



- Customer:** bus manufacturer\*
- Task:** fuel tank monitoring
- Machinery:** airport bus\*
- Solution:** DUT-E fuel level sensor
- Result:** 40% costs saved for fuel tank components

## CUSTOMER

In 1946, vehicle manufacturing plant produced the first unit\*. The plant was engaged in production of trucks of various tonnage, buses, delivery vans and other commercial vehicles. Some of the vehicle were manufactured under license from West German companies, the other part – vehicle of own design.

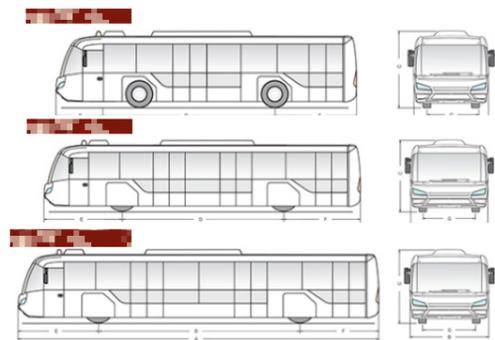
After several reorganizations in 90's and 00's new owners came to the company and its name was changed. The plant was named [redacted] and main specialization became a production of school, intercity and airport buses (buses for delivering passengers from airport terminal to aircraft).

**300+** employees

**400+** airport buses manufactured yearly

**70+** years in business

## MACHINERY



[redacted] buses are the most famous products of the plant. They deliver passengers from airport terminal building to aircraft and back. Buses operate in dozens of airports in European Union, Middle East, Russia and Ukraine.

Buses are equipped with MAN D0836 LOH 41 engines, 176 kW, aggregated with automatic transmission. Volume of fuel tank is 190 liters.

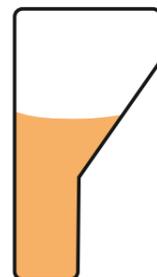
Main requirement to bus platform is the maximum passenger capacity. In addition, for the convenience of boarding and disembarking passengers, a bus must be low-floor. Based on these requirements, overall dimensions of bus and placement of main parts and components is designed.

## TASK



**Airport buses have high passenger capacity**

Due to the peculiarities of bus design, fuel tank of buses has specific shape - a height of about a meter, very narrow at the bottom and wide at the top (see picture).



**Fuel tank shape**

Standard float (lever) fuel level sensor used in road trucks is not able to measure fuel level correctly. The reason is its design: sensor's lever cannot move freely over the entire height of the tank. For such a tank, development of a special design of sensor is required.

Representatives of customer contacted several manufacturers of float sensors, but prices of non-standard sensors in the quantities necessary for customer (about 400 units per year) did not fit into the project cost, in addition, delivery time was too long.

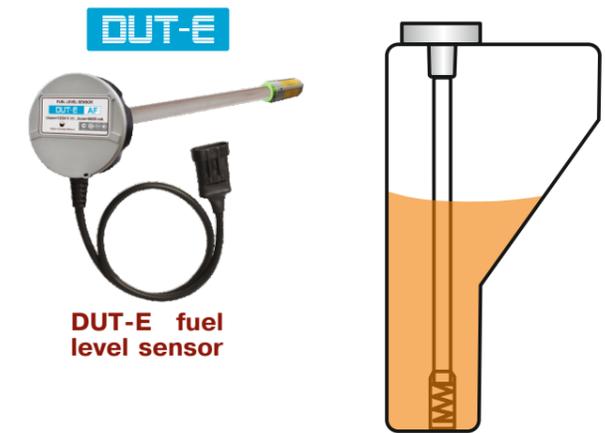
## SOLUTION

To monitor fuel in tanks of buses, EU distributor of Technoton products (Wagencontrol company) offered DUT-E AF fuel level sensors of a custom design\*.

DUT-E AF has a capacitive principle of operation, there are no movable parts used in design, what ensures high reliability. The sensor measures volume of fuel in tank with high accuracy – measurement inaccuracy is within 1%. Since the sensor's tubes reach almost to the bottom of tank, this allows to measure fuel level and volume from lowest possible to maximum possible point.

**By special order of customer, DUT-E AF sensors of a specific length were made** – the length of 960 mm is corresponding to the height of bus tank. This allowed to install sensor in fuel tank without additional time loss for trimming or extending the length of measuring probe of sensor.

**Calibration table for the tanks** of buses, where DUT-E AF were installed, as well as all necessary signal processing settings **were stored in internal memory of DUT-E AF.**



**DUT-E fuel level sensor**

**DUT-E in bus fuel tank**



**Yury Lavrentiev, Wagencontrol s.r.o. (Technoton Distributor)**

*"We offered for customer to make a customized version of DUT-E AF fuel level sensors, fully adapted and configured for specific fuel tanks. At their factory, the sensor is just installed in tank and connected to dashboard – additional training on sensor configuration for plant workers is not required.*

*The delivery time of customized version of DUT-E AF fuel level sensor is 2-3 weeks. This time frame completely suits the customer and allows them convenient planning of purchase of components for production."*

## RESULT

In 2017, **specially manufactured modification of DUT-E AF** saved [redacted] about 40% of the budget allocated for this type of components.

In addition, [redacted] plant has gained additional flexibility in production planning and formation of order for components - **delivery to customer warehouse takes 2-3 weeks** from the moment of sending the order to Wagencontrol s.r.o.

Thus, customer received a ready-for-use product that fully complies with the requirements of design documentation\*. During bus assembly process, it is only needed to install the sensor in a tank and connect signal cable to a standard analog-to-digital converter, from which the signal is transferred to dashboard.



[redacted]

*"We spent a lot of time looking for suitable fuel level sensors for airport buses. Proposals of other suppliers did not suit us either because of design, or because of price and delivery time.*

*DUT-E AF functions exactly as we expected. It is very important for us that we get the sensors already fully configured, having required length of measuring probe and with a special mounting plate made according to our drawings.*

*Thank you for very good and high-quality product, which we will continue to install on airport buses."*



\* details are hidden. If you want to know customer's name - please, contact [info@technoton.by](mailto:info@technoton.by)