

DM-230.1Mp & DM-230.2Mp Application Data Sheet

DENSITY – is one of the main parameters to determine the weight of petroleum products.

Density measurements of petroleum products are stipulated by the standards of majority of countries. They have to be taken every day in oil storage tanks and filling station's tanks.

The staff of the oil storage must take measurements of oil's weight (**M**) twice per day. For this purpose they need to measure the volume (**V**) and the density (**ρ**) of the product (**$M=V\rho$**).

It is required to know the real density (with commercial accuracy $\pm 0.0005 \text{ g/cm}^3$) of petroleum products in railway tanks, road tanks (cisterns) and sea tankers for custom control and for trading.

Density measurements take place in petrochemical and petroleum refinery industry – for qualitative control of intermediate and final products. And in the other areas dealt with qualitative and quantitative control of petroleum products.

Temperature - is one of the major parameters, which require providing maximum accuracy of density measurements. When the temperature of petroleum increase – its density decrease. And, conversely, when the temperature decrease – the density of petroleum increase.

To eliminate the influence of temperature to the final values of density it is required simultaneous measurements of density and temperature of petroleum products. And the best method of simultaneous measurements – is the sample-less method.

Time economy. If it is needed to take samples of liquids from several levels of the tank – the time expenses for account of documentary weight of petroleum in one storage tank may run up to 1 hour. To reduce this period you have to use the device, which can measure density and temperature without samplings at any depth of the liquid.

WHY PORTABLE DEVICES ?

The portable devices – have a number of advantages in comparison with stationary devices:

- It is not required to mount it stationary on the tank;
- Due to their mobility it is possible to take measurements on queue of various capacities;
- They are irreplaceable in case of a control of documentary weight of petroleum products during their transportation;
- They are comfortable and simple in operation;
- They can be used anywhere: in large storage tanks and in cisterns, in sea tankers and in filling stations' tanks, etc.
- One operator is needed for one device;
- They are cheaper, than stationary devices.

The only disadvantage of portable devices is their incapability to provide the commercial accuracy of measurements ($\pm 0.0005 \text{ g/cm}^3$).

But the company LEMIS Baltic have designed and manufactured Portable Density Meters DM-230.1Mp and DM-230.2Mp especially for commercial operations with petroleum products.

They measure:

- real density with accuracy $\pm 0.0005 \text{ g/cm}^3$, at the depth up to 30 meters, without sampling;
- real temperature;
- referred density in dependence with the type of fuel (gasoline, diesel, jet, crude oil);
- **°API** : real values and referred to 60 °F;

These devices are combined with computer by RS232 and build-in infrared channel.