

Pictures courtesy of Nico Sieling

**BREAK OUT:** Sieling's parallelogram opener can be used with discs or tines and features sideways break out protection.



**AT A GLANCE...**

- ▶ 12m wide Rotacon air seeder
- ▶ Unique folding method
- ▶ 50kph road speed
- ▶ Easily converted to a double disc seeder
- ▶ Sideways break out protection

# Air seeder wins Henty innovation award for farmer

A cleverly-engineered air seeder won the Farm Innovator Award at the Henty Machinery Field Days recently. Built by grain grower Nico Sieling, from Mulwala, NSW, the Rotacon seeder has many unique features, reports researcher Mark Saunders.

**S**ieling's 12m wide air seeder has a unique folding system as well as a host of other clever engineering features which no doubt impressed the judges at Henty Machinery Field Days.

The unique folding system means the air seeder has a transport width of just three metres and Sieling can haul it on the road at speeds up to 50km/h. The folding design is best described as a collapsing quadrilateral set up.

**FRONT FOLD**

The seeding frame sits at the rear of the air seeder and folds in half, towards the front of the machine, in a lateral sweep. Once each "half" of the seeding bar is folded back against the main structural member of the air seeder, then they fold upwards.

The seed and fertiliser box is located at the rear of the seeder while the main support wheels are also located at the rear of the

machine, which means there are no load-carrying wheels in the seeding bar area. The rear main axle is rated to 15 tonnes. The tractor carries 4.5t and the main wheels 6.5t in transport. When the air seeder is in the ground, the load is evenly shared across the width of the bar by each opener.

**FARMING BACKGROUND**

A spritely 60 years young, Sieling set about making the air seeder after struggling to find a suitable "off-the-shelf" machine.

He has a background in engineering and was a dairy farmer before switching to grain growing. The final design took a little more than three years to complete and the build time was a little more than three months, interrupted by the sowing of this year's winter cereal crops.

The Rotacon is far from a farm-workshop-made piece of gear. Parts are laser cut at a local steelworks and the bins are commercially-available, sold as Jacky Bins.

The overall build quality is exceptionally good. The design incorporates a liquid product tank which doubles as the main support frame member (1200 litres) and Sieling has applied for patents on the Rotacon's design.

**FIXED**

The row widths on the Rotacon are fixed at 300mm. Each ground-engaging unit, based on a parallelogram design, is welded to the main frame, but there is plenty of adjustment available.

Tool-free adjustments can be made for press wheel depth and pressure, seed tine closer angle and seed closer depth, fertiliser tine angle and knife depth, coulter depth, parallelogram angles and the ram angle within the parallelogram.

Linchpins are used extensively throughout the two gangs of seeding units (20 on the rear and 20 on the front of the seeding bar).

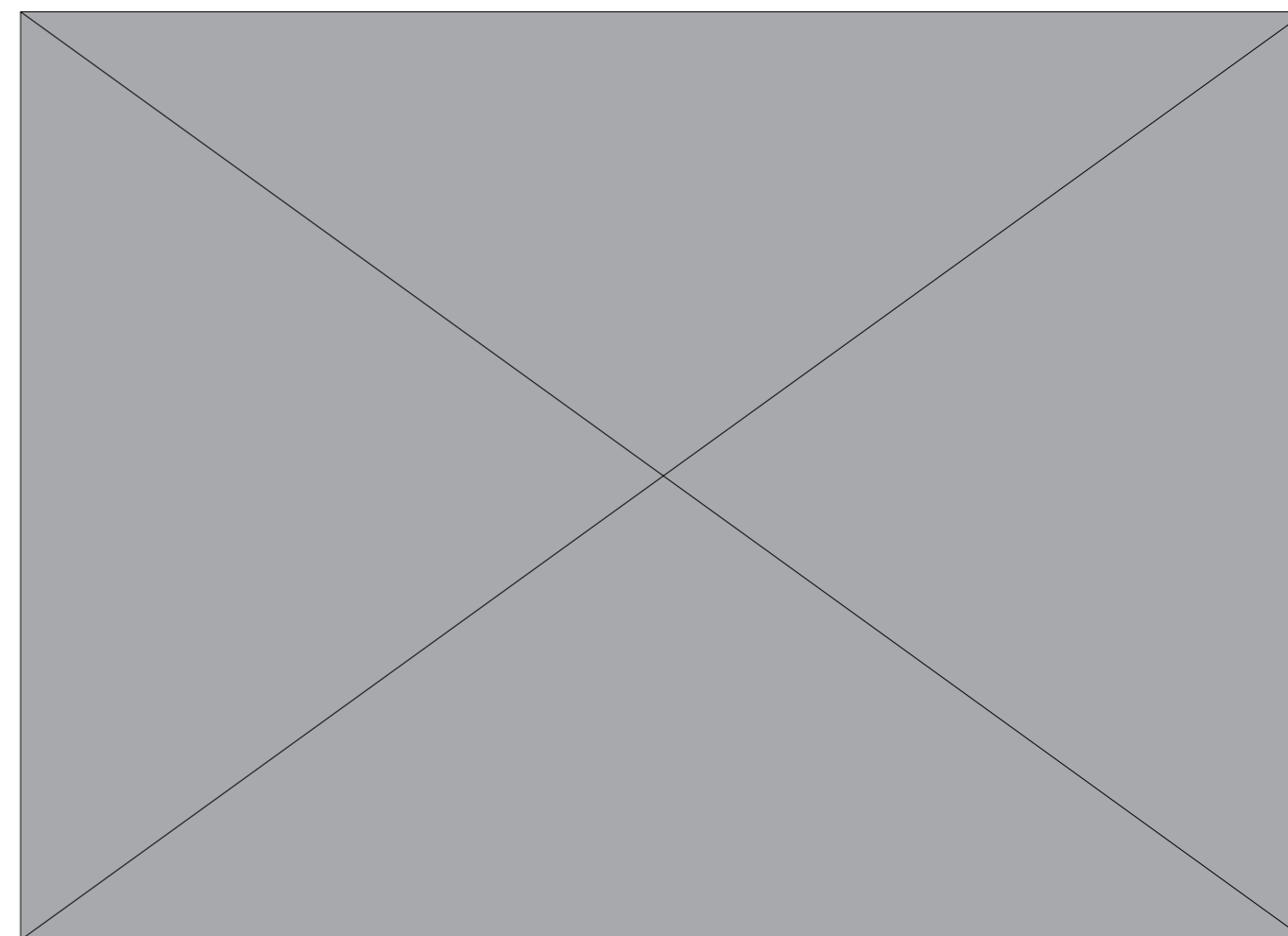
The seeding modules can be easily adjusted and each one has vertical as well as sideways break out capabilities. Seeding can also be easily changed between a tine and double disc set up with the principal of a knock on/off tine.

**METERING**

Another unique feature of the Rotacon is the seed and fertiliser metering system that is based on a rotary conveyor design. The product flows freely through the stainless steel metering system. An angled, rotating



**METERED OUT:** The seed and fertiliser metering system is based on a rotating stainless steel disc.







**CLEVER:** The Rotacon's folding system is unique and allows a transport width of just 3m. The main seeding bar folds in half, towards the front of the air seeder and then upwards, either side of the main frame.

disc of about 400mm in diameter draws the product evenly from the hopper while it spins and delivers the product to the air stream chute on the lower side of the disc. A bolt-on adaptor can be used for fine seeds such as canola.

The hoppers or bins are a simple plastic design, with a total capacity of 8000 litres. Sieling has decided to do away with lids for the bins for ease of filling and the metering design is compatible with a Farm Scan rate controller.

### SIDEWAYS

Sieling has incorporated sideways break out protection into the seeding units, which allows the tines or discs to move sideways and then return to their "line" if they encounter an obstruction such as a rock. Upwards breakout force is 150kg and backwards is 300kg.

The sideways break-out (100kg) protection is thanks to a few design tricks including the addition of elongated or slotted holes where the bottom arms of the parallelogram are fixed to the openers.

The ends of the top arm of the parallelogram and the hydraulic ram are fitted with ball joints and a coil spring under normal load holds the parallelogram hard against the forward end of the slot. When an obstacle is encountered, the opener can move sideways within the slot, and then return to its normal operating position.

Even the press wheels, coulters and support wheels have sideways break out protection with a similar system of slotted holes and springs.

### SUPPORT

Once the Rotacon is unfolded, the weight of the seeding bar is shared evenly among the 40 support wheels, which are a pneumatic tyre, similar to a small tractor tyre.

These support wheels are not attached directly to the frame of the machine. The up or down movement of the wheels provides feedback to the other openers to compensate for the movement via a hydraulic ram.

When the support wheel moves up, the ram is shortened, and because the ram is connected hydraulically with the other rams on the bar, more oil is delivered to the other openers. Hydraulic breakout pressure is maintained without the need for accumulators or bypass valves.

### ON THE FARM

Sieling has a mix of dryland and irrigated cropping. About 650ha of wheat was planted this year with the Rotacon and yield estimates mid-November were 5-6t/ha for the dryland wheat and 9-10t/ha for the irrigated wheat.

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