SETA STANHOPE-SETA

PRELIMINARY INFORMATION

JetDC 88500-0

Measurement of Dielectric Constant of Aviation Turbine Fuel

IP PM-FC/21; ASTM D924

- Dielectric constant (κ) measurement range 1.000 to 2.500
- Controlled temperature from 0 °C to 30 °C
- Rapid test
- Integrated apparatus
- Automated measurement
- Results in less than 15 minutes
- Large 9.7" touch screen

• Aviation •

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COMMITTED TO YOU 25 YEARS EST. 1998

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JetDC

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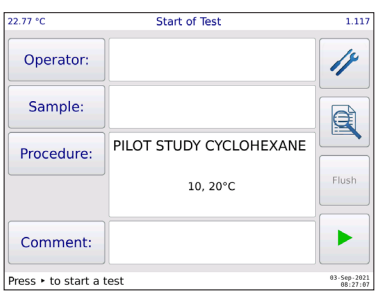
JetDC

The Seta JetDC is an automated, benchtop instrument designed to determine the relative permittivity (dielectric constant), density and temperature of aviation turbine fuel and fuel containing synthesised hydrocarbons and synthetic blending components. The relationship between these parameters is used to predict behaviour in aircraft gauging systems.

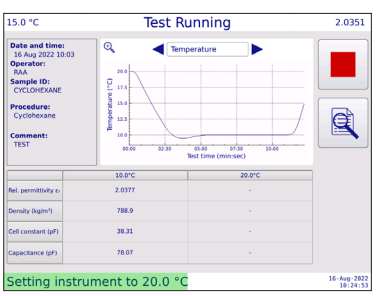
Sustainable Aviation Fuel (SAF) represents an important route to reduce global net CO_2 emissions. SAF is produced through many different processes, using different feedstock such as used cooking oil, syngas, fats, vegetable oils, greases, sugars and alcohols. SAFs are approved for use through a standardised testing process.

The molecular make up of conventional aviation turbine fuel and SAF are not identical and there can be a difference in the dielectric constant, density, temperature relationship. This relationship is used by many aircraft gauging systems as part of the mechanism to determine how much fuel is on board the aircraft. As such capacitive fuel gauge accuracy relies on the dielectric constant properties to be similar across jet fuel batches.

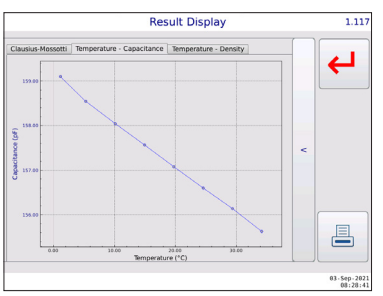
Operator Interface



> Enter operator and sample details, press ▶



> Test progress displays



> Final result displays. Data can be viewed as Clausius - Mossotti, Temperature - permittivity, Temperature - density

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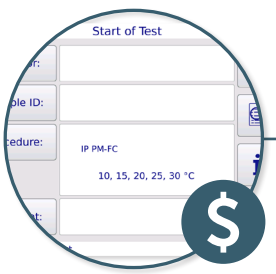
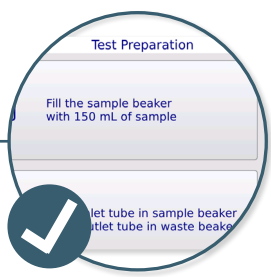


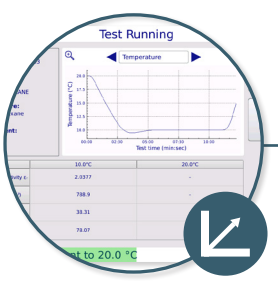
Cost Saving

- Small footprint requiring minimal lab space
- Low operator time due to simplicity of set up and automation, reducing labour costs
- Easy to maintain, service and calibrate in the field, eliminating time and costs associated with sending the instrument to a service centre

Ease Of Use

- Features simple user interface with touch screen and real time display of test progress
- The fully automated test means minimal operator knowledge is required with no extensive training
- Results are stored internally and can be exported directly to a USB, using the QR code or LIMS





Precision and Accuracy

- Fully automatic test sequence and consistent sample handling ensures test repeatability and reproducibility
- Possible missed steps or operator bias are eliminated for precise results

Test Method

- An Energy Institute Task Group is developing a new standard of test specifically for Jet Fuel which addresses the technology and needs gap of the existing method for measuring dielectric constant, ASTM D924
- Proposed test method IP PM-FC Determination of Relative Permittivity (Dielectric Constant) of Aviation Turbine Fuel, Small Scale Automated Temperature Scanning Method was approved and published in 2021 with preliminary precision

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Technical Specifications

JetDC 88500-0	
Operation	
Dielectric constant (κ) measurement range	1.000 to 2.500
Method of measurement	Relative permittivity
Relative permittivity precision (repeatability)	0.0012
Relative permittivity precision (reproducibility)	0.0017
Density range (Kg/m^3)	0 to 900.0
Controlled temperature (°C)	0 to 30
Data Management	
Display	Real time on screen test progress and results
Results storage	Results stored in internal memory
Results download	CSV, PDF
Interface	
User interface	LCD touchscreen
Data input/output	LIMS compatible, Ethernet, RS232, USB, QR code
Printer options	RS232, Ethernet
Power requirements	
Voltage	100/240 V, 50/60 Hz
Power	300 W
Physical	
Size (HxWxD)	430 x 265 x 340 mm
Weight	16.8 kg

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