



# *Continuous Mixed Flow Grain Driers*



# Perry of Oakley since 1947

Perry of Oakley was founded in 1947 by Tom Perry, a farmer's son, who offered a mobile repair and manufacturing service to local farmers and businesses in the Oakley, Basingstoke area of Hampshire.

Working from home he converted an Austin 12 car into a mobile workshop, the back seat was replaced by a bench & welder. He travelled all over the country & sleeping in a tent if away from home – repairing farm machinery, re tubing traction engine boilers, welding combines & binders in the field.

In 1949 Tom Perry designed and built our very first belt and bucket elevator with a capacity of 5 tph. 1949 also saw the introduction of our first grain cleaners. These early cleaners were equipped with mechanical sieves and aspiration to lift off dust and light rubbish.

During the early 1950's many new farm mechanization aids were designed by Tom Perry and manufactured in Oakley. These included tractor mounted buck rakes, trailers, dust reduction systems for

combine harvesters and jog trough grain conveyors driven by petrol engines or electric motors. These conveyors had capacities of up to 5 tph, as capacity requirements increased the first chain and flight conveyors were developed. These conveyors were the fore runners of the conveyors that Perry's currently design and manufacture with capacities up to 650 tph.

In 1952 the first factory was built in Oakley it measured 60 foot x 40 foot.

In 1955 our first continuous flow grain drier was manufactured also with a capacity of 5 tph.

The business steadily developed based on its reputation of delivering reliable, well engineered conveyors and bucket elevators during the early 1950's. Export sales of Perry's

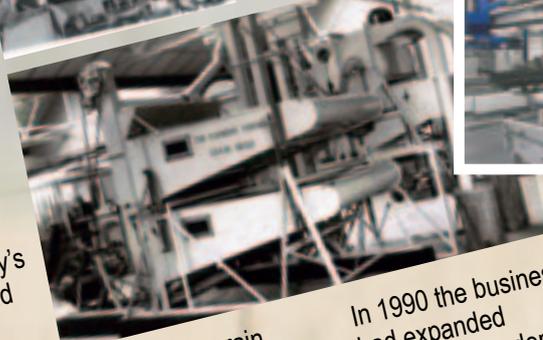
own design grain driers developed as well as adding dust extraction equipment and weighing hoppers to the range. The conveyor range was expanded to include curved and inclined conveyors and flow and return types.

In 1974 a brand new purpose built manufacturing facility was built in Oakley Basingstoke.

During the next 16 years the business continued to grow

In 1990 the business had expanded sufficiently- under the direction of Tom's son Nigel Perry - to require larger premises and a relocation move to Honiton in Devon was made.

The following year Nigel's son, David, joined the business - having achieved a First Class Honors degree in engineering.



Since October 2007 when David Perry took over as Managing Director, Perry's have continued to expand and plan for the future. Investing in the very latest CAD CAM technology, including 3 dimensional design facilities and the latest fully automated punching and forming machinery.

All Perry products are designed and manufactured in Perry's purpose built facility in the West Country using a depth of knowledge acquired during more than 65 years of business.

We have a large engineering and design department and have a very active research and development program. We provide expert technical support for our machinery worldwide and we stock one of the most comprehensive spare parts inventories in the trade.





# Perry Grain Driers are exported worldwide to dry a large variety of crops



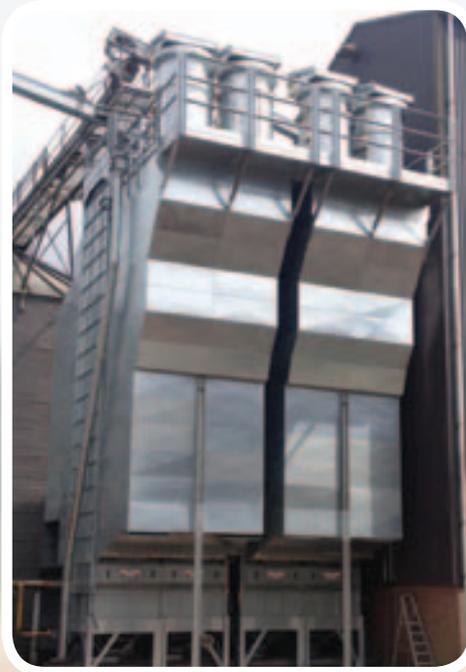
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- All Perry Grain Driers are designed and manufactured in the UK and are designed to BS6399 for wind loading and BS5950 for structural strength with a fully galvanised construction.
- Widths from 2m to 8m single and dual column with capacities from 8 to 150tph.
- Grain column is manufactured from 2mm thick galvanised steel and has a completely ledge free design to reduce dust and straw residue. Corner support mullions are from 5mm thick pregalvanised steel.
- Tapered duct design to aid an even airspeed through the column of grain.
- The top rows of ducts in the drier are manufactured from 3mm thick galvanised steel to prolong life.
- The grain column has unique design features to promote even grain flow.
- Highly efficient shutter discharge.
- Very latest touch screen PLC panel that has been designed and programmed in house.
- Full technical support direct from the manufacturer.
- Dedicated Research and Development drier.
- Automatic Drier control using air temperature measurement as standard.
- Optional Automatic Drier control using grain moisture measurement.
- Optional thermal insulation of furnace plenum and hot air sections of the drier.
- Variable cooling section adjustable from ground level.
- Fully Biomass fired driers available.
- Optional heavy duty discharge hoppers made from 3mm pregalvanised steel.
- Cold weather kits and larger burners are available for driers operating in very low temperatures (well below zero).







## Dual Column Driers

- These driers combine the high capacity of a large drier combined with the flexibility of being able to use either half for drying small batches.
- If there is only a small amount of crop to be dried then only one column needs to be used.
- One column can be left filled with one crop whilst the other column is used to dry another. This significantly reduces lost time spent filling and emptying the drier between batches.

## Drier Discharge



- Shutter discharge for efficient drier operation.
- Heavy duty fully galvanised construction with all the pivot points fitted with hard wearing bushes.
- Fully adjustable pneumatic or electric operation.
- Sight glasses in hoppers to aid adjustment.
- Hand slides in hoppers to control grain flow.

## Drier Burner & Fuel Options



- Direct or indirect fired via air to air heat exchanger.
- Kerosene (3 stage, with mode selection on the PLC panel to control the amount of heat generated).
- Diesel (3 stage, with mode selection on the PLC panel to control the amount of heat generated).
- Natural gas (Fully modulating burners for optimum heat control)
- LPG (Fully modulating burners for optimum heat control)
- Partly or fully Biomass fired via heat exchangers







# Highly Efficient Axial Flow Fans



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- Front mounted
- Side mounted
- Vertical mounted

All fans can be fitted with:

- Pneumatically operated dust reduction shutters
- Weather protection shutters
- Silencers to suit requirements
- CentriKleens



## Drier Access For Cleaning

- Large doors for easy access
- Multiple cross braces and harness connection points inside the drier to provide safe access for cleaning



## Drying Light Seeds

- As standard the Perry drier has a separate fan bypass plenum to allow additional air to be bled directly into the fans to reduce the actual airflow through the drier. These air inlets are conveniently located so they can be opened from the ground.
- On multiple fan driers the PLC panel gives the operator the option to turn a fan off. To use this option effectively fan shutters should be fitted.
- As an additional cost option and where space is at a premium an inverter can be used to slow the fans down to reduce the airflow.
- During low temperature operation on multiple burner driers the PLC panel allows individual burners to be turned off



10:23 AM 15/08/12

75.3C 124.5C 125 C

61.2 C 62.0

10.0TPH

A & B DRY MENU

PLANT STOP

THE TOP LEVEL PROBE IN COLUMN A HAS CAUSED SHUTDOWN  
THE TOP LEVEL PROBE IN COLUMN A IS UNCOVERED

10:23 AM 15/08/12

32.7 C 83.6 C 85.0 C

55 38.9 C 45.0

5.8TPH

A & B DRY MENU

PLANT START

MUTE

CROP	DRYING TEMP	GRAIN TEMP
BARLEY - FEED	125.0 C	62.0 C
BARLEY - MALT	70.0 C	44.0 C
BEANS	85.0 C	50.0 C
LINSEED	85.0 C	48.0 C
MAIZE	125.0 C	65.0 C
OATS	70.0 C	44.0 C
OIL SEED RAPE	85.0 C	48.0 C
PEAS	85.0 C	50.0 C
SEED CROP	70.0 C	44.0 C
SUNFLOWER	60.0 C	38.0 C
WHEAT - FEED	125.0 C	62.0 C
WHEAT - MILLING	85.0 C	45.0 C

BACK RESET DEFAULT

INITIALIZED E-MAIL NOT CONNECTED

ALARM E-MAILS OFF STATUS E-MAILS OFF

E-MAIL ADDRESS	EMAIL	STATUS
E-MAIL ADDRESS 1	khagan@perryofesley.co.uk	10
E-MAIL ADDRESS 2	perry@w@btinternet.com	5
E-MAIL ADDRESS 3	dperry@perryofesley.co.uk	0
E-MAIL ADDRESS 4	447796344047@textmagic.com	5
E-MAIL ADDRESS 5	khagan@perryofesley.co.uk	0

ENTER SUBJECT  
ENTER CONTENT

E-MAIL SUCCESSFUL

MENU MANUALLY SEND E-MAIL SETUP

DO NOT USE FOOD

WET 1 WET 2

FILLING

19.8 °C 82.1 °C

STOP

0.0 TPH

SETUP IN / OUTPUT

RESET STOP ALL AUTO

MAIN SHOW ROUTE 1 - FILL FROM WET START

PIT & WET BIN SETUP

ELF 1 ELF 2 ELF 3

MACHINE 1 MACHINE 2 MACHINE 3 MACHINE 4

OFF

20.3 °C 20.5 °C

START

0.0 TPH

RESET STOP ALL AUTO

MAIN SHOW ROUTE 4 - DRIER TO STORE START

Variable 3296

39.8 °C 75.0 °C 45.7 °C

60 .

1	2	3	Esc
4	5	6	Del
7	8	9	←
+/-	.		→

0.0 M/HR

# PLC Control Panel



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## Overview

- 12" Touch screen
- Simple operation
- Plain English status alerts
- Designed & programmed in house
- Data logging of all readouts and alarms and drier status
- Moisture contents can be entered during the day
- Export all recorded drier conditions and moisture contents to a spreadsheet and automatically create daily record sheets.
- Fuel use calculator included
- Recirculated batch mode available

## Crop Set Up Page

The crop set up page allows you to enter the crop type, intake moisture content and target moisture content; the panel will then set all the drier parameters and start speed using this data.

## Diagnostics

The drier history is recorded and input & output screens display current panel conditions to aid fault diagnostics

## Internet Connectivity

Connect your panel to the internet to allow:

- Status reports can be sent to select mobile numbers and email addresses
- Ability to control or monitor the drier remotely from any internet connected PC or tablet
- Download all drier history and data logged records
- Allows remote connection by Perry engineers to diagnose any faults or to control the drier

## Auto Discharge Control

The Perry drier auto discharge control system included within the panel operates using a list of user adjustable parameters to enable each drier to be tuned to the customer's needs. These include the sensitivity, rate of sampling and target hot grain temperatures. The system uses the wet grain and dry grain temperature either individually or as a combination of the two to control the speed of the drier and to maintain the grain moisture content. This makes it one of the leading methods of control on the market today.

# PLC Plant Control Panel

## Overview

- Additional cost option incorporated in your drier control panel
- Switch simply between drier and plant control view
- Can control up to ten machines as standard
- Unique mimic drawings for each installation
- Manual or auto route selection modes
- Drier operation can be seen whilst in plant control panel display
- Possible to add routes on site without re-programming



# Light Grain & Chaff Recovery System



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The Light Grain & Chaff Recovery System (LGCRS) removes the need to clean out light grains and chaff from the drier exhaust plenum.

- Additional option on all new driers but can be retrofitted to shutter discharges.
- Pneumatically operated only. Connected to existing drier compressor.
- PLC controlled so frequency of drop can be adjusted.
- Labour saving
- Particularly useful when drying Oil Seed Rape or light seeds
- Chaff and light seeds released directly into the discharge hoppers
- Pneumatic flap optimises the airflow in the drier when in the shut position.



*Tired of cleaning your drier exhaust plenum during harvest?*

*Then you need the LGCRS system!*

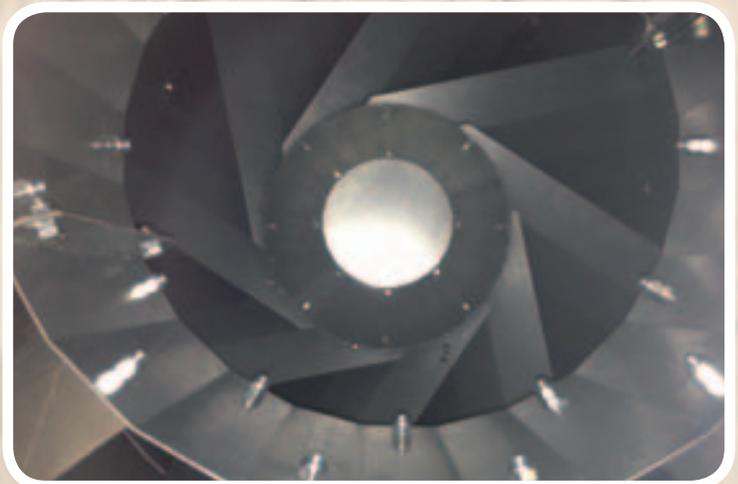




## *CentriKleen - The cost effective, simple solution to your drier's dust and chaff problems*



- Can be fitted to existing axial fans on all makes of drier.\*
- No additional motor power
- Up to 95% of visible dust and chaff collected
- Does not require additional steel support\*\*
- No moving parts
- All galvanized
- Dust and chaff can be collected into a trailer or dust box
- 2 models currently available to suit 1m and 1.25m diameter axial fans



*Had enough of having yards or roofs covered in chaff from your drier?*

***CentriKleen is your solution!***

\*subject to fan survey and test.

\*\* access is required for periodic cleaning

# Capacity and Sizes Available



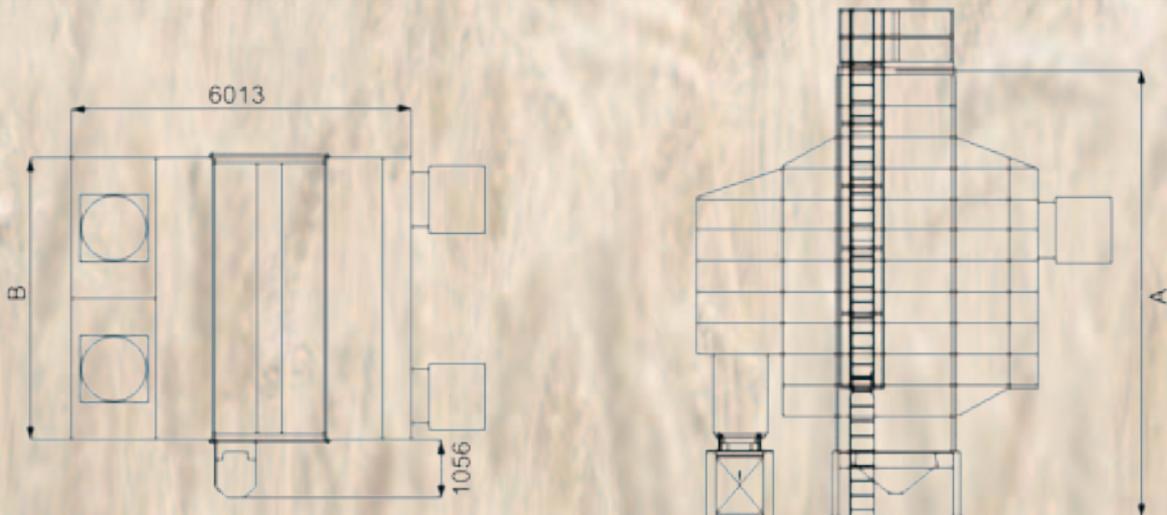
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	Model	Zone Qty	Cooling Zone Qty	Capacity Feed Wheat at 125°C 20% in 15% out (tph)	Capacity Milling Wheat at 85°C 20% in 15% out (tph)	Holding Capacity (tonnes)	Absorbed Power (kW)	Drier Height (mm) (*A)	Drier Width (mm) (*B)
M2	M206	6	2	8	5.0	10,815	9.3	6293	2180
	M207	7	2	10	6.1	12,105	9.7	6843	
	M208	8	2	12.5	7.3	13,395	12.4	7393	
	M209	9	3	12.5	7.3	14,685	12.8	7943	
	M210	10	3	14.5	8.4	15,975	15.1	8493	
	M211	11	3	16	9.5	17,265	17.4	9043	
	M212	12	3	18	10.6	18,555	19.1	9593	
	M213	13	4	18	10.6	19,845	22.2	10143	
	M214	14	4	20	11.7	21,135	24.3	10693	
	M215	15	4	23	13.4	22,425	21.3	11243	
	M216	16	4	25	14.6	23,715	25.8	11793	
	M217	17	4	28	16.7	25,005	25.5	12343	
M3	M306	6	2	12.5	7.3	16,223	12.8	6293	3180
	M307	7	2	15.5	9.0	18,158	15.8	6843	
	M308	8	2	18	10.6	20,093	19.1	7393	
	M309	9	3	18	10.9	22,028	24.3	7943	
	M310	10	3	22	12.8	23,963	21.3	8493	
	M311	11	3	24	14.2	25,898	23.8	9043	
	M312	12	3	28	16.4	27,833	26.5	9593	
	M313	13	4	28	15.8	29,768	30.0	10143	
	M314	14	4	31	18.1	31,703	31.6	10693	
	M315	15	4	34	20.2	33,638	36.3	11243	
	M316	16	4	36	21.2	35,573	38.3	11793	
	M317	17	4	40	23.5	37,508	44.3	12343	
M318	18	5	40	23.6	39,443	48.5	12893		
M319	19	5	42	25.2	41,378	43.5	13443		
M320	20	5	46	27.1	43,313	45.1	13993		
M4	M406	6	2	16	9.4	21,630	19.1	6293	4180
	M407	7	2	20.5	12.2	24,210	19.4	6843	
	M408	8	2	25	14.6	26,790	25.8	7393	
	M409	9	3	25	14.6	29,370	26.5	7943	
	M410	10	3	29	16.9	31,950	30.1	8493	
	M411	11	3	32.5	19.0	34,530	34.8	9043	
	M412	12	3	36	21.2	37,110	38.3	9593	
	M413	13	4	36	21.2	39,690	44.3	10143	
	M414	14	4	40	23.4	42,270	38.2	10693	
	M415	15	4	46	26.7	44,850	42.5	11243	
	M416	16	4	49	28.5	47,430	51.0	11793	
	M417	17	4	52	31.6	50,010	55.9	12343	
M418	18	5	52	30.6	52,590	55.8	12893		
M419	19	5	57	33.6	55,170	54.3	13443		
M420	20	5	61	36.2	57,750	60.9	13993		

Note: it is recommended that all driers over 50tph capacity and operating FOD have an additional 550mm reserve section.

Throughput capacity assumes mature, clean grain with no restriction to airflow and with the drier stabilised. TPH is calculated on the weight of wet grain into a drier. Note that if the product going through the drier has impurities, the capacity could be reduced. Capacity is calculated using wheat at 750kg/m<sup>3</sup>. Relative humidity: 80%. Ambient temperature: 15 degrees Celsius. Drying Temperature: 125 degrees Celsius. Moisture reduction 5% from 20% to 15% M.C wet basis.

	Model	Zone Qty	Cooling Zone Qty	Capacity Feed Wheat at 125°C 20% in 15% out (tph)	Capacity Milling Wheat at 85°C 20% in 15% out (tph)	Holding Capacity (tonnes)	Absorbed Power (kW)	Drier Height (mm) (*A)	Drier Width (mm) (*B)
M5	M506	6	2	21	12.2	27,038	21.3	6293	5180
	M507	7	2	26	15.6	30,263	25.5	6843	
	M508	8	2	31	18.1	33,488	30.1	7393	
	M509	9	3	31	18.4	36,713	36.3	7943	
	M510	10	3	37	21.5	39,938	44.3	8493	
	M511	11	3	41	23.8	43,163	48.5	9043	
	M512	12	3	46	27.1	46,388	45.1	9593	
	M513	13	4	46	26.3	49,613	47.4	10143	
	M514	14	4	51	29.6	52,838	55.9	10693	
	M515	15	4	57	33.4	56,063	54.3	11243	
	M516	16	4	61	36.2	59,288	60.9	11793	
	M517	17	4	66	38.7	62,513	63.9	12343	
	M518	18	5	66	39.8	65,738	70.4	12893	
	M519	19	5	70	41.6	68,963	79.7	13443	
	M520	20	5	76	45.2	72,188	79.9	13993	
M6	M606	6	2	25	14.6	32,445	25.5	6293	6180
	M607	7	2	31	18.1	36,315	31.6	6843	
	M608	8	2	36	21.2	40,185	38.3	7393	
	M609	9	3	36	21.8	44,055	48.5	7943	
	M610	10	3	44	25.5	47,925	42.5	8493	
	M611	11	3	49	28.5	51,795	53.5	9043	
	M612	12	3	54	31.7	55,665	58.8	9593	
	M613	13	4	54	31.6	59,535	55.7	10143	
	M614	14	4	62	36.1	63,405	63.9	10693	
	M615	15	4	69	40.1	67,275	63.0	11243	
	M616	16	4	72	42.3	71,145	79.7	11793	
	M617	17	4	80	46.9	75,015	91.8	12343	
	M618	18	5	80	47.3	78,885	100.2	12893	
	M619	19	5	85	50.8	82,755	88.6	13443	
	M620	20	5	89	52.9	86,625	93.5	13993	
M621	21	6	93	54.2	90,495	94.7	14543		
M622	22	6	98	57.1	94,365	107.1	15093		
M8	M806	6	2	32	18.8	43,260	38.3	6293	8180
	M807	7	2	41	23.4	48,420	48.5	6843	
	M808	8	2	49	28.5	53,580	51	7393	
	M809	9	3	49	28.2	58,740	58.8	7943	
	M810	10	3	58	33.8	63,900	60.9	8493	
	M811	11	3	65	38.1	69,060	67.3	9043	
	M812	12	3	72	42.3	74,220	79.7	9593	
	M813	13	4	72	43.8	79,380	83.6	10143	
	M814	14	4	80	46.7	84,540	87.9	10693	
	M815	15	4	88	51.7	89,700	93.5	11243	
	M816	16	4	97	56.9	94,860	101.9	11793	
	M817	17	4	108	63.3	100,020	111.8	12343	
	M818	18	5	105	61.1	105,180	117.6	12893	
	M819	19	5	112	65.2	110,340	116.2	13443	
	M820	20	5	124	72.4	115,500	131.7	13993	



# Principle Of Operation

The reserve section of the drier is kept full of grain using a feed on demand or flow and return conveying system. This keeps the grain column permanently full which is essential for efficient operation.

To obtain the best drier operating speed and correct drying temperatures the crop details are entered onto the crop selection page of the PLC control. You enter the grain type ie Malting Barley or feed Wheat, the input moisture content of the grain to be dried and the target moisture content. The drier PLC then calculates the correct drier throughput and temperatures for operation.

The heat source is normally a diesel, kerosene or gas fired burner but it is also possible to use biomass heat sources and heat exchangers to provide some or all of the heat.

If light seeds such as Oil seed rape are being dried then the amount of air going through the drier needs to be reduced. In this case the air bleed doors or air scoops can be opened to allow air to be bled into the fans to reduce the amount of air being drawn across the crop and to reduce lift off.

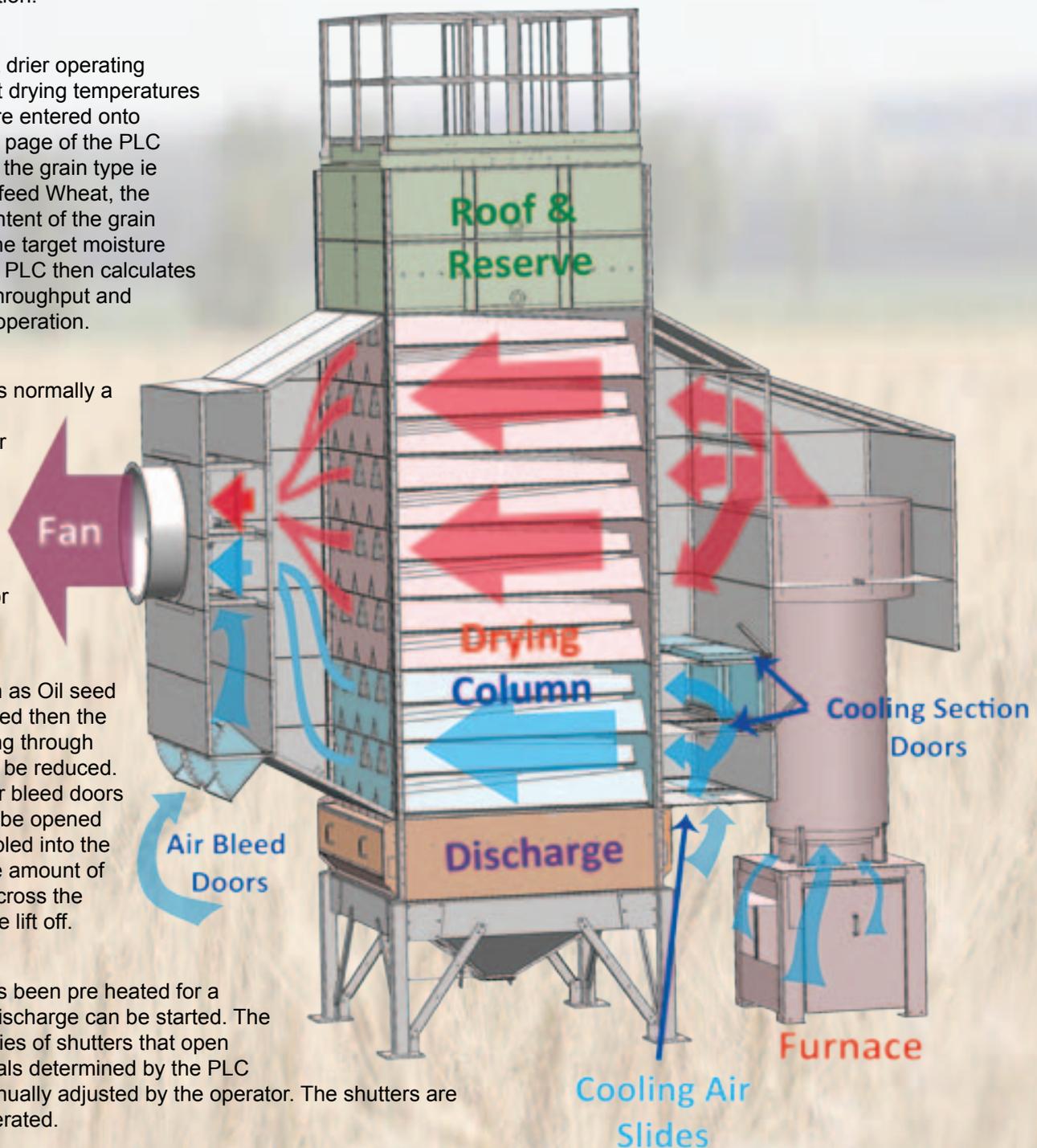
Once the drier has been pre heated for a short period the discharge can be started. The discharge is a series of shutters that open and shut at intervals determined by the PLC or this can be manually adjusted by the operator. The shutters are pneumatically operated.

At the start of the drying process the grain that comes out of the drier will not be dried as it has not passed down the full height of the drier so , depending on the conveying system this grain needs to be either recirculated back into the top of the drier or diverted to an area where it can be put back into the drier later.

Whilst the drier is running the operator will take periodic moisture samples of grain entering and leaving the drier. When the desired exit moisture content is reached the conveying system is changed so that the dry grain is sent to store and not recirculated.

Once the operator is sure that there is a consistent moisture content for the grain leaving the drier then automatic mode can be selected to allow the PLC to control the drier without the need of the operator to be permanently in attendance.

In normal operation the bottom section of the drier is uses ambient air to cool the grain before it leaves for the store.





# Drier Testing



Perry of Oakley has its own grain drier test rig installed at Cannington Grain. It is a model M217. Capacity 26tph.

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This gives us access to a drier operating under real life conditions and the capability for extended test runs for all new product developments and to enhance our R&D capabilities.

The drier is completely wired with temperature monitors and has access hatches to enable us to measure moisture contents and temps anywhere in the grain column.

## Ezi Quote

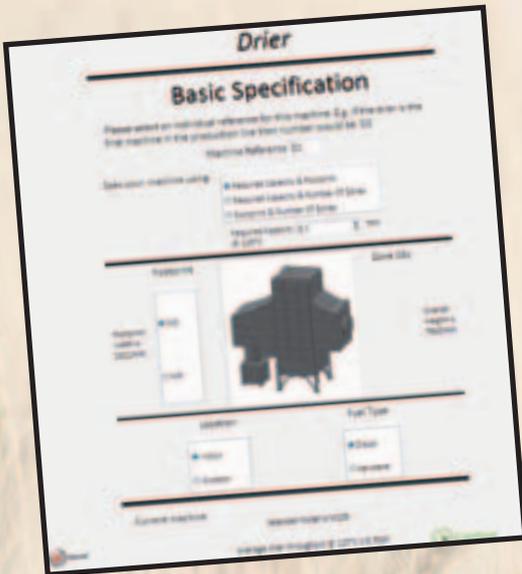
The range of Perry driers are available to quote and order on our Ezi Quote system.

The Ezi Quote system is a fast online quoting and ordering system, allowing you to get a quote or order machines from us in a matter of minutes.

Not only does the system email you a quote document but if you require any 2D or 3D drawings, the system will email you out custom drawings of the machine you have specified on the Ezi Quote system in a matter of minutes, not days!

The machines available on the Ezi Quote system include:

- Driers
- Belt and bucket elevators
- Store conveyors (Horizontal, Flow & Return, Inclined & Curved)
- Roller trough belt conveyors
- Aspirator cleaners
- Ducting, Fittings & Valves



## Commissioning & Support

All Perry driers are commissioned by our own experienced engineers who will also provide expert technical advice for complete satisfaction.

We also have a dedicated technical support line to provide a first point of call for all technical enquiries for all products including driers and their control panels.



*Quality that lasts, at a price you'll remember!*

# Perry of Oakley Ltd

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