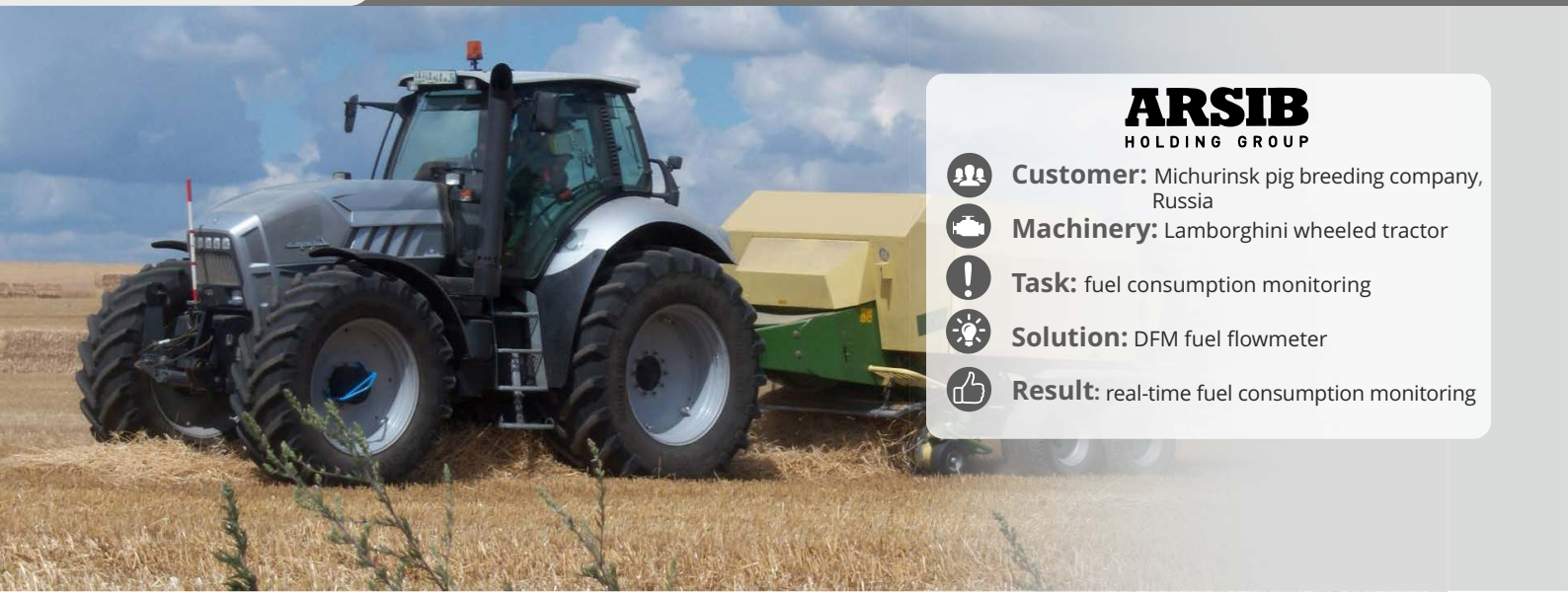
Fuel consumption monitoring in agriculture. Wheeled tractor.



ARSIB HOLDING GROUP

Customer: Michurinsk pig breeding company, Russia

Machinery: Lamborghini wheeled tractor

Task: fuel consumption monitoring

Solution: DFM fuel flowmeter

Result: real-time fuel consumption monitoring

CUSTOMER

Michurinsk Pig Breeding Company is one of the largest agricultural enterprises in Tyumen region, Russia. The company founded in 1998 is currently a part of ARSIB Holding Group. Main activitiy of the company is production of pork, beef and dairy.

MACHINERY

Lamborghini R8-265 general-purpose wheeled tractor is designed for plowing, transportation, as well as other agricultural operations. The tractor is aggregated with various implements and trailed equipment.

The dimensions of the tractor are as follows: 5600*2750*3255 mm, weight is 9050 kg.

Diesel engine Deutz BF6M 1013 ECP has electronic control system and intercooler, working volume is 7.2 l, power - 192 kW. The volume of the fuel tank is 550 l.

Lamborghini R8-265

TASK

Lamborghini R8-265 general-purpose wheeled tractor is used by the Customer for soil cultivation (plowing, harrowing) and transportation of trailers with various cargoes.

Tractor fuel consumption depends on many factors such as:

- operating mode (idling, driving on the road, plowing, harrowing the soil),
- speed of movement,
- the hardness of the road surface,
- amount of transported cargoes in the trailer,
- air temperature.

It is impossible to accurately calculate fuel consumption according to the existing regulatory tables (quotas) – they do not fully consider all the above-mentioned conditions. The accounting department of the Company has difficulties in writing off fuel.

As per experience of other agricultural enterprises, the consumption quota is usually higher than the actual one. This provides dishonest tractor drivers with opportunity to misuse fuel and drain it to canister for personal use or resale.

The Customer has decided to install a telematics system on Lamborghini R8-265 tractor not only to monitor the actual location of the unit, but also to obtain accurate recording of fuel consumption and operating hours.

SOLUTION

DFM 500D fuel flowmeter, installed on the tractor

The telematics system installed on the tractor consists of a DFM fuel flowmeter, GPS/GLONASS monitoring terminal (telematics device) and a telematic service.

For direct fuel consumption measurement, a DFM D500 differential fuel flowmeter was installed in the tractor fuel line. The flowmeter directly measures the fuel consumption in both supply and return fuel lines. The flowmeter calculates the difference in flow rates and ready-made data are sent to the telematics device. Measurement inaccuracy does not exceed 3%.

Special Reports have been generated in Wialon service, including the most important parameters of the tractor such as idling and driving time, operating hours, total and average hourly fuel consumption by each operating mode. Such Reports can be generated for any chosen time interval.

Running hours	6:05:45
Idling mode	0:17:53
Run per trip	31 km
Average speed per trip	5 km/h
Max. Speed per trip	20 km/h
Number of trips	2
Number of stops	2
Duration of parking stops	8:41:22
Number of parking stops	2
Consumed as per DFM	124 liters
Consumed as per DFM (Running mode)	122 liters
Consumed as per DFM (Idling mode)	1.12 liters
Average consumption as per DFM (Idling mode)	3.76 l/h
Average consumption as per DFM (Running mode)	21.13 l/h

Report sample from Wialon telematic service

Andrei Dergousov, Director of 76 Oil Tumen, Technoton's Partner

"The telematics system based on DFM fuel flowmeter was the best suited solution for installation on a tractor. The flowmeter measures fuel consumption with constant accuracy in all operating modes and on any terrain – flat or uneven one. Basing on the data received from the flowmeter, it was easy and quick to set up on Wialon all the necessary reports about fuel data and tractor operating time. "

RESULT

The telematics system was installed in July 2020. Since then, it has fully met all the expectations of the Customer. The system helps to:

- track the location of the tractor online;
- control instantaneous fuel consumption;
- generate the Reports on fuel consumption and engine hours for any chosen time period.

The actual fuel consumption of Lamborghini R8-265 tractor turned out to be less than the standard one. Fuel is written off basing on actual consumption. The tractor drivers do not have unaccounted surpluses - fuel drains have stopped.

Sergey Dudorov, Leading specialist of the Company

ARSIB HOLDING GROUP

"After installing the telematics system, we get all the information we need regarding fuel consumption and tractor operating time. The dispatcher specialist monitors fuel consumption and location in real time. Reports in Wialon telematics service are simple, informative and intuitive. The information is exported to spreadsheets and is further used for management and accounting purposes. "