


MBAMLA900  
MLA1000Conductivity measurement  
for flowing light oilMBA**SMB International and MBA Instruments:  
two brands - one idea. Material Handling.**SMB MBA

SMB and MBA core business focuses on the segment material handling. The group's product range encompasses planning, development, manufacturing, worldwide distribution and servicing of highly complex automated loading systems, filling systems, level and conductivity measurement technology, palletising stations, conveyor systems, compact high bay warehouses and shiploaders.

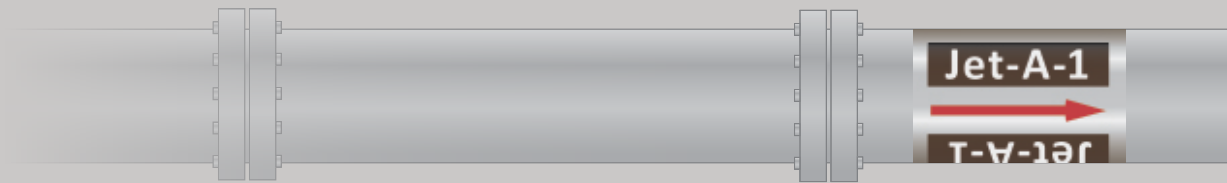
SMB group has consciously opted to carry out a large proportion of in-house manufacturing at its plant in Quickborn, near Hamburg. This enables the group to react quickly, specifically and spontaneously to customer requirements to a consistently high quality standard. In-house construction and the production of mechanical and electrical assemblies provide the platform for a wide vertical range of manufacture, while additionally guaranteeing reliability in terms of quality and delivery times. Our installation and service teams work on both national and international projects, while a globally operating distribution network delivers fast and expedient information and coordination.

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# Conductivity Measurement in light oil products



## Application for safety reasons

Light oil products such as kerosene or any kind of jet aviation fuel like Jet-A-1 that are pumped at high pumping velocities may cause an electrostatic charge due to low

electrical conductivity of the fluid. While discharging sparks could ignite the flammable product and cause an explosion. To avoid the storage of static charge additives are used to

increase the conductivity. The static charge will be dissipated to the wall of the tank or pipeline. Therefore the monitoring of the fuel conductivity value is a very important safety parameter.

## Application for quality reasons

Even the slightest contaminations in petroleum products can be discovered by measuring the conductivity. The lower the conductivity of a petro-

leum product, the higher its quality. Consequently, the conductivity value can also be applied as a purity and quality parameter. A measuring range

of 5 to 2,000 pS/m (picosiemens/metre) enables the lowest value of conductivity to be measured either in-line or in the lab.

## Principle of measurement

The probe used to measure conductivity comprises an inner core electrode and an outer tube electrode. Depending on the instrument version, the outer tube electrode has in-flow and out-flow openings of various sizes that enables the fuel to flow between both electrodes surely. A precisely regulated DC voltage is applied to the electrodes with the result that the surrounding fluid conducts the current from one electrode

to the other. The capability of the fuel to conduct electrical charges is the result of the conductivity of the fluid.

A resistor is used for basic calibration of the device as the conductivity value is the physical inverse value of the resistance.



## MLA900 portable hand-held meter



## Individual conductivity measurement of kerosene

The level of conductivity depends on the temperature of the liquid. As a consequence, the hand-held **MLA900** meter measures the conductivity and the temperature simultaneously. Both readings are shown simultaneously on a large display. The conductivity value of aviation fuel continually decreases by and by. As a result, retesting is required after several pumpings and fillings to check whether the added amount of additives still affords the necessary level of safety. For safety reasons a minimum conductivity value is compulsory for aviation fuel.

The **MLA900** is approved for use in explosive areas and is listed in **ASTM 2624** as the standard conductivity and temperature measurement method.

### TECHNICAL DATA / MLA900

- Conductivity: 0 to 1,999 pS/m with simultaneous temperature measurement in °C
- Threshold, function and status readings
- Portable field device in accordance with DIN 51412
- Explosion protection: Ex II 1/2 G EEx ia IIB T6
- Straightforward testing of function and display accuracy
- Battery life: up to 1,000 operating hours

## MLA1000 stationary and continuous operating measurement system

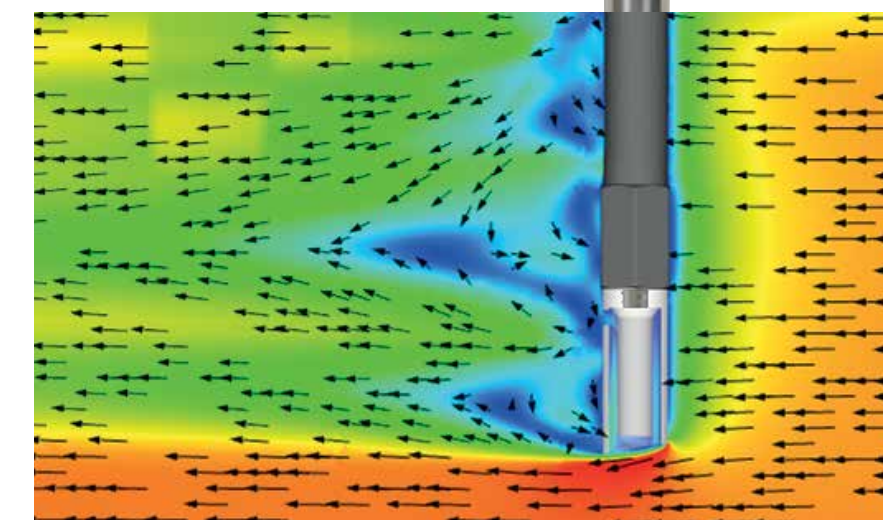
## Continuous in-line conductivity measurement of kerosene

The continuous measurement system **MLA1000** utilises the flow speed within a pipeline. While a flow of 0.5 – 7 m/s exists within the pipeline itself, the internal flow speed of the measuring probe is reduced by the small size of its in-flow and out-flow openings.

Accordingly, the resulting laminar flow between the two electrodes within the probe permanently suppresses the polarisation, yielding highly accurate, real-time conductivity and temperature values.

As with the **MLA900** the functional testing on the **MLA1000** involves the placement of a magnet that closes the test contact, showing a pre-set reading on the display.

The additional use of dismantling muffle (optional) allows the probe to be removed during pipeline operation.



### TECHNICAL DATA / MLA1000

- Conductivity: 5 to 2,000 pS/m, expandable to 5 to 10,000 pS/m, with simultaneous temperature measurement in °C
- Function and status readings
- Display unit MLA1000-A: Ex II 2(1)G Ex de [ia Ga] IIB T4 Gb
- Probe MLA1000-S: Ex II 1G Ex ia IIB T4 Ga