

DE Engineers have developed a sophisticated, low cost aeration controller (the ‘Safegrain 8”) here in WA for Australian farmers.



GRDC studies have shown that the two most common, serious threats to grain quality in Australia’s storage are insect pest infestations and grain moisture problems causing mould / fungal growth. Key initial strategies include thorough hygiene for storage and equipment, plus aiming for “cool, dry grain” in storage. Using aeration reduces grain temperatures and creates uniform, cool conditions in the grain bulk. This maintains grain quality and if cool enough, slows grain pests breeding and if temperatures below 15C can be achieved, breeding will stop. Some of our customers have used aeration on silos for up to 10 years and have not had to use any fumigation whatsoever as weevils have completely disappeared from their silos. It also assists in maintaining low germination rates and is considered essential in canola storage. It is important to note that aeration may not entirely eliminate the need to fumigate silos.

All silo manufacturers in WA make fully sealed silos to increase the effectiveness of fumigation but this had led to silos which do not vent to allow moist air to escape resulting in many calls regarding moisture in silos with the culprit usually being moist grain and it is Important to note that even though silos seal, they are only designed to seal for the 7-10 day fumigation period. At other times they should be ‘cracked-open’ or ideally aerated with a controller to allow headspace heat to escape and maintain uniform grain moisture and temperature. Not many people realise that a 76t silo filled with grain that has too much moisture (above 12%) can condense 760 litres of water for every 1% released from the stored grain inside the silo which then runs down the silo walls ruining grain and corroding silo walls.



Note the corrosion to the walls in this near new 109t silo caused by damp grain. This silo was filled with grain at harvest that had too much moisture that condensed to the silo roof then ran down the silo walls.



Green radish in a silo will also increase moisture as could the application of water based pickle so be sure to store only clean, dry grain with a moisture content of 12 percent or less to keep grain in top condition and reduce weevil problems.

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Grainsafe 8 Silo Aeration System



The Safe Grain 8 has three stages of automatic independent control:

Stage one — continual aeration

The initial aim is to get maximum airflow through the grain bulk as soon as it goes into storage, to push the first cooling front through and lower grain temperature.

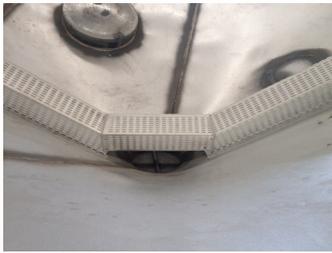
The controller keeps the fans running continuously unless the ambient humidity exceeds 80%. Once the air leaving the silos has cooled and the humidity has lowered, then the controller will switch to rapid cooling mode.

Stage two — rapid cooling

After aeration fans have been running continuously to flush out the warm, humid air for 2–3 days, the controller automatically reduces the run time to 9–12 hours per day for the next 3–5 days. The goal is to quickly reduce the grain temperature from the mid 30°Cs to the low 20°Cs. An initial reduction in grain temperature of 10°C ensures grain is less prone to damage and insect attack, while further cooling becomes a more precise task.

Stage three — maintenance cooling

After 3–5 days of aeration in the ‘rapid’ or ‘purge’ phase the automatic controller then switches to ‘normal’ or ‘protect’ mode. During this final phase it continually monitors ambient and internal silos temperature and humidity and run fans on average during the coolest 100 hours for the month.



We manufacture our own aeration fans and unique lowered ducting to push cool dry air to the bottom of silos to ensure all the stored grain is kept in optimum condition.

NB/-sealed grain storage allows moist air into silos damaging grain and rusting silo walls.



Start boxes have a contactor to start and stop fans with overload, Earth leakage and lightning proof protection and are capable of running 4-6 fans on a 10 amp lead. This allows one controller to aerate dozens of silos.

DIY installation without anything more than a simple power board distribution of 240Vac, so an electrician is not required.



Code	Description	Price	GST	Total
AEC	Grain Safe 8 Aeration Controller	\$1,265	\$126.50	\$1,391.50
AEF	F100 Aeration Fan	\$550	\$55	\$605
AED	Aeroduct Ducting	\$120	\$12	\$132
AESB	Controller Start Box	\$110	\$11	\$121
AEDF	Fitting only of Fan and Ducting (in house Includes Ducting)	\$160	\$16	\$172
AECR	Grain Safe 8 Remote start Aeration Controller	\$1,465	\$146.50	\$1,611.50
GEN	6kw Diesel generator with 2 wire remote start	\$1,399	\$139.90	\$1,538.90

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