



INNOVATION
AWARD
AGRITECHNICA
GOLD MEDAL



HYBRID POWER FOR AGRICULTURAL TRANSPORT!

The JOSKIN group, specialized in transportation and spreading, innovates once again by offering now the possibility to fit its range of transport vehicles with electrically driven axles.

In the past, tractor powers were lower and did not always allow to transport heavy loads or to face unfavourable working conditions. The use of driven axles was then the most common solution to address these issues. Through the years, tractor powers have significantly increased and the use of driven axles began to die out.

Nowadays, the transported volumes and loads have increased but the traction on the road could not be significantly improved. The use of wider wheels to transfer the tractor power to the ground became necessary, resulting in higher costs and a not so satisfying traction increase. Furthermore, the addition of weights on tractors in order to improve the grip has become a common practice but it results in a high fuel consumption and if the loads are not properly distributed, some parts and the tyres may wear prematurely. In difficult working conditions and with even bigger machines, tractors are put to a severe test, more fuel is consumed and the work output decreases.

As manufacturer of transport material, JOSKIN is constantly looking for solutions to improve the output of its machines and solve the problems linked to transportation. In the past, a great attention was devoted to the reduction of the empty weight of machines through new manufacturing concepts and the use of appropriate material. In the same way, Joskin has been developing an innovative solution called "E-Drive" for several years now.

The Beginning of a New Era!

This technology distributes the tractor power by transferring it to the whole tractor-trailer combination. In concrete terms, the JOSKIN E-Drive will partly transfer the tractor power by distributing it on two extra axles. The tractor traction is therefore supported by that of the vehicle behind it. It is consequently not necessary anymore to increase the weight on the tractor axles in order to gain grip during road transportation. The same applies for works in the fields, which require a higher tractor power in wet and unfavourable conditions.

The traction is significantly increased; but these are not the only advantages of this solution. Since less ballast is required, it is possible to reduce the weight of the tractor and thereby ground compaction, fuel consumption and tyre wear.

Given the traction ease provided by the E-Drive, damages to the ground structure due to the tractor-trailer combination slipping or sliding too much are also significantly reduced. This advantage is particularly interesting when spreading slurry. Since the periods permitted by law are limited, it is possible to maximise them by starting to work earlier and longer when the weather is less favourable.

This traction improvement also ensures better spreading performances. It is indeed possible to work with bigger tankers combined with wider injection implements or spreading booms. These larger implements can be used without any problem nor overload at low speed in order to ensure an optimal work quality.

The E-Drive's scope of action is however not limited to slurry tankers. Even on the contrary! This technology is also very advantageous in many other cases. It is easy... Every machine with driven axle can benefit from it. Horizon muck spreaders are by the way a good example. Since they are heavier at the back because of the spreading table, these spreaders get even heavier when the moving floor bring the matter to the beaters. As a result, there is less weight on the eyelet. Thanks to the above-mentioned advantages, the E-Drive allows to solve this problem without ballasting the tractor.

How does it work?

JOSKIN's E-Drive technique is a hybrid system with several key elements whose integration was studied in collaboration with the John Deere company. In first place, there is the engine. It is the centerpiece of the system and it transforms the received electric energy into a mechanical power up to 100 kW. The clutch transmission box is provided and designed by John Deere.

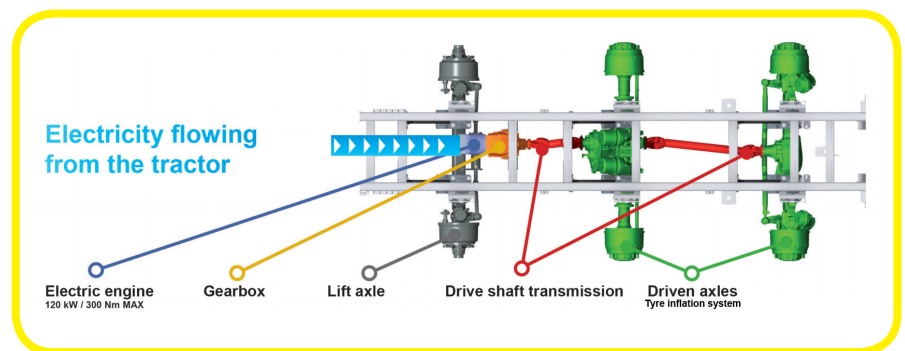
It is then through two P.T.O.-shafts that the electric motor drives the axles. Provided by

MAN, well-known international manufacturer in the transport industry, the axles combine power and sturdiness.

On a triple-axle vehicle, the last two axles ensure the extra traction. In this way, the first lifting axle can be kept, which allows to reduce tyre wear, the resistance of the vehicle and the energy requirement. Furthermore, when the front axle is lifted in the field, the traction is increased by transferring weight on the tractor and the two driven axles. The running gear is also characterized by the presence of a differential lock, a tyre inflation system and brakes with a suitable diameter.

From the various check points and the data exchange between the tractor and the machine on the ISOBUS (driving speed, weight on the axle, steering angle, etc.), the system is going to automatically manage the power transferred to the electric motor of the JOSKIN machine.

This system is therefore very easy and clear for the driver.



A Generator as Power Supply

The electric energy is produced by a generator integrated into the tractor. The mechanical energy is then transformed into electricity, which is finally transferred to the Joskin machine. The system is safe because it is in compliance with the AEF electric standards (Agricultural Industry Electronics Foundation).

E-Drive: Combining Flexibility and Simplicity

With its E-Drive hybrid solution, JOSKIN follows and supports current trends like fuel savings, use of "lighter" tractors to transport the same or heavier loads and the quest for optimal work performance in the fields.

Regarding the efficiency, the E-Drive is more effective than a hydraulic system and more flexible than a mechanical traction system. Thanks to its automatic management of the power distribution, the device does not require any handling from the driver and is therefore very easy to use.

Developed in cooperation with John Deere, JOSKIN's E-DRIVE is an innovative solution in an agricultural industry that is constantly looking for new solutions.