

Operation Evolution

The tractor cab may be in for a makeover, realigning for a future as a rolling office when driving is an afterthought.



Engineers consider the view and the ability to swivel, head clearance and shock absorption, and who could forget lumbar support? There's no detail too small when it comes to designing the seat and the cab on a piece of ag equipment.

"The appearance of the seat leads to comfort," says Tilo Kefer, with one of the industry's leading seat-design companies, Grammer. "Even the color is comfort. If you like the seat, you feel more comfortable sitting in it."

Tractor and combine cabs have come a long way since "comfort" was defined by how a rear settled into a molded steal seat. But, even after Bluetooth-capable sound systems and information-packed LCD monitors have become common, the cab, a farmer's throne, could be in for a serious makeover. Fresh designs will seek to turn the cab into a data and decision-making hub, allowing a farmer to control a whole operation from an ever-more comfortable seat as autonomy continues to take over more of the actual job of driving and operating machinery.

John Deere showed off its vision for a "cab of the future" last fall at the Agritechnica machinery show, in Hanover, Germany, trying to answer questions that are ringing throughout the industry.

How long will an active tractor driver be necessary? How long, in turn, will a cab be necessary? Finally, what's a farmer to do in that cab for what seems destined to be a gap in development when tractor and equipment are ready to do almost everything on their own but not ready to be truly left alone?

A VISION OF THE FUTURE

Deere proposes the Command Cab. "It's our vision that, as we go toward more automation and ultimately autonomy, the role of the operator goes away from direct control and more toward supervision both in the field you're in and management of your entire fleet," says Josh Hoffman, Deere's lead for user experience and industrial design.

The Command Cab is an LCD-laden cocoon of productivity.

One wide LCD spans across the user's chest packed mostly with on-sight information such as the machine's progress in the field, application rates and speed. Problem with the planter? There's an alert for that and so much more.

John Deere built its Command Cab concept to manage not just the tractor in the field but the whole farm.

There's another wide, narrow LCD above the forehead, this one featuring information on everything from GPS coordinates to weather reports to the actions of a farm's drone fleet or the progress of another tractor working on a different task in a different field.

A video call may pop up from home checking to see when dinner should be ready or from the employee asking what to tackle next. There could be alerts and suggestions, as well, perhaps from a camera drone that has detected weed growth, such as "Would you like to deploy the sprayer?" You can do so with the tap of a finger.

"It's not just the job you're managing right now," Hoffman says. "It's the context you get of other jobs at the same time. You see other fields, other work happening, other machines doing their job. You're in command of the entire operation."

Press one button, and the lower LCD turns translucent, allowing a camera-assisted view down to the front tires. Press another, and the whole screen physically lowers away.

LOOK MA, NO WHEEL

What a user won't see is a steering wheel, which would be replaced by a joystick.

Deere is not alone. Fendt debuted its IDEALDrive joystick control for its combines in Europe last year, making it the first combine from a major manufacturer to remove the steering wheel in favor of a stick.

“The main thing is you have a better view. You can sit back, very relaxed in a great sitting position,” AGCO sales engineer Johannes Bröker explains.

The joystick, on a user’s left hand, incorporates buttons for the horn, GPS activation and lights. The innovation promises a clean end-to-end view of the header and an easier time turning the machine around on the headlands, all amounting to less operator fatigue.

“A big advantage is you have much shorter movements of your arm, and you’ll turn around fast,” Bröker says. “It’s a different feeling the first time without a steering wheel in front of you, but you’ll quickly get familiar with the system.”

Fendt claims a 6% increase in productivity with its IDEALDrive joystick and a 65% reduction in “operator steering workload.” The option is set to be available for North America by 2021 in all Class 7 to Class 10 Fendt IDEAL combines.

HAVE A SEAT

Other cab innovations are en route or have already arrived in cabs. Pneumatic lumbar is often available, and some seat manufacturers are working on an inflation system for the sides of seats, furthering the embrace of the operator. Heated and air-conditioned seats are options on many new machines, and some distant dreams include sewn-in sensors that would automatically control that temperature depending on an operator’s body temperature or heart rate.

“Everybody’s talking about it,” says Jeff Linnberg, with Sears Seats. “Some of it borders on being hokey or not really worth it, but there might be something in there that makes sense.”

Massage chairs are coming, too, not as a gimmick but as a way to keep an operator comfortable all day.

“Customers have asked for it again and again,” Deere’s Hoffman says.

At Apache Sprayers, designers changed the angle on armrests to allow for more arm and legroom, and a premium seat option includes heating and air-conditioning. Units now are available with premium stereos and speakers.

Case’s newest Magnum series of tractors comes with redesigned armrests loaded with 11 buttons programmable for more than 100 functions, making ergonomics better for an operator.

A NEW REALITY

In-cab amenities in agriculture tend to lag behind but follow automotive features, but change is likely looming across both industries. Once you start tinkering with what an operator does while the tractor drives, how that operator sits can change, too. There are different needs when constant, sharp focus is required more than there are when a farmer will pay more attention to info-packed LCD screens or even relaxing in front of Netflix.

The newest seat innovation now includes ways to increase comfort, but engineers are already puzzling over how to adjust for a dramatic change in function.

“It may turn more toward an office chair. A lot of things now are designed for a driver to look over the right shoulder at an implement, but an advanced cab with a lot of video screens, there may be less need to look over your shoulder because there will be video screens doing that for you,” Linnberg explains. “Then the seat designs will change shape and get taller. It will move and flex more, like an office chair.”

Then again, there could be a tipping point. Even if the days of monitoring equipment from the home office seem distant, autonomous tractors built to work in a field aren’t, and they are, in fact, already on the market.

A top-of-the-line cab can account for a large chunk of the cost of a new machine, but how necessary is that when the tractor may spend most of its life following a leader?

“There’s no doubt we’re moving to this autonomous stage,” says John Fulton, an associate professor at Ohio State University. “You could have a step-down version of some tractors that have all the capability to do field functions but are managed remotely. You could actually draw back from all those cab features.”

The seats farmers do spend most of their time in, however, are likely to remain comfortable. ///



Joysticks may replace steering wheels, allowing better views in the cab, which are getting comfy upgrades of their own with heated and cooled seats.

JOEL REICHENBERGER