.

ECO-Master™ dryers are modular and are available in 7 sizes and 3 different widths. Single-column type with a 3.3 m working width is shown here.



Enclosed fan housing with access through centrally located external ladder and access doors with internal platforms for both hot & cold air sections.

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



SUSTAINABLE DEVELOPMENT IN GRAIN CARE

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 climates 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.

DRYING/COOLING SECTIONS

Drying/cooling sections are built as standard in galvanised 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).



**ECO-MASTER™
DRYER OFFERS
MINIMAL ENVIRONMENTAL
IMPACT**

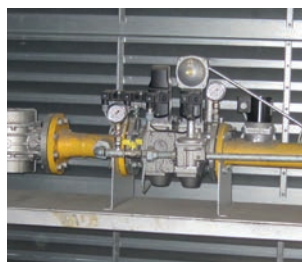
GAS BURNER

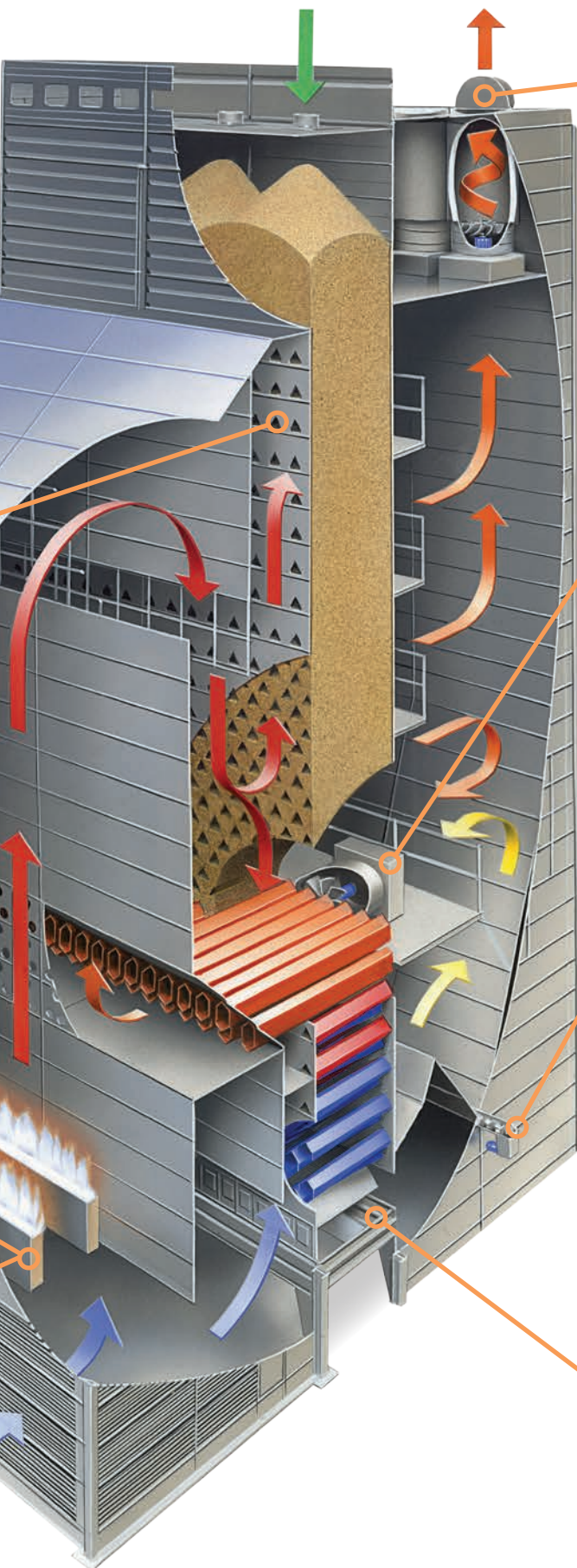
A fully modulating line gas burner adapted to the size of the ECO-Master™ dryer and equipped with integrated blower fans for combustion air ensures uniform drying air to the grain while maintaining unsurpassed flexibility in the choice of drying air temperature due to the modulation range from 1 to 10. 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

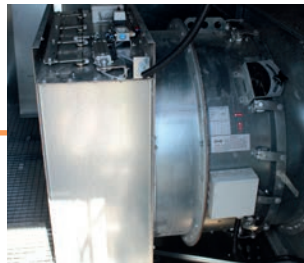
line gas burner - easily accessible for service and maintenance, whilst at the same time protected from the elements.





FAN HOUSING

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.



RECIRCULATION

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.



DUST AUGER

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.



DISCHARGE SECTION

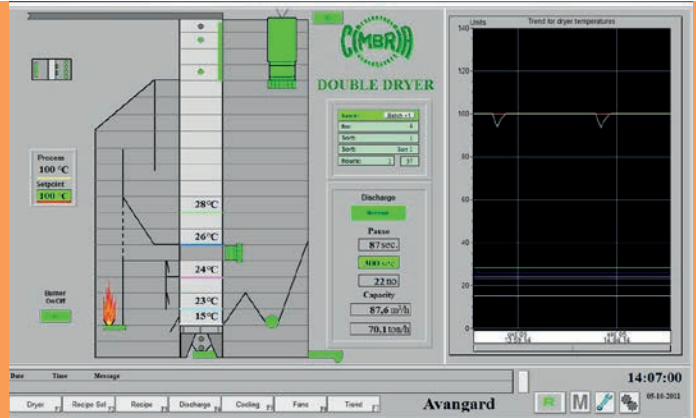
The discharge section of ECO-Master™ dryers is designed with sector valves with large opening areas that ensure fast and uniform product discharge, as well as allowing even large foreign bodies to be discharged without damage to the discharge section. The discharge is designed with a minimum number of moving parts which are pneumatically controlled.

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:



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.

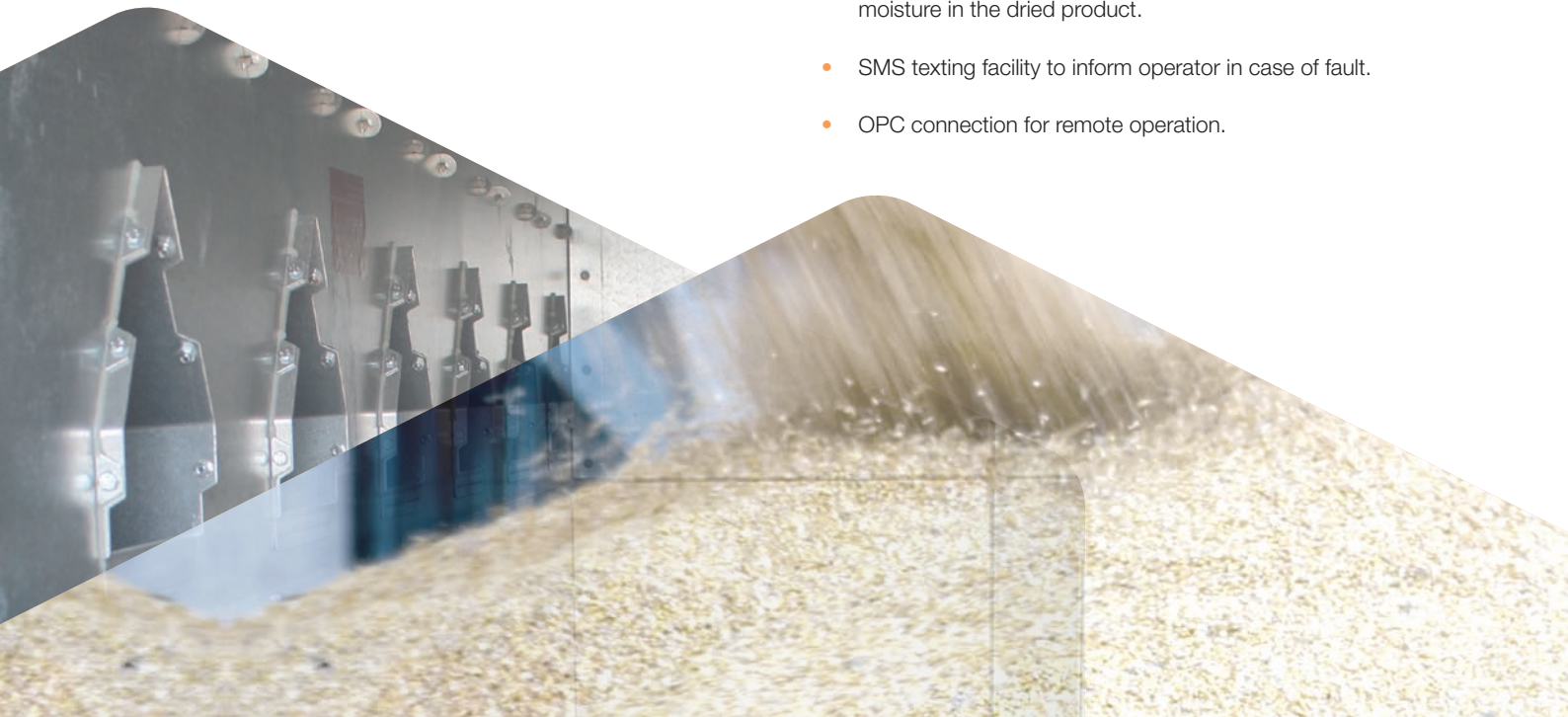
CIMBRIA CONTROL PANEL

- 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

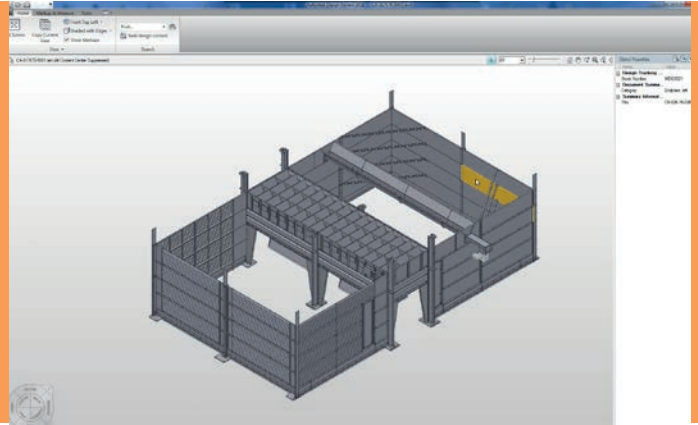
OPTIONAL EXTRAS:

- 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.



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:

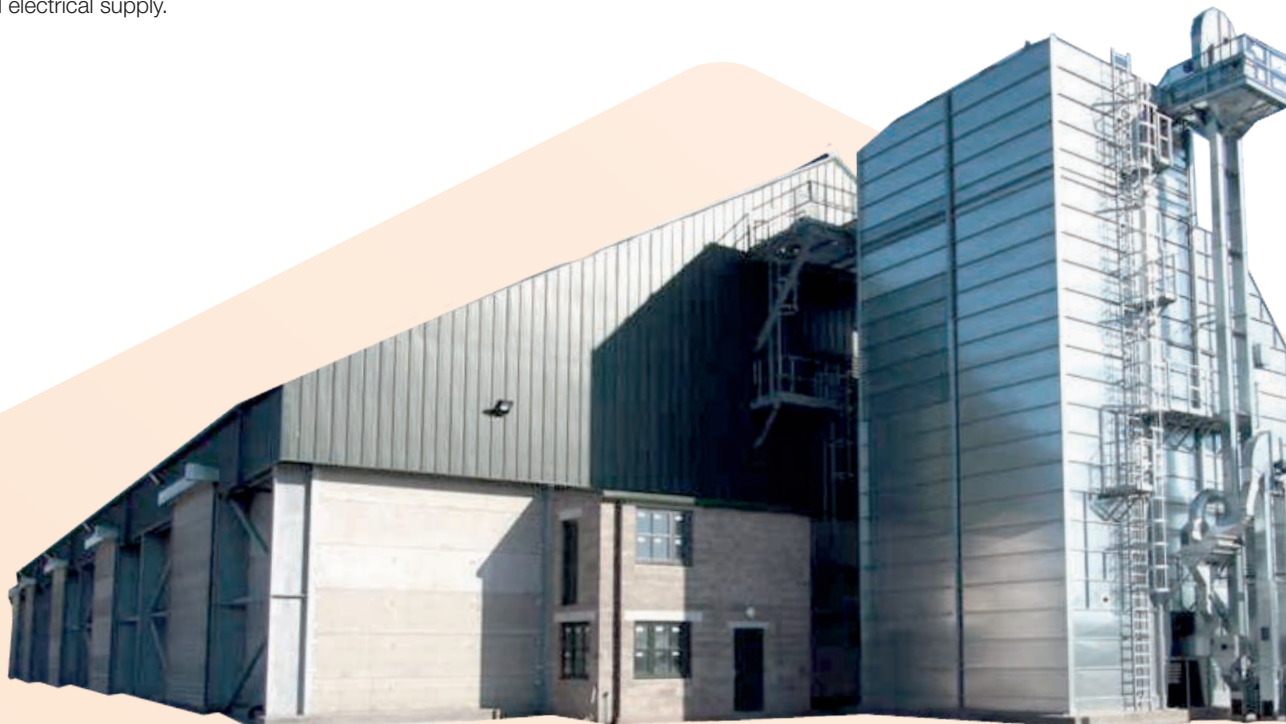
- Dimensional drawings in 3D.
- Foundation load drawings.
- 3D viewer and step-by-step instruction manual.
- Supply to site in pre-packed modules ensuring rapid installation.

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).

SINGLE-COLUMN DRYER

	1.	HEAT*)	POWER**)	2.	HEAT*)	POWER**)	3.	HEAT*)	POWER**)	4.	HEAT*)	POWER**)
	t/h	kWh	kW	t/h	kWh	kW	t/h	kWh	kW	t/h	kWh	kW
CMG-14R	11.5	2,523	47	22	1,640	46	13	1,290	45	7	1,120	44
CMG-18R	15.5	3,387	59	31	2,296	57	18	1,806	57	10	1,568	56
CMG-22R	18.5	4,011	70	39	2,952	69	23	2,322	67	13	1,904	67
CMG-26R	22.0	4,824	77	46	3,444	73	27	2,709	72	16	2,352	71
CMG-30R	26.0	5,750	100	53	3,936	97	32	3,225	96	19	2,688	95
CMG-34R	29.2	6,505	115	61	4,592	111	37	3,612	110	22	3,136	109
CMG-38R	32.0	7,353	122	68	5,084	118	41	4,128	117	24	3,472	116

DOUBLE-COLUMN DRYER

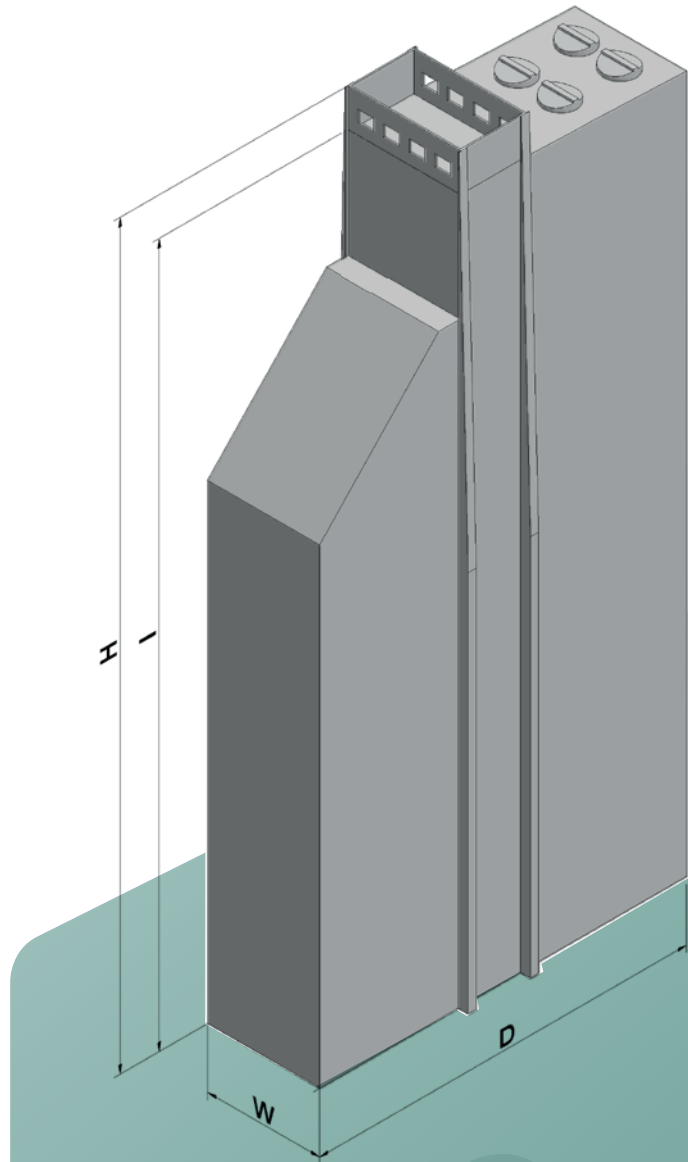
	1.	HEAT*)	POWER**)	2.	HEAT*)	POWER**)	3.	HEAT*)	POWER**)	4.	HEAT*)	POWER**)
	t/h	kWh	kW	t/h	kWh	kW	t/h	kWh	kW	t/h	kWh	kW
DMG-14R	23.0	5,050	92	44	3,280	89	26	2,580	88	14	2,240	87
DMG-18R	31.0	6,774	115	62	4,592	112	36	3,612	111	20	3,136	110
DMG-22R	39.0	8,022	139	78	5,904	136	46	4,644	133	26	3,808	132
DMG-26R	44.0	9,648	148	92	6,888	143	54	5,418	141	32	4,704	140
DMG-30R	52.0	11,500	196	106	7,872	190	64	6,450	189	38	5,376	187
DMG-34R	58.4	13,010	227	122	9,184	220	74	7,224	217	44	6,272	216
DMG-38R	64.0	14,706	244	136	10,168	236	82	8,256	234	48	6,944	231

TRIPLE-COLUMN DRYER

	1.	HEAT*)	POWER**)	2.	HEAT*)	POWER**)	3.	HEAT*)	POWER**)	4.	HEAT*)	POWER**)
	t/h	kWh	kW	t/h	kWh	kW	t/h	kWh	kW	t/h	kWh	kW
EMG-14R	34.5	7,575	135	66	4,920	132	39	3,870	130	21	3,360	129
EMG-18R	46.5	10,161	172	93	6,888	168	54	5,418	165	30	4,704	164
EMG-22R	58.5	12,033	204	117	8,856	201	69	6,966	200	39	5,712	197
EMG-26R	66.0	14,472	219	138	10,332	214	81	8,127	212	48	7,056	210
EMG-30R	78.0	17,250	293	159	11,808	284	96	9,675	283	57	8,064	281
EMG-34R	87.6	19,519	339	183	13,776	330	111	10,836	325	66	9,408	325
EMG-38R	96.0	22,059	360	204	15,252	354	123	12,384	351	72	10,416	346

*) 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).

	COMMON VALUES			TYPE C			TYPE D			TYPE E		
	D	H	I	W	Content	Net weight	W	Content	Net weight	W	Content	Net weight
	m	m	m	m	m ³	tonne	m	m ³	tonne	m	m ³	tonne
XMG-14R	11.1	17.4	16.3	3.4	66	29.1	6.8	132	51.5	10.2	198	76.7
XMG-18R	11.1	20.0	18.8	3.4	78	32.9	6.8	155	58.2	10.2	233	86.7
XMG-22R	11.1	22.5	21.3	3.4	89	36.9	6.8	178	65.3	10.2	267	97.1
XMG-26R	11.7	25.0	23.9	3.4	101	39.8	6.8	201	74.0	10.2	302	108.2
XMR-30R	11.7	27.5	26.4	3.4	112	45.3	6.8	225	80.6	10.2	337	119.7
XMG-34R	12.9	30.1	29.0	3.4	124	51.2	6.8	248	90.7	10.2	372	134.8
XMG-38R	12.9	32.6	31.5	3.4	136	55.2	6.8	271	97.5	10.2	407	145.1



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