Driverless Tractor Safety – Repaired Meeting Kit



What's At Stake

A driverless tractor is an autonomous farm vehicle that delivers a high tractive effort (or torque) at slow speeds for the purposes of tillage and other agricultural tasks. It is considered driverless because it operates without the presence of a human inside the tractor itself. Like other unmanned ground vehicles, they are programmed to independently observe their position, decide speed, and avoid obstacles such as people, animals, or objects in the field while performing their task. The tractors use GPS and other wireless technologies to farm land without requiring a driver. They operate simply with the aid of a supervisor monitoring the progress at a control station or with a manned tractor in lead.

What's the Danger

HEALTH AND SAFETY RISKS OF DRIVERLESS TRACTORS

Autonomous vehicles are becoming more and more commonplace in farming. This doesn't mean that safety is increasing, though. In fact, the automation of many of these pieces of heavy equipment might prove to be more unsafe than those that are operated by humans.

Just like the issues that have come to light about autonomous cars on the roads, there is a chance that the farm equipment's program might not react appropriately to hazards in the way of the machine. This can mean that farmers and farm workers might end up with a serious injury or could even be involved in a fatal accident caused by the autonomous equipment.

It is true that these self-driving vehicles offer greater precision than what is possible with human-driven equipment. In some cases, the margin of error is a mere two inches. The smart features are also impressive. Many programs will text the farmer or another contact when there is something that isn't right, such as a tractor moving too fast.

The introduction of automated equipment is exciting, but it poses a challenge for workers. If they are injured in the field by one of these vehicles, they have to determine how to handle the situation. Do they file for workers' compensation or do they seek compensation through a third-party lawsuit? The answer might not be clear, but finding it will be important in these cases.

There are some key elements which pose health and safety risks; a lot of accidents happen because workers become far too familiar with the tasks which they are doing and therefore, in their minds, the hazard they are mitigating becomes less and less important because it has not happened before and they become casual to the point where they are not as careful as they should be. This means it is a cultural problem, so the health and safety risks to farmers remain the same.

Therefore, a fairly dangerous task, which workers believe to be safe, isn't; it is just that the hazard hasn't turned into an accident, but the risk has remained. The technology is still there, but the challenge is the population in the workforce. We have an ageing workforce and they are familiar with the hazards, meaning they sometimes do not give them the seriousness they require; they take chances, and that is when people get hurt.

A disproportionate percentage of the agricultural workforce are injured every year, with the industry accounting for some 20% of all workplace injuries, with 23% of fatalities being caused by being struck by a moving vehicle, and a further 10% by contact with machinery.

HOW AUTONOMOUS FARM TRACTORS WORK

An autonomous farm tractor is a piece of self-driving farm equipment that performs its duties without an operator sitting in the cab. Autonomous tractors have been designed to process and calculate their own position and speed, and to avoid obstacles in the field such as humans, animals, and objects. Tractors without drivers can be fully autonomous or monitored remotely. Typically, a single operator will oversee a fleet from a remote (but nearby) location.

Autonomous farm tractors are equipped with integrated systems, computers, and processors. These connections transform electrical impulses into a controller or CPU to enable the tractor to perform. Each tractor is equipped with its own set of interconnected capabilities and failsafe emergency systems. Every autonomous farm tractor comes with a remote emergency stop feature for everyone's safety.

For navigation, tractors are equipped with GPS-enabled cameras, radars, and lighters. A sensor suite with two lighters, a camera set, and a side robotic camera is mounted on the tractor. These are used to navigate and monitor the environment, and the data they absorb is fed into the main system.

THE BENEFITS OF AN AUTONOMOUS TRACTOR

Accurate and Efficient Farming. One of the most significant impacts of automation in agriculture is gains in efficiency and accuracy. This is absolutely true in the case of the tractor. Fully autonomous farm tractors can till and plant seeds with pinpoint accuracy. This results in better farming precision, which leads to greater yields (and financial returns). Because so many of the tasks are automated, ancillary advantages are generated – such as more efficient fertilizer distribution, decreased fuel waste, and lower production costs.

Avoid Human Errors. With human workers comes the possibility of human error. People get tired, they get distracted, they text while they're driving. All of these things can lead to serious tractor-related incidents. A completely autonomous tractor leverages a form of laser-focused artificial cognition that is impervious to error, fatigue, or distraction.

Better Data Gathering. The cutting-edge tractor sensors used by autonomous farm tractors collect information regarding soil conditions and crop health. They also

collect all harvest data prior to and after cropping. Through the data collected by autonomous tractors in agriculture settings of every kind, small and large farms can generate new insights and strategies.

Combat Labor Deficits. Farms are facing a labor shortage. However, autonomous tractors enable farm operators to get the work done even if they can’t add headcount. What’s more, the labor they do have on payroll can do more with less. Workers can execute for extended periods of time because all arduous, physical, draining tasks are automated. Autonomous tractors require minimal supervision, meaning a single operator can easily operate an entire fleet.

DRIVERLESS TRACTORS SAFETY OVERVIEW

The driverless tractor is considered controversial in terms of safety and public acceptance. A tractor operating without a driver makes some people nervous. Creating technology that stays safe in all scenarios where failure could possibly occur takes a lot of programming and time. In terms of motion detection, the tractors have sensors to stop them if they detect objects in their path such as people, animals, vehicles or other large objects.

While farmers are generally eager to embrace an autonomous machine that eliminates one of their most time-consuming tasks, there are a wide range of potential issues that must be considered before such machines make their way onto the market.

FINAL WORD

Smart equipment – tractors and combines – till, plant, fertilize, monitor and harvest the fields. Using cutting-edge artificial intelligence, they do the work and save farmers countless hours of labor. The equipment responds to the weather and calculates the exact needs of each crop.