

## Use of Hybrid Vehicles in Agricultural Field

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### ABSTRACT

The use of hybrid vehicles in the agricultural field is a growing trend. These vehicles offer a number of advantages over traditional diesel-powered tractors, including reduced fuel consumption, lower emissions, and increased productivity.

Hybrid vehicles use a combination of electric and gasoline engines to power the vehicle. This allows them to operate more efficiently than traditional diesel-powered tractors, which can waste a significant amount of fuel when idling or operating at low speeds. In addition, hybrid vehicles produce lower emissions, which can help to improve air quality and reduce greenhouse gas emissions.

Hybrid vehicles offer a number of advantages over traditional gasoline-powered vehicles. They are more fuel-efficient, which means they produce fewer emissions and can save drivers money on fuel costs. They also have a lower environmental impact, as they produce less pollution. In addition, hybrid vehicles can be quieter than traditional gasoline-powered vehicles, which can be beneficial in urban areas.

### KEYWORDS: Vehicle, Artificial, Hrbrid

### INTRODUCTION

There are a number of different types of hybrid vehicles available on the market, from small cars to SUVs. The cost of hybrid vehicles varies, but they are generally more expensive than traditional gasoline-powered vehicles. However, the cost of hybrid vehicles is expected to come down as the technology continues to develop.

If you are considering buying a new car, a hybrid vehicle may be a good option for you. While they may be more expensive upfront, the long-term savings on fuel costs can offset the initial cost.

As the technology continues to improve, hybrid vehicles will become more affordable and more efficient. This will make them a more attractive option for farmers, who are always looking for ways to save money and reduce their environmental impact.

In addition to the environmental and economic benefits, hybrid vehicles can also improve safety in the agricultural field. Diesel-powered tractors can be noisy and produce fumes that can be harmful to the health of farmers and other workers. Hybrid vehicles are much quieter and produce fewer fumes, which can create a safer working environment.

Here are some of the benefits of hybrid vehicles:

- Improved fuel economy: Hybrid vehicles can get up to 50% better fuel economy than traditional gasoline-powered vehicles. This can save drivers a significant amount of money on fuel costs, especially over the long term.
- Quieter operation: Hybrid vehicles are generally quieter than traditional gasoline-powered vehicles, which can be beneficial in urban areas.
- Increased resale value: Hybrid vehicles tend to hold their value better than traditional gasoline-powered vehicles, which can save drivers money when they are ready to trade in their car.

Of course, there are also some drawbacks to hybrid vehicles:

- Higher initial cost: Hybrid vehicles are typically more expensive than traditional gasoline-powered vehicles. However, the cost of hybrid vehicles has been coming down in recent years, and they are becoming more affordable.
- Limited range: The electric motor in a hybrid vehicle can only power the car for a limited distance. Once the battery runs out of power, the gasoline engine kicks in. This can be a drawback if you plan on driving long distances on a regular basis.

- Recharging the battery: If you live in an area with cold winters, you may need to recharge the battery in your hybrid vehicle more often. This is because the battery can lose power in cold weather.

Another advantage of hybrid vehicles is that they can provide increased productivity. This is because they can be used for a wider range of tasks than traditional diesel-powered tractors. For example, hybrid vehicles can be used for tasks such as spraying crops, harvesting crops, and transporting goods.

Overall, the use of hybrid vehicles in the agricultural field offers a number of advantages. They are more efficient, produce lower emissions, and can improve safety. As the technology continues to improve, hybrid vehicles are likely to become a more common sight on farms in the years to come.

Here are some of the specific benefits of using hybrid vehicles in agriculture:

- Reduced fuel consumption: Hybrid vehicles can reduce fuel consumption by up to 30% compared to traditional diesel-powered tractors.
- Increased productivity: Hybrid vehicles can be used for a wider range of tasks than traditional diesel-powered tractors. This can help farmers to be more productive and efficient.
- Improved safety: Hybrid vehicles are much quieter and produce fewer fumes than traditional diesel-powered tractors. This can create a safer working environment for farmers and other workers.

## USE OF HYBRID VEHICLES IN AGRICULTURAL FIELD

Today, the agricultural sector is facing some difficulties, for example, improving people, creating energy demand, lack of work, and changing unnatural weather conditions. The increase in energy demand causes various challenges from one side of the world to the other; In this manner, various techniques are proposed to achieve energy independence from oil-based products and degradation releases. From a more comprehensive perspective, the use of agricultural vehicles and proper power sources all have the potential to be a significant step towards robotic and accelerated manufacturing in Agriculture 5.0. The example of mechanical improvement recalling fully autonomous robots for the agricultural sector is clearly one of emerging advances to deal with the expanding interest for food and address standard issues.

To fix the issues of projected population, agricultural trained experts, farmers and reintroducers are expected in a sensible way to bring more food from less land. Along with the reduction of normal work, this shows a clear need to increase the range by introducing more automation structures on farms.

Replacing huge equipment with lighter remote or autonomous contraptions can reduce issues related to soil stress in agriculture. Robotic and electric ranch vehicles have many advantages, including precision farming, handling working conditions, limiting specific impacts, and crop efficiency.

The development of decongested wild field vehicles as agricultural electric vehicles is still in the prime stages, but it continues to attract interest among subject matter experts and industry. Despite the way wheel loaders and other existing vehicles have progressed, ranch haulers and agriculture remain adaptable robots.

Contraction shock takes part in some advantages, stood apart from the usual type, such as sensor connection, dynamic course and even more precise control in work applications. Similarly, as real power adds to the energy reserves, it is estimated that electric vehicles with less spill over should make them beyond one's expectations.

Robots are used a lot in current applications such as materials handling, transportation, and quality control evaluation. Various agricultural robots have been proposed and built, which provide motorization and information to agricultural inputs. Agricultural robots are independent machines used to support range and yield performance, reducing dependence on continuous work in general rationality.

Lightweight robots could reduce soil damage from critical agricultural materials. Furthermore, robots used in agricultural applications should not be heavier than human workers as this constant condition may aggravate whenever the soil is injured. Smaller and lighter robots thus need to be smarter and more intelligent in order to forge a presence of robots on farms. Recently, some research articles have been spontaneous regarding the improvement of small robots.

An adaptable robotic stage is used to deliver a multi-sensor stage for ground conducting. Visual information is integral to handling robot action as it can be used to abstract away the robot's control, increase eco-agreeableness and reduce soil compaction effects.

Agricultural robotics can beat restrictions such as low expansion and dangerous work. Robots can perform tasks that people cannot do in the restraints of wild conditions, for example, general checks and controls, crop viewing, and care and treatment. Similarly, the use of robots in agriculture can reduce labor costs and lead times.

Another motivation for using agricultural robots is in addition to improving the quality and efficiency of food production and reducing labor costs and working hours. Market wages and better progress will engage researchers to promote agricultural robots for additional reasons including gathering vegetables and general things with higher accuracy and efficiency.

Electric vehicle requires a huge part in precision manufacturing, which is to deal with the suitability of assembled manufacturing without affecting various agricultural factors and reducing the manufacturing cost. Arduino is the one time open-source device to consider the major stuff and create PC programs. Arduino sheets are really perfect for viewing information sources on an explorer, finger on a pic, or enlightening on a Twitter message - and support a contraption to turn it into produce, flipped at a drove, on the web accept anything. By providing a lot of guidance to the schematic microcontroller, you can coordinate your device. Arduino was the brainchild of thousands of works, which ranged from standard papers to complex speculative abstractions, usually over the years.

The water framework is processed using a soil moisture sensor. This sensor detects the field position. As a last resort, the tenacity or wet soil expectation is less than 10%, suggesting the GPIO pin is high and accepting soil soaking conditions requires more than 90%, the GPIO pin shows low. Using the Wire application, the process of the water framework is controlled. This application is connected with the Raspberry Pi, until the message is issued, turn on Exchange.

The motor defend driver is connected to the Arduino Uno board. It includes 5 automatic pins. The two pins are connected to two ultrasonic sensors (modern pins), one on the front and one on the back. In the event that there is an obstacle in front of the vehicle, the ultrasonic sensor resource is within 15 cm level. This gives advanced messages to the Arduino Uno board which is connected to the motor shield drive to stop the vehicle. Recognizing that there is an obstacle near the vehicle, the motor safeguard drives the wheels from the left and 50% of the DC motor from the right. This movement is indistinguishable from the rear end.

The electric vehicle stream is gradually noted as a safe and non-pollution contraption in life. The Cross Variety Power Vehicle is an incredibly futuristic thing that is coordinated and employed by various ancillary products. Its risk in agriculture is also mild. More basic vehicle controls are typical for safe transportation on a mountain road for example. Its accuracy and speed are a focal advantage over the standard vehicle sighting.

Its stand out from the force is clearly and quickly too. Tact is another essential part. It apparently receives a handle on the corresponding shaft to tire the tire with high speed. It is easy to control. It would traditionally use on agricultural gear. For example agricultural machinery eg. Farm transporter and various vehicles. Since standard farm vehicles are large and slow, it is thought later that they would use precision control decks. Electric vehicles will play a wider role in agricultural inputs to reduce costs.

Absurd progress from diesel to electric resource is about to happen soon. Since a diesel vehicle tends to be slow, its efficiency is low, however, its power is fundamental to the sector. New turn

of events and the cost of diesel is high, it is common to convert to more modern contraption to fit for agriculture bound stuff. For example the included finder and grain breaker are controlled by cost, even as of late use the mixing power vehicle. It will be shiny and open, reducing from the cost point of view.

In current culture diesel vehicle plays a role in agricultural improvement because of its strong power and power. It has added great benefits to the procurement and weeding of agricultural rice transplanters. In any case the basic and blockhead movement affects its use for the foreseeable future. There must be an ever-expanding degree of immense and practical control. Some disasters happen in Critical Control. It is applied to large work to guarantee permanently enough high accuracy and constraint. This should be some valuable contraption for range application. This may be more direct and less annoying than the engine thing.

## DISCUSSION

Hybrid vehicles can get up to twice the fuel economy of gasoline-powered vehicles, which can save farmers a significant amount of money on fuel costs. This is especially important for farmers who operate large fleets of vehicles.

Finally, hybrid vehicles have lower operating costs than gasoline-powered vehicles. This is because hybrid vehicles require less maintenance and repairs. In addition, hybrid vehicles are eligible for a number of tax breaks and incentives, which can further reduce the cost of ownership.

As a result of these advantages, hybrid vehicles are becoming increasingly popular in the agricultural field. A growing number of farmers are choosing to switch to hybrid vehicles in order to reduce their environmental impact, improve their fuel efficiency, and lower their operating costs.

Here are some of the specific applications of hybrid vehicles in the agricultural field:

- Tractors: Hybrid tractors are becoming increasingly popular for a variety of tasks, including tilling, planting, and harvesting.
- Combine harvesters: Hybrid combine harvesters are also becoming increasingly popular. Combine harvesters are used to harvest crops, and they can be a major source of emissions.
- Trucks: Hybrid trucks are used to transport crops and other agricultural products. Hybrid trucks offer a number of advantages over traditional gasoline-powered trucks, including reduced emissions, improved fuel efficiency, and lower operating costs.

Overall, hybrid vehicles offer a number of advantages for farmers. They can reduce emissions, improve fuel efficiency, and lower operating costs. As a result, hybrid vehicles are becoming increasingly popular in the agricultural field.

Hybrid vehicle is now researched and manufactured by us. This is another Progress vehicle built with something like two single powered structures in the interim. In contrast a crossbreed vehicle presents flavor electric vehicle that employs a conventional engine and motor as the power source. The engine uses diesel or gas and some engines use compacted typical gas propane and ethyl alcohol as fuel. It is a system that is searching for some center. Farming driver needs to control the vehicle with difficulty while taking tricky mountain turns. If he drives immovably it will be easier to have episodes.

It is normal to be careful and step by step to control an agricultural vehicle especially in the offroading of cargo. The electrics are brought to the center for the presence of the driver between the time the vehicle is on top as well. It is easy to be controlled by the driver considering the spacious and fast response of the electric vehicle. Since there is no acceleration course open to use the foot pedal, the power transmitted is brief and sharp, so if the driver doesn't mind to incident it will be fundamentally safer than using a standard engine vehicle . Therefore the electric agricultural vehicle is placed with tremendous and priory.

It can be maintained that the trial test has not been so good. If we collect a lot of related data usually it will be outlined and judged conclusively for agriculture. Being solid, the vehicle must

exercise significant control in order to avoid a hazard situation in dangerous road conditions. For example in a dangerous road condition it must use critical and quick response to drive and control, i.e. direct control. Essentially this way a driver can use their enormous capacity at any point in time to meet their obligations safely and quickly.

The significant improvement for re-transportation and cost savings over a particular period are enormous. These cargo will consume the space and choose with the purpose that they are also prominent in the presence of time. In due course of time, there will be scattering. We can save different soul and time. Speed in a loose manner of driving is important to convey the essentials. It is therefore fundamental to transfer them as conceivable. They should be closely monitored for their skill utilization.

## CONCLUSION

Complicated and sophisticated movement is common in agricultural progress. Because of the complicated strategy and construction, the cost required is irrelevant even in agriculture. Game-planning and assembling keeps costs down, that's our thing in electric vehicles. Simply proposed motor we can make the vehicle basically whenever, which can save our arrangement time and money as much as possible. This usually drives the two or four wheel opposite to the engine that is running and reduces fuel damaging carbon and nitrogen oxides.

By then low carbon and green living will be achieved. The wastage of resources to pay attention to our age will also reduce. We can routinely vent the outside air and exploit limited resources. At last we have green environment. Electric vehicles are most important in the future of agriculture because of their accuracy and speed. They are epic for their apparent safe and non contamination to our living environment. Plus the cost is low so we can deliver them together with no bounds which gives us license to make them fast and everywhere.

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