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Custom-built success

Machinery On Farm Opinion

Purchasing new kit is a big decision on-farm, with many different factors to consider.

CPM finds out how one farmer ticks all of his boxes with a custom approach.

By Charlotte Cunningham

When you're in the market for a new bit of kit, whatever it may be, drilling down into the spec can be an overwhelming task.

Not only is there a tantalising feast of features on offer, but there's also the challenge of matching a machine's ability and functionality to your business objectives, to ensure every penny spent will work to bring a tangible return on investment.

So how do you strike the right balance?

For Leicestershire farmer, Leigh Donger, investing in a custom-built sprayer has been key to ensuring all of the right boxes are ticked.

If you were to visit Leigh at Peacock

Farm — deep in the Vale of Belvoir — you're likely to see more than just crops and kit.

As well as producing over 607ha of arable crops, the fifth-generation farm is a hub for diversification, growing and producing “local produce with low food miles” including honey, from the on-site hives of bees, and cold-pressed rapeseed oil, as well as hampers for Christmas gifting and a busy livery yard.

Incredibly busy

And so with an incredibly busy schedule, having robust, high performing kit for the crop production side of things has always been a priority says Leigh. “With so much going on at the farm, having kit that works when we need it to is crucial. For us, incurring downtime making repairs is not an option.”

When it comes to reliable sprayer options, Chafer has been the farm's brand of choice for the past 15 years, says Leigh. “In 2005 a self-propelled Rogator 618, with a 30m Chafer spray pack and a 6000-litre tank, was charged with keeping on top of the spraying,” he explains. “But having a dedicated sprayer meant that too much pressure was being put on the

existing tractor fleet at busy periods.

“The Rogator was an excellent machine, but we felt we didn't have enough land to justify a dedicated sprayer and we needed to be able to use the tractor unit for other jobs if needed.”

As a result, the decision was made to trade in the self-propelled sprayer and replace it with a trailed machine so the tractor could be utilised elsewhere when workload pressure was at its peak.

In 2011 a second-hand trailed 40m Sentry with a 6000-litre tank on RTK arrived on the farm, and three years later, this was converted to 30m as the farm shifted its priorities to move towards a controlled traffic farming system, explains Leigh.

In light of changing needs and further adjustments to the business' management strategy last year, Leigh decided to replace the existing 30m Chafer Sentry with a brand new 30m Sentry with 6000-litre capacity.

“We had no issues with the Sentry when it was 40m, but it was too big for many of our fields, plus we wanted to work towards a CTF system,” he explains. “In fact, we'd had so few problems with it that I was reluctant to change, but as a business, we

had a focus on ensuring optimum nozzle to boom height, so the new 30m model with triple-folding boom and RTK fits our system much better.”

As well as continued performance from Chafer machines, Leigh says the ability to build custom kit with the firm has been a huge decider in staying loyal to the brand. “We’ve never really looked at other sprayer brands because Chafer has always made a bespoke machine for us.

“When it came to our latest purchase, I basically just gave them a shopping list of features I wanted to have on the machine and they were able to do it for me — something I’ve never found with competitors.”

Steering axle

One of the main things Leigh wanted was an alternative steering axle. “The standard axle that came with the Sentry had a silent bush system, but I wanted something different and Chafer were able to do this for me. When I spoke to other manufacturers, this wasn’t something they were prepared to discuss.”

An air purge system was also a must-have custom feature. Aimed at reducing wash-out times and chemical dead volumes, Chafer’s AirPurge system uses compressed air to expel the maximum amount of liquid from the plumbing and spray lines at the end of a tank load. An icon automatically appears on the screen at low tank levels, and once selected, the additional air tanks are used to propel liquid from the nozzles.

“An automatic purge system feature at the beginning of the spraying procedure also means that the pipes are full so there’s no time lag when you start spraying,” adds Leigh.

On the technical side of things, Leigh was also keen to include a digital touch



ePlumbing, the manufacturer’s own fully automated filling, rinsing and dilution system, has been designed to maximise efficiency by reducing downtime and removing the chance of error.

Having a bespoke sprayer has proved crucial to Leics farmer, Leigh Donger.

screen system for operating the sprayer. “Chafer fitted an iPad type touchscreen to the side of the sprayer and I was then able to choose what buttons I needed and where I wanted to put them, meaning I’m able to operate the sprayer exactly how I want to.”

Turning to the nuts and bolts, just how does this latest Sentry sprayer compare to its predecessor?

A new sprayer-mounted gyroscope operates the steering axle, with no physical connection to the sensor now required, helping to reduce the time taken mounting the sprayer.



The most noticeable advantage is the new boom-levelling system, something that’s particularly impressed Leigh. “We really like the new Norac UC7 boom ▶



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According to Leigh, the most noticeable advantage on the latest Sentry sprayer is the new boom-levelling system.

► levelling system,” he says. “Our old sprayer had Chafer’s own levelling system which worked really well, but it was limiting in its performance in that it was slow to react to topographical changes. The new Chafer ‘F’ type boom and hydraulic system coupled with Norac is so much quicker to react.”

Chafer has also realigned the stainless-steel tank on the new Sentry,



Chafer customers can choose from a shopping list of features, including FieldVision boom lighting.

which means it sits about 40cm lower on the frame and it’s wider than the previous

Tailored to you

Leigh’s custom-built approach isn’t unique to Chafer, and the firm’s ethos is centred around creating bespoke sprayers to ensure every business priority is satisfied, explains the firm’s Joe Allen. “The sprayer market is particularly competitive, so by offering this bespoke approach, we can promise to deliver in every sale.”

So, how do you decide on a specification?

Size and capacity are understandably the main priorities when looking at a new machine on any farm, with a wide variety of factors effecting the choices made, explains Joe. “The total cropped area, sizing of given blocks of land, and the ability for varying soil types to carry the machine are all discussed when choosing a tank size. Where customers are running a bowser, obviously sprayer capacities can be reduced, lowering the overall weight and compaction in the field.”

Along with capacity, boom width is also one of the key considerations, with field sizing and the ability to spread solid fertilisers among the factors that ought to be considered. “At Chafer we continue to see the trend of customers moving to wider booms to improve work rates, timeliness and often to fit in with a CTF system.”

However, this isn’t always the case, and sometimes widths can be pushed too far at the detriment of work rates. “In initial conversations with customers we can provide tools to show expected work rates at certain forward speeds, the effects of cropped area changes, and estimate the effects these amendments have on returns,” explains Joe. “But there is a huge availability of different booms within the Chafer range which balance overall weight with durability.”

One of the main drivers behind increasing work rates — while optimising application accuracy — has been advancements in boom-levelling systems, he adds. “Chafer can supply various options with the Norac UC7

‘Active Roll’ system offering what we believe is the most advance levelling system available. It ensures boom height is maintained regardless of topography to minimise drift and maximise product efficacy.

“Available in three or five sensor versions, UC7 uses ultrasonics and accelerometers to control the boom, adjusted through the independent incline cylinders and the centre frame. It’s that additional reaction in the centre carriage that has really advanced the contour following and the system’s ability to deal with larger tramline undulations.”

When it comes to sprayer specification, it’s precision farming technology and GPS that are high on customers wish lists, with many farms having settled on their brand of choice, believes Joe. “Both trailed and self-propelled machines can be specified with any manufacturers GPS equipment, so customers are able to choose from Topcon, Raven, Greenstar, TeeJet etc.

“We can provide advice on what’s most suitable, but often a farm has aligned itself with one particular brand and this helps with machine familiarity when it arrives on farm — fully fitted in the factory with their control system of choice.”

Another point worth noting is that Chafer choose not to align themselves with any one particular supplier of plumbing and nozzle body components. This allows customers to choose from single, twin and quad spray-line options, offering automatic line switching to vary application rates and nozzle type on the move, says Joe. “Pulse width modulation has allowed us to improve application accuracy further still, with operators being able to make use of specific exact droplet sizing and maintain that, regardless of forward speed. Built-in turn compensation and individual nozzle control are part of this system and these are popular with customers looking to improve applications and reduce inputs on even the most difficult of field shapes.”



Chafer’s ethos is centred around creating bespoke sprayers to ensure every business priority is satisfied, says Joe Allen.

Like many manufacturers, the options list is a long one, with lighting, mud guarding, electronic plumbing systems and stainless-steel belly sheets to mention just a few. “We try to understand each customer’s requirements, whether that’s the layout of their filling area, crop rotation or comparisons with an existing machine. It’s at this point that we can come across one-off issues that require some modification to the standard list of components, but with our own in-house design and engineering departments, these can be solved and a custom solution provided.”

This flexibility has led to some interesting custom machines over the years such as 6000-litre twin tank trailed machines, pineapple sprayers for Costa Rica, and the company’s range of de-icing equipment, but more often than not changes are applicable to other customers too. “Often a customer’s one-off request is picked up by other growers so becomes a standard option for the future,” concludes Joe.



With an incredibly busy schedule, having robust, high performing kit for the crop production side of things has always been a priority at Peacock Farm.

version. "This improves sprayer stability — especially with the bigger tanks — when travelling at speed or on slopes, and in turn this makes it feel safer and easier to operate."

Chafer has made some subtle changes to the triple boom folding height, which now sits much lower to the side of the tank. According to Leigh, this has been particularly useful when going under low hanging trees or backing into sheds.

"Chafer has even thought about the position and functionality of the induction hopper," he says. "On our old machine it was on a fixed height so would often hit the crop. The new induction hopper works off a hydraulic cylinder which comes out and up when required for filling, and then neatly tucks back underneath out of the way when not in use."

Chafer's Sentry is also fitted with ePlumbing, the manufacturer's own fully automated filling, rinsing and dilution system and has been designed to maximise efficiency by reducing downtime and removing the chance of error.

"The ePlumbing feature has made washout a simple procedure now. It's fully automatic and runs to a set programme," explains Leigh. "Our operator decides how

long to clean for; the exact water quantities needed, and which part of the sprayer to clean."

Another important priority for the farm is operator comfort and safety and Chafer doesn't disappoint in this area either, he concludes. "Whereas in the past, commands were mostly mechanically driven, they are now electric. Two monitors (one in the cab and one on the outside) control every sprayer function, with the Topcon GPS system providing extremely accurate rate and section control over 16 boom sections." ■

Farm facts

Peacock Farm, Muston, Leics

- **Arable area:** 607ha
- **Cropping:** Winter wheat; winter beans; spring wheat; spring OSR, spring oats and spring beans.
- **Soil type:** Medium to heavy clay.
- **Mainline tractors:** Massey Ferguson 8690; 7726; 7626, John Deere 6920; 6410 with a loader.
- **Combine:** Claas Lexion.
- **Cultivation equipment:** Farnet Softer 6, Vaderstad Rapid, Horsch Sprinter, Kverneland tine seeder, Horsch Terrano FG.

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