



World leaders in
SF6 Analysis and
Handling Products

www.emt.uk.com





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“The Asset Protection Specialists”



*protect
preserve
enhance*



Neil Kane
Managing Director



Introduction

Welcome to Energy Maintenance Technologies Limited, Asset Protection Specialists to the Electricity Supply Industry (ESI).

Asset Protection: People + Plant = Protect, Preserve + Enhance

EMT supply a range of SF6 and oil testing instrumentation, consumables and related services for Condition Monitoring in T&D. These instruments maintain and support personnel, whose role is to protect, preserve and enhance the life of people, plant and equipment assets within their responsibility.

Scientific Approach = World Leading Technology for SF6

Present and future plant - SF6 filled switchgear and circuit breakers require high quality purity insulating oils and Sulphur Hexafluoride (SF6) gas at the point of use. With the increasing voltage and temperature stresses of modern plant, mounting pressure from Environmental & Political forces and the Economic & Financial constraints influencing Asset Management Strategies, it is imperative that insulating medium within plants is properly maintained and serviced at regular intervals. Testing & Maintenance of existing SF6 filled equipment is often chosen over replacement making SF6 Testing, Recycling & Leak Detection more critical than ever. The EMT range of Oil & SF6 testing products deliver world leading technologies developed and manufactured in collaboration with industry professionals from around the world, specifically to meet the needs of predictive maintenance personnel.

Experience + Consultative Approach = Peace of Mind

With over 40 years experience delivering high voltage technology products to the electric utility market, no one is more qualified than EMT to meet the needs of the industry. We understand the practical issues and concerns of end users, with products developed specifically to meet the needs of utility managers. EMT can help you get the most from your valuable assets by discussing and understanding your challenges and providing appropriate cost-effective solutions. Our team of experienced professionals have spent many years developing solutions to meet



utilities challenges, and are unrivalled in their knowledge of the industry and legislative compliance. We are driven to develop the very best technologies which will significantly improve handling practices adopted by maintenance personnel.

Global Reach = Local Sales + Support

SF6 analysers are the essence of our business. Our focus allows us to be flexible and responsive to our clients' needs, and as specialists in this field, our consultative approach backed by training and education means that challenges are resolved with real solutions that not only meet the end goal but also deliver a host of additional benefits on every level. This is why EMT products are available in over 50 countries, and many of the world's largest utilities, SF6 asset suppliers, and gas suppliers have chosen EMT for their asset protection needs.

Neil Kane

Neil Kane
Managing Director





Pioneers in SF6 Analysis ...

SF6 Testing & Maintenance

EMT delivers the most advanced and complete range of SF6 analysis and handling products, aligned to global trends in the electricity generation, transmission and distribution sectors. These products monitor the health and longevity of critical assets in high voltage systems and facilitate the effective management of maintenance, operation and planning.

EMT SF6 Analysers give you ...

- effective controls on SF6 inventory and usage
- accurate monitoring and transparency of information
- improved handling practices and standards
- compliance with regulation
- enhanced safety
- maximum asset utilisation
- minimum environmental impact
- reduced maintenance costs
- highest performance measurement technologies.

“SF6 is a major greenhouse gas. Measuring, monitoring and capturing SF6 is an important step in ongoing substation maintenance programmes.”

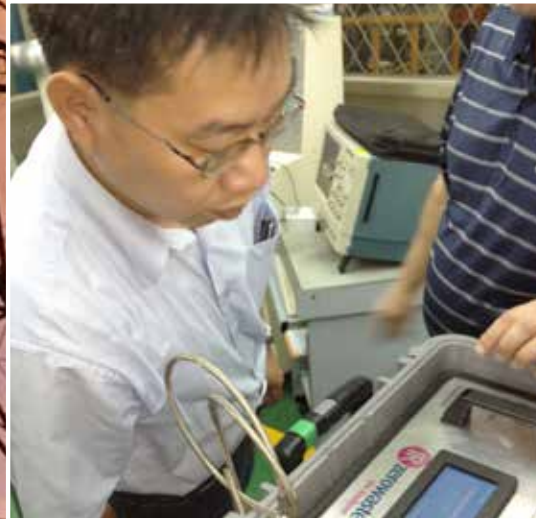




Why measure SF6?

Plant availability and reliability amounts to efficiency and profitability. Therefore insulating gas analysis can be most effective when applied to a number of routine testing and maintenance programmes.

- identify the location of internal flashover faults
- identify the appropriate method for disposal of contaminated gas
- avoid the unnecessary internal inspection of equipment
- profile the long term behaviour of switchgear and instrument transformers
- determine contact and Teflon cone wear
- identify the presence of PD, hot spots, extreme loadings, insufficient contact between parts at the same potential
- verify gas quality/condition after filling (including moisture, air and SF6 content)
- determine the condition of individual items of equipment following abnormal system events
- determine the condition of the gas prior to opening a compartment or applying other test devices to ensure that appropriate gas handling measures/protective measures for staff are applied and instruments are not destroyed by contaminated gas.





*The world's most advanced SF6 Analyser ...
bringing the laboratory to the field*

Zerowaste®

The Zerowaste® is the world's first SF6 impurity gas analyser to combine the following features:

Simultaneous SF6 measurement of up to 11 parameters

- uses advanced infrared absorption technology to measure SF6, H2O, HF, R12 and CF4 in addition to SO2, CO and H2S with electrochemical cell, bringing laboratory-standard measurement to the field
- fully battery operated (minimum 8 hours) even during gas pump back
- automatic sampling of up to 5 sequential measurements
- automatic pump back for sampled gas (user-selectable)
- automatic start of measurement upon detection of gas connection (user-selectable)
- minimum amount of gas drawn of typically 250cc per measurement cycle
- time programmable moisture purge for highest quality H2O measurement
- fully upgradeable - easy addition of more sensors
- innovative and patented modular design that allows the measurement of the largest number of gases offered in the market
- optional SF6 leak detection probe
- full colour touchscreen display with user friendly interface
- data logging
- user-selectable methods to display compliance with different industry standards including IEC/CIGRE.

This has been made possible by utilising some of the best experience and knowledge in gas sensing, spectroscopy and product design and an extensive knowledge of the SF6 impurity market.



Zerowaste® Results Screen



Features of the EMT Zerowaste® IR SF6 Analyser

■ Auto Operation: Connect and Walk Away!

connect to the circuit breaker and the Zerowaste® automatically samples the SF6 gas, detects when gas is connected (by sensing the inlet gas pressure) and starts the preselected number of cycles automatically, it then pumps the gas back after the analysis

■ Safe Distance Working

the Zerowaste® allows a safe working distance for the user. Once started, the unit will wait for 2 minutes before automatically commencing the analysis

■ Multi Analysis Operation

the user can select up to 5 cycles to run on the same sample. In fully automatic mode, the instrument will run the selected number of cycles then pump the gas back at the end. The user will then be able to view and save the results for the number of measurements taken, including:

- the most accurate - laboratory quality analysis in a portable analyser
- works at very low pressures - 0.5 bar (7 to 145 PSI)
- built in pressure regulation and measurement

■ Fully Portable

AC or 8 hours battery operated, even during gas recycling

■ The Lightest 'Pump Back' SF6 Analyser

only 15Kg / 33lbs and housed in a robust IP67 case with wheels, retractable handle and pockets for hoses and spare parts

■ The Fastest

just 5 minutes per cycle

■ The Most Accurate

laboratory performance results

■ Smallest Amount of SF6 Gas Sample Used

just 250cc's of SF6, making the Zerowaste® ideal for low voltage breakers. With enough gas storage for up to 5 normal sampling cycles, the unit enables checks on repeatability and performance

■ Up to 11 Gases - User-Selectable

multi sensor Hi / Lo ppm technology. SF6 Purity, Dew Point, SO2 (low/high range), HF, CF4 (low/high range), Air, CO, H2S, R12 (push gas)

■ Pre Set IEC and CIGRE Methods - Red/Green = Fail/Pass

methods fully compliant with all current IEC & CIGRE methods, plus 3 custom methods available

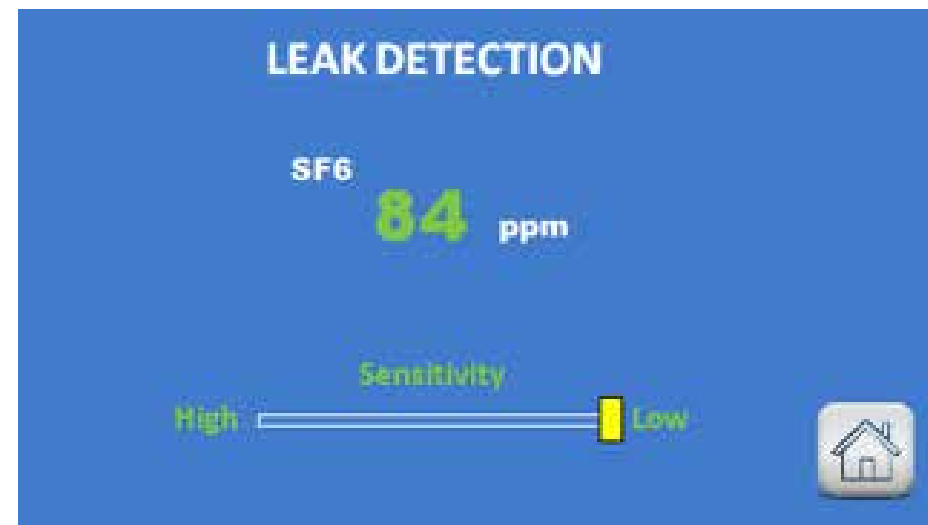
■ Leak Detection Probe Option

ppm/gms per year.

Leak Detection Option

The main Leak Detection screen shows the SF6 level (ppm) as well as a sensitivity adjustment bar.

The SF6 units can be selected as either ppm and gm/year.





Technical Specification

Gases Measured and Options	Gas	Range	Repeatability
	SF6 Purity	0-100%	+/-0.5% FS ¹
	Dewpoint	-60 - 20°C	+/-0.5°C at -30°C
	HF	0-200ppm	+/-5% FS ¹
	SO2 Lo	0-150ppm	+/-2% FS ¹
	SO2 Hi	0-500ppm	+/-2% FS ¹
	CF4 Lo	0-4000ppm	+/-2% FS ¹
	CF4 Hi	0-65%	+/-1% FS ¹
	CO	0-1000ppm	+/-5% FS ¹
	HS2	0-100ppm	+/-5% FS ¹
	R12	0-250ppm	3% of FS ¹
	AIR	0-50%	1% of FS ¹

FS¹: Full Scale (of Measuring Range)

SF6 Leak Detection	Detection Limit	3 gm/year
	Technology	NDIR

Screen	Type	TFT
	Size	4.3" 16:9 (wide aspect ratio)
	Resolution	480 x 272 dots
	Transmission Mode	TN/Transmissive/Normally White
	Dot Pitch	0.198 x 0.198
	Colours	24 bit
	Touchscreen	Integrated resistive touch panel
	Backlight	White LED PWM
	Luminance	350Cd/m2 (Typ.)

Memory	Type	Flash EEPROM
	Capacity	1000 results

Battery	Operating Time	>8 hours
	Charger Input	100-240V - 50/60Hz

PC Communications	Type	USB
	Class	HID
	Connector	Mini AB

Gas Pressure	0.5 to 10 bar (7 to 145 PSI)
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High Pressure Option	Bar = 0.5 to 12 Bar
	PSI = 7 to 174 PSI

Operating Environmental Conditions	Temperature Range	-20 to 40°C
	Humidity	0-95%RH non-condensing

Physical Specifications	Weight	15kg (33lbs)
	Maximum Dimensions	L500 x W300 x D470 mm (19.11" x 12" x 18.5")

The lightest and ultimate in portability ...

Asserolyz-IR SF6 Analyser

The Asserolyz-IR™ is the world's first SF6 impurity gas analyser to combine the following:

Introduction

- up to 11 parameters measured simultaneously within 5 minutes!
- uses advanced infrared absorption technology to measure SF6, H2O, HF, R12 and CF4 in addition to SO2, CO and H2S with electrochemical cell bringing laboratory-standard measurement to the field
- lightest instrument on the market weighing only 1.8kg with optional shoulder harness to allow for hands-free operation
- minimum amount of gas used (250cc)
- fastest measurement cycle of less than 5 minutes with only 90 seconds of gas sample
- innovative modular design that allows the measurement of the largest number of gases offered in the market
- optional SF6 leak detection module/probe
- full colour touchscreen display with user friendly interface
- data logging - up to 1000 results
- user-selectable methods to display compliance with different standard (IEC/CIGRE etc)
- fully upgradeable to Zerowaste® plus additional sensors.



The most advanced multi-parameter, infra red SF6 gas analyser delivering high performance SF6 measurements remotely, bringing interference-free laboratory performance to the field.

Features

- **The Lightest**
at just 1.8kg (<4lbs) there is no lighter instrument on the market, and with an optional shoulder harness and rechargeable battery providing up to 8 hours operating time, portability has never been easier
- **The Fastest**
readings are obtained at just 5 minutes per test
- **The Simplest to Use**
1 button operation, colour touchscreen LCD, with 5 user-selectable methods (CIGRE/IEC/ASTM) and 3 custom methods - all via USB communication
- **The Most Accurate**
accurate IR is specific with no cross interference, no contamination and no drift. Delivering stable, repeatable readings the Asserolyz-IR outperforms any SF6 gas analyser
- **With Less SF6 Waste**
minimal gas usage during operation - less than 1 litre
- **Leak Seeker Option**
offering a 'leak seeker' mode (audible) probe type, with an operating temperature range of -20 to +40° C, gas flow of 300ml/min, and input gas pressure of up to 10 Bar, this analyser is unrivalled in every way

- **Giving the Best Overall Performance**
measuring up to 11 parameters at the same time (SO2, HF, CF4, CO, H2S, Dewpoint and SF6 Purity) and data logging more than 1000 sample results, the Asserolyz-IR provides the most comprehensive analysis of any analyser available in the industry.

Benefits

- **effective controls on SF6 inventory and usage**
- **accurate monitoring and transparency of information**
- **improved handling practices and standards**
- **compliance with regulation**
- **enhanced safety**
- **maximum asset utilisation**
- **minimum environmental impact**
- **reduced maintenance costs**



Asserolyz-IR Accessories and Options

Basic Components

■ Main Unit

the unit comes in several models, IR1 up to IR10 depending on the selection of gases that you have ordered. Additional and/or special gases can also be ordered - please check with EMT

■ Pressure Regulator

the pressure regulator piece is essential when connecting the instrument to any gas sampling point with pressure above 5 PSI. For low pressure systems with less than 5 PSI, a direct coupling adapter can be supplied - please check with EMT

■ Purge Filter Tube

contains filter material to provide a clean, dry gas during the purge phase of the measurement cycle

■ Purge Filter Refill Sachets and Filling Funnel

the sealed sachets contain fresh purge filter material. These sachets are to be used to refill the purge filter tube

■ Battery Charger

a universal battery charger is provided with UK, US and European interchangeable main plugs.



Optional Accessories

■ Leak Detection Probe

the flexible probe is provided with all units ordered with leak detection option. It plugs into the Purge Filter Port of the instrument through a coiled tube that is extendable to 1 metre



■ Shoulder Harness

the shoulder harness allows you to carry the analyser around with maximum comfort leaving your hands free to do other tasks



■ Carry Case

the carry case protects your instrument during transportation and travel and has moulded sections to accommodate your instrument and all accessories. A large pocket, fitted to the lid, is also provided to accommodate tubing and other parts that you might want to carry with the instrument.





Technical Specification

Gases Measured and Options	Gas	Range	Repeatability
	SF6 Purity	0-100%	+/-0.5% FS ¹
	Dewpoint	-60 - 20°C	+/-0.5°C at -30°C
	HF	0-200ppm	+/-5% FS ¹
	SO2 Lo	0-150ppm	+/-2% FS ¹
	SO2 Hi	0-500ppm	+/-2% FS ¹
	CF4 Lo	0-4000ppm	+/-2% FS ¹
	CF4 Hi	0-65%	+/-1% FS ¹
	CO	0-1000ppm	+/-5% FS ¹
	HS2	0-100ppm	+/-5% FS ¹
	R12	0-250ppm	3% of FS ¹
	AIR	0-50%	1% of FS ¹

FS¹: Full Scale (of Measuring Range)

SF6 Leak Detection	Detection Limit	3 gm/year/PPM
	Technology	NDIR

Screen	Type	TFT
	Size	4.3" 16:9 (wide aspect ratio)
	Resolution	480 x 272 dots
	Transmission Mode	TN/Transmissive/Normally White
	Dot Pitch	0.198 x 0.198
	Colours	24 bit
	Touchscreen	Integrated resistive touch panel
	Backlight	White LED PWM
	Luminance	350Cd/m2 (Typ.)

Memory	Type	Flash EEPROM
	Capacity	1000 results

Battery	Operating Time	>6 hours
	Charger Voltage	12V
	Charger Connector	2.5mm jack plug
	Charger Input	100-240V - 50/60Hz

PC Communications	Type	USB
	Connector	Mini AB

Gas Pressure	0.5 to 10 Bar (7 to 145 PSI)
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Operating Environmental Conditions	Temperature Range	-20 to 40°C
	Humidity	0-95% RH non-condensing

Physical Specifications	Weight	1.8kg (4lbs)
	Maximum Dimensions	565 x 205 x 86 mm (22.25" x 8.0" x 3.25") (instrument only)
	Maximum Case Dimensions	L645 x D450 x W195 mm (25.0" x 17.0" x 7.0")

The smartest ...

Smartfill SF6 Filling & Topping Up System

With constantly changing regulations governing SF6 inventory and usage, measurement and control is essential. This smart solution significantly improves upon SF6 gas handling practices used throughout the industry worldwide.

Features

- **Accurate Measurement**
precise measurement and control of SF6 gas used in the filling and topping up operations of electricity substation maintenance operations
- **Complete Traceability**
automatic data logging records show exactly how much SF6 gas has been used during these procedures
- **Portable and Fully Automated**
with set parameters and simple operation - press "Go" and Smartfill carries out its filling and topping up protocols with complete automation and precision
- **No Waste - No Leakage**
fills and tops up equipment with the exact amount of SF6 gas required.



Benefits

- **effective controls on SF6 inventory and usage**
- **accurate monitoring and transparency of information**
- **improved handling practices and standards**
- **compliance with regulation**
- **enhanced safety**
- **maximum asset utilisation**
- **minimum environmental impact**
- **reduced maintenance costs**
- **once setup, fully automated (unattended) operation**
- **portable**
- **battery operated at least 5 hours**
- **when finished it shows the end pressure and total SF6 gas utilised**
- **datalog, different parameters are stored after finished filling**
- **USB connectivity**
- **WiFi connectivity for remote operation**
- **traffic light, for indication during fill/top-up**
- **GPRS/Mifi (Mifi = Mobile WiFi)**
- **easy to use.**



Smartfill Layout and Connections



Layout and Connections

- 1** inlet SF6 gas, Swagelok 1/2" female quick coupling, max pressure 12 Barg
- 2** battery / VDC power adaptor
- 3** fuse, max T6.3A
- 4** emergency button, will disconnect the power to the positive shut-off valve, no SF6 gas flow possible. An alarm in the software will occur
- 5** 2 tone buzzer, for top-up finished and alarm. Sound level SPL: 92dB
- 6** HMI, touchscreen - highly visible, even in direct sunlight
- 7** on-off switch
- 8** port A, 6 pins connector for Traffic Light or other auxillary option
- 9** USB connector, for saving report files
- 10** outlet SF6 gas, Swagelok 1/2" female quick coupling, max pressure 12 Barg.



Technical Specification - MFU

Operation	Max flow rate 18 Kg/h-70 Kg/h 39.6 lbs/hr - 154.3lbs/hr
	Smallest deviation 0.5 Barg (7 PSI)
	Fill Pmin 3.0 Barg (43.5 PSI)
	Top-up to Pmax 3.5 Barg
	Maximum pressure 10 Barg (145 PSI)

Accuracy	Flow 1% of FS
	Pressure sensors 0.5% FS
	Max inlet pressure 10 Barg (145 PSI)
	Min inlet pressure 2 Barg (29 PSI)

Safety	Emergency button will close inlet valve and trigger HMI, an alarm email is sent (only in case internet connection is unavailable)
	Relief valve, opens at 11 Barg (159.5 PSI)
	Positive shutoff closes when communication fails for 60 seconds
	Indication when filling, traffic light flashes orange
	Sends email or text/SMS when AC power fails (option)

Remote Control	VCN viewer available for: iOS, Android, WP8 Blackberry, PC and Mac
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Hoses	Braided hoses – Swagelok/PTFE - Pressure tested to 100 Barg (1,450 PSI)
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Certification	Pressure sensors are calibrated and synchronised using an NMI traceable pressure meter
	Pressure test certificate (10 Barg or 145 PSI)

Weight	20kg (44lbs)
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Power Supply	AC power 110/230VAC – 50/60Hz Enclosure IP rating – 68 Portable – 2 hours
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USB Drive	8 GB maximum, USB 2.0 compliant, 2 GB recommended
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The 24/7 leak manager ...

Smartfill - Continuous SF6 Top-Up Manager

A unique SF6 “live topping up” device, designed for managing leakage of SF6 from circuit breakers and other plant, minimises SF6 released in exceptional circumstances, where the asset has to remain in service and operational.

Features

■ Auto Top-Up

to achieve “live topping up” the unit is continually attached to the gas zone in order to manage the gas pressure within a small pressure range i.e. 3.3 - 3.4 Bar. “Auto top-up” will occur when pre set alarm pressure levels drop below the lower limit

■ Automated Pressure

maintained between defined upper and lower limits preferably just above alarm level

■ Remote Start Up

operator able to start the top-up remotely via WiFi (option)



■ Data Logging

text message sent to operator upon completion. Data including operator, site, equipment, mass and time is sent to ftp web server automatically (option)

■ Alarm Activated

operator able to start the top-up remotely

■ Automated Shut Down

unit shuts off when target pressure is reached

■ Fail Safe

pipe work has a check valve at the zone end, pressure comparison either side and shut down. There is also a safety relief valve within the unit

■ Portable

easily transported, weighing 20kg (44lbs).



Benefits

- effective controls on SF6 inventory and usage
- accurate monitoring and transparency of information
- improved handling practices and standards
- compliance with regulation
- enhanced safety
- maximum asset utilisation
- minimum environmental impact
- reduced maintenance costs
- 24/7 topping up.



In the event of **exceptional** circumstances where the asset, i.e. switchgear, has to remain in service without repair, the unit can be continually attached to a gas zone and maintain the pressure between a comparatively small range, e.g. 3.2-3.3 Bar. This gives a reduction in the SF6 uses hence saving costs. See below for details.



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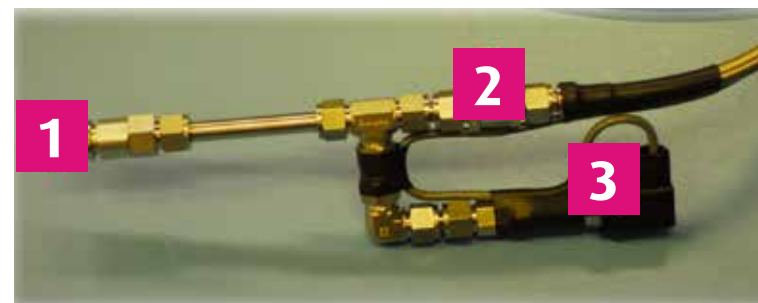
The Smartfill is supplied with a traffic light system. Using this traffic light gives information on the Smartfill's status without the need of opening the lid or using remote control.



Hose Connections CTU

The supplied pair of hoses consists of two types, one for the inlet and one for the outlet. The outlet hose is fitted with a non-return valve and a pressure sensor.

Modifying the hoses, or extending them, could result in malfunctioning. In case other hoses are needed, contact EMT.



Outlet hose with sensor and non-return valve

Description

- 1 Swagelok self-sealing ½" coupling
- 2 Non-return valve
- 3 Pressure transducer

Technical Specification - CTU



Operation	Max flow rate 18 Kg/h-70 Kg/h 39.6 lbs/hr - 154.3lbs/hr
	Smallest deviation 0.5 Barg (7 PSI)
	Fill Pmin 3.0 Barg (43.5 PSI)
	Top-up to Pmax 3.5 Barg
	Maximum pressure 10 Barg (145 PSI)

Accuracy	MFC 1% of FS
	Pressure sensors 0.5% FS
	Max inlet pressure 10 Barg (145 PSI)
	Min inlet pressure 2 Barg (29 PSI)

Safety	Emergency button will close inlet valve and trigger HMI, an alarm email is sent
	Relief valve, opens at 11 Barg (159.5 PSI)
	Positive shutoff closes when communication fails for 60 seconds
	Indication when filling, traffic light flashes orange
	Sends email when AC power fails (option)
	Outlet hose pressure is monitored at beginning and end

Remote Control	VCN viewer available for: iOS, Android, WP8 Blackberry, PC and Mac Range WiFi: Max 50 Metres
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WiFi	Built in WiFi. This is used for remote control
	The built in WiFi supports IEEE 802.11n, IEEE 802.11g and IEEE 80-2.11b

Hoses	Braided ½" hoses from Swagelok
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Certification	NMI Traceable Digital Massflow Controller
	Pressure sensors are calibrated and synchronised using an NMI traceable
	Pressure test certificate (10 Barg or 145 PSI)
	No Ex required

Weight	35kg (77lbs)
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Power Supply	AC power 110/230VAC - 50/60Hz Enclosure IP rating – 68 Portable – 2 hours
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USB Drive	8 GB maximum, USB 2.0 compliant, 2 GB recommended
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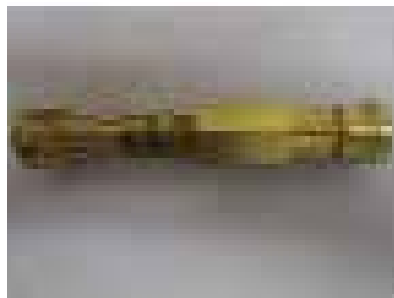
Log File Size	The maximum size per log file is +/- 100kb
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Accessories

EMT can provide connection to any SF6 compartment

EMT Universal Fittings Kit

Complete kit containing fittings required for the connection of SF6 gas analysers to most commercially available SF6 switchgear and circuit breakers, housed in a robust portable case.



- Swagelok Female Hanson Female
- Swagelok Male DN6
- Swagelok Male Hanson Female
- Swagelok Male DN8
- Swagelok Male DN20
- DN7 Female
- Swagelok Male $\frac{3}{8}$ BSP Female
- Swagelok Male $\frac{3}{4}$ BSP Male
- Swagelok Male Hanson Male
- Swagelok Male $\frac{1}{4}$ NPT Male.



■ Quality control to ISO9001

We can supply fittings for the following manufacturers:

- | | |
|--------------------|----------------------------------|
| ■ ABB | ■ Hyosung including all DN range |
| ■ Siemens | ■ Hanson |
| ■ Alstom Schneider | ■ Staubli |
| ■ Hyundai | ■ Malmqvist. |



EMT's SF6 Testing & Maintenance Products are widely regarded as the number one choice throughout the Electricity Supply Industry and are fast becoming standard issue for maintenance personnel around the world. But don't just take our word for it...

"EMT came highly recommended by one of our business partners also in ESI. Their people were both professional and knowledgeable. They quickly understood the issues we were facing and their answer came in the form of a very impressive and comprehensive proposal delivering a number of solutions which satisfied our asset management objectives on a number of levels. EMT helped us to get the most out of our assets by working in partnership with us throughout and delivering appropriate cost effective solutions which met our needs. The on-going service & support that we've received from EMT's Customer Support Team has been second to none."

A World leading Transmission and Distribution Company

"It's like we've been driving a car with square wheels and suddenly these guys have come along and put round wheels on!"

ESI end user on the issues and challenges resolved with SF6 Testing & Maintenance Products from EMT

Your Complete Products & Services Portfolio for SF6 & Oil Testing and Maintenance

Collaboration with select Business Partners complement EMT's portfolio of world leading technologies. We are the only provider of instrumentation, consumables and related services able to offer a complete range of Oil and SF6 testing products and services, to ensure you find the right product for your application.

SF6 and Oil Recovery, Reprocessing & Regeneration



■ **Enervac Corporation of Canada** is a world leader in the manufacture and development of processing and recovery systems for Insulating Oils and SF6 Gas. Enervac's range of high performance filtration and reprocessing equipment extends the life of the insulating liquid or SF6 with transformers, circuit breakers, or switchgear, removing contamination including Carbon Moisture, Sludge, Particulates and Breakdown products which enable the user to re-use the insulating medium rather than replenishing in new Oil or SF6, PLUS the environmental challenge of dealing with the associated waste management costs. Enervac's unique "corrosive sulphur" removal system for Transformer Oil regeneration is widely regarded as the reprocessing technology of choice for maintenance engineers throughout the globe.

Oil Analysis & Handling

■ Analysis plays a vital role in determining the condition of transformers and other assets. Monitoring the condition of the oil can help prevent sudden faults whilst protecting and preserving the general condition of the plant, and should therefore be part of any predictive maintenance programme. EMT's portfolio for oil analysis and handling ensures the best possible conditions for the avoidance of transformer deterioration. Products included in this range are the H2OP Portable Moisture in Oil Meter and TAN (Total Acid Number) Titrator.

Service, Support, Repair and Recalibration

■ EMT deliver the very best instruments available on the market backed by the strongest support team in the industry. While downtime and instrument availability remain at the forefront of many asset management strategies and objectives, the expanse of our service & support team means we are able to provide maintenance personnel with the highest level of technical-added-value to help them protect, preserve and enhance the life of the people, plant and equipment assets within their responsibility. Our factory trained personnel have over 45 years experience in the field of SF6 and Transformer Oil Monitoring & Analysis. The team provide comprehensive service and support to clients including regular routine maintenance, fast-response breakdown cover, product training, calibration and validation qualification, and third party servicing.



Thermal Imaging Systems



■ Guangzhou SAT Infrared Technology Co. LTD (SATIR)

is one of the world's leading civilian thermal imaging system manufacturers for a wide range of industrial, commercial and governmental applications including predictive and preventive maintenance, condition monitoring, non-destructive testing, research and development, temperature measurement and thermal testing.

HV Testing Equipment



■ **Raytech GmbH** has developed and produced portable measuring instruments with laboratory precision for the electrical testing industry, used for maintenance and acceptance testing of electrical high voltage apparatus. Their unique design approach has resulted in the development of highly regarded measuring instruments which have set new standards in the electrical testing industry.

Ultrasonic Leak Detection



■ **CTRL Systems, Inc.** designs and manufactures Ultrasonic Technology and Predictive Maintenance Solutions for Non Destructive Testing (NDT), Condition Based Monitoring (CBM), Quality Control and Leak Detection, in critical mechanical and electrical equipment. Turn-key implementation includes training, analysis software, data capture, and the UL101.



Consulting, Seminars & Training

Having a high profile within the power delivery community has been instrumental to our positioning as a global market leader.

Consulting

- Our worldwide involvement with SF6 protocols and legislative guidelines, including participation in SF6 task forces with IEC, CIGRE, NEMA, ASTM and the EPA, have enabled us to impart our knowledge and expertise in this field. Our contribution to several working groups and forums have given us the opportunity to consult on challenges facing the industry, with technical papers presented at a number of meetings including the EPA SF6 Emission Reduction Partnership.

Seminars & Training

- Significant resource is invested in our own series of seminars and workshops, which have brought us together with organisations within the electric utility industry from all corners of the world. Our training program is designed to improve knowledge on the most up-to-date technologies for ESI Asset Protection and delivers competency assessments, training and certification. Our staff are certified in accordance with EC 305/2008 'Minimum Requirements for Personal Handling and Recovering SF6 from High Voltage Switchgear.'



■ Seminar in UAE



■ Seminar in UAE



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AGENDA: (Please tick your preferences)

Moisture & Acidity Measurement Technologies	<input type="checkbox"/>
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Oil and SF6 Recycling	<input type="checkbox"/>
SF6 Analysis and Topping Up Systems	<input type="checkbox"/>
SF6, Zerowaste and Smartfill EMT Products	<input type="checkbox"/>

All courses can be tailored to individual requirements. Please contact EMT to discuss your preferences

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■ Demonstration in Taiwan



■ Neil Kane with Xabier Bermudez checking hose fitting



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