



KOTZUR

ELEVATED DRYING SILOS



A family
owned
Australian
business



APPLICATION

In silo aeration drying of grain

Short and long term storage of
grain

FEATURES

- Sealed Gastight for long term storage and pest control
- 3 smaller models fully factory assembled, 4 larger models erected on site
- Zincalume/Galvanised construction
- Sight glass level indication
- Can be supplied with various fan and heater options
- Covered by "Kotzur" 5 year warranty
- All silo models can be varied/modified to specific customer requirements



ADVANTAGES OF DRYING GRAIN

The ability to dry grain after harvest increases flexibility and profitability for grain growers. Grain moisture must be below certain levels to ensure safe storage. For cereals this is around 12% and for oil seeds 5-9%. Harvesting at Higher moisture has a number of advantages;

Early Harvest increases yield - reduced shedding, harvester loss, bird/rodent damage. Yield losses are typically between 0.5% and 1% per day that harvest is delayed after the grain reaches maturity (at which it is usually greater than 20% MC)

AERATION DRYING CONSIDERATIONS

Aeration Drying varies from conventional hot air drying in a number ways. There are a number of advantages and disadvantages to consider;

- Aeration drying is low cost- compared with conventional drying, aeration drying has significantly lower capital cost and has around 75% lower energy consumption
- In Silo drying reduces grain handling- Because the grain is dried in the silo there is less handling (reduced cost & less damage risk).
- Aeration drying is "Gentle"- Aeration drying is slower and requires little or no heat. This results in less damage (eg cracking, loss of germination, quality) to the grain being dried.

Early Harvest results in improved grain quality - Higher grain moisture at harvest means less grain damage and improved qualities such as colour, viability, oil quality (in oilseeds), reduced chance of weather damaged grain

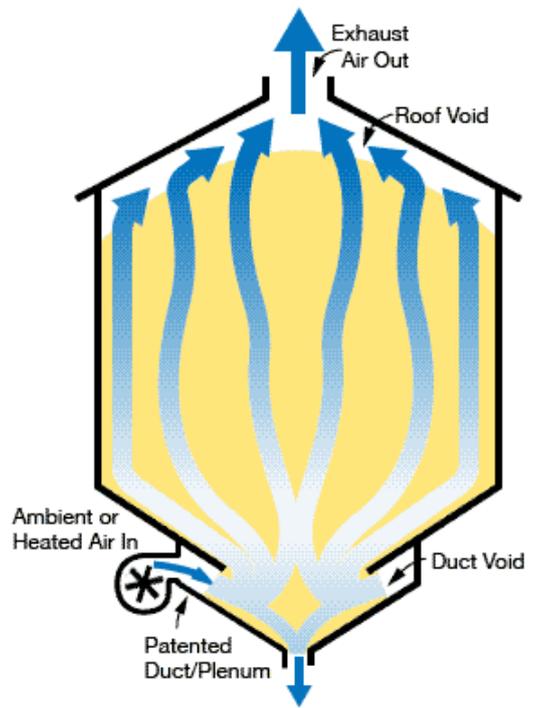
Increased Harvest window - Start harvest sooner (up to 10 days), longer harvest days, reduced weather interruption time.

Reduced Risk - reduce risk of weather damage to crop.

Direct Heading of Crops - some crops that have been traditionally windrowed/swathed may be direct headed where higher moisture harvest is possible.

Cropping in wetter climates - Grain growing in Australia has been often limited to areas where a dry weather harvest is likely. With grain drying, harvest weather becomes less of a problem.

- Aeration drying is slower- Aeration drying is much slower than large conventional driers. This needs to be considered when determining the required throughput. Aeration drying rates in "Kotzur" Drying Silos will vary according to the silo/fan combination. Do not hesitate to ask.
- Aeration drying is weather dependant - Aeration drying relies on the air being "dry enough" to dry the grain, therefore relative Humidity is a key consideration. The graph below shows the relationship between relative humidity and moisture content in wheat. Temperature is also an important consideration in determining how fast the grain will dry. In ideal climatic conditions, drying fans may be run 24 hours per day, while in other cases, careful control of fan operation may be required to ensure that the fan only operates at dry times during the day or on dry days. Where humidity and temperature are not suitable for drying, supplementary heating is used to enable drying.. Only small temperature rises (5o-15oC) are

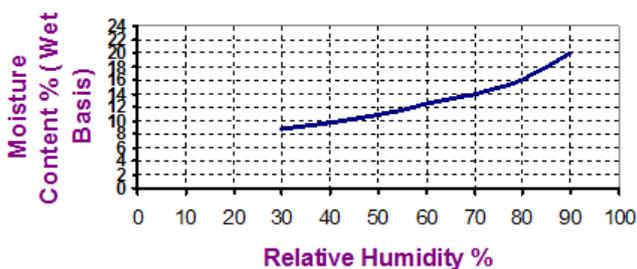


The Kotzur Drying Silo

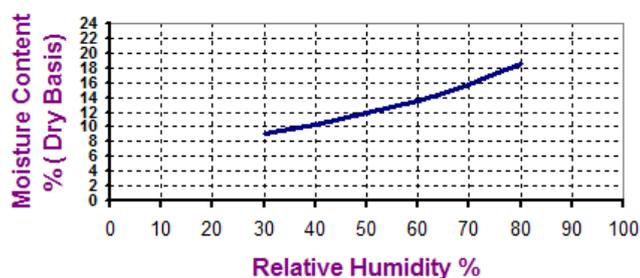
The “Kotzur” Elevated Drying silo incorporates a specially developed and patented plenum cone. This allows high pressure air to be forced through the grain efficiently. The air is not restricted by screens or mesh and is fully self cleaning. The result is high volume air flow— in the order of 10-35 litres/second/tonne depending on model and product. This airflow is 5 - 20 times that normally used on conventional grain aeration.

GRAIN MOISTURE CONTENT VS RELATIVE HUMIDITY

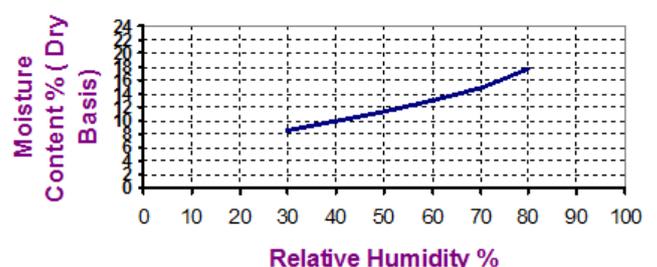
Wheat @ 25°C



Sorghum @ 25°C



Barley @ 25°C



The following Isotherm Charts show the relationship between relative humidity and the moisture content of various grains. This relationship is important to determine if weather conditions are suitable for drying and whether supplementary heat is required.

- Compiled by Andrew Kotzur using average data from “Handbook of Food Isotherms”, Iglesias & Chirife, Academic Press 1982
- Note that some charts show moisture content dry basis and others wet basis.

SPECIFICATIONS Effective 19 July 2023

MODEL	CAPACITY M ³	CAPACITY WHEAT ⁽¹⁾ T	MAX LOAD T ⁽²⁾	HEIGHT CENTRE TO M	HEIGHT TO EAVE M	NOM. DIAMETER M	OUTLET HEIGHT MM	CONE ANGLE	AUGER LENGTH ⁽³⁾ M (FT)	FOOTING PLAN STYLE	WIDE LOAD PILOTS ⁽⁴⁾
K463DS	63	50	58	7.2	6.0	4.2	600	35°	12.5 (41')	Round	1
K474DS	74	59	68	8.0	6.8	4.2	600	35°	13.9 (46')	Round	1
K491DS	91	73	84	8.2	6.9	4.6	600	35°	14.3 (47')	Round	2
GPE 8-4-35D	154	128	142	9.5	7.8	5.8	700	35°	16.6 (55')	Round	Built on site
GPE 10-4-35D	257	213	236	10.3	8.2	7.3	700	35°	18.0 (59')	Round	Built on site
GPE 10-5-35D	303	251	279	11.4	9.3	7.3	700	35°	19.9 (65')	Round	Built on site
GPE 10-6-35D	349	290	321	12.5	10.4	7.3	700	35°	21.5 (71')	Round	Built on site

1 - Wheat capacity based on typical consolidated/compacted bulk density in silo. **2** - Max. Load based on engineering design. This may not apply to products other than grain. **3** - Auger lengths are indicative only and are based on 35° angle. **4** - Pilot/Escort vehicle requirements may vary in certain locations (e.g. metropolitan areas).

ACCESSORIES

2020	PART NUMBER	SIZE	POWER REQUIRED
D4000 415V Single Phase Fan ⁽¹⁾	AERATION D 0217	7.5 Kw	50Hz240V/33A or 480V/17A ⁽¹⁾
D4000 415V 3 Phase Fan ⁽¹⁾	AERATION D 0218	7.5 Kw	50Hz 415V 3F 13A ⁽¹⁾
Gas Drying Heater Kit ⁽²⁾	K059004	29Kw, 101MJ/Hr	240V/0.75A, LPG 1.5-2.1Kg/Hr ⁽³⁾
Diesel/Kerosene Drying Heater Kit ⁽²⁾	K059005	27Kw, 97MJ/Hr	240V/1.4A, Diesel 2.5 litres/Hr

1 - Current draw quoted is typical operating current. **2** - Kit includes heater and fan inlet air mixer. Mounting stand for heater is not included. **3** - LPG Consumption shown is minimum to maximum range

FEATURES/OPTIONS

STD - Standard OPT - Optional N/A - Not Available

MODEL	CENTRE FILL DIA (MM)	ROOF INSPECTION HOLE ⁽¹⁾	SIGHT GLASS LEVEL ⁽²⁾ INDICATION	EXTERNAL WALL ROOF LADDER	WALL LADDER CAGE	REMOTE OPENING AUTO SEALING	BASE MANHOLE	WHITE COLORBOND WALLS ROOF	SEALED GASTIGHT
K463DS	610	OPT	STD	OPT	OPT	STD	STD	OPT	STD
K474DS	610	OPT	STD	OPT	OPT	STD	STD	OPT	STD
K491DS	610	OPT	STD	OPT	OPT	STD	STD	OPT	STD
GPE 8-4-35D	680	STD	STD	OPT	OPT	STD	STD	OPT	STD
GPE 10-4-35D	680	STD	STD	OPT	OPT	STD	STD	OPT	STD
GPE 10-5-35D	680	STD	STD	OPT	OPT	STD	STD	OPT	STD
GPE 10-6-35D	680	STD	STD	OPT	OPT	STD	STD	OPT	STD

1 - Due to changes in OHS regulations, from Jan 2003 roof manhole and internal ladder are no longer supplied. **2** - One Sight Glass per wall strake is standard.

WARRANTY - Kotzur Pty Ltd are confident in the quality of the products they design, manufacture and supply. The company guarantees its product for a period of five years from date of purchase. This guarantee covers faulty design, engineering and workmanship however does not include problems arising from factors over which they have no control. These factors include footings constructed by others, negligent damage, unintended use of products, poor maintenance of care, normal wear and tear. Please note that this warranty excludes Consequential losses.

Whilst every care has been made in the preparation of this brochure, the company does not accept responsibility for inadvertent errors. It reserves the right to make changes and improvements to its products without further notice 19/07/2023