








-  **Customer:** Entrepreneur (Philippines)
-  **Task:** fuel theft prevention on road building machinery
-  **Machinery:** excavators, dump trucks, loaders
-  **Solution:** DUT-E GSM fuel level sensor
-  **Result:** fuel costs reduction (drivers stopped stealing fuel from tank)

## CUSTOMER

Customer's field of activity is road building and maintenance.

25 machinery units are used for work:

- excavators and front end loaders – for digging and ground forming works;
- dump trucks – sand, soil and other bulk cargo transportation;
- minibuses – employees transportation.

Works are carried out on the southeast of Negros island (Philippines).

## MACHINERY

Vehicles and road building machinery of Chinese brands are used.

- JAC dump trucks (6x4 wheel configuration, capacity 17 t, engine volume 11,5 L, engine power 375 h.p., fuel tank volume 350 L).
- Sinotruk dump trucks (6x4 wheel configuration, capacity 11 t, engine volume 9,5 L, engine power 250 h.p., fuel tank volume 300 L).
- Lonking front end loaders (capacity 3,5 t, engine volume 6,8 L, engine power 140 h.p., fuel tank volume 250 L).
- Lonking excavators (bucket volume 1,1 m<sup>3</sup>, engine volume 5,9 L, engine power 150 h.p., fuel tank volume 380 L).
- Hyundai minibuses (engine volume 2,5 L, engine power 120 h.p., fuel tank volume 75 L).



**Sinotruk**  
dump trucks



**Hyundai**  
minibuses



**Lonking front**  
end loaders



**JAC**  
dump trucks



**Lonking**  
excavators

## TASK



**Fuel theft from tank**  
causes great losses

Fuel theft is common in Philippines. Average salary is less than \$270. Cost of diesel fuel is about \$0,65 per liter. Fuel drain and further resale became a profitable activity for many drivers, including those who work on customer's vehicles.

Another problem is ineffective operation of vehicles. It is common for drivers to have long breaks or coming back late from lunch. There is no way to control drivers by personal visits because working sites are far away from each other.

To solve these problems customer contacted Technoton's regional integrator. The task was to receive various information in real time: vehicle's location, fuel volume in tank, filling and draining, reports on engine hours and idle time. Solution should be universal for all types of vehicles with no need of complex maintenance.



## SOLUTION

For accurate fuel volume, route and location monitoring DUT-E GSM fuel level sensors were mounted on customer's vehicles.

DUT-E GSM is «two-in-one» device. It combines fuel level sensor with telematics unit. DUT-E GSM is easy to install and it is more resistant to interference than standard «sensor + terminal» combination.

Sensors measure fuel volume in tank with high accuracy (inaccuracy is just 1%). Volumes of filling and draining from tank is measured and reported in real time.

DUT-E GSM detects vehicle's location and sends following data to fleet operator's computer:

- fuel level in millimeters and fuel volume in liters;
- information about filling and draining events (precise volume and place of the event);
- route and location of vehicles;
- reports on engine hours and idle time.

ORF4 telematics service allows to display vehicle operation data in an easy-to-use form (reports, charts, diagrams).



**DUT-E GSM**  
fuel level sensor



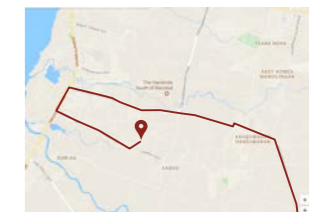
**Change of the fuel**  
volume in tank

## DUT-E GSM

**Fuel volume measurement**  
and location detection



**ORF4 telematics service –**  
data visualization



**Route and location**  
monitoring



**Alexey Pinchuk, Technoton**

*“The task was to provide an effective fuel monitoring and vehicle tracking system that would be suitable for different vehicles (dump trucks, minibuses, excavators and other roadbuilding machinery).”*

*We decided to use DUT-E GSM fuel level sensor. For more than half a year, DUT-E GSM in conjunction with ORF4 telematics service provides customer with all necessary data.”*

## RESULT

After DUT-E GSM installation customer can control the route and location of vehicles.

Manipulation with fuel and misuse of vehicles had stopped. Data on fuel (remaining fuel in tank, filling and draining) is always available.

20% fuel economy.

## Entrepreneur

*“Technoton offered unique solution – one device that can both measure fuel and detect location. DUT-E GSM fuel level sensors are fast to install, so the downtime of vehicles because of installation was short. Sensors work reliably in harsh environment (dust, high humidity, heat), which is common for places of machinery operation. DUT-E GSM were installed on 25 machinery units (vehicles, loaders, excavators). Thanks to 20% fuel consumption economy, it took less than three weeks to return costs of purchasing this equipment.”*

