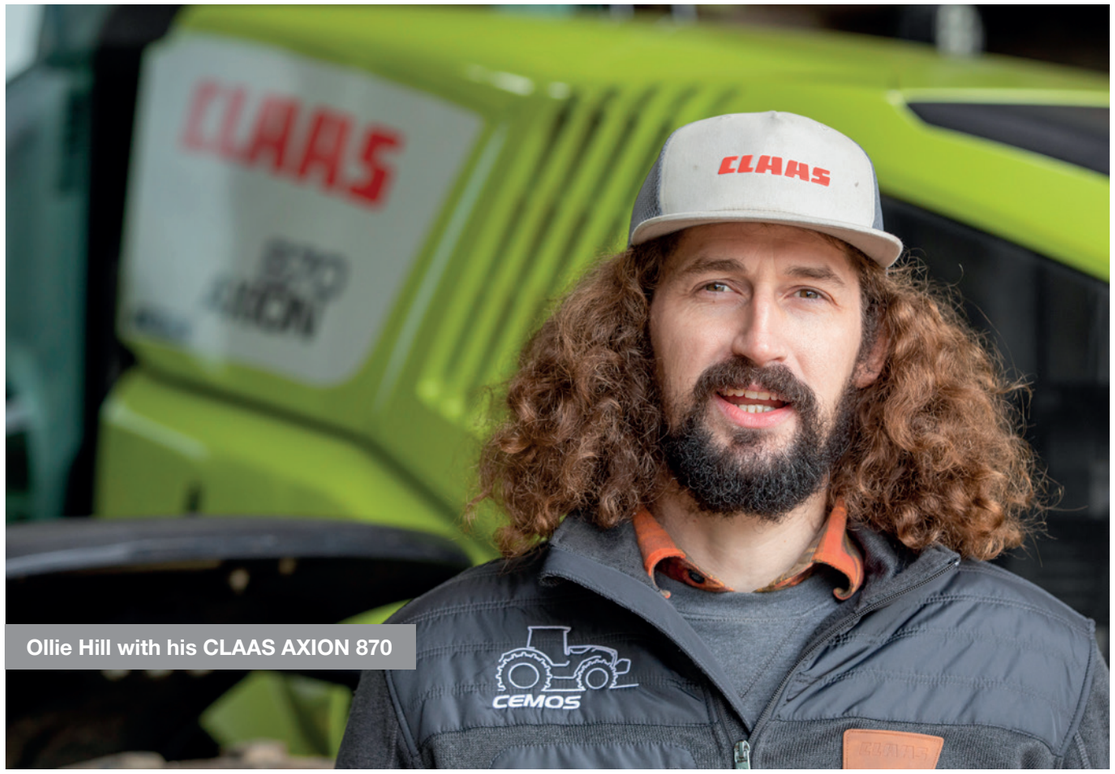
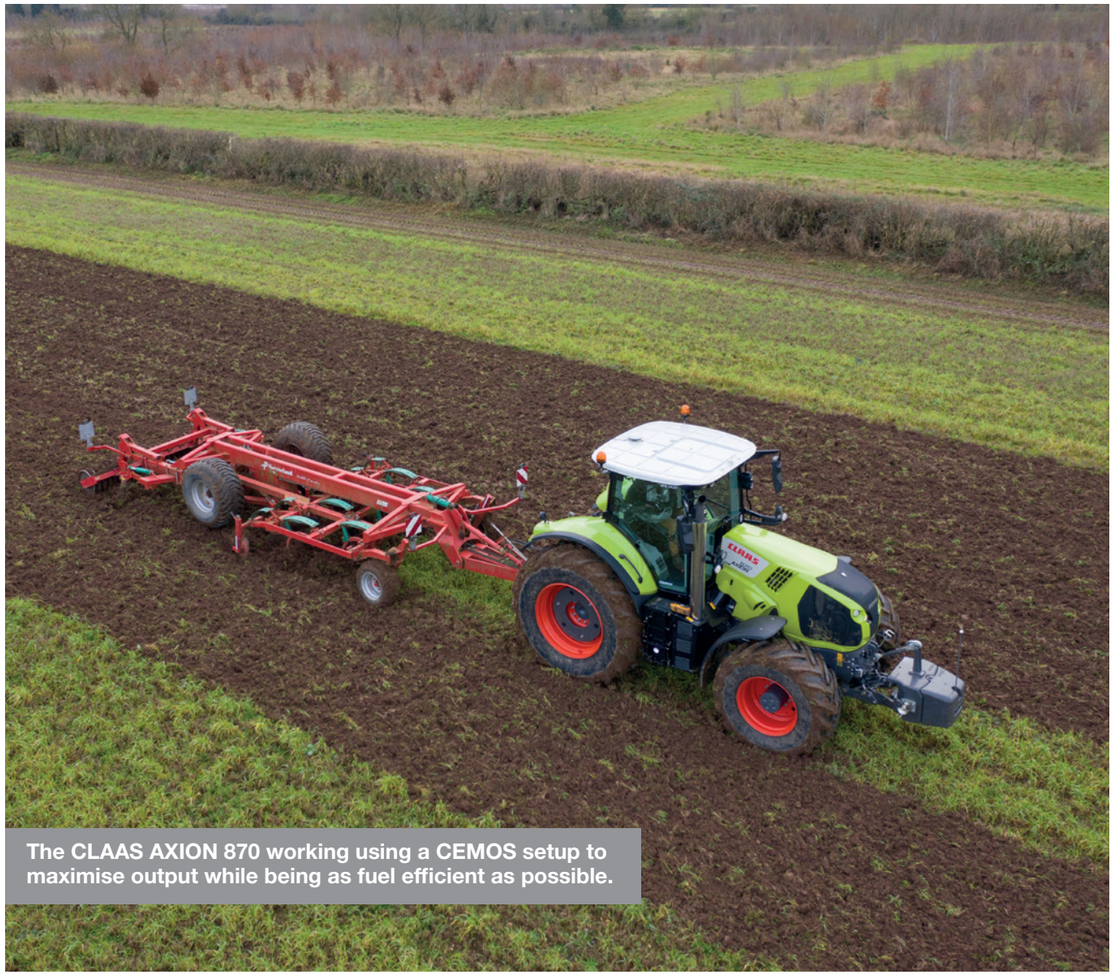
CEMOS for Tractors
“Finding the Sweet Spot”



Ollie Hill with his CLAAS AXION 870



The CLAAS AXION 870 working using a CEMOS setup to maximise output while being as fuel efficient as possible.

While CLAAS’ CEMOS for Tractors system has just helped to secure the coveted Sustainable Tractor of the Year title, over the last 18 months it has proved itself in the field, helping one Leicestershire farmer and contractor cover more ground while burning less fuel.

Everyone knows that getting ballasting and tyre pressures right to suit the job in hand is the textbook way of doing things, but that’s not always reality.

More often than not time’s pressing, the weather is closing in and it’s just a case with getting on with it.

To help operators deal with this issue when it comes to setting up the tractor and implement, CLAAS has developed an on-board system that’ll aid in the decision making process.

Tagged as CEMOS for Tractors and working in much the same way as CEMOS Dialog on LEXION combines, software within the tractor’s CEBIS touchscreen terminal monitors various performance parameters and makes suggestions as to how best improve machine output and efficiency.

While the system has only just been launched to market, for the last couple of years evaluation units have been out for field testing across the globe. One of those has been put to work with Leicestershire father-and-son team Stephen and Ollie Hill.

TWO TRACTORS TO DO ALL THE WORK

Farmers and contractors, they undertake a broad range of work from heavy cultivations and crop establishment to mowing, baling and wrapping. As such they need versatile prime movers capable of undertaking pretty much any task.

“In the past we’ve tended to run a whole plethora of older tractors, each machine with its own job to do from lightweight topwork to heavyweight cultivations,” explains Ollie.

“But a couple of years ago with some of the front-runners beginning to show their age we decided we needed to rationalise things, swapping out four old-timers for a pair of shiny new CLAAS tractors – an ARION 650 and an AXION 870.

“While this made sense on paper, being considerably lighter than our old heavyweight tugs we were concerned about how well the new tractors would get on with our heavy draft cultivators on our heavy clay ground. Of course when it came to it, with their stepless gearboxes, the right weights on the nose and some decent rubber those concerns proved unfounded.”

However with these two expected to undertake a much wider range of jobs than the machines they replaced, getting the ballasting, tyre pressures and transmission settings right has become much more of an essential issue.

So when Ollie was approached by his local CLAAS dealer to trial a new system to help with this he jumped at the chance.

“In our first six months with the tractors we had been really impressed by the way the stepless CMATIC transmission delivered the power to the ground but I was keen to get any extra guidance I could in setting them up right.

“As our main cultivations workhorse the 870 came fitted with 500kg of rear wheel weights plus 1500kg and 900kg blocks to go on the front linkage. That gave us quite a lot of opportunity for tweaking things alongside being able to drop pressures as low as 0.4bar in the Michelin Machbibs.

THE CEMOS SANITY CHECK

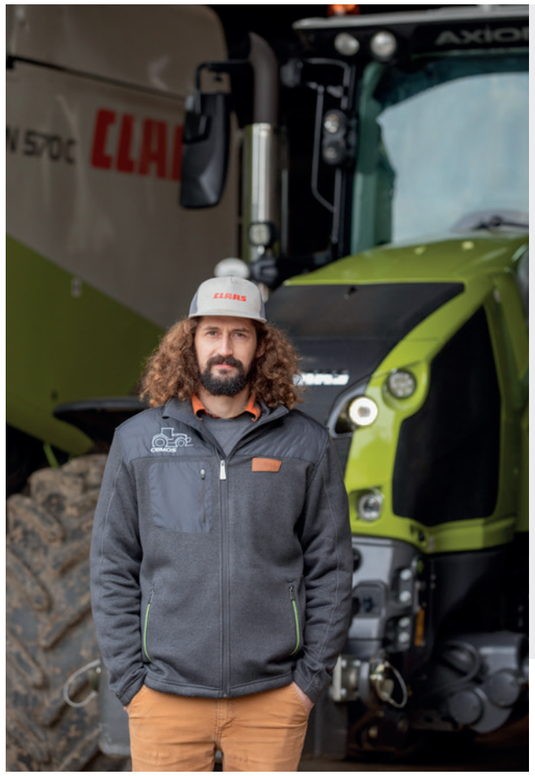
“What the CEMOS system provided was a sanity check about how best to go about making these changes.”

When hitching up a new implement, the system requires the operator to input a short list of variables such as machine weight, working depth, soil type and condition. It will then make a recommendation about how best to ballast the tractor to achieve the best balance front to rear. At the same time it’ll make a suggestion of what pressures the front and rear tyres should be running at. Displayed on the tractor’s CEBIS colour touchscreen with clear silhouette imagery, this information will then be stored for all future work.

With this the driver can set off into work, choosing simply to bias the set-up either towards maximising output or efficiency (minimising fuel use).

“When I set off doing a new job, for example with our combination sub-soiler cultivator, I do a couple of runs with the tractor set as I think best,” explains Ollie.

“During this time the CEMOS computer is monitoring everything and then makes an assessment as to how things could be improved. It might suggest altering



Farm Facts

FARM	TW Hill & Son, near Leicester
FARMED AREA	243ha (600 acres)
SOIL TYPES	Predominantly heavy clay loams
CROPPING	Winter wheat, winter and spring beans for seed, spring barley, spring oats and linseed
LIVESTOCK	100 x Kerry Hill breeding ewes
CONTRACTING	Cultivations, combining, hay, silage and straw-baling
TRACTORS	CLAAS AXION 870 and ARION 650
STAFF	Ollie and Stephen Hill

engine:transmission droop settings or trying diff-lock. Alternatively it could propose altering how much air is in the tyres or how much weight is on the nose.

“Almost always making the changes results in the tractor going better – either covering more ground or using less diesel.”

SURPRISING CEMOS SUGGESTIONS

Interestingly the fuel savings don’t necessarily come about with a reduction in engine revs.

“With our old tractors I’d always try to keep engine rpm as low as possible for cultivations work to extract maximum torque out of the motor.

“If I try that with the 870, CEMOS immediately suggests altering transmission settings to let the engine rev up to somewhere between peak torque and peak power. Typically aiming for 10-12kph with our disc-tine-press combo the system has comfortably knocked fuel use back by 1-litre/hour compared with how it would run before we had CEMOS fitted.”

This change in mindset is mirrored when it comes to ballasting, the system almost always suggesting a lighter footprint than Ollie anticipates.

“Having had CEMOS for two seasons and working with the CLAAS team developing the system, I’ve learnt that I have a tendency to over-weight the tractor.

“The computer almost always tells me to drop weight off. It amazes me how you really don’t need to stack it on when you might think you do.

“Just to prove me wrong CEMOS is constantly measuring tractor performance and how quickly I’m covering the ground. It’s proved the whole rig runs that much more efficiently the lighter it is and tractiuon isn’t an issue with the way the transmission delivers the power.

“Of course when you think about it, it makes sense – we’re not hauling unnecessary bulk about and consequently we’re not burning unnecessary fuel. On top of that we’re not screwing the ground up and we’re elongating tyre life.”

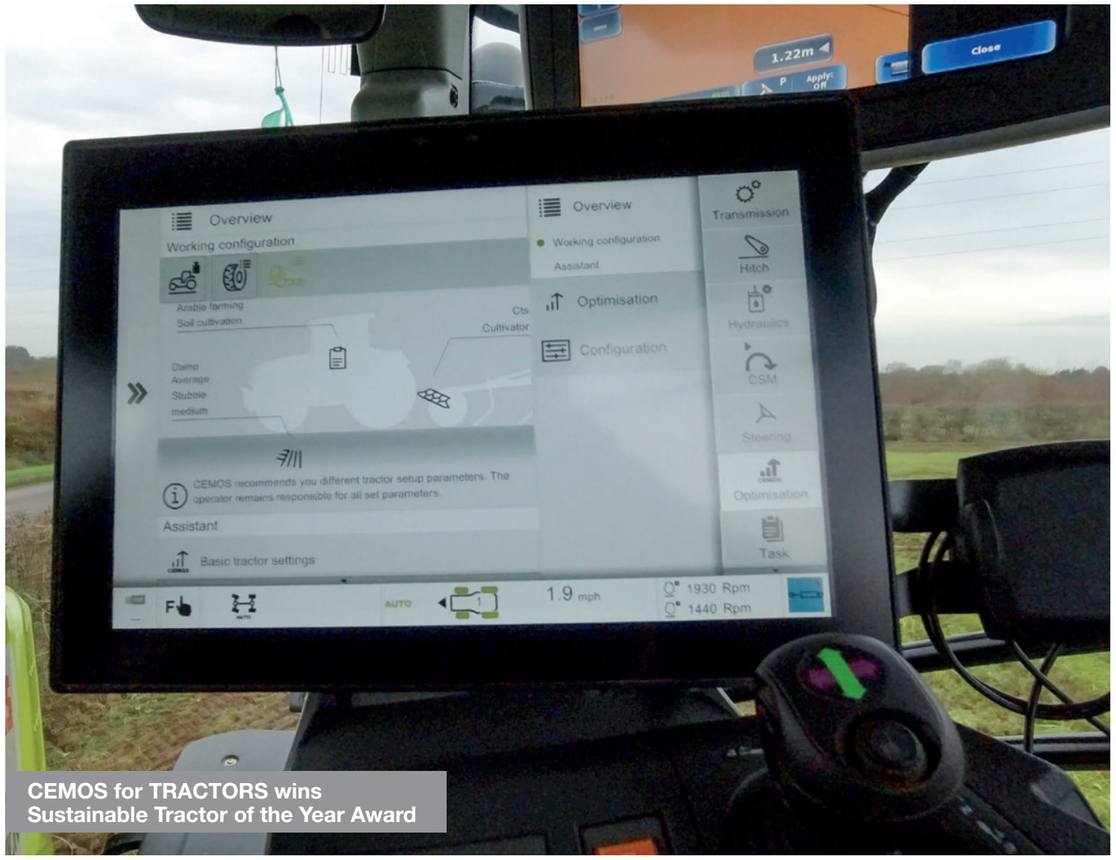
BETTER THAN AN OPERATOR

The overall feeling is that the system is better than an operator in striking the right balance between ballast, tyre pressures and transmission settings and that’s where the efficiency gains are to be had. When it comes to adjusting the amount of air in the tyres, the tractor’s own compressor can be employed but in reality a trip back to the farm workshop is generally timed with a fuel tank top-up if a serious pressure change is required.

“I can really see the merit in pairing CEMOS with a proper on-board central tyre inflation system to give the opportunity to tweak pressures on the move and it’s one of the next things we’ll be looking at,” says Ollie.

“CEMOS has added hugely to the capability of our tractors. At the core of it they’ve got modern engines capable of producing the power and fantastic stepless gearboxes that smoothly deliver the torque to the wheels so much better than what we’ve had before.

“What CEMOS does is provide an extra level of finesse, constantly questioning my judgements and giving me a sanity check about transmission set up, ballast and tyre pressures. Ultimately that results in us covering the ground faster using less fuel.”



CEMOS for TRACTORS wins Sustainable Tractor of the Year Award

What is CEMOS for Tractors?

CEMOS for Tractors is an on-board system designed to help operators optimise the performance of their machine and improve efficiency.

Like CEMOS Dialog on LEXION combine harvesters it monitors a range of tractor functions and makes suggestions to the driver about ways to fine-tune machine settings to get the most out of both tractor and implement.

Having undergone extensive field-testing and customer evaluation over the last 18 months, CEMOS for Tractors is now available as an option on all CLAAS ARIONs and AXIONs equipped with Cmatic stepless transmissions. (It can also be retro-fitted to existing tractors built since 2018).

Put simply, the operator inputs a range of parameters relating to the implement, soil condition and tyres via the tractor’s touchscreen CEBIS display and sets off into work. The CEMOS software then monitors tractor performance for a short while before making suggestions about how things could be improved. This might include changes to ballasting, tyre pressures or transmission settings.

The driver can choose to bias the system towards either maximising output or optimizing the tractor towards fuel efficiency. Over time the ‘auto-learning’ computer controller gathers data about the work being done and adapts its recommendations to real-life working conditions.

Typically during the last two year’s worldwide field evaluations businesses using CEMOS for Tractors saw a 10-20% improvement in fuel use or output. In a recent DLG field test an AXION 960 equipped with CEMOS Dialog and CLAAS’ CTIC tyre inflation system was shown to use 16.8% less fuel and cover 16.3% more ground when on cultivation duties.

CEMOS for Tractors is part of CLAAS’ continuing Tractor Implement Management (TIM) programme. Employing a ‘colour-blind’ multi-brand ISOBUS interface, this already includes automatic speed control for green harvest equipment like forage-wagons and balers which can now govern tractor transmission ratios according to load on the crop intake system.

Following the success of the initial launch of CEMOS Tillage the range of jobs that the system can be employed for will be expanded over coming seasons.