



# GRAIN DRYERS

**KEPLERWEBER®**





## ***MORE THAN 80 YEARS CONTRIBUTING TO OUR CUSTOMERS' GROWTH.***

Founded in 1925, in the city of Panambi/Brazil, and focused on the agribusiness since its creation, Kepler Weber is specialized in developing complete storage solutions. Kepler Weber offers an agile and integrated structure, which allows us to annually process 100,000 tons of steel to serve an array of customers like trading companies and cooperatives, or even small and big businesses. The company is widely recognized for the development of agribusiness in Brazil and, acting as an exporter since 1973, is the current Latin-American leader in the segment. Our strong investment in technology, the maximum quality of consumables and the development of tailor-made projects are features that confirm Kepler Weber's commitment of always contributing to its customer's growth.





## SERVICES

### *KW Support*

Our multiservice support system aims at fulfilling our customers' every after sale need in Brazil or abroad. In order to keep the highest quality and performance standards for Kepler Weber equipment, the KW Support offers services like Technical Assistance, Original Spare Parts and Technical Training.

### *Technical Assistance*

A specialized technical team is at the complete service of Kepler Weber's customers for answering questions, running technical checks, and offering solutions. Technical visits are also offered in order to carry out preventive and corrective maintenance services and to provide overhauls, improvements, updates, and expansion of the customer's system.

### *Original Parts*

Original parts for Kepler Weber equipment are available for purchase through KW Support or in any of our many resellers in Brazilian territory, or through our international sales agents.



### *Technical Training*

Our Technical Training Program takes Kepler Weber professionals with theoretical and practical expertise of grain transport, cleaning, drying and storage techniques, to the client's facilities, where they teach courses of equipment operation and maintenance.





Designed to dry grains with safety and efficiency, guarantee the product's integrity and quality. KW dryers confirm the company's reputation in delivering quality services for a wide variety of products in a number of weather conditions, with high static capacity and high airflow. These driers have elevated thermal efficiency, allowing lower energy consumption, on the fans and the heater, also minimizing the particle emission to the environment.

## ***GRAIN DRYERS***





# Dryers

## Small – 10 to 30T/h

Its capacity ranges from 10 to 30 metric tons an hour, with drying towers of two types: columns or trestles, as well as drying with or without cooling, catering to the market's strict demands. This line was developed for small production capabilities.

### Airflow:

**R Airflow:** recirculation of the cooling air

Product is dried in 70% of the tower and chilled in 30%, which allows immediate storage of the grain after the process. The air out of the cooling chamber is reused in the drying chamber, which saves energy and airflow.



R Airflow

#### SMALL SIZE DRYERS - AIR FLOW RECIRCULATION [R]

##### TRESTLES TOWER

Model	Capacity (mt/h)		Static Capacity (m <sup>3</sup> )	Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	Soybean	Maize					Firewood	Fuel-oil	Gas
KW 10 ADS	10	8	21	31,000	1 x 10.0	580,000	207	59	46
KW 20 ADS	20	15	42	48,000	1 x 15.0	890,000	318	90	71
KW 30 ADS	30	23	55	72,000	1 x 25.0	1,330,000	475	135	106

##### COLUMN TOWER

Model	Capacity (mt/h)		Static Capacity (m <sup>3</sup> )	Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	Soybean	Maize					Firewood	Fuel-oil	Gas
KW 10 ADS	10	8	15	31,000	1 x 10.0	580,000	207	59	46
KW 20 ADS	20	15	29	63,500	1 x 20.0	1,180,000	421	120	94
KW 30 ADS	30	23	37	85,000	1 x 30.0	1,570,000	561	159	125





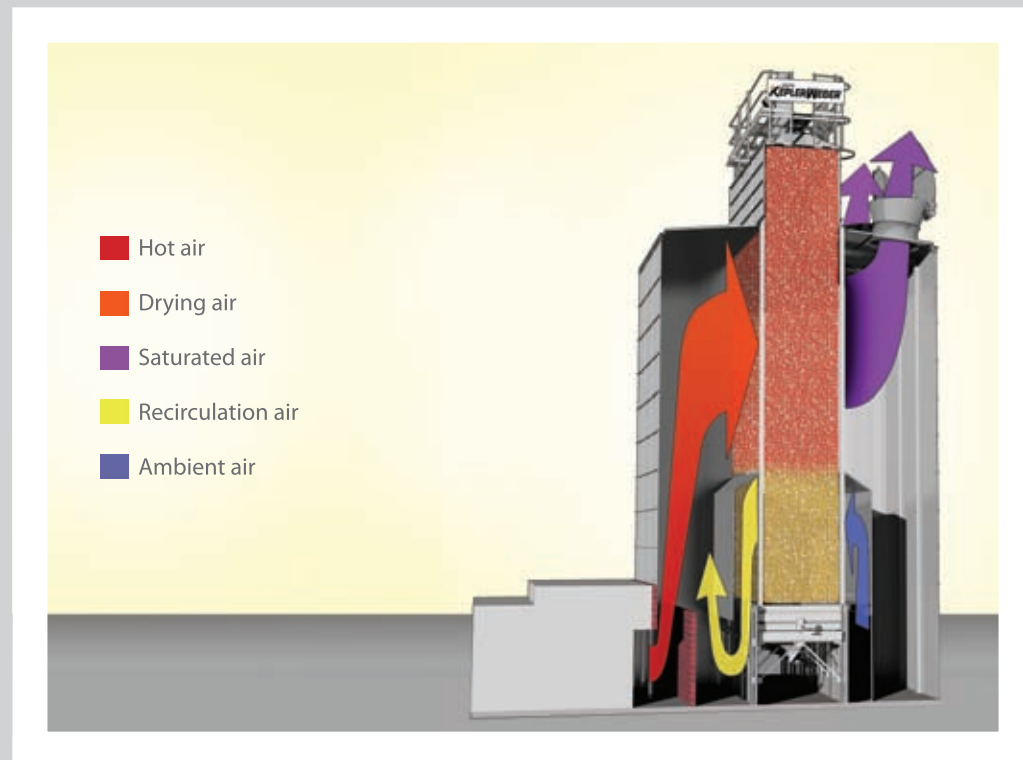
## Dryers Medium – 40 to 100T/h

Its capacity ranges from 40 to 100 metric tons an hour, with drying towers of two types: columns or trestles, as well as drying with or without cooling, and with an option of recirculated full column. This line was developed for medium production capabilities and cooperatives.

### Airflow:

**R Airflow:** recirculation of the cooling air

Product is dried in 70% of the tower and chilled in 30%, which allows immediate storage of the grains after the process. The air out of the cooling chamber is reused in the drying chamber, which saves energy and airflow.



R Airflow

#### MEDIUM SIZE DRYERS - AIR FLOW RECIRCULATION [R]

##### TRESTLES TOWER

Model	Capacity (mt/h)		Static Capacity (m <sup>3</sup> )	Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	Soybean	Maize					Firewood	Fuel-oil	Gas
KW 40 ADS	40	30	89	96,000	2 x 15.0	1,780,000	636	180	141
KW 60 ADS	60	45	116	144,000	2 x 25.0	2,670,000	954	270	212
KW 80 ADS	80	60	156	190,500	3 x 20.0	3,540,000	1,264	358	281
KW 100 ADS	100	75	189	255,000	3 x 30.0	4,750,000	1,696	452	377

##### COLUMN TOWER

Model	Capacity (mt/h)		Static Capacity (m <sup>3</sup> )	Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	Soybean	Maize					Firewood	Fuel-oil	Gas
KW 40 ADS	40	30	62	127,000	2 x 20.0	2,350,000	839	238	187
KW 60 ADS	60	45	79	170,000	2 x 30.0	3,160,000	1,129	320	251
KW 80 ADS	80	60	106	216,000	3 x 25.0	4,010,000	1,432	405	318
KW 100 ADS	100	75	125	294,000	3 x 40.0	5,470,000	1,954	553	434



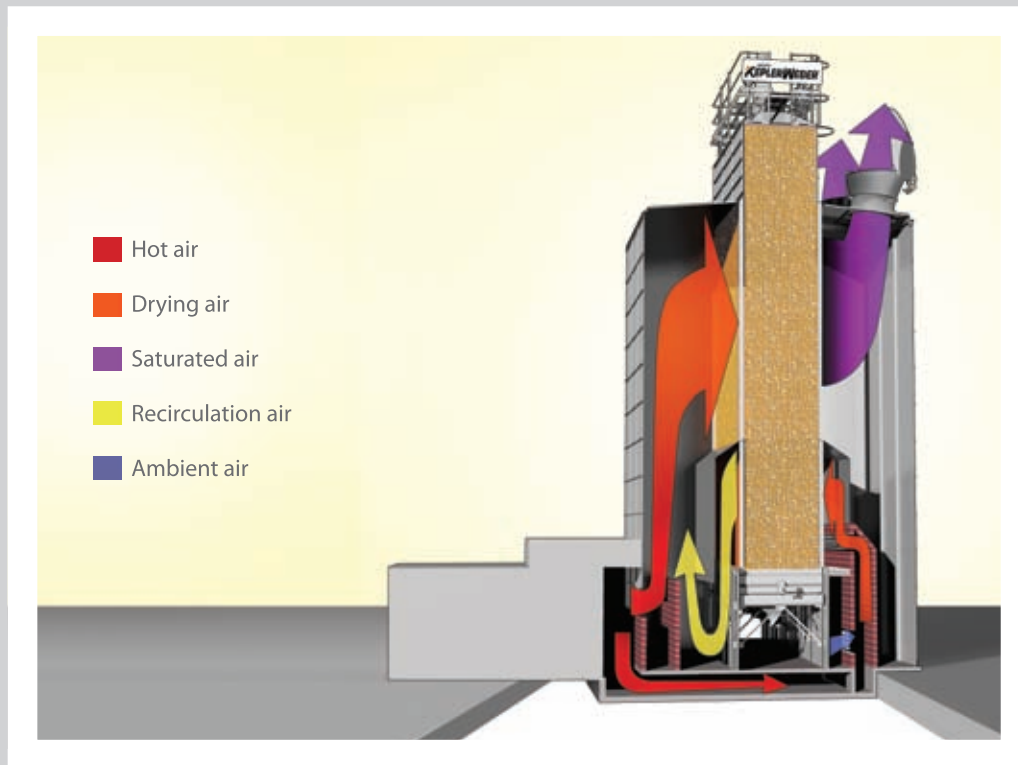


# Dryers

## Medium – 40 to 100T/h

### CIR Airflow: full tower with recirculation

Drying is performed 100% in the tower, though a blend of drying air and cooling air is made throughout 30% of the tower in order to balance the temperature and save energy.



CIR Airflow

#### MEDIUM SIZE DRYERS - FULL TOWER WITH RECIRCULATION [CIR]

##### TRESTLES TOWER

Model	Capacity (mt/h)		Static Capacity (m <sup>3</sup> )	Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	Soybean	Maize					Firewood	Fuel-oil	Gas
KW 40 ADS	52	39	89	91,000	2 x 15.0	2,380,000	850	241	189
KW 60 ADS	78	59	116	142,000	2 x 25.0	3,660,000	1,307	370	290
KW 80 ADS	104	78	156	184,500	3 x 20.0	4,750,000	1,696	480	337
KW 100 ADS	130	98	189	249,000	3 x 30.0	6,260,000	2,271	644	505

##### COLUMN TOWER

Model	Capacity (mt/h)		Static Capacity (m <sup>3</sup> )	Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	Soybean	Maize					Firewood	Fuel-oil	Gas
KW 40 ADS	52	39	62	123,000	2 x 20.0	3,220,000	1,150	326	256
KW 60 ADS	78	59	79	166,000	2 x 30.0	4,280,000	1,529	433	340
KW 80 ADS	104	78	106	213,000	3 x 25	5,490,000	1,961	556	436
KW 100 ADS	130	98	125	283,500	3 x 40	7,240,000	2,586	733	575



# Dryers

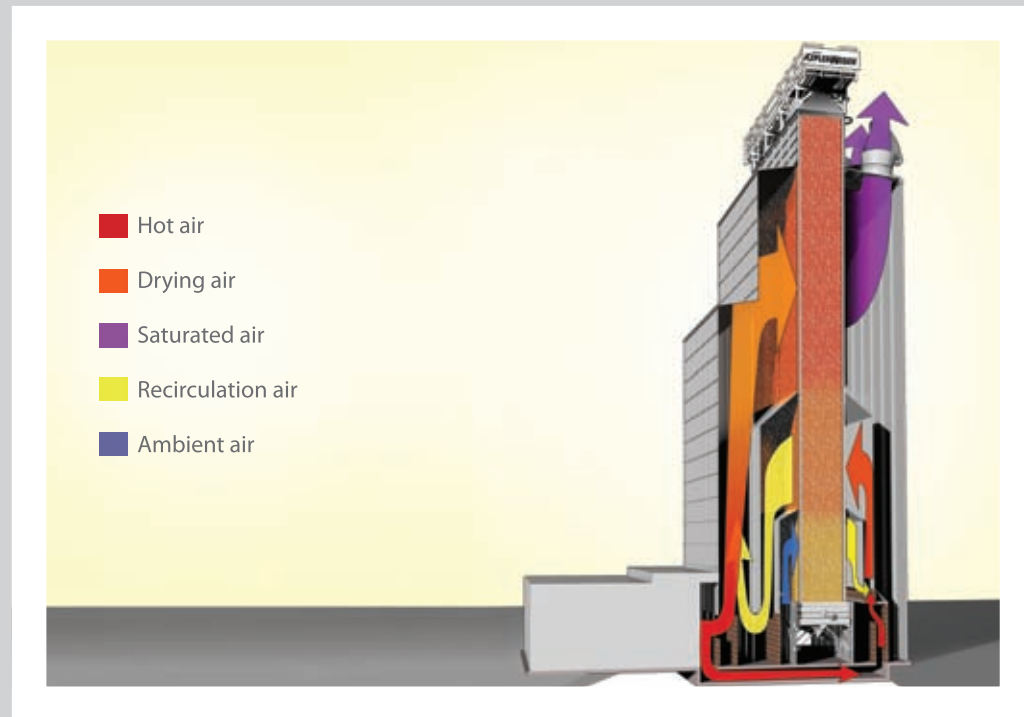
## Large – 100 to 200T/h

Its capacity ranges from 100 to 200 metric tons an hour, with drying towers of two types: columns or trestles, with double air recirculation. This line was developed for large production capabilities.

### Airflow:

**DR Airflow:** double air recirculation

Drying occurs in two drying sections with different temperatures and a cooling section. The air that comes from the previous sections is reused twice, which optimizes its energy efficiency and results in a product at an ideal temperature for storage.



DR Airflow

#### LARGE SIZE DRYERS - DOUBLE AIR RECIRCULATION [DR]

##### TRESTLES TOWER

Model	Capacity (mt/h)		Static Capacity (m <sup>3</sup> )	Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	Soybean	Maize					Firewood	Fuel-oil	Gas
KW 100 ADS	100	75	189	163,000	2 x 30.0	3,980,000	1,421	403	316
KW 125 ADS	125	94	244	210,000	3 x 25.0	5,130,000	1,832	519	407
KW 150 ADS	150	113	292	244,500	3 x 30.0	5,970,000	2,132	604	474
KW 200 ADS	200	150	367	326,000	4 x 30.0	7,950,000	2,839	805	631

##### COLUMN TOWER

Model	Capacity (mt/h)		Static Capacity (m <sup>3</sup> )	Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	Soybean	Maize					Firewood	Fuel-oil	Gas
KW 100 ADS	100	75	125	210,000	3 x 25.0	4,890,000	1,746	495	388
KW 125 ADS	125	94	154	244,500	3 x 30.0	5,690,000	2,032	575	452
KW 150 ADS	150	113	192	326,000	4 x 30.0	7,590,000	2,711	769	602
KW 200 ADS	200	150	235	407,500	5 x 30.0	9,490,000	3,389	960	753

**Note 1:** The drying capacity, necessary energy and fuel consumption are calculated considering the following conditions: ambient temperature = 20°C, ambient relative humidity = 60%, atmospheric pressure = 717mmHg (490m above sea level), grain's specific weight = 750 kg/m<sup>3</sup>, impurity content = 1% maximum (trestles tower) or 4% maximum (columns tower), Drying temperature in the upper chamber = 110°C, drying temperature in the intermediary chamber = 90°C, firewood specific heating energy = 2,800Kcal/Kg, fuel-oil specific heating energy = 9,600Kcal/Kg, gas specific heating energy = 12,000Kcal/Kg .

**Note 2:** The unloading grain temperature at the trestles tower dryers are between 8 to 10°C higher than ambient temperature, in the columns tower dryers are between 10 to 12°C higher than the ambient temperature. Considered for soybean with 13% moisture discharge.





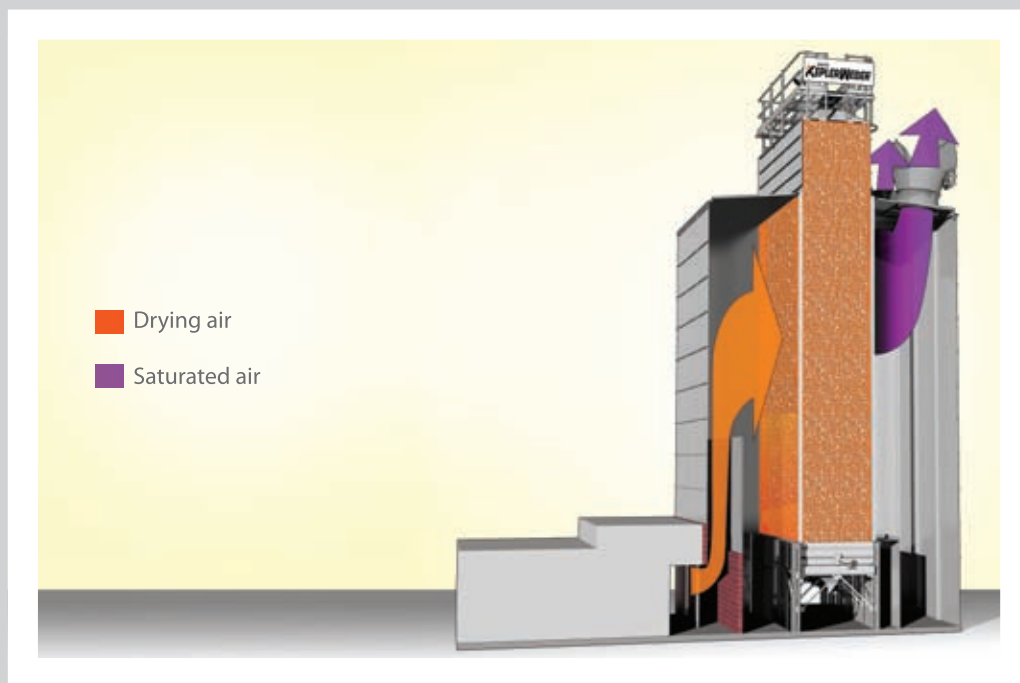
# Dryers Rice Line

Especially designed to resist wearing due product abrasion. The rice dryers have unique dimensions and highly resistant plates at the loading funnel.

## Airflow:

**CI Airflow:** full tower

The grains are dried in the drying tower composed of one section, which results in maximum performance and results. In order to provide a more uniform drying airflow, an internal partition is applied in the furnace diffuser.



CI Airflow

### PADDY RICE LINE - FULL TOWER [CI]

#### TRESTLES TOWER

Model	Capacity		Air Flow (m <sup>3</sup> /h)	Fan Power (HP)	Necessary energy (kcal/h)	Fuel Consumption (kg/h)		
	m <sup>3</sup>	Ton				Firewood	Fuel-oil	Gas
KW 500	45	27	68,000	1 x 20.0	850,000	304	86	67
KW 1000	89	54	136,000	2 x 20.0	1,690,000	604	171	134
KW 1400	117	70	178,000	2 x 30.0	2,210,000	789	224	175
KW 2000	159	95	234,000	3 x 25.0	2,900,000	1,036	294	230
KW 2300	191	114	300,000	3 x 40.0	3,710,000	1,325	375	294
KW 3000	245	147	400,000	4 x 40.0	4,950,000	1,768	501	393

#### DRYING CAPACITY

Model	Model and Capacity of Loading Bucket Elevators	Daily Drying Capacity per Moisture Reduction (mt)				
		24% -> 13%	22% -> 13%	18% -> 13%	24% -> 16%	22% -> 16%
KW 500	EA - 2 / 48t/h	70	84	130	90	112
KW 1000	EA - 3 / 96t/h	142	168	260	192	224
KW 1400	EA - 3 / 120t/h	200	236	359	253	311
KW 2000	EA - 3 / 160t/h	260	307	470	330	407
KW 2300	EA - 4 / 192t/h	328	387	588	415	510
KW 3000	EA - 4 / 192t/h	394	462	690	495	602

Note 1: The drying capacity, necessary energy and fuel consumption are calculated considering the following conditions: ambient temperature = 20°C, ambient relative humidity = 60%, atmospheric pressure = 717mmHg (490m above sea level), grain's specific weight = 750 kg/m<sup>3</sup>, impurity content = 1% maximum (trestles tower), Drying temperature = 60°C, firewood specific heating energy = 2,800Kcal/Kg, fuel-oil specific heating energy = 9,600Kcal/Kg, gas specific heating energy = 12,000Kcal/Kg.

Note 2: The maximum unloading grain temperature should not exceed 38 to 39°C. These values are related to the ambient conditions, product conditions (temperature, loading and unloading moisture), chemical composition, physical and thermal characteristics.

Note 3: Daily drying capacities are considered with one bucket elevator for loading and unloading suggested flow.



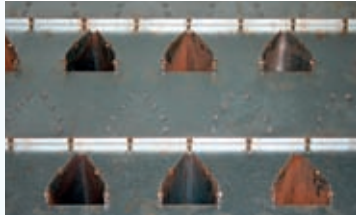


## Technical Details

*Common to all grain dryers*

### Drying Tower

The tower is made of a set of modular panels, with zinc-coated steel plates. Drying tower has mixed flow and may be trestles or columns, perpendicular to the grain's unloading flow.



### Trestles Tower

The trestles are inverted "V"-shaped parallel air ducts that provide superb energy efficiency and high static capacity, as well as low drying rates to guarantee maximum product quality. They are designed for products with a maximum of 2% impurities.

### Columns Tower

The columns are made of self-cleaning directional plates which allow a high drying rate and guarantee a uniform process. Products with 4% impurity can be dried safely.



### Diffusers

Their main function is to direct the air through the drying and cooling chambers being placed before and after the drying tower. Assembled in a modular format, with zinc-coated steel plates and sealed external joints to avoid infiltrations and prevent accumulating impurities in its exterior.

### KW

KW dryers are equipped with axial high performance fans whose adjustable blades are made of cast aluminum, allowing the operator to control the performance and emission of particles. Operate with low noise levels.

### Temperature sensors

The temperature sensors are of "K" type, with mechanical and temperature isolation.

### Control board

The electronic monitoring system allows the air temperature of the drying system to be controlled, as well as the product's unloading flow. The control board is easy to operate and provides great safety during operation.



### Unloading Systems:

#### Unload through dumping tray

Activated by a reducer drive system, being the flow controlled by a frequency inverter and set by the width and aperture of the product outflow, it allows fine tuning according to the type of grain and can be operated with a high level of impurity.

### Pneumatic unload

Controlled by a timer that activates the pneumatic piston, which releases the product in batches, allowing the trestles to be uniformly cleaned, this feature is offered in the trestles tower dryers.

### Platforms

Placed in the loading point and next to the fans, the platforms are in accordance with the safety standards: floors with baseboards, hand rails and fall arresters.





## OPTIONAL ACCESSORIES

### Batch drying kit

By installing this Kit it is possible to carry out the drying by filling only 1/3 of the tower's total volume.

### Particles collection system

The particulate collection system by cyclone is made up of a series of adjustable blades. The blades regulate the efficiency of the process depending on environmental conditions and type of product, guiding the particulates at an angle against the pipe walls where they are collected by an auxiliary cyclone.



### Control Board – Komander Net

An alternative to the drying control with the following features:

- Monitoring and control for temperature and unload;
- Humidity control;
- Block the fans and unloading;
- 15-day operation backup;
- Safety alarms.



### Kit TOP NET

Through control panel with internet connection and software it is possible to view drying data, shortening the distances and making it easier to take decisions. It allows data to be stored and monitoring of the operation history.

### Temperature Control Kit

System used in furnaces, it is composed of a mechanical controller attached to the blinds connected to the temperature sensors in order to provide temperature control through the opening of the airflow to the drying chambers.

### Ladders and Platforms

The medium and large dryers can be equipped with internal and external access ladders in full compliance with the safety standards: floors with baseboards, hand rails, fall arresters, and rest platforms.



### Thermal energy sources

KW dryers are developed to operate with the following energy sources:

- Firewood and rice husk furnace;
- Diesel or gas burners;
- Heat exchanger.





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