ESSICCATOI PER LEGNO
DRYER-WOOD™

EN

COPCAL KDS-FW5

Firewood Dryer

FIREWOOD DRYER

COPCAL KDS-FW5 is the dryer that allows you to achieve
the best quality QUICKLY, ECONOMICALLY, and UNIFORMLY

www.dryerwood.it

MADE IN ITALY

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DRYER-WOOD™

SPECIALISTS IN HEAT TREATMENT OF WOOD AND OTHER MATERIALS

A history spanning more than 40 years

MADE IN ITALY

Dryer-Wood Srl is an Italian company specializing in the design and manufacture of systems for the drying and heat treatment of wood and other products.

Founded in 2007 by Mr. Gionni Gusella, a former executive of the historical 'Copcal International Kiln Dryer Spa,' the company takes advantage of a vast experience in the field of wood drying that has its origins back **1980**.

'**COPCAL**' product range represents Italian artisanal excellence with a history of more than 40 years.
During this time, thousands of systems have been installed all over the world, offering **turnkey solutions** and pre- and post-sales support.

Dryer-Wood's in-house production guarantees the highest quality and reliability, distinctive features of 'Made in Italy' products that meet the needs of an ever-changing global market.

Our **mission** is to consistently pursue excellence with dedication and professionalism in order to provide our Customers with innovative, technically impeccable and competitive services.

High quality dry firewood

Firewood is an excellent fuel that is increasingly in demand for heating homes or for pizzeria ovens, but for optimal combustion it requires long natural drying times during which significant economic resources are locked up and valuable storage space is occupied.

In the winter suppliers need ready access to dry wood to meet the demands of a market that is increasingly tending to delay purchases until the last minute, but this is not always possible. Also for this reason Copcal KDS-FW5 dryers provide the ideal solution for rapid and cost-effective drying of firewood and to offer your customers the highest possible quality guarantees.

One fundamental precondition to obtain satisfactory results fast is to subject the wood to artificial drying cycles, which provide accelerated seasoning that, in natural conditions, would normally call for many months of storage in a dry and properly ventilated environment.
Our forty-years' experience in wood drying has enabled us to create a unit that performs this task in an optimal manner.

Firewood is not all the same, but it differs in different quality classes - Norma ISO 17225-5

	unità di misura	A1+	A1	A2	B
Origine		– Fusti – Residui di legno non trattato chimicamente		– Piante intere senza radici – Fusti – Residui di utilizzazione – Residui di legno non trattati chimicamente	
Specie legnosa		Si indica la specie			
Diametro (*D*)	cm	D2, D5, D15, D15+		D15, D15+	
Lunghezza (*L*)	cm	L20, L25, L30, L33, L40, L50	L20, L25, L30, L33, L40, L50, L100	L30, L33, L40, L50, L100	
Contenuto idrico (*M*)	% sul peso tal quale	≤ 15	≤ 20 ≤ 25		≤ 20 ≤ 25 ≤ 35
Volume o peso	mc *accatastato* mc *riversato* kg *tal quale*	Si indica la tipologia di misurazione adottata nella commercializzazione (volume stero accatastato, volume stero riversato, peso)			
Proporzione tra pezzi spaccati e pezzi tondi	% dei pezzi	≥ 90	≥ 90	≥ 50	Non richiesto
Superficie di taglio		Regolare	Regolare	Non richiesto	Non richiesto
Presenza di carie o muffe	% dei pezzi	Non visibile	Non visibile	≤ 5	Dichiarare se > 15
Densità energetica o potere calorifico inferiore		Da indicare			
Stagionatura o essicazione		Si indica se stagionata o essiccata			

COPCAL KDS-FW5 Dryers

To best meet the diverse needs of the market, various dryer models with load capacities ranging from 4 to 24 pallets of firewood are available. Dryers can also be built to order, according to customer-specified dimensions and needs.

The entire system is made in Italy using top quality materials with all parts composed exclusively of stainless steel and aluminium to ensure optimal resistance to the corrosive action of the acidic vapours released by the wood during the drying process.

Copcal KDS-FW5 dryer is assembled by our specialised personnel directly on the customer's premises. In just a few days, the system is ready to go Into operation.

To work properly, Copcal KDS-FW5 dryer needs hot water; this can be supplied by a boiler or other source capable of providing the required thermal power. The dryer can be purchased together with one of our boilers; in this case the latter is installed inside a special prefabricated room - supplied as part of the package - and the customer is provided with a complete turnkey solution.

Alternatively, customers can use their own boiler after consulting our engineering department to assess the feasibility of the proposed solution.

Your firewood in the front row

Our Copcal KDS-FW5 dryer was specifically designed and developed for fast and even drying of pallet-stacked firewood.

Achieving rapid and, most importantly, even drying of this type of wood is not something for a common wood dryer.

Our Copcal KDS-FW5 dryer, in fact, takes greater advantage of the distribution of the wood to dry because, since the wood is placed on pallets, there is a lower load loss for the flowing air.

This makes it possible to fully exploit the fans' predominance and airflow ratings and thus cut down the consumption of electric energy. What's more, since the drying air has to flow through a lower mass of wood material, it maintains a lower relative humidity, increasing its capacity to dry the wood in a short amount of time. This makes the dryer much more efficient compared to conventional systems, delivering lower energy consumption, reduced drying time, and a more evenly dried product.

BENEFITS OF THIS CHOICE

Firewood of far higher value that produces far more heat

Since firewood is an authentic natural fuel source we can calculate its "value" in terms of energy contents, which vary in accordance with moisture contents. This shows that drying to reduce moisture contents from 50% to 20% increases the heating value of the wood by 100%, which means that 1 kg of wood with moisture contents of M 20% delivers a heating value of 4.0 kWh/kg, while with moisture contents of M 50% it delivers only 2.0 kWh/kg.

WOOD CONDITIONS	M (%)	HEATING VALUE
Freshly cut	50 - 60	2,0 kWh/kg = 7,2 MJ/kg
One summer season	25 - 35	3,4 kWh/kg = 12,2 MJ/kg
Several summer seasons	15 - 25	4,0 kWh/kg = 14,4 MJ/kg

Low environmental impact firewood that is fully compatible with modern technology

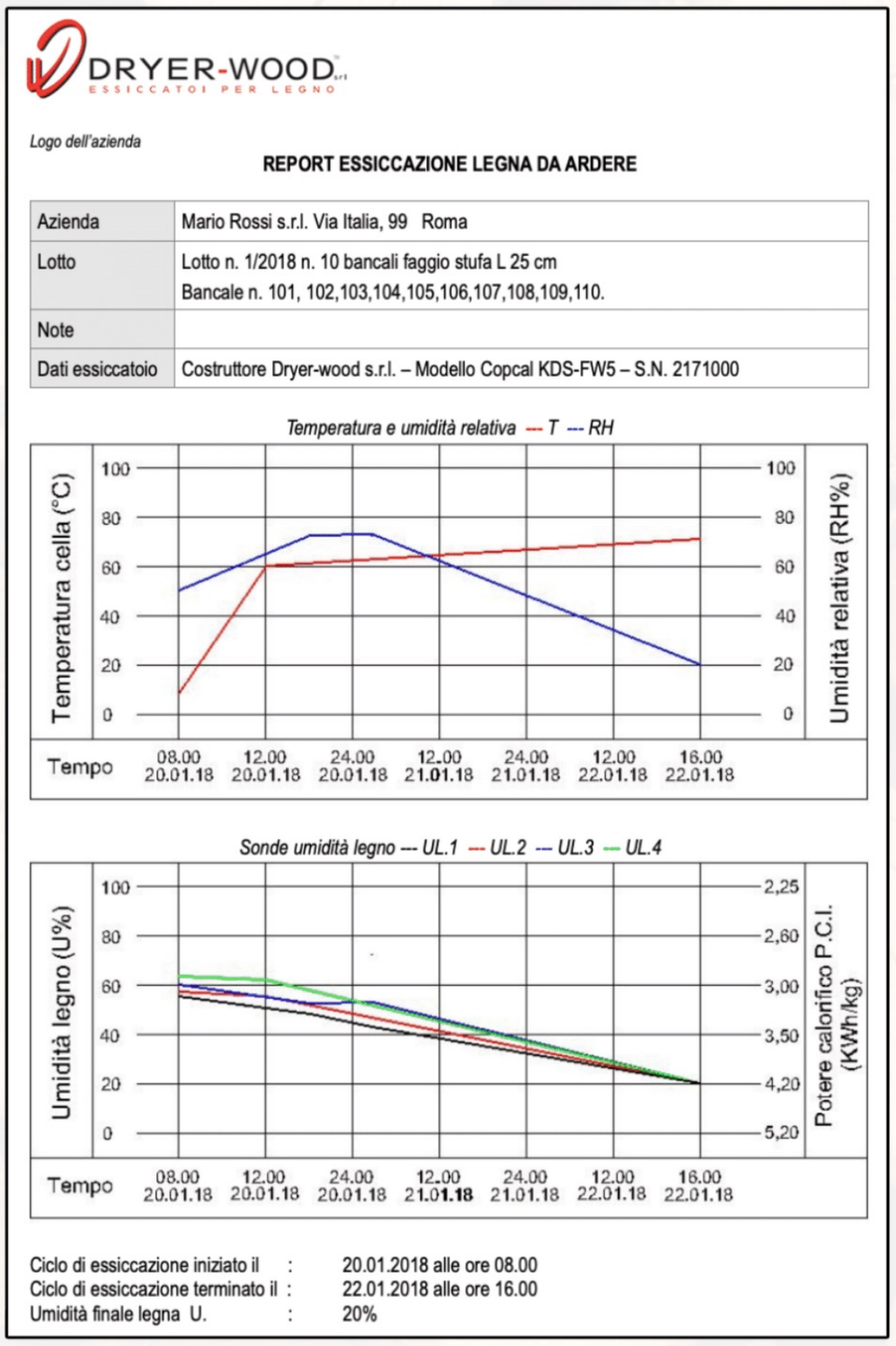
To obtain high efficiency with low levels of noxious emissions, modern technological solutions such as wood fired boilers and stoves increasingly call for fuel with low moisture contents to ensure the combustion process is as complete as possible.

Another drawback of the use of wood with excessively high moisture contents is the build-up of tar and condensate in the stove and flue, with the risk of flue fire outbreaks and the need for frequent and costly chimney sweeping. There's also the risk of local contamination with smoke released into the environment and blackening of walls and furnishings.

How to demonstrate successful drying

It's important to remember that proper firewood drying adds value to the product and significantly improves its quality. However, it's clear that the drying process affects the final product cost. Therefore, it's crucial to make the drying process identifiable and verifiable so that firewood can also gain economic value. To achieve this, the Copcal KDS-FW5 dryer is capable of generating a report at the end of the drying process, which includes various pieces of information such as:

- Company that performed the drying treatment.
- Identification of the batch or pallets that were dried.
- Information about the drying system.
- Process charts.
- Specific values of calorific power and moisture content of the firewood, measured at the beginning and end of the drying process.


DRYER-WOOD srl
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Logo dell'azienda

REPORT ESSICCAZIONE LEGNA DA ARDERE

Azienda	Mario Rossi s.r.l. Via Italia, 99 Roma
Lotto	Lotto n. 1/2018 n. 10 bancali faggio stufa L 25 cm Bancale n. 101, 102,103,104,105,106,107,108,109,110.
Note	
Dati essiccatoio	Costruttore Dryer-wood s.r.l. – Modello Copcal KDS-FW5 – S.N. 2171000

Temperatura e umidità relativa — T --- RH

Temperatura cella (°C) / Umidità relativa (RH%): 100, 80, 60, 40, 20, 0

Tempo: 08.00 20.01.18 · 12.00 20.01.18 · 24.00 20.01.18 · 12.00 21.01.18 · 24.00 21.01.18 · 12.00 22.01.18 · 16.00 22.01.18

Sonde umidità legno --- UL.1 — UL.2 — UL.3 — UL.4

Umidità legno (U%): 100, 80, 60, 40, 20, 0

Potere calorifico P.C.I. (KWh/kg): 2,25; 2,60; 3,00; 3,50; 4,20; 5,20

Tempo: 08.00 20.01.18 · 12.00 20.01.18 · 24.00 20.01.18 · 12.00 21.01.18 · 24.00 21.01.18 · 12.00 22.01.18 · 16.00 22.01.18

Ciclo di essiccazione iniziato il : 20.01.2018 alle ore 08.00
Ciclo di essiccazione terminato il : 22.01.2018 alle ore 16.00
Umidità finale legna U. : 20%

Rot-free and parasite-free firewood

Natural drying of firewood doesn't always ensure satisfactory results because suitable dry and ventilated premises are not always available, also because when the wood is tightly stacked on pallets internal ventilation can be impeded.

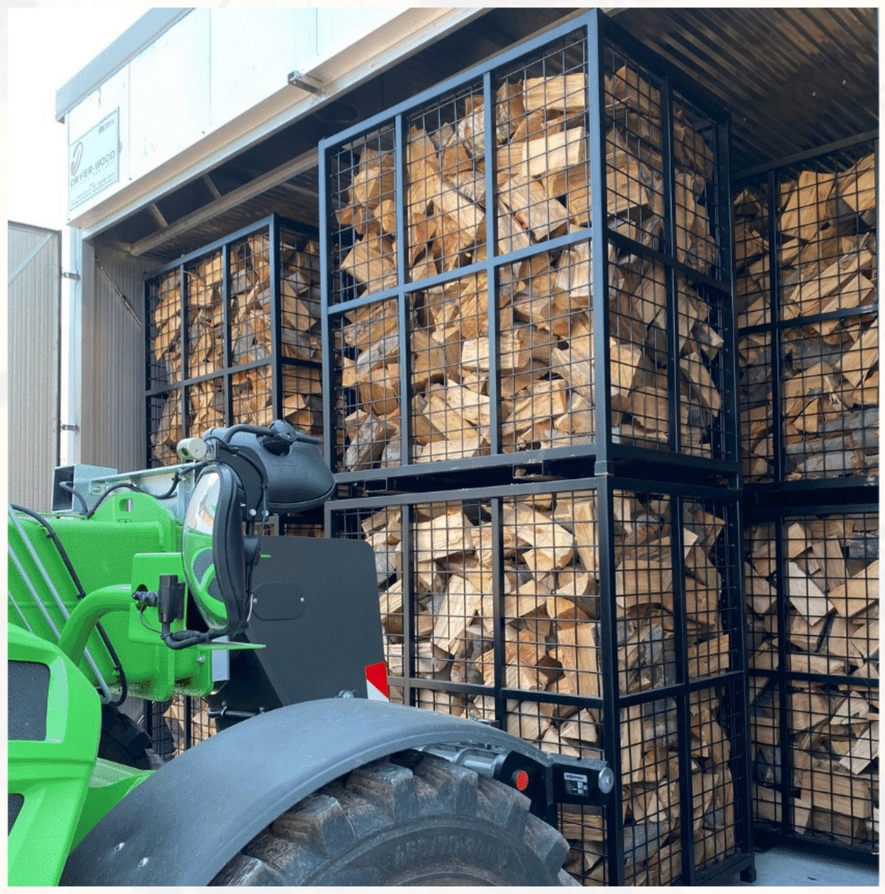
For these reasons naturally dried wood often has large areas of mould and rod in the interior of the pallet that makes the affected wood unusable. Another negative factor is the presence of insects, parasites or other animals that find shelter in the wood stack during the natural drying period.
Artificial drying with the Copcal KDS-FW5 dryer solves many of these problems thanks to the high temperature thermal process.

Lower costs of storage and transport of firewood

As mentioned earlier, natural drying of firewood calls for the availability of ample storage spaces and locks up significant amounts of capital for long periods of time. With Copcal KDS-FW5 dryer you can finally free up space and economic resources, making your business more flexible by adapting the supply to changing market demands.

Another important aspect that must be considered, particularly in recent times, is the incidence of transport costs of fuel wood, which with high moisture contents weighs around 30% more than dry wood, so transport cost savings of around 25% can be achieved by transporting only properly dried fuel wood.

Our solutions can meet all your needs



THE ADVANTAGES OF TECHNOLOGY

Ease of use and minimum investment cost

One critical factor is the investment costs required to purchase a dryer that is capable of providing correctly processed firewood.

The Copcal KDS-FW5 dryer is an industrial unit capable of operating continuously for prolonged periods, performing uninterrupted drying cycles with automatic thermal process in the critical conditions caused by high temperatures and high humidity levels and in the presence of the corrosive substances released by the wood during drying.

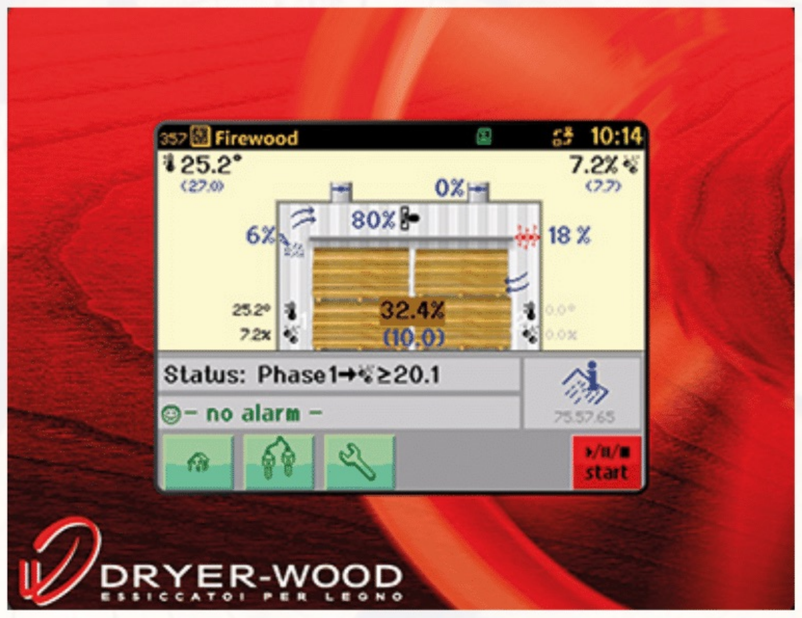
For these reasons the Copcal KDS-FW5 dryer features a loading structure made of AISI-304 stainless steel with all other components made exclusively using corrosion resistant materials. Suitable attention has also been devoted to thermal insulation of the walls roof and door. The enclosure is composed of high insulation high-density polyurethane and aluminium panels, which ensure high energy savings and optimal efficiency of the plant.

Special inverter controlled fans made of stainless steel and aluminium, capable of providing adequate ventilation inside the drying chamber, are driven by high efficiency motors designed for optimum performance in the critical conditions present in the dryer.

Suitably sized heat exchangers transfer all the necessary heating capacity to the dryer, thus imparting a high level of flexibility to the plant during the various drying stages.

The automatic control system of the drying process, performed by electronic instruments and sensors that control and detect the operating conditions inside the drying chamber, is user-friendly and functional.

Without describing every aspect in detail, we have provided an overview of exclusively the fundamental criteria followed for the design and construction of the Copcal KDS-FW5 dryer, which allow us to guarantee our customers the utmost reliability of the product and an optimal quality/price ratio.



Automatic control system of the dryer

Drying times and costs

Two more highly important aspects on which we focused during the design stage are the times required for correct drying of the wood and the associated running costs, both of which are decisive in ensuring the correct balance between costs and benefits.

The high performance of the Copcal KDS-FW5 dryer means that drying times are reduced to the minimum, while management of the thermal and electrical energy required for the process is entrusted to state of the art technology that ensures the maximum efficiency and energy savings.

The time required for a drying cycle is from a minimum of 24 hours to a maximum of 72 hours depending on the initial moisture contents of the wood, while the energy costs vary according to the type of fuel utilized.

STRENGTHS OF COPCAL KSD-FW5

- Drying in 24-48-72 hours
  (in contrast, natural drying occurs in between 9 and 24 months of seasoning)
- Made of stainless steel and aluminium throughout
- High thickness thermal insulation
- Energy saving with inverter drive
- Heat recuperators for thermal energy saving
- Maximum heating value thanks to low moisture contents
- Pale coloured wood without rot, insects or parasites
- Enhanced combustion with lower emission of substances harmful
  to health and the environment
- Easy plant management
- Minimum running costs
- Minimum economic outlay
- Automatic drying process management

GENERAL TECHNICAL DATA

Some models of our firewood dryers

DRYER MODEL	DRYING CAPACITY	DIMENSIONS OF DRYER mm (a x b x h)	ELECTRICAL POWER RATING KW	INSTALLED HEATING CAPACITY KW
COPCAL KDS-FW5 30.24.20	4 pallets	3.200 x 2.700 x 4.500	3	35
COPCAL KDS-FW5 30.60.20	10 pallets	3.200 x 6.300 x 4.500	6	100
COPCAL KDS-FW5 30.84.20	14 pallets	3.200 x 8.700 x 4.500	9	150
COPCAL KDS-FW5 30.120.20	20 pallets	3.200 x 12.300 x 4.500	12	200
COPCAL KDS-FW5 30.145.20	24 pallets	3.200 x 14.800 x 4.500	15	250

Notes: Boiler room dimensions vary according to the dryer type and the paired boiler type, therefore they are not shown in the diagram.

OPTIONAL ACCESSORIES AVAILABLE UPON REQUEST

External tank for biofuels

Metal cages for firewood

Prefabricated or containerized thermal power plants

Portable moisture meter

We reserve the right to any changes we deem fit, without notice, to improve product quality and performance.

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DRYER-WOOD srl

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