



AryanBeris

OIL & GAS
PETROCHEMICAL
TEST INSTRUMENT





We would to introduce ourselves as leading company in iran engaged in importation, sales and services of scientific instruments and laboratory equipment as well as distributor of chemicals. Since 2003 aryan Beris Supplying petroleum testing apparatus. A well trained staff of electrical and mechanical engineers permits us to continuously update our products to the state-of-the-art technology and to the new requests coming from the market. reliability & high efficiency of the supplied products made our company one of the most reputable companies in range.



Some of completed and ongoing projects of Aryan Beris company

1. Laboratory of Kangan Petroleum Refining Project (Turn key) Client/Purchaser: Kangan Petroleum Refining Company

Project Scope: Design and construction of furniture and gas distribution network, sample handling systems, supply of laboratory equipment, mixed gases and chemicals, installation, commissioning and training, warranty and after-sales service.

2. Laboratory of Masjed Soleiman Petrochemical (Turn Key) Client/Purchaser: Masjed Soleiman Petrochemical Company

Project Scope: Design and construction of furniture and gas distribution network, supply of laboratory equipment and chemicals, installation, commissioning and training, warranty and after-sales service.

3. Laboratory of Pars Behin Qeshm Heavy Oil Refinery Project (Turn Key) Client/Purchaser: Pars Behin Qeshm Oil Refinery Company

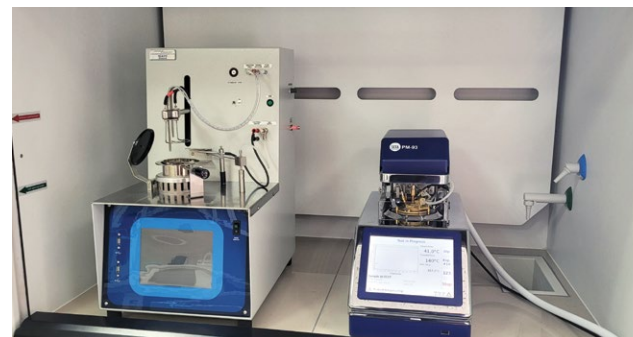
Project Scope: Design and construction of furniture, supply of laboratory equipment and chemicals, installation, commissioning and training, warranty and after-sales service.

4. Laboratory of South Pars Gas Field Development Project-phase 19 (Turn Key) Client/Purchaser: Petropars Company

Project Scope: Design gas transmission system, utility distribution network, drainage network, electrical distribution network, supply of laboratory equipment, gases and chemicals, installation, commissioning and training, warranty and after-sales service.

5. Laboratory of South Aluminum company (Turn Key) Client/Purchaser: China NFC Company

Project Scope: Design and construction of furniture and gas distribution network, supply of laboratory equipment, pure gases and chemicals installation, commissioning and training, warranty and after-sales service.



6. Laboratory of Bushehr Petrochemical - Olefin Plant (Turn key) Client/Purchaser: Sazeh Consulting Engineers Company

Project Scope: Supply of laboratory equipment, gases and chemicals, installation, commissioning and training, warranty and after-sales service

7. Laboratory of Bushehr Petrochemical - MEG Plant (Turn key) Client/Purchaser: Fateh Energy Kimia Company

Project Scope: Design gas distribution network, supply of laboratory equipment, gases and chemical, installation, commissioning and training, warranty and after-sales service

8. Laboratory of Ilam Petrochemical - Olefin Plant (Turn key) Client/Purchaser: Petrochemical Industries Development Management (PIDMCO)

Project Scope: Design and construction of furniture and gas distribution network, supply of laboratory equipment, gases and chemicals, installation, commissioning and training, warranty and after-sales service

9. Laboratory of Ilam Petrochemical - SRU Plant (Turn Key) Client/Purchaser: Energy Industries Engineering and Design Company (EIED)

Project Scope: Supply of laboratory equipment, analyzers and chemicals, installation, commissioning and training, warranty and after-sales service

10. Laboratory of Persian Gulf Star Oil Project (Turn Key) Client/Purchaser: Faradast Energy Falat Company

Project Scope: Supply of laboratory equipment and chemicals, installation, commissioning and training, warranty and after-sales service.

11. Laboratory of South Pars Gas Field Development Project – Phase12 Client/Purchaser: Sazeh Consulting Engineers Company

Project Scope: Design and construction of furniture, supply of laboratory equipment and chemicals, installation, commissioning and training, warranty and after-sales service



Ara Kavosh Pajouh is a knowledge-based service company with new approach to serve all required services for analytical, industrial and research instruments and process analyzers, regardless of any commercial activities, relying on the knowledge, experiences and abilities, tries to serve appropriate timely services to customer requests. This company as a member of "ARA Group" is responsible for giving services to Aryan Beris lunched equipments.

Our services are as follows:

- Consultant, installation, commissioning, set up, service and maintenance of the laboratory instruments & process analyzers.
- Supplier of spare parts.
- Calibration of laboratory instruments based on ISO/IEC 17025
- Users training, providing solutions and development of analytical methods
- Design and manufacture of laboratory instruments and accessories (manufacturer of the first metal analyzer (quantometer) and changeable-slit spectrometer in Iran).



SYKAM
CHROMATOGRAPHY

tsr
TECHNICAL SUPPORT HEIJSTRATEN ROEST

MI MERCURY INSTRUMENTS
Analytical Technologies

stakpure

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SETA STANHOPE-SETA

KEM

FRITSCH

PEAK SCIENTIFIC

Originalys

Nabertherm
MORE THAN HEAT 30-3000 °C

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Setaflash Small Scale Flash Point Testing

ASTM D3278; ASTM D3828; ASTM D7236; ASTM E502; IP 523; IP 524; IP 534; IP 303 (obs); ISO 3679; ISO 3680 (obs); CLP regulations

Setaflash methods cover flash point tests within the range –30 to 300°C using a small scale closed cup tester. The procedures can determine whether a product will or will not (flash/no flash Method A) at a specified temperature, or the flash point of a sample (Method B).

The small scale 'ramp' test method ASTM D7236 provides a definitive flash point result that has established correlation with ASTM D3828. Many specifications call for the use of these test methods as an alternative to ASTM D93 Pensky-Martens or ASTM D56 Tag and other flash point tests.



Setaflash Series 3

- Temperature range 10 to 130°C or Ambient to 300°C
- Sub-Ambient Tests and Rapid Cool Down
- Large format display
- Full touch screen display
- Control via push button if preferred
- Barometric correction included
- Portable, lightweight, compact design
- Realtime clock
- Results storage – 1GB data capacity
- USB output
- Corrosion Resistant option

Setaflash Series 8

- Temperature range -20 to 130°C or Ambient +5 to 300°C
- Small sample size, 2 or 4ml
- Corrosion Resistant cup option
- Electric ignitor (with gas option)
- Automatic dipping and flash detection
- ActiveCool electronic Peltier cooling
- 64 Test memory & RS232 interface
- °C or °F temperature display
- Barometric pressure correction



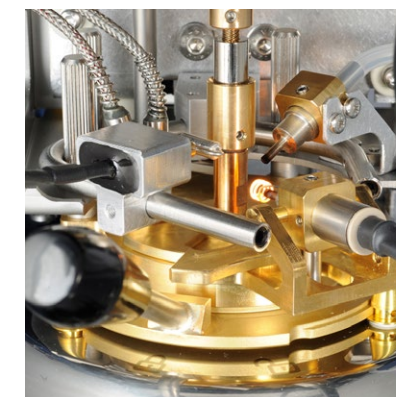
PM-93 Pensky-Martens Closed Cup Flash Point Tester

ASTM D93; IP 34; ISO 2719 Procedures A, B and C

- Easy '3-step to test' operation involving minimal operator intervention
 - Unique 'SafeFlash' fire extinguishing system
 - Large touch screen
 - Single action lifting pod
 - Small, compact footprint
 - Seta 'Ignite' - robust and long lasting ignitor
 - 30 programmable test profiles, test methods & sample names
- The Seta PM-93 is a fully automated Pensky-Martens Closed Cup Flash Point Tester which combines state of the art control technology and safety systems to provide the next generation of automated precision flash point instruments.

Seta PM-93 provides rapid sample testing using integral heating and forced air sample cooling systems.

Operation is simple, the single action lifting arm is aligned so the lid and cup locate perfectly when loading or removing the test cup. The lid and shutter are integral to a hinged pod and fitted with a fire detection probe, fire extinguishing manifold, ignitor, flash detector and temperature probe. The stirrer drive, shutter actuator and ignitor dipping mechanism are also self contained within the pod module. The ignition source is a purpose-designed extended life hot wire, a gas ignition option is also included. The sample temperature probe is a class A PRT and flash detection is by a thermocouple.



Multiflash Automatic Multi-Method Flash Point Testers

CLEVELAND (ASTM D92); ABEL (IP 170); TAG (ASTM D56); SMALL SCALE (ASTM D3828)

Multiflash is a highly automated low cost modular flash point system with in-built safety features.

It provides a '4 in 1' solution for all primary flash point tests using a universal base & interchangeable test modules

Seta Multiflash, Abel Flash Point Module

BS 3900 Parts A8 & A9, BS EN ISO 13726, BS 2000-170, IP 170, IP 491, IP 492, ISO 1523

The automatic Abel module conforms precisely to national and international Abel flash point test methods. It comprises a water bath, sample cup and lid, temperature probes, flash detector, and a DIPS pod containing the dipping mechanism with co-axial gas/electric ignitor, and a stirrer.

The Abel module must be used with the Multiflash Universal Base unit. The base unit recognizes that the Abel module is connected and instantaneously sets up standard test parameters and calibration data. The cooling boost module is required to test all types of sample.

Specifications:

Temperature Range: Ambient to 93°C (5°C to 93°C)

Bath: Liquid / Liquid, Heating: Hot Plate

Ignitor: Quick-fit coaxial gas jet / electric hot wire, user selectable Temperature

Probes: Class A Platinum Resistance Thermometers, (Stirrer Speed: 30 rpm)

Gas Supply(gas jet ignitor): Laboratory gas, 3kPa (0.44psi) maximum pressure

Cooling Supply: Water (5°C and above) Water / Ethylene Glycol 50/50 (below 5°C) 125kPa (18psi) maximum pressure



Setavap3 Automatic Vapour Pressure Analyzer

ASTM D5191; ASTM D6378; ASTM D6377; ASTM D6897; ASTM D5188; IP 394; IP 481 Correlates with ASTM D323; ASTM D4953; ASTM D5190; ASTM D5482; ASTM D1267;EN 13016; IP 409

SetaVap3 incorporates the very latest technology to provide reliable automated vapour pressure tests on fuel and oil samples. The instrument has been designed to provide users with unsurpassed ease of operation and incorporates a sturdy measuring chamber and sliding piston with integral shaker.

Easy to use but powerful software allows both standard testing and customised test parameters to be entered. A large colour touch screen allows simple operation with 'press to test' functionality for minimal operator input.

Results are clearly displayed and can be captured using a QR code, emailed, saved to a memory stick, output to LIMS or produced in hard copy with the printer option.

Servicing and calibration can be performed in the field.

Specifications:

Temperature Range: 0 to 120°C

Test Pressure Range: atm. to 1550 Kpa, Resolution: 0.01°C

Accuracy: $\pm 0.05^\circ\text{C}$, Battery: 3 x 1.5 volt AAA, Battery Life: 2000 hours

Sensor Type: 1/10 DIN PT100 – Wire Wound, Sensor Size: $\varnothing 1.5 \times 8\text{mm}$

Weight: 16kg



Crude Oil Filtration Apparatus

ASTM D4807

This instrument covers the determination of sediment in crude oils by membrane filtration. This test method has been validated for crude oils with sediments up to approximately 0.15% mass.



Setavap2 Rapid Automatic Vapour Pressure Tester

ASTM D5191, BS EN 13016-1, BS 2000-394, Correlates with: ASTM D323; ASTM D4953; ASTM D5482; ASTM D6378; IP 69; BS ISO 3007, BS 2000-69, IP 394, IP 481
The Setavap 2 automatic vapour pressure tester is used for the measurement of gasoline, solvents, light crude oils and other similar products using the «Mini» method. Fully evacuated chamber technology guarantees that the sample is tested under a full vacuum, as required by the «Mini» test methods, unlike the expansion technologies that rely on moving pistons.

Specifications:

Test Temperature: 37.8 °C (100°F) ±0.1°C
Test Pressure Range: 0 to 200kPa ±0.5kPa (0 to 29psi ±0.1psi) Pressure Resolution: 0.1kPa (0.1psi)
Sample Size: 3ml, Vapour to Liquid Ratio: 4:1
Vacuum Requirement: better than 0.01kPa (abs), Voltage: 110/120V or 220/240V, 50/60Hz (switchable) Power 70W
Size (HxWxD): 37 x 13 x 20cm



Salt Content in Crude Analyzer

ASTM D3230; IP 265
The Seta Salt-in-Crude Analyzer is a robust and portable instrument for determining the chloride (salt) content of crude oils in full conformity to ASTM D3230, IP 265 and equivalent test methods.
The Seta Salt-in-Crude Analyzer is pre-calibrated and automatically displays salt concentration measurements in g/m3 or lbs/1000bbl (pounds per thousand barrels), this avoids the need to mix salt calibration standards and makes testing a simple and fast procedure.

Specifications:

Conductivity range: 0.0 to 151 lbs/1000bbl
(Res: 0.1 lbs/1000bbl), 0.0 to 430.0 g/m3 (Res: 0.1 g/m3), Temperature range: -20° to 150°C (Res: 0.1°C)
Power: 9 volt dc battery or mains, Adaptor Size (HxWxD): 20 x 7 x 3.5cm Weight:1.6kg



Setastill Distillation

ASTM D86; D216 (obs); D447 (obs); D850; D1078; E133; IP 123; IP 191; IP 195; EN 3405; BS 2000 Parts 123, 191 & 195; BS 658; BS 7392; ISO 198; FTM 791 1001; NF M07-002 (obs); JIS K2254

The distillation unit, mounted to the left, comprises a flask support mechanism, heater elements, and the heater controller. The flask is supported by a drop-in ceramic-glass support board mounted to a platform that is adjustable for height. The quartz enclosed heating elements are also attached to the platform, and are powered by a solid-state energy regulator and calibrated control. A cooling fan is installed in the rear of the distillation unit to reduce cooling time between distillations. A toughened glass observation window is fitted in the front of the distillation window, and a spillage collection tray with outlet is mounted beneath the heaters. The condenser unit is attached to the distillation unit, and may be used with either a static fill of coolant or a laboratory cooling supply. Housed within the condenser unit is a thermally-insulated, stainless steel coolant tank, fitted with a permanently installed condenser tube. A drain tap and an overflow outlet are mounted on the rear of the unit.

Specifications:

Distillation Range: Ambient to 400°C,
Voltage Range: 110/120V or 220/240V, 50/60Hz (switchable), Power: 1000W maximum
Condenser Tank Volume: 7.2 litre
Size (HxWxD): 47 x 37 x 25cm (Condenser) 47 x 21 x 21cm (Draught Screen)



Roll Stability Testers

ASTM D1831; MIL-G-10924
Simulates the effect of squeezing grease between rollers and the outer race of a roller bearing. The Seta Roll Stability Tester allows up to four test cylinders to be used simultaneously. Each test cylinder contains a heavy roller and is loaded with a quantity of sample grease. The test cylinder rests horizontally upon a set of driving and guide wheels which rotate the cylinder at either 10 or 165 rev/min.

Specifications:

Rotation Speed: 10 or 165 rev/min, Temperature Range: Ambient to 100°C



Seta Cold Filter Blocking Tester

ASTM D2068, IP 387, IP 618

The Seta CFBT is a small scale laboratory Analyzer which measures the Cold Filter Blocking Tendency (CFBT) of diesel and gas oils. The CFBT predicts how diesel fuel may behave at low ambient temperatures by replicating vehicle/engine field cold conditions and testing the fuel's filter tendency. A typical test takes just 20 minutes for 2 temperatures with results displayed on the colour LCD screen.

Specifications:

Pump Rate: 20ml/min, adjustable in software, Sample Size: 750ml
Temp Range: -5°C to +40°C, Set Temp: -1°C to +3°C
Temp Stability: Better than 0.5°C, Voltage: 82-262V, 45-65Hz, Current: 3.5A
Display: Widescreen 7" TFT LCD, Size (HxWxD): 355x520x540mm



Seta Oil Test Centrifuge for Sediment & Water

ASTM D91; D96 (Obs); D893; D1290; D1796; D1966; D2273; D2709; D4007; IP 75 (Obs); IP 539 (Obs)

The Seta Oil Test Centrifuge is a heating centrifuge fitted with a rotor head and four universal pivoting buckets. The centrifuge is used to determine water and sediment in oils.

The rotation speed, temperature, acceleration rate and time are set using the control panel. Test parameters can be saved as a program and recalled quickly.

Specifications:

Maximum Relative Centrifugal Force (RCF): 2210 g
Maximum Rotational Speed: 3000 rev/min, Temperature Range: 20 to 80°C ± 1°C
Control Microprocessor with 99 memory capacity Capacity: 4 Samples
Voltage range: 230 V, 50/60 Hz Power 950 W
Size (HxWxD): 410 x 560 x 640 mm



Seta Cloud and Pour Point Cryostat

ASTM D2500, ASTM D5853, ASTM D97, BS 2000-15, ISO 3016, BS EN 23015, BS 2000-219, ISO 3015, DIN EN 23015, DIN ISO 3016, IP 15, IP 219, IP 441

The Seta Cloud and Pour Point Cryostat has Four 2 litre compartments which are independently temperature controlled and can accommodate four Air Wells. Three compartments have a temperature range of ambient to -34°C and one has a low temperature compartment -34 to -51°C. The lid is electrically heated to prevent the formation of ice and condensation. Refrigeration is accomplished by a two stage CFC free system.

Specifications:

Compartment quantity: 3 + 1 low temperature, Compartment volume: 2 liter
Total test positions: 16
Temperature range: Ambient to -34°C (x3) -34°C to -51°C (x1), Ambient temperature range: 15° to 32°C
Cool down Time (single compartment): approx 2 hrs 30 mins at an ambient of 23°C (to -51°C)
Refrigerant: CFC free; First stage R134a; Second stage R507, Voltage: 110/120V, 60Hz 220/240V, 50Hz
Power: 1.8kW, Size (HxWxD): 95 x 63 x 63cm, Weight: 115kg



Seta Compact Cloud and Pour Point Cryostat

ASTM D2500, ASTM D5853, ASTM D97, BS 2000-15, ISO 3016, BS EN 116, BS 2000-309, BS EN 23015, BS 2000-219, ISO 3015, IP 15, IP 219, IP 441.

The Seta Compact Cloud and Pour Point Cryostat provides convenient refrigeration of fuel samples in accordance with all primary cloud and pour point test methods.

Specifications:

Temperature range: Ambient to -34°C, Compartment volume: 2 liter
Total test positions: 12, Power: 750W
Cool down time (single compartment): approx 1 hr (from 32°C to -34°C)
Refrigerant: CFC Free; Single Stage R507, Voltage: 220/240V, 50Hz
Size (HxWxD): 60 x 60 x 85cm



Seta Multi Filtration Tester

The Seta Multi Filtration Tester (MFT) is a fully automated instrument, designed to test the Filter Blocking Tendency (FBT) of diesel, biodiesel (B100 & B5/7/20/30), gas oil, gas turbine fuel and kerosene.

The MFT features a colour touch screen and clear, simple user interface which guides the operator through the menu system and simple operating sequence. Results are stored internally and can be viewed on the screen or saved directly to a USB memory stick or LIMS for further data management and analysis.

The MFT has been designed to fully comply with ASTM D2068. Features include internal grounding for operator safety, piston pump including mechanical and electronic precision adjustment and calibration of flow, with locking mechanism. Pulse damper to produce smooth flow of fuel to the filter unit and a pressure release valve located on the arm holding the filter assembly. Stanhope-Seta are proud to have participated in the Inter Laboratory Study (ILS) called up in ASTM D2068 and IP 387. Precision was solely derived using the Seta MFT for procedure B.

Specifications:

Filter Blocking Tendency (FBT) Range: 1.0 to 30 (low number is best), Size (HXWxD) 350 x 300 x 400 mm, Weight: 9.8 kg
Maximum Pressure: 200 kPa, Power: 110/240 V, 50/60 Hz, 300 W

Gum Residue Seta Existent Gum Solid Bath

ASTM D381-IP 131; IP 540; BS 2000 Part 131; BS 4348 (obs);
ISO 6246; DIN 51 784; NF M07-004; FTM 791 3302

A Solid Block Bath designed to carry out up to five simultaneous tests for determining existent gum content in fuels by the Jet Evaporation method.

Specifications:

Operating Temp. Range: 140 to 260°C, $\pm 0.5^\circ\text{C}$, Heaters: 2kW
Over-temperature Cut-out: 280°C (adjustable), Air/Steam Inlet: 15mm o.d pipe
Flow Indicator: Calibrated for min and max air and steam flow, Power: 2kW
Voltage: 220/240V, 50/60Hz, Size (HxWxD): 45 x 35 x 50cm, Weight: 45kg



Micro Carbon Residue Tester

ASTM D4530; IP 398; ISO 10370; Carbon Residue (Micro Method)

An automatic airtight furnace that is pre-programmed to run tests to determine Micro (Conradson) Carbon residue of petroleum products.

The digitally controlled furnace has a temperature range of ambient to 500°C. Temperature, flow and pressure values are automatically controlled and values are displayed on the control panel. The test cycle includes an audible 'end of test' alarm.

Specifications:

Temperature range: Ambient to 500°C $\pm 2^\circ\text{C}$, Ramp Rate: 10 to 15°C/min
Thermocouple: Iron - constantan, Pressure controller: 20 to 750kPa
Primary pressure: 1400kPa max, Flowmeter: 0.1 to 1 litre/min
Flow rate: Automatic, 150ml/min or 600ml/min
Consumption: Approx. 40l/N2 per test, Power: 1.6kW
Voltage: 110/120V, 50/60Hz 220/240V, 50/60Hz, Size (HxWxD): 46 x 35 x 39cm
Weight: 21kg



Norma Hoffman Oxidation Bath

ASTM D942, BS 2000-142, FTM 791 3453, IP 142

A digitally controlled oil bath with a temperature range of ambient to 120°C, and a high speed stirrer. The top plate can accommodate up to four Norma Hoffman oxidation pressure cylinders.

The thermostir unit incorporates over temperature and low fluid level alarms, has connection port for an external PT 100 probe, and an RS232 interface. The bath and top plate are constructed out of stainless steel.

Specifications:

Temperature range: Ambient to 120°C $\pm 0.1^\circ\text{C}$, Capacity: 35 litres
Voltage: 110/120V, 60Hz 220/240V, 50Hz
Power: 2.1kW
Size (HxWxD): 52 x 45 x 33cm, Weight: 12kg



Seta Robot Bath

ASTM D2112, ASTM D2272, ASTM D4742, IP 229

The Seta Robot Bath is a floor standing unit used for the evaluation of oxidation stability of new and in-service engine, turbine and insulating oils in the presence of water and a copper catalyst. Up to two oxidation test vessels (Seta 15210-5) are supported at an angle of 30° in an oil bath, and rotated at 100 rev/min by an electric motor and bevel gear drive.

The 72 litre oil bath is digitally temperature controlled. A hinged hood, fitted with a safety interlock that switches off the motor when opened to protect the operator from the rotating test vessels. The bath is equipped with low fluid level and over-temperature protection devices. Extraction fans remove silicone oil vapours and fumes from the bath.

Specifications:

Temperature range: Ambient to 160°C, Temperature stability: $\pm 0.1^\circ\text{C}$

Bath capacity: 72 litres, Bath fluid: Silicone Oil, Number of vessels: 2

Rotational speed: 100 rev/min

Voltage: 220/240V, 50Hz 220/240V, 60Hz

Power: 3.2kW

Size (HxWxD): 113 x 78 x 88cm



Seta Autowash

ASTM D6082, ASTM D892 Appendix X1, IP 146, ISO 6247

The Seta Autowash automates the washing sequence allows Unattended washing of the diffusers. The Autowash is a bench top unit which automatically cleans and dries Mott and Norton dif- fusers using one or two solvents without removing the air tube. Automatic wash programmers provide a consistency of cleaning that has significant benefits in assisting to provide reliable and repeatable foam test results. Suitable for use with air inlet tubes of differing lengths and diameters.

Specifications:

Autowash dimensions: 895 x 235 x 305 mm

Diaphragm pump dimensions: 244 x 144 x 198 (127) mm, Autowash weight: 17 kg



Seta Oxi-Cor Bath

ASTM D130, ASTM D4048, ASTM D4814, ASTM D525, ASTM D5304, ASTM D7667, ASTM D7671, ASTM D873, BS 2000-112, IP 112, BS 2000-138, IP 138, BS EN ISO 2160, BS 2000-154, ISO 2160, BS EN ISO 7536, BS 2000-40, ISO 7536, DIN EN ISO 2160, DIN EN ISO 7536, IP 154, IP 227 (obs), IP 40, IP 611
A stainless steel water or oil bath with a temperature range of ambient +5°C to 150°C, temperature controlled to $\pm 0.1^\circ\text{C}$ by a top mounted thermostat circulator with integral over-temperature and low fluid level protection devices.

Specifications:

Temperature range: Ambient +5°C to 150°C, Temperature stability: $\pm 0.1^\circ\text{C}$

Bath capacity: 35 litres, Heater Power: 1500W

Voltage: 110/120V, 50/60Hz 220/240V, 50/60Hz, Size (HxWxD): 41 x 45 x 33cm

Weight: 10kg



Oxidation Bath with Oxflo Controller

ASTM D2274, ASTM D4310, ASTM D7462, ASTM D943, BS EN ISO 12205, BS 2000-388, ISO 12205, DIN 51 587, IP 157, IP 388, ISO 4263.

The Seta Oxidation Bath is used for quantities analysis of the tendency of oils and fuels to form sludge, acids and deposits when exposed to oxygen in the presence of metallic catalysts over extended periods.

The 35 litre oil bath can accept up to six sets of glassware. The stirred oil is maintained to within $\pm 0.1^\circ\text{C}$ at 95°C by an integral thermostir unit that has been designed for continuous use over extended periods, incorporating a stirrer motor well recognized for longevity. The temperature measurement system uses a PT100 probe to ensure long term temperature stability without routine maintenance or re-calibration.

The separate Oxflo control unit includes a gas inlet pressure regulator, pressure gauge and six precision flowmeters calibrated for oxygen at 3 liters/hour, 21°C and 0.4 bar pressure.

Specifications:

Temperature range: Ambient +5°C to 150°C, Stability: $\pm 0.05^\circ\text{C}$

Bath type: Oil filled Bath capacity: 35 litres, Power: 1.5kW

Voltage: 110/120V, 50/60Hz 220/240V, 50/60Hz

Size (HxWxD): Bath: 64 x 36 x 33cm, Oxflo Control Unit: 44 x 35 x 26cm



Seta Cold Soak Test Bath

ASTM D7501; IP PM-EA; CGSB-3.0 No 142; CEN N 403; ASTM D6751; EN 14214
The Seta bath is a specially designed bench top unit with programmable digital temperature control suitable for cooling and heating samples in accordance with cold soak test requirements.

Specifications:

Temperature Range: -20 to 80°C, Temperature Stability: $\pm 0.02^\circ\text{C}$
Sample Capacity: 4 off 500ml, sample bottles Bath Liquid Capacity: 12 litres
Refrigerant: CFC free, Single Stage R507, Ambient Temperature range: 15 to 30°C
Cooldown time: Approx. 45 minutes from 25 to 1°C
Size (HxWxD): 78 x 32 x 51cm, Weight: 46.6kg



Handheld Conductivity Meter

ASTM D1655, ASTM D2624, DEF STAN 91-091, IP 274, ISO 6297
The Seta D2 Hand Held Conductivity Meter (D2 JF-1A-HH model) meets the requirements of ASTM D2624. It provides an accurate and rapid conductivity measurement of distillate fuels; and is specifically designed for testing low conductivity fluids such as aviation kerosene
The analyzer can measure fuel electrical conductivities between 0 and 2000 picosiemens/meter (pS/M), although it is optimized and normally used in the 0 to 500 pS/M range. The conductivity analyzer is constructed of thermally stable internal electronics and two 316 SS coaxial electrode sensors.



Specifications:

Conductivity Range: 0-2000 pS/m (contact factory for optional ranges)
Conductivity Accuracy: ± 1.5 pS/m ($\pm 1.5\%$ of reading)
Conductivity Resolution: 0.1 pS/m, Temperature Range: 0-35°C
Operating Temperature: 0-75°C
Temperature Accuracy: $\pm 0.05^\circ\text{C}$, Temperature Resolution: 0.1°C
Power: Built-in 2.6Ahr Lithium Ion Battery (1000 samples), Sample Trend Line Graph to Assist Data Collection Outputs: 128x64 Dot Matrix Display Indicating Conductivity and Temperature, Conductivity Sensor: 316 SS Coaxial Electrode K = .02
Temperature Sensor: Platinum RTD NIST Traceable Calibration,
Materials: Housing Polyamide Sensor 316SS and PEEK, Size (HxWxD): 31 x 11 x 10cm

Herschel Emulsifier

ASTM D1401, IP 412, ISO 6614.

The Herschel Emulsifier is a compact and efficient benchtop instrument designed to measure the ability of petroleum oils and synthetic fluids to separate from water. The instrument incorporates 4 test stirrers, with independent control and motorised raising and lowering. Samples can be tested simultaneously or individually to suit laboratory requirements.

Test cylinders are located in a temperature controlled bath with an adjustable set point of either 54 or 82°C, in accordance with ASTM and ISO test methods. A large LCD touch screen display is used to initiate test and provides automated sequencing with an audible and visual reminder at each recording interval.

Specifications:

Bath Volume: 5 litres, Bath: Liquid Water or white oil
Sample Size: 40ml oil, 40ml distilled water, 1% sodium chloride solution or synthetic seawater
Temperature range: 54°C and 82°C, Bath Temperature Stability: $\pm 1^\circ\text{C}$ Stirrer
Speed: 1500 ± 15 rpm, Size (HxWxD): 890 x 450 x 450 mm, Weight: 49.5 kg
Voltage: 110/240 V, 50/60 Hz, Autosensing Universal PSU Display: LCD touchscreen



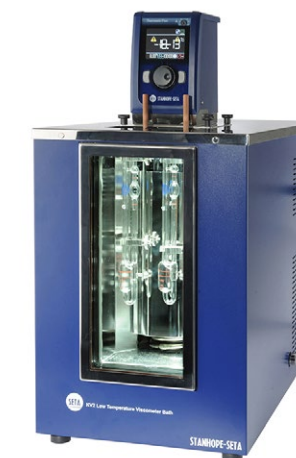
KV-2 Low Temperature Viscometer Bath

ASTM D445, ASTM D446, BS 188, BS 2000-71-2, ISO 3105, BS EN ISO 3104, BS 2000-71.1, ISO 3104, DIN 51 561, IP 71.

The Seta KV-2 is a two place low temperature viscosity bath designed to achieve ultra-high stability in the temperature range of $+20^\circ\text{C}$ to -40°C . The bath offers high stability of ± 0.015 at -20°C and ± 0.01 at -40°C . Temperature is measured by a PT100 probe, a twin display shows the current and set temperature. The instrument has a small footprint and is ideally suited for busy labs. It is fully self-contained and requires no external chillers or connections. A heated top plate and viewing window prevent condensation and ice formation. The easy to use controller features large 13 mm digits and high intensity, long life ultra-bright LED lighting ensures clear bath visibility at all times.

Specifications:

Temperature range: -40 to $+20^\circ\text{C}$, Refrigerant: R404A, Weight: 56 kg
Temperature stability: ± 0.015 at -20°C , ± 0.01 at -40°C , Tube capacity: up to 2
Bath Fluid: Methyl Alcohol or Denatured Ethyl Alcohol, Bath capacity: 7 litres
Voltage: 220/240 V, 50/60 Hz, Power: 2.7 kW, Size (HxWxD): 75 x 37 x 70 cm



Seta-Shell Four Ball Tester-Autoload

ASTM D2266 & D4172, ASTM D2596, ASTM D2783, BS EN ISO 20623, BS ISO 26422, CEC L-45-A-99, DIN 51 350, IP 239

The Autoload Seta-Shell Four Ball Lubricant Tester determines the friction properties of extreme pressure oils and greases. Used in tribology research laboratories and in the routine quality control of finished lubrication products.

A ball, mounted in a chuck, is rotated against three stationary balls in a pot containing the sample lubricant. The digital speed controller has three factory pre-programmed settings. A load, adjustable in the range of 40 to 800 kgF, is applied to the balls via a balance beam and electric jack. The applied load is displayed on a digital readout. The torque transferred between the rotating and stationary balls is measured and displayed. The digital timer, with a range of 0.1 second to 9999 hours, can be used to control the duration of the test. If the torque exceeds a preset level, or the balls weld, during a test, power to the drive motor is automatically turned off.

Specifications:

Speed Range: 1200 to 1760 rpm

Load Range: 40 to 800 kgF, Timing: 0.1s to 9999 hr

Air Release Value Apparatus

ASTM D3427, BS 2000-313, DIN 51 381, IP 313, ISO 9120, NF T60-149

The Seta Air Release Value Apparatus is designed to determine the air release properties of hydrocarbon based oils in accordance with ASTM, IP and other methods.

The apparatus is a benchtop instrument with integrated density balance, heater, temperature control system, pressure regulation and microprocessor based control system. A unique slider arrangement allows easy positioning of the sinker and movement throughout the test cycle.

Specification:

Compressed air supply pressure required: 137 kPa, Sample size: 180 ml \pm 5 ml

Temperature range: Ambient to 75°C (air to 85°C)

Set temperatures: 25°C, 50°C, 75°C (custom temperature available in software)

Temperature stability: 0.2°C

Density measurement accuracy : \pm 0.5 kg/m³



In-Line Conductivity Analyzer

ASTM D2624

The In-Line Analyzer provides a continuous 24/7 highly accurate record of product conductivity levels inside the distribution lines. InLine conductivity measurement provides significant benefit to operators by offering the ability to continuously measure conductivity thereby assuring continuous compliance with conductivity level requirements. It also eliminates the requirement for manual sampling and record keeping.

Specifications:

Range: 0 to 1000 pS/m to 0 to 2000 pS/m, Accuracy: \pm 2 pS/m (\pm 2% of reading)

Pressure: 16 bar max pressure

Temperature range: -20° to 60°C/-4° to 140°F, Accuracy \pm 0.5°C, Resolution: 0.1 pS/m

Sensor Type: 316 SS, Coaxial Electrode Calibration: Internal Source Zero and Scale

Certification: ATEX Ex II2G EExd [ia] IIC T4 FM/FMc I.S. Probe for Class 1, Division 2 GP ABCD, T3C @ Ta = 60°C



Setafoam Dual Twin Foam Test Baths

ASTM D892; IP 146; BS 2000 Part 146; ISO 6247; NF T60- 129; FTM 791 3211; JIS K2518
Setafoam Dual Twin Foam Test Baths are a pair of highly transparent water baths for detecting undesirable foaming characteristics in lubricating oils, which could cause inadequate lubrication, overflow and cavitation.

The Dual Twin Foam Test Baths now incorporates the new Thermostir 120 unit which provides precision temperature control to within \pm 0.5°C across a temperature range of ambient to 100°C. It has an easy to use rotary dial and two function keys for quick temperature setting and menu navigation. The Thermostir is protected against over-heating by an independent over-temperature cut-out which is user adjustable via the over-temperature location of diffusers. All air connections are via quick release connectors, and the diffuser tubes can be used with either Mott diffusers or Norton Stones.

Specifications:

Outer: Polycarbonate, Temperature range: Ambient to 100°C \pm 0.5°C

Inner: 28 liter, borosilicate glass No of Baths: 2

No of Cylinders per bath: 4 (2 per bath supplied), Cylinders: 1000ml, borosilicate glass, graduated Diffuser: Mott or Norton Stone

Flowmeters: 2 per bath, 94 \pm 5ml/min, Control Units: Thermostir, 1 per bath



Seta Universal Penetrometer

ASTM D1321, ASTM D1403, ASTM D1831, ASTM D217, ASTM D5, ASTM D7342, ASTM D937, BS 1377, BS 2000-179, BS 2000-50, BS EN 13880-2, BS EN 1426, BS 2000-49, DIN 51,579, DIN 51 580, IP 179, IP 310, IP 376, IP 49, IP 50, ISO,2137. ASTM D1321, ASTM D1403, ASTM D1831, ASTM D217, ASTM D5, ASTM D7342, ASTM D937, BS 1377, BS 2000-179, BS 2000-50, BS EN 13880-2, BS EN 1426, BS 2000-49, DIN 51, 579, DIN 51 580, IP 179, IP 310, IP 376, IP 49, IP 50, ISO 2137. A semi-automatic penetrometer with a range of 0 to 640 Pen (64mm). Plunger release and retention is controlled by a solid state timer which can be set for penetration times of 5, 8, 10, 12, 30 and 60 seconds.

Specifications:

Penetration Range: 0 to 640 Pen (64mm)
Penetration Time: 5, 8, 10,12, 30, 60 second selectable, Display: Digital 2 decimal places

KV6 Viscometer Bath

ASTM D2170, ASTM D2270, ASTM D445, ASTM D446, BS 188, BS 2000-71-2, ISO 3105, BS EN 12595, BS 2000-319, DIN 5366, DIN 51 562, DIN EN ISO 3104, IP 226, IP 319, IP 71, ISO3104

The KV-6 Viscometer Bath is a temperature-controlled bath that maintains the temperature of viscometer tubes, which are used to measure the viscosity of liquid petroleum products.

The instrument consists of an oil-filled temperature-controlled bath. The bath holds up to six standard viscometer tubes, which you can view through the glass panel at the front of the instrument. Each aperture has a cover to minimize heat loss when not in use. LEDs illuminate the bath so that you can view the viscometer tubes more easily.

Specifications:

Temperature range: Ambient to 150°C, Temperature stability: $\pm 0.01^\circ\text{C}$
Tube capacity: Up to 6
Bath fluid: Oil, Silicone fluid or water, Bath capacity: 50 Litres
Voltage: 220/240V, 50/60Hz Power: 2.2kW
Size (HxWxD): Bath outside dimensions 560 x 345 x 435mm
Tank inside dimensions 526 x 273 x 400mm



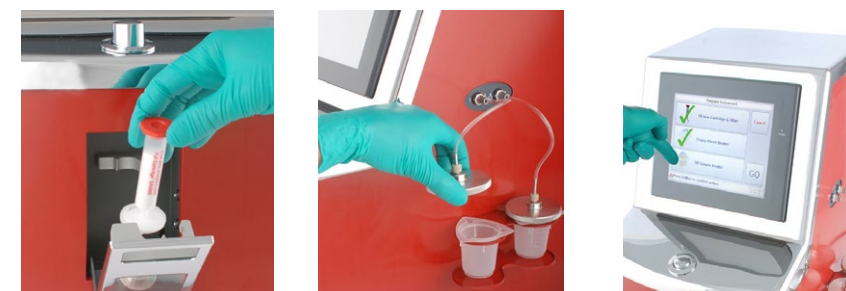
FIJI FAME in Jet / Middle Distillate & Residual Fuel / MultiFuel for Jet, Distillate & Residual Fuels

ASTM D1655; Defence Standard 91-091; ISO 8217, ASTM D7797; IP 583
Determination of the fatty acid methyl esters (FAME) content of aviation turbine fuel (AVTUR) by Fourier Transform Infrared Spectroscopy - Rapid screening method, ASTM D7963 for Middle Distillate and Residual Fuels (Correlates to EN 14078)
The patented Fame In Jet Instrument (FIJI) has been developed to offer the industry a rapid and easy check on Parts Per Million (ppm or mg/kg) levels of FAME in Aviation fuel using test method IP 583 and ASTM D7797.
FIJI uniquely utilises state of the art FTIR (Fourier Transform InfraRed Spectroscopy) technology and a patented sample preparation system which allows FAME detection accuracy down to the 10mg/kg level.
FIJI can be used as a field or lab based screening tool to give a quick indication of possible FAME contamination that may then necessitate further investigations. The instrument can be used to prevent expensive testing and avoid costly delays of fuel release. The FIJI instrument is robust, extremely simple to use and is fully automatic so no specialist operator training is involved. Tests require less than 50ml of sample and typically take under 20 minutes. Results are presented in mg/kg units together with an op- tional traffic light system for flagging FAME contamination levels of the fuel.

Specifications:

Measurement range: 10-150 ppm (mg/kg) FAME in Aviation Tur- bine Fuels
Test duration: 20 minutes Sample size: 50 ml
Operating temperature range: 5 to 35°C maximum (80% RH) Power: 50 W maximum

Operator Sequence



Water Separation Instrument

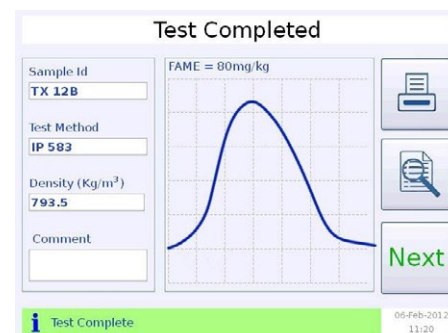
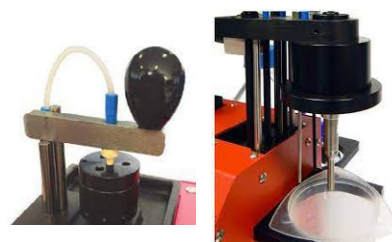
ASTM D8073, IP 624

The Water Separation Instrument is a fully automatic and compact bench top / portable instrument. The instrument measures how effectively a fuel sample releases entrained and emulsified water when pumped through a water coalescing filter. The WSI displays the measured water separation index. Results can range from 0.0 to 100.0. A high water separation index, such as 100.0, indicates the test specimen coalesces easily and is relatively free of surfactants.

The WSI is operated via a touchscreen user interface that steps you through the testing procedure. The instrument consists of a sonicator, temperature probe, filter cartridge, dye detector and dyed water, solvent and test specimen pumps. Before each test the WSI flushes the instrument with the test specimen, primes the instrument and primes the filter. When the test starts the unit pumps dyed water into the test specimen and emulsifies the solution with the sonicator. After a specific time the emulsion is pumped through a particulate filter, the dye detector and into the waste container to provide a reference value. Once a reference value is acquired, the emulsion is diverted through a filter cartridge to remove the dyed water before it passes through the detector again and a new set of readings are taken. The water separation index is calculated from the reference value and subsequent readings. Results display on the screen.

Specifications:

Measurement Range: 50-100 Water Separation Index (WSI) Conductivity 0-2000 pS/m (factory option)
Temperature Range: 19°C to 29°C Sample Size 220 ml \pm 10 ml
Power Universal, AC 85-264 VAC 50/60 Hz Outputs USB, Digital Display, FAT Compatible Files



AFIDA Indicated Cetane Number (ICN)

IP 617; Pr EN 17155; ASTM DXXXX

AFIDA is a revolutionary development providing fully automated determination of the Indicated Cetane Number (ICN) of diesel and diesel related fuels using test method IP 617 and ASTM D8183.

The analyzer uses a Constant Volume Combustion Chamber (CVCC) and incorporates a unique and patented high pressure injection system that generates fine fuel droplets similar to modern common rail injectors in most diesel engines.

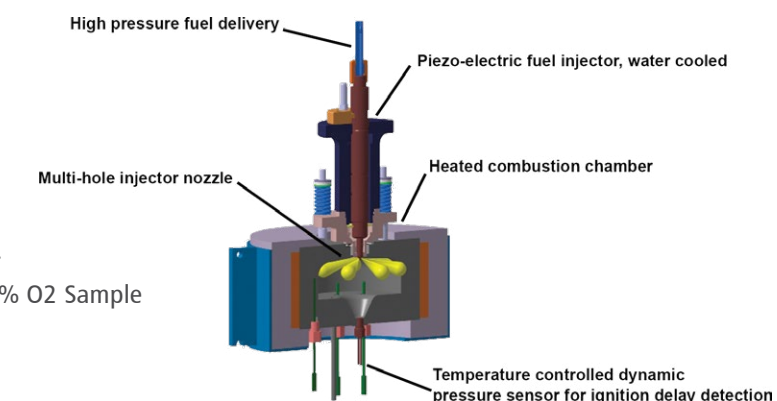
An ultra-robust temperature controlled piezo electric injector provides rapid switching and highly repeatable fuel metering, offering improved performance and consistency when compared with solenoid controlled injectors and pintle type nozzles.

The analyzer provides very fast, efficient and calibrated ICN determinations, tests are fully automated via an integral 36 position carousel and auto sampler. AFIDA (the future of cetane testing)

- Cost effective investment - typically 1 year ROI
- Approved alternative to D613
- No bias to D613
- Uses the same PRF's as D613
- Minimum operational skill
- Automated sampling
- Just 40ml of sample per test
- Minimal maintenance

Specifications:

Chamber temperature: 580°C, Chamber pressure: 17.5 bar
Injection pressure: 1000 bar, Compressed air: 20.9 \pm 0.5 % O₂ Sample volume: approx. 40 ml for analysis and cleaning
Warm up time: approx. 45 min
Analysis time: approx. 25 min per sample



H2S Analyzer with Vapour Phase Processor (VPP)™

ASTM D7621; IP 570; ISO 8217

The H2S Analyzer was originally developed in cooperation with Lloyd's Register's 'Fuel Oil and Bunker Analysis Service' (FOBAS) along with support of other major international oil companies to offer rapid measurement of H2S in liquid petroleum products.

The H2S Analyzer is an excellent tool for supporting Quality Control and safety ensuring product is within approved specification. Rapid repeat sample measurement means it can also be used to assist product remediation treatment of feedstocks and off specification product.

H2S is efficiently purged from the test sample by a combination of heat and agitation, and is measured by a proprietary advanced gas specific detector. The instrument offers a cost effective solution for H2S measurement – no costly or hazardous chemicals are required and there is no need for analytical preparation by an experienced chemist.

This is achieved by removing any interfering chemicals such as toluene, xylene or Mercaptans which can damage the sensor and 'interfere' with readings. Additionally the VPP can be used to address a broader range of petroleum products.

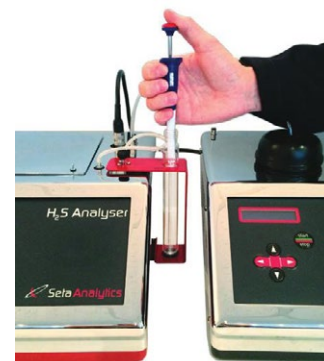
Specifications:

Measurement range: 0-250 mg/kg H2S in the liquid phase (0-250 ppm H2S)

Operating limits: 5 – 40°C maximum (80% RH), Viscosity Range: Up to 3000 mm²/s

Principle of measurement: Advanced Electrochemical sensor, Test duration: 15 minutes

Sample size: 1 ml, 2 ml, 5 ml (depending on H2S concentration), Diluent volume: 20 ml



AvCount3 Particle Counter

The AvCount3 is a compact bench-top automatic particle counter, used to measure the size and distribution of particles and water droplets in light and middle distillate fuels, including aviation fuel and kerosene, biodiesel, low viscosity oils and hydraulic oils.

The fully automatic test sequence and consistent sample handling ensures test repeatability and reproducibility. The AvCount3 is calibrated to ISO 11171 and features programmable alarm limits. Statistical Quality Control (SQC) analysis allows analysis of results in accordance with ASTM D6299.

Specifications:

Particle Size Range Iso 11171: 4 µm(C) To 70 µm(C) (Calibration For Larger Sizes Available On Request)

Number Of Measuring Channels: 16 Size Channels Displayed On Instrument, 4 µm(C) To 70 µm(C) And 2 µm(C) To 100 µm(C) (Iso 4402 Sizes)

Counts Per Measurement (Max): 60,000 Per MI

Sample Viscosity (Max): 64 mm²/s (Using Internal Pump), 200 mm²/s (Pressure Fed @ 3 Barg) (Sa1950-0 Sample Delivery System Is Available As An Accessory)

Sample Temperature Range Ambient: 0 To 70 °C

Results 500,000 Result Memory. Print Via Internal Printer, Export To Lims, Usb Or Qr Code

Sample Flow Rate: 30 ml/min ± 5 ml/min

Total Sample Volume Used: 80 ml For Astm D7619 & Ip 565, From 20 ml For Other Methods (Includes Flush Cycles)

Power: 100/240 V, 50/60 Hz, Auto-Sensing Universal Power Supply

Size (HxWxD): 370 X 230 X 270 mm

Weight: 6 Kg



Gas Chromatography Analyzer

ASTM D2163, D4424, D5303, D5504, D6159, D6228, IP 264/72, 405, CD/96/97, ISO 7941, ASTM D6839, ASTM 8071, ASTM D3710, D2887, D5307, D5399, D5442 D6352, D7096, D7169, D7213, D7500, DIN 51435, 51581, EN 15199-1,2&3, IP 406, 480, 507, 545, ISO 3924, 5442, IP 585/10.

All GC analyzers are configured for complex separations, data processing and reporting. Our analyzers are designed to meet many accepted standard methods (like GPA, ASTM, UOP, ISO, etc.) in the Oil and Gas industry. The efficient configurations are based on proven GC technology, resulting in robust instruments with an optimal return on investment.

Our company specialize in turnkey products for Energy, Refinery, Chemical and Environmental markets. Online analyzers are provided for fast monitoring of chemical processes like catalyst screening and reactor analysis. We also offers solutions for ambient air monitoring like VOC analyzers and Sift-MS.

A comprehensive range of standardized analyzers is offered, like RGA, NGA, DHA, Simdist, PIONA, Permanent Gas Analyzer, Low Level Sulfur Analyzer, Light Hydrocarbon Analyzer, LPG Analyzer, Oxygenates Analyzer, Trace CO-CO2 Analyzer and TOGA Analyzer.



Ion Chromatography

Ion Chromatography (IC) is an analytical separation technique based on ionic interactions. It is widely used for determination of anions, Cations, Alkalinity, Organic Acids, Transition Metals & Amines.

IC systems are modular and each system could be customized for requested applications.

Specifications:

Suppression system: membrane capillary without daily using reagents
Low pulsation pump system: less than 0.1%, Lubrication: Automatic
Degassing: Automatic, Back-flushing system: Automatic
Volume injection: Variable (Partial loop injection) & Dilution system
Calibration: Automatic with single standard solution
Detector: Conductivity with measuring range of 0-20000 $\mu\text{S}/\text{cm}$
Column oven temperature: adjustment 4°C – 100 °C
Column selector: capable of selecting between 6 columns



High Performance Liquid Chromatography (HPLC)

ASTM D7524, IP 568, ASTM D6591, IP 391, EN 12916, ASTM D6379; IP 436, DEFSTAN 91-91.

The Sykam High Performance Liquid Chromatography (HPLC) System S 500 and S600 Series are intended for all routine analysis as well as for the ambitious analyst. The system configuration is highly variable and several upgrade options make this system suitable for the whole range of analytical applications.

These HPLC systems are applicable for: Automatic injection (Autosampler) with 120 sample vials, Variable volume injection (Partial loop injection) & Dilution system, Automatic multi point calibration with single standard solution, Temperature adjustment 4°C - 60°C for samples,

Gradient/ Isocratic pumps with flow rate of 0.001-1000 ml/min (micro, analytical, semi-preparative and preparative) made of PEEK/ Stainless Steel, Low pulsation (less than 0.1%), Automatic lubrication, Automatic Degassing, Automatic back-flushing system, Column oven with temperature adjustment 4°C - 150°C, Automatic column selector capable of selecting between 6 columns,

Various detectors such as UV/Vis, Florescence, PDA, RI and conductivity.

HPLC systems are modular and each system could be customized for requested applications.

This system is suitable for below analysis:

- Measures Static Dissipater Additive (SDA) in Jet and Diesel fuels.
- Measures Aromatics in Diesel and Bio-Diesel.
- Measures Aromatics in Aviation and Jet fuels.

Specifications:

Wetted Materials: Stainless Steel / PEEK*, Teflon AF, PVDF, Ceramics, Sapphire, Ruby
Flow Rate: Programmable as (Micro: 0.001 - 4.000 ml/min, Analytical: 0.001 - 10.000, Semi-Preparative: 0.1 - 40.000 and preparative: 1-1000 ml/min)
Flow Accuracy: $\pm 1.0\%$ 1.000 ml / min
Flow Precision: $\pm 0.1\%$ RSD 1.000 ml/min
Pressure Range: 0 – 60 MPa (0 – 600 bar)
Pressure Pulsation: typical < 0.1 MPa or < 1.0 %
Compressibility Compensation: user-adjustable for different solvents



Amino Acid Analyzer

The innovative automatic Amino Acid Analyzer S 433 combines the advantages of the classical ion exchange separation method with the modern technique of high performance liquid chromatography. The complete package of sophisticated instrumentation, a wide variety of prepacked and tested separation columns, combined with optimized ready-to-use buffer solutions and chemicals, creates the right answer for any routine or research problem in amino acid determination. More than 30 years experience in developing and operating sophisticated amino acid analyzers results in unmatched performance.

With old fashioned step-elution systems, 4 and/or 5 buffer solutions were needed. Now, due to the optimized buffer system, only 2 buffers for hydrolysates and 3 for the physiological sample are necessary. The buffer can be adjusted individually to the samples by varying the mixture of the buffer.

Future:

- Multistep Separation
- Cooled Reagent Storage
- Integrated Autosampler
- Integrated Vacuum Degasser
- Separation Column Oven
- High-Temperature Reactor
- Integrated Reagent Dosing Pump
- Complete Inert Design
- Safety Devices: control pump pressures, temperatures and leakages

Optional Application

- Post column derivatisation with OPA (needs an optional Fluorescence Detector)
- Carbohydrate determination for reducing sugars with Cu-bicinchoninate post-column derivatisation (except the separation column, no additional extras are needed)
- Polyamine determination with Ninhydrine or OPA postcolumn derivatisation



Shodex:

Shodex provide a wide range of products to meet your analytical needs, from pretreatment and separation columns to calibration standards for size exclusion chromatography.

HPLC, IC, GPC, SEC Columns are most important of these products.

Future:

The great chemical stability leads to an extended pH range (2 to 13).

The low bleeding allows the use of sensitive detection.

The large variety of material properties creates a higher resolution.

They are available for almost all separation techniques.

The price per injection is cheaper than in silica-based columns due to their extended lifetime (2 to 3 times longer than silica-based).

Over than 6000 application note for these products.



Automatic Potentiometric Titrator (AT-710)

D94, D558, D664, D974, D1159, D2420, D2710, D2896, D3227, D4739, D4929, D5776, D6470, E1899.

The AT-710 titrators come with a large TFT colour touch screen and offers everything required to perform all kinds of titrations, from simple acidity determinations to fully automated titration procedures requiring several burettes to add auxiliary reagents or to do back titrations. Features like automatic correction of the thermal expansion of the reagents, automatic storage of the reagent data directly in the burette and comprehensive check functions

These titrators offer comprehensive GLP functions which ensure that system performance checks are performed at regular intervals. Up to 100 records of system performance checks, burette precision validations and sensor calibrations are stored in the instrument.

Specifications:

Detection range: Potentiometric: -2000mV to +2000mV

pH:-20.000 to 20.000pH, Temp.: 0 to 100°C

Titration mode: Auto Titration, Auto Intermit, Intermit, Stat, Petroleum Titration, COD

Method: Standard method 120, Combined method 10

Kinds of titration: Potentiometric, Photometric, Polarization, Conductivity

Key operation: Touch panel

Ambient condition: Temperature: 5 to 35°C, Humidity : 85%RH or below (no condensation)

Power source: AC100 to 240V +/-10% 50/60 Hz



Volumetric KARL FISCHER titrator (MKV-710 Seies)

ASTM E203, ASTM D890, ASTM D 1364, ASTM D 4377, CE marking EMC : EN61326-1 LVD : EN61010-1 RE Directive Burette unit EBU FCC Part15 Sub part C FCC ID : 2ABSVEBU01 MKV-710 for volumetric moisture titration is the solution to worldwide users' need for reliability and precision in measurement of water content. These models are the results of KEM's many years' experience and know how in developing advanced technology, and they are highly valued in measurements as conforming to such an international standard as ISO, ASTM, EP or USP.

Specifications

Measuring method: Karl Fischer Volumetric titration

Measuring range: Water content : 1ppm to 100%H₂O (depends on KF reagent factor),

Burette precision: 10mL burette +/- 0.015mL ; reproducibility +/- 0.005mL

End time range: 1 to 99s, Power source: AC100 to 240V +/- 10% 50/60 Hz

Titration form: Normal titration / Back titration, Required solvent: 30 to 100mL

Method: 120,Data storage: 500 samples



Hybrid Karl Fischer Moisture Titrator (MKH-710)

ASTM D1533, ASTM D1744, ASTM D 4928, ASTM D 6304, ASTM E 203, ISO 760.

Hybrid Karl Fischer Moisture Titrator MKH-700 has the world's first & convenient functions equipped such as high-speed & high-precision measurement by "Hybrid titration method" which uses both "Volumetric titration method" and "Coulometric titration method", and "Electrolytic Factor Measurement System" which does not require pure water for factor determination.

Karl Fischer Moisture Titrator which is on the market is necessary to adjust the sample amount when carrying out the measurement.

Specifications:

Coulometric titration

Measuring method: Karl Fischer Coulometric titration, Measuring range: Water content 10μg - 300mg H₂O, Precision: RSD less than 0.3% (n=10)

Display resolution: 0.1μg

Titration form: Normal titration/Back titration, Titration cell: Two component cell

Required reagent: Anolyte 100mL, Catholyte 5mL

Volumetric titration

Measuring method: Karl Fischer Volumetric titration, Measuring range: Water content 100μg - 500mg H₂O, Concentration: 1ppm - 100% H₂O

Burette precision, Volume: 10mL Resolution: 1/20,000

Discharge precision: ±0.015mL, Repeatability: ±0.005mL

EP sense method: Detection of potential level maintained during End point time.

End time range: 1 - 99s.

Titration form: Normal titration/Back titration,Add the optional additional burette unit.

Required solvent: 50 - 150mL

Hybrid titration

Measuring method: Karl Fischer Coulometric titration, Karl Fischer Volumetric titration

Measuring range: Water content 10μg - 500mg H₂O, Precision: RSD less than 0.3% (n=10) (Karl Fischer reagent factor 3mg/mL), Display resolution: 0.1μg

Control method : Automatic continuous titration, Constant current pulse time control

Endpoint detection: Alternate current polarization method with a twin Platinum electrode, EP sense method: Selective drift stability or Limit measurement time

Titration form Normal titration

Required reagent: Anolyte 100mL,Catholyte 5mL, Reagent factor: from 1 to 5

Precision: SD less than 1.0% (n=3)



Coulometric KARL FISCHER Titrator (MKC-710 Series)

ASTM D7318, ASTM D6304, ASTM D1533, ASTM D4928, ASTM E 1064, ASTM E 203, CE marking EMC : EN61326-1 LVD : EN61010-1

The Karl Fischer Moisture Titrator Model MKC-710 can make moisture analysis for a variety of natural products, raw materials and industrial products. As a general rule, if samples routinely contain water concentrations of 500 mg/kg or less, the coulometric technique should be considered.

Specifications:

Measuring method: Karl Fischer Coulometric titration

Measuring range: Water content / Bromine index: 10ug to 300mg / 8ug to 300mg

Precision: Relative, Standard Deviation: less than 0.3% (n=10), Display resolution: 0.1ug

Control method: Constant current pulse time control

Endpoint detection: Alternate current polarization method with a twin platinum electrode

EP sense method: Selective drift stability or limit measurement time

Required solvent: 2-Component cell: Anolyte 100mL, Catholyte 5mL; 1- Component cell: Anolyte 150mL

Method: 120, Data storage: 500 samples

Power source: AC100 to 240V +/- 10% 50/60 Hz



Refractometer (RA-620 / 600)

ASTM 1218

This instrument is ideally suited for the quality control and concentration measurements in the pharmaceutical, chemical, aroma, flavor and fragrance and petrochemical industry. It conforms to the specific requirements, methods, norms and regulations of these industries.

Specifications:

Measuring Method: Detection of Critical Angle of Optical Refraction

Light Source: LED Na-D Line (589.3nm)

Measuring Items: Refractive Index, Brix, Other Concentrations Measuring Range: Refractive Index (nD): 1.32000 - 1.58000 1.3200 - 1.7000 ;

Brix: 0.00 ~ 100.00%

Accuracy: Refractive Index (nD): $\pm 0.00002 \pm 0.0001$, Brix: $\pm 0.014\% \times 2$ (0 ~ 85.0%) $\pm 0.1\%$

Repeatability: Refractive Index (nD): $\pm 0.00001 \pm 0.0001$; Brix: 0.01% 0.1%

Resolution: Refractive Index (nD): 0.00001 0.0001 ; Brix: 0.01% 0.1%



Density / Specific Gravity Meter (DA-650/ 645/ 640)

ASTM D 1250, ASTM D 1475, ASTM D 4052, ASTM D 4806, ASTM D 5002, ASTM D 5798, ASTM D 5931, ISO 12185, ISO 15212

The Density Meters are the result of 3 decades of experience in manufacturing Digital Density Meters and the market experience gained in close cooperation with our customers. It combines the most recent measuring technology with an intuitive user interface in a robust housing.

Just imagine the model where a weight is attached to a bar at the end and a bar is fixed on a wall as shown in the right figures. And when you hit the weight by a finger, the weight starts vibrating.

Now you will find that the heavier the weight becomes, the slower it vibrates, and vice versa. This is because the weight will vibrate on the oscillation period specific to a substance in proportion to the mass of weight. This means that one can determine the density of a substance by measuring its oscillation period since density becomes proportional to the mass when the volume is constant, i.e. a fixed tube.

Specifications:

Measuring Range (all models): 0.0000 to 3.0000g/cm, Accuracy: (DA640: 0.0001g/cm³), (DA645: 0.00005 g/cm³), (DA650: 0.00002g/cm³)

Resolution: (DA640: 0.0001g/cm³), (DA645: 0.00001g/cm³), (0.000001g/cm³)

Temperature range: 0 to 93.0 degree C Measuring principle Oscillating u-tube

Minimum sample amount approx. 1.2 mL with syringe | approx. 2 mL with pump

Viscosity correction: yes

Display: 5.7 inch color TFT LCD; VGA (640×480)

Display contents: Density, specific gravity, oscillation frequency, temperature, concentration and other messages

Sampling: Manual by syringe, Automatic by builtin peristaltic pump

Methods: Stores up to 100 methods including measurement parameters, density auto correction, concentration conversion, etc. Wetted Materials: PTFE, borosilicate glass, SUS304

Ambient Conditions: Temperature: 5 – 35°C, Humidity : 85%RH or below (No condensation allowed)

Power Supply: AC100 – 240V; 50/ 60Hz (Comes with AC adapt- er)



Density/Specific Gravity Meter DA-860/850/840

ASTM D 1250, ASTM D 1475, ASTM D 4052, ASTM D 4806, ASTM D 5002, ASTM D 5798, ASTM D 5931, ISO 12185, ISO15212

The density/specific gravity meter DA-860/850/840 is developed with the improvement in convenience and efficiency to meet market demands, inheriting reliability and technology established over many years, by Kyoto Electronics Manufacturing Co., Ltd. (KEM).

The instrument employed resonant frequency oscillation method can measure the density/specific gravity in liquid samples, and concentration of the sample using a conversion table or formulas. The required minimum sample volume is approximately 1mL when sample solution is injected manually, and the shortest measurement time is approximately 10 seconds when the viscosity correction function is disabled and the sample temperature is stable. Data integrity (DI) support functions are equipped as standard to help maintain and manage your valuable data. The interface has been enhanced to support a variety of uses, such as a separate structure for the operation unit (tablet/PC) and measurement unit, wireless LAN connection, and connection of multiple units.

The instrument has a space-saving design and can be integrated with a semiautomatic cleaning unit (optional). Also included is a camera for viewing inside the measurement cell, improving reliability, convenience, and efficiency.

Applications

The instrument can be used for liquid concentration control and quality control in the following segments.

- Determination of transaction prices and taxes for crude oil and petroleum products (fuel oil and lubricants)
- Purity control and quality control of substances produced by chemicals (chemical products)
- Brix measurement as production process control and quality inspection for milk products, carbonated drinks, fruit drinks, etc.
- Measuring the concentration of alcohol and extracts in beer, sake, wine, etc.
- Brix concentration measurement of sugar solution, syrup solution, isomerized sugar solution, seasoning, etc.
- Pharmaceutical Densitometry Based on Pharmacopoeia
- Quality control of oils and fats such as vegetable oils and animal oils
- Quality control of flavors, chemicals, etc.
- Quality control of surface treatment agents such as etching solution and acid cleaning solution

Specifications:

Measurement Method: Resonant frequency oscillation

Measurement Range: 0 to 3 g/cm³

Temperature Range*: 0 to 100°C (32 to 212°F)

Accuracy



Density:

DA-860: 0.000003 g/cm³

DA-850: 0.00001 g/cm³

DA-840: 0.00005 g/cm³

Temperature

DA-860: ±0.02°C (±0.04° F)

DA-850: ±0.03°C (±0.05° F)

DA-840: ±0.05°C (±0.09° F)

Repeatability

DA-860: 0.000001 g/cm³

DA-850: 0.000005 g/cm³

DA-840: 0.00005 g/cm³

Reproducibility

DA-860: 0.000002 g/cm³

DA-850: 0.000005 g/cm³

DA-840: 0.00005 g/cm³



Standards

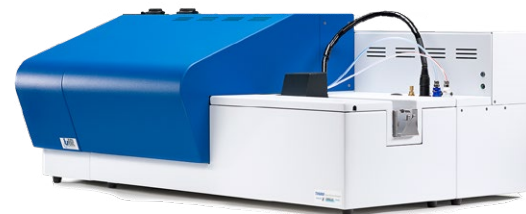
- ASTM D1250 Standard Guide for Use of the Petroleum Measurement Tables
- ASTM D4052 Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
- ASTM D4806 Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel
- ASTM D5002 Standard Test Method for Density, Relative Density, and API Gravity of Crude Oils by Digital Density Analyzer
- ASTM D5931 Standard Test Method for Density and Relative Density of Engine Coolant Concentrates and Aqueous Engine Coolants by Digital Density Meter
- European Pharmacopoeia / 2.2.5. RELATIVE DENSITY
- ISO 12185 Crude petroleum and petroleum products -- Determination of density -- Oscillating U-tube method
- ISO 15212-1 Oscillation-type density meters -- Part 1: Laboratory instruments
- JIS K0061 Test methods for density and relative density of chemical products
- JIS K2249-1 Crude petroleum and petroleum products -- Determination of density -- Part 1: Oscillating U-tube method
- JIS Z8804 Methods of measuring density and specific gravity of liquid
- OIML R 22 Traceability and computerization of alcoholometric tables
- United States Pharmacopoeia–National Formulary / 31 <841> SPECIFIC GRAVITY

Total Nitrogen Analyzer Series 6000 Analyzer

ASTM D4629, ASTM D5762, ASTM D6069, ASTM D7184, EN 12260, SH/T 0657, UOP 936, UOP 971, UOP 981.

TSHR international introduces the Total Nitrogen Analyzer, model TN 6000, as a trace level Analyzer that gets you the necessary data quickly, reliable and accurately. The TN 6000 is matrix independent and complies fully with the international industrial and environmental standards.

The TN 6000 system is designed for fast and efficient analysis of total nitrogen (TN). The TN 6000 system supports the use of different modules, like liquids and solids which are used for the introduction of various sample matrices into the furnace. The NO is detected by the principal of chemiluminescence, this analysis technique is relative and make that a calibration line is required.



Specifications:

Dimensions: 960 (W) x 390 (h) x 590 (D) mm, Furnace Voltage: 2 x 24 V, 50/60 hz

Furnace power: 2 x 300 W, Furnace Temperature Sensor: 2 x Ni-Cr/Ni

Furnace configuration: Dual temperature controlled, Furnace Temperature: 1250 ° C Max, Range: 30 ppb – 10000 ppm

Quantity of sample: 0,1 – 100 mg, Analysis time: < 10 minutes, Relative standard deviation: < 5%, Software: Athena

Series 7000 Analyzer

ASTM D4629, ASTM D5762, ASTM 6069, ASTM D7184 and UOP 971.

The TSHR TN 7000 Total Nitrogen Analyzer is designed to measure nitrogen levels over a wide range of liquids sample types and nitrogen concentrations quickly and accurately. The TN 7000 is matrix independent and complies fully with DIN, ASTM, IP and CEN standards. Levels of nitrogen emitted into the atmosphere are stringently controlled by worldwide pollution legislation aimed at reducing global warming.



Specifications:

Furnace Voltage: 2 x 24 V, 50/60 hz, Furnace power: 2 x 300 W

Furnace Temperature Sensor: 2 x Ni-Cr/Ni, Furnace configuration: Dual temperature controlled

Furnace Temperature: 1250 ° C Max, Detection Principle: Chemiluminescence, Range: 20 ppb – 5000 ppm

Quantity of sample: 1 – 100 µL, Sample matrix: Light hydrocarbons, Analysis time: 3-6 minutes, Relative standard deviation: < 5%, Software: Athena

Total Chloride Series 6000 and 7000.

ASTM D3120, ASTM D3246, ASTM D3961, ASTM D4929, ASTM D5194, ASTM D5808, ASTM D6721, ASTM D7457, GB/T 11061, GB/T 18612, SH/T 0253, UOP 779

TSHR international introduces the Total Chlorine Analyzer, model TX 6000 and TX7000, as a trace level analyzer that gets you the necessary data quickly, reliable and accurately. The TX 6000 is matrix independent and complies fully with the international industrial and environmental standards. The TSHR TX 7000 is especially designed for the more demanding customer with high sample throughput. The special design gives easy and save access to all serviceable parts. Running 24/7 with minimum downtime and superb reliability. The new combustion design will eliminate any soot formation. The TX 7000 is designed to analyses all low and high boiling liquids, including gas samples.



Sample Introduction Modules GM 7000 & 7000 Series

The compact Gas & LPG sample introduction module, GM 7000, is able to connect with the TSHR range of Combustion Elemental Analyzers and legacy Thermo Euroglas TNTSTX analyzers for a range of pressurized gas and LPG samples. The TSHR GM 7000 module is a fully automated and software-controlled gas and LPG sampling and sample introduction module in compliance with ASTM D6667 and D7551 methods for trace level sulfur analysis. The module is provided with fast connectors to easily connect the sample cylinder and can take different sample volumes to fulfill customer needs.

The sample volume will carry towards the combustion analyzer for direct analysis of the total sulfur, nitrogen or chlorine content in the Gas or LPG sample.

This enables the user within a few minutes, accurate data in compliance with regulatory methods.

The modularity of the TSHR range of Combustion Elemental Analyzers supports the feature to switch easily between Gas/LPG applications and liquids or solids samples with minimum method changeover-time of the analyzer.



Total Sulfur Analyzer Series 6000 Analyzer

ASTM D5453, D6667 and D7183

The TSHR TS 6000 analyzer incorporates a high-end pulsed UV fluorescence detector which provides superior stability and detection limits. Combined with excellent uptime, matrix independence, exceptional linearity and enhanced performance, the TS 6000 is the ideal solution for both demanding and routine applications. The high sample load capacity and integrated septum stop per minimizes weighing errors and eliminates problems caused quick gas connectors for oxygen and carrier gas (Ar/He).

Specifications:

Dimensions: 960 (W) x 390 (h) x 590 (D) mm, Furnace Voltage: 2 x 24 V, 50/60 hz

Furnace power: 2 x 300 W

Furnace Temperature Sensor: 2 x Ni-Cr/Ni, Furnace configuration: Dual temperature controlled, Furnace Temperature: 1250 ° C Max

Detection Principle: Pulsed UV-Fluorescence (extra options: Coulometrics)

Range: 30 ppb – 10000 ppm, Quantity of sample: 0,1 – 100 mg Analysis time: 4 - 10 minutes Relative standard, deviation: < 5%

Software: Athena



Series 7000 Analyzer

ASTM D5453, ASTM D6667, ASTM D7183, ASTM D7551, GB/T 11141, ISO 20846, SH/T 0689, UOP 987, UOP 989.

The TSHR Total Sulfur Analyzer, model TS 7000, incorporates a highend pulsed UV-Fluorescence detector which provides superior stability and low detection limits. Combined with excellent uptime, matrix independence, exceptional linearity and enhanced performance, the TS 7000 is the ideal solution for both demanding and routine applications.

The enhanced combustion process ensures a complete and effective combustion of organic sample types and analysis low and high boiling liquids as well as LPG/Gas samples.

Specifications:

Furnace Voltage: 2 x 24 V, 50/60 hz, Furnace power: 2 x 300 W

Furnace Temperature Sensor: 2 x Ni-Cr/Ni, Furnace configuration: Dual temperature controlled, Furnace Temperature: 1250 ° C Max

Detection Principle: UV-Fluorescence, Range: 30 ppb – 5000 ppm, Quantity of sample: 1 – 100 µL

Sample matrix: Light hydrocarbons, Analysis time: 3-6 minutes, Relative standard deviation: < 5%, Software: Athena



The right mill for first-rate analysis

The quality of every product or material analysis depends on the quality of the sample preparation. It is therefore extremely important to consider all the individual milling parameters in order to make an informed choice: material properties, feed size and volume of the sample, grinding time and desired final particle size, any abrasion of the grinding parts – all these factors are significant. And of course the costs. For this reason, FRITSCH offers a wide selection of high-performance mills in various product groups for every application and every specific need: Planetary Mills, Ball Mills, Cutting Mills, Rotor and Beater Mills, Jaw Crushers, Disk Mills, Mortar Grinder and knife mill.



Precise and reliable sieve analysis

The FRITSCH sieve range is the focused answer to all typical sieving tasks in the laboratory: The ANALYSETTE 3 PRO and SPARTAN and the ANALYSETTE 18 for dry and wet sieving from 20 g up to 15 kg. With the Vibratory Sieve Shaker ANALYSETT 3 PRO also micro-precision sieving is possible (measuring range 5 µm - 100 µm, max. sample quantity approx. 0.05 - 0.5 g). Three well-conceived instruments for every application with FRITSCH concepts, that make the work simpler and faster - easy to operate, reliable and long-lasting with extensive accessories and the modified analysis software AUTOSIEVE.



ANALYSETTE 28 ImageSizer

The ANALYETTE 28 ImageSizer is the ideal Particle Sizer for all applications that require accurate and reproducible measuring results for both particle shape and size of powders and bulk solids as well as of suspensions and emulsions. The optical process of Dynamic Image Analysis provides results for a wide measuring range, delivers multiple shape parameters and evaluation possibilities for particle size. The measuring time depending on the sample quantity, is under 5 minutes. And the result is available immediately.



Dividing and Feeding

Representative Sample Preparation - the Foundation for every Precise Analysis!
 The instruments for sample dividing and feeding will make your work more efficient and guarantee a representative sample preparation. The Rotary Cone Sample Divider LABORETTE 27 creates the optimal basis for reliable analysis of a representative sample.

The Vibratory Feeders LABORETTE 24 are ideal for efficient feeding of mills, sample dividers, mixers, sieve shakers, balances and other laboratory instruments.



Laser Particle Sizer ANALYSETTE 22 NeXT (Nano/micro)

Automatic particle size analysis down to the nano-range

The completely revised ANALYSETTE 22 NeXT (Nano/micro) with an extra wide measuring range for maximum precision and sensitivity for smallest particles with an additional detector system. The intelligently revised measurement design makes the ANALYSETTE 22 NeXT especially compact and space saving. The measuring time is for most measurements less than a minute – including a reliably residue-free cleaning.



	ANALYSETTE 22 NeXT Nano	ANALYSETTE 22 NeXT Micro
Measuring range	0.01 – 3800 μm	0.5 – 1500 μm
Large angle detectors	Yes	No
Backward scattering channels	Yes	No
Standard	ISO 13320	
Laser beam alignment/ class according to IEC 60825-1	Automatic/Class 1	

Mercury Analyzer

UT-3000 Mercury UltraTracer

The UT-3000 Mercury UltraTracer provides a compact and reliable tool for measuring mercury in gases at ultra-trace levels and Natural Gas Utilizing the high performance Gold Trap amalgamation module and an optimized state-of-the-art AA-mercury vapor detector the UT-3000 Ultra-Tracer offers detection limits at sub- ng/m^3 (ppq-parts per quadrillion) levels.



Specifications:

Measuring principle: Amalgamation on gold (MI GoldTrap), UV absorption (CVAAS), Wavelength = 253,7 nm

UV source: Electrodeless low-pressure mercury lamp (EDL), Stabilization method: Reference beam method

Optical cell: Fused silica (Suprasil), Length approx. 230 mm, heated, approx. 45°

Sample volume: 0,1 l to 10 l

Sampling duration: 10 seconds to 16 minutes

Detection limit: 0.1 ng/m^3 corresponding to 0.5 pg Hg absolutely, Measuring ranges: at 10 l sample volume: 0.1 ng/m^3 to 1000 ng/m^3 , at 1 l, sample volume: 1 ng/m^3 to 10 000 ng/m^3

Sample volume determination: Electronic massflow meter, Sample gas pump: Membrane pump, Viton:

Sample gas filter (at inlet): Membrane filter PTFE 0,45 μm , exchangeable

Carrier gas: not required

Mercury Vapor Monitor VM-3000

The VM-3000 Mercury Vapor Monitor serves for continuous measurement of the mercury concentration in air and other gases in laboratory as well as industry and mobile applications. The mercury concentration is measured in an optical cell made of fused silica. A maintenance free membrane pump continuously feeds the sample gas to the optical cell where UV absorption is measured at a wavelength of 53.7 nm. This so-called cold vapor atomic absorption spectroscopy (CVAAS) measuring method is extremely sensitive for mercury determination and has been used successfully for many years. In contrast to the ocmethod it is low in interference and requires neither an amalgamation step nor expensive noble gases as carriers.



Specifications:

Measuring principle: UV absorption (CVAAS), Wavelength = 253,7 nm
 UV source: Electrodeless low-pressure mercury lamp (EDL) Stabilization
 method: Reference beam method
 Optical cell: Fused silica (Suprasil), Length approx. 230 mm, heated, approx. 45°
 Measuring ranges: 0 - 100 $\mu\text{g} / \text{m}^3$ (0.01-10 ppb), 0 - 1000 $\mu\text{g} / \text{m}^3$ (0-100 ppb), 0 - 2000 $\mu\text{g} / \text{m}^3$ (0-200 ppb)
 Sensitivity: 0.1 $\mu\text{g}/\text{m}^3$ (0.01 ppb), Response time: < 1 second
 Outputs: analogue 4...20 mA; serial (RS 232 / USB); parallel (Centronics)



AULA 254 GOLD

Analyzer for automatic determination of mercury in liquids and digested solids

Specifications:

High precision UV-photometer with reference beam feedback controlled UV source.
 Temperature controlled electrodeless mercury discharge lamp. Analytical wavelength 253,7 nm.
 Heated optical cell made 100% of fused silica. Graphical LC display. Comfortable and easy-to-learn PC operation with AULA WIN software.
 Built-in amalgamation unit «GOLDTRAP» for enhance sensitivity. High performance ceramic gold trap with fast heating and cooling rate.
 Measuring range to 1 ppt (= 1 ng/l)
 Measuring range 0,001 $\mu\text{g}/\text{L}$ Hg ... 10 $\mu\text{g}/\text{L}$ Hg, Sample volume 4-9 mL.
 Automatic zero adjustment.
 Output for printer and analog output 420 mA.
 Auto sampler-reaction unit with 53 positions and automatic rinsing function, 53 sample tubes (10 mL), 3-channel peristaltic pump, automatic addition of reagent, cross flow reactor unit, thermoelectric dehumidifier (low surface, no chemical drier tubes necessary), built-in electronic mass flow controller (calibrated for Argon).



Mercury Tracker-3000 XS

The new Mercury Tracker-3000 XS weighs even less, it is smaller, easier to handle and features GPS, a 5.7" color TFT display and a new high performance Eneloop battery pack with minimized self-discharge.
 The mercury concentration is measured in an optical cell entirely made of a high purity grade fused silica. A maintenance-free membrane pump continuously feeds the sample gas into the measuring cell where the attenuation of a UV beam is measured. Analytical wavelength used is 253.7 nm.

Specifications:

Measuring principle: UV absorption (CVAAS), Wavelength = 253,7 nm
 UV source: Electrodeless low-pressure mercury lamp (EDL) Stabilization
 method: Reference beam method
 Optical cell: Fused silica (Suprasil)
 Measuring ranges: 0 - 100 $\mu\text{g}/\text{m}^3$, 0 - 1000 $\mu\text{g}/\text{m}^3$, 0 - 2000 $\mu\text{g}/\text{m}^3$
 Sensitivity: 0.1 $\mu\text{g}/\text{m}^3$ (0.01 ppb)
 Resolution: 0.0001 mg/m^3
 Response time: Approx. 1 second, real time measurement alarm: Exceedance of concentration, 3 levels programmable Status alarms: measuring cell soiled, battery state, UV lamp exhausted
 Control pad: waterproof membrane keypad
 Measurement Display: 5.7 inch TFT graphical color display, with LED backlight



GAS GENERATORS

Precision Hydrogen Generator

The Precision Hydrogen generators are designed to provide the gas needed for detectors requiring Hydrogen fuel gas, such as FID and FPD. One generator is capable of supplying multiple detectors, and are available in various flow rates to ideally suit individual customers' needs. These generators offer safe, reliable and convenient solutions for those using hydrogen for GC carrier gas, producing the highest purity of hydrogen from the Precision series by utilizing a Proton Exchange Membrane to create the Hydrogen gas from deionized water, and a desiccant filtration stage is used to dry the gas. Precision Hydrogen gas generators come with various safety features as standard, giving you complete peace of mind in the laboratory and a far safer, dependable and more convenient alternative to cylinder gas.

Specifications:

Max Flow Rate: 100, 200, 300, 450cc/min, Max Pressure: 100 psi/6.9 bar

Purity: 99.9995%

Gas Outlets: 1 × 1/8" Swdelok compression fitting

Water Purity Requirement: <1.0 μ Siemens/cm OR > 1 Mohm-cm, Water Consumption: Up to 0.12, 0.24, 0.36, 0.53 L/day

Noise Level: Silent in operation

Precision Hydrogen Trace Generator

The Precision Hydrogen Trace generator is designed primarily for GC or GC - MS carrier gas use, and can also be used for detectors requiring Hydrogen fuel gas such as FID and FPD. One generator is capable of supplying multiple GC instruments. These generators offer a safe, reliable and convenient solution for those using Hydrogen for GC carrier gas, producing the highest purity of Hydrogen from the Precision range by utilizing a Proton Exchange membrane, as well as Pressure Swing Absorption and molecular sieve technology to remove moisture content down to trace levels.

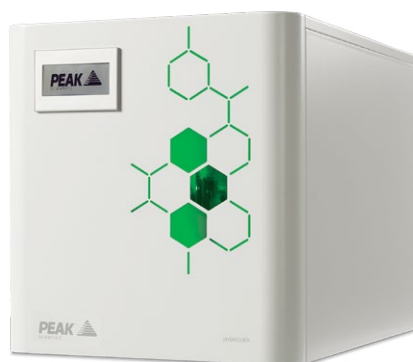
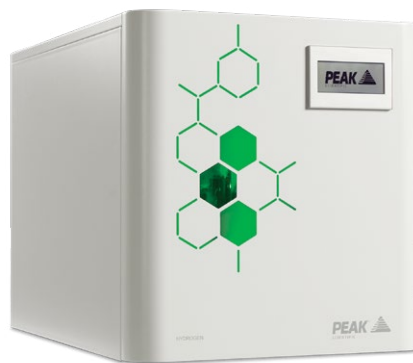
Specifications:

Max Flow Rate: 250, 500 and 1200 cc/min, Max Pressure: 100 psi/6.9 bar, Purity: 99.9999%

Gas Outlets: 1 × 1/8" Swdelok compression Fitting

Water Purity Requirement: <1.0 μ Siemens/cm OR > 1 Mohm-cm, Water Consumption: 0.17- 0.46, 0.4-1.2 L/day

Noise Level: Silent in operation



Nitrogen Generators Precision Nitrogen Generator

Precision Nitrogen generator has been developed to provide a constant and consistent source of Nitrogen for detector make-up gas at standard/typical detection levels for GC applications, as well as headspace vial pressurization, purge and trap, tube conditioning for thermal desorption and sample blow down. These generators are capable of delivering high purity nitrogen, removing oxygen and moisture via Pressure Swing Adsorption and Carbon Molecular Sieve technology. As with all Precision Series generators, Nitrogen models benefit from a compact and modular, stackable design, minimizing the total footprint required for GC gas supply, and providing flexibility to add or remove modules as your laboratory requirements evolve over time.

Specifications:

Max Flow Rate: 250, 600, 1000cc/min, Max Pressure: 80 psi/5.5 bar

Purity: >99.9995%

Gas Outlets: 1 × 1/4" BSPP

Min/Max Air Inlet Pressure: 7.6-8.27bar/100-120psi, Min Air Inlet Flow: 35 lpm

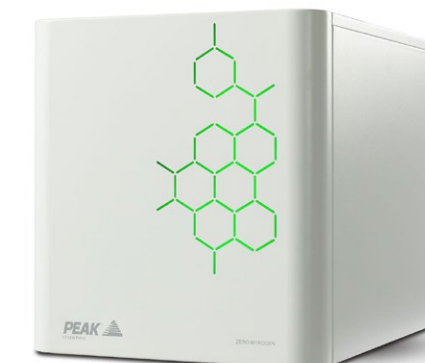
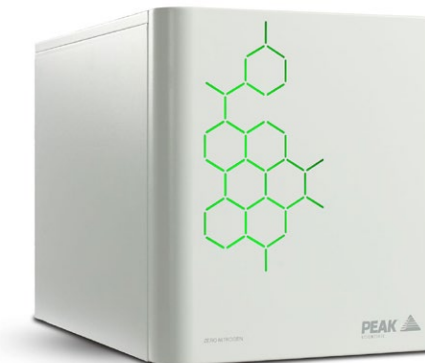
Min Inlet Air Quality: ISO8573-1:2010 Class 1.4.1, Phthalates: None

Suspended Liquids: None

Startup Time For Purity: 1.5 hours

Precision Nitrogen Trace Generator

Precision Nitrogen Trace generator has been developed to provide a constant and consistent source of zero nitrogen for carrier and detector gas for GC applications. These generators are capable of delivering ultra-high purity nitrogen, removing oxygen and moisture via Pressure Swing Adsorption technology, as well as removing hydrocarbons by means of catalytic oxidation to ensure maximum purity output. As with all Precision Series generators, Nitrogen Trace models benefit from a compact and modular, stackable design, minimizing the total footprint required for GC gas supply, and providing flexibility to add or remove modules as your laboratory requirements evolve over time.



Specifications:

Max Flow Rate: 100, 250, 600 and 1000 cc/min, Max Pressure: 80 psi/5.5 bar
Purity: HC / 0.05 ppm
Gas Outlets: 1 × 1/4" BSPP
Min/Max Air Inlet Pressure: 8.3-10bar/120-145psi, Min Air Inlet Flow: 18 , 22 lpm
Min Inlet Air Quality: ISO8573-1:2010 Class 1.4.1, Phthalates: None
Suspended Liquids: None
StartUp Time For Purity: 1.5 hours

Infinity EX 5010-5070: Single Nitrogen source

Producing between 10 and 240 L/min of nitrogen gas, Infinity XE 50 series gas generators can comfortably supply multiple LC-MS instruments with LC-MS grade nitrogen. With the Infinity XE 5010-5040 you can now effectively meet the demands of numerous LC-MS instruments simultaneously. With no moving parts or mechanical sound, the Infinity range is easy to service and requires minimal maintenance.

Peak Scientific's Infinity XE series generators have been engineered to provide nitrogen to laboratories that utilize an external source of compressed air, which meets a minimum quality grade of ISO 8573-1:2010 Class 1.4.1. Where required, Peak can provide assistance on external compressors & pre/post filtration as part of delivering a complete solution for your needs.

Specifications:

Max Flow Rate: Up to 60, 120, 180, 240 L/min, Purity N₂ Min-Max: LC-MS grade Nitrogen
Max Outlet Pressure: 100 psi default (user adjustable)
Inlet Air Quality Requirement: ISO8573-1:2010 Class 1.4.1, Inlet Air Pressure Requirement: 125 psi (8.6 bar) minimum



Precision Zero Air Generator

The Precision Zero Air generators are designed specifically to supply clean, dry, hydrocarbon-free air to be used as detector gas for GC. Five models are available, delivering 1.5, 3.5, 7, 18 and 30 liters per minute flow rate, dependent upon the specific requirements. As with all Precision Series generators, Zero Air benefits from a compact and modular, stackable design, minimizing the total footprint required for GC gas supply, and providing flexibility to add or remove modules as your laboratory requirements evolve over time.

Specification:

Max Flow Rate: 1.5, 3.5, 7, 18, 30L/min
Max Pressure 80, 100 psi/6.9 bar
Hydrocarbon Concentration (as Methane): >99.9995%
Gas Outlets: 1 × 1/4" BSPP
Min/Max Air : 90-145, 110-125, 110-145 psi
Inlet Pressure: 6.2-10, 7.5-8.6, 7.6-10 bar
Min Air Inlet Flow: 1.5, 3.5, 7, 18, 30L/min
Min Inlet Air Quality: ISO8573-1:2010 Class 1.4.1
Phthalates: None
Suspended Liquids: None
Start-up Time For Purity: 60 minutes



Pure water generators Omnia pure and ultrapure water systems

The Omnia series is extremely convenient to use. All devices are fitted with the Optifill one-hand dispenser with integrated control and monitoring unit. One-handed operation, removable, can be swivelled and height-adjusted, and with a flexible connection for easy water dispensing into any type of container.

Specifications:

Can be swiveled and height adjusted
Leakage sensor
Automatic Voltage Adjustable
Setting possibilities for conductivity in $M\Omega \times cm$ or $\mu S/cm$
Removable & ergonomic shaped
Press button withdrawal
Safe Password access

OmniaPure

When your need is for highest quality pure water that fulfils the demands of analytical and life science laboratory requirements, then OmniaPure system will be the right one which can be configured by user. The incorporated pretreatment constantly ensures the reliability of experimental results and reduces running costs. Water prepared by ion exchange, reverse osmosis, electrodeionisation or distillation is used as feed water.

Specifications:

Output Water: Type I Conductivity: $0.055 \mu S/cm$, Resistance: $18.2 M\Omega \times cm$
TOC Value: 5-10 ppb, (1-5 ppb in UV series)
Low level Particles, Bacteria, Endotoxin is Available in UV/UF and UV-TOC/UF Series
Feed water requirement: Water prepared by ion exchange, reverse osmosis, distillation
Operating pressure: 0.5 – 6 bar
Supply voltage: 90 – 240/50 – 60 Volt/Hz, Connected load: 0.1 kW
Connector size: 3/4"



OmniaTap: H2O pure Types I + II from drinking water

OmniaTap is the ideal system when both pure water and ultrapure water are required, but in relatively small amounts. The ability to provide both types from a single system results from the combination of ultramodern purification technologies. These also make it possible to connect the system directly to a drinking water tap. A press on the dispenser button activates dispensing of ultrapure water type ASTM I via the digital dispenser control. The recirculation of the pure water held in the installed 10 litre tank keeps it permanently at type ASTM II quality. The pure water tank has a second outlet for feeding downstream end users.

Specifications:

Pure water performance: 6 or 12 l/h
Conductivity: $0.055 \mu S/cm$ (Type I), $0.067-0.1 \mu S/cm$ (Type II), TOC Value: 5-10 ppb, (1-5 ppb in UV series)
Low level Particles, Bacteria, Endotoxin is Available in UV and UV/UF Series
Feed water requirement: Tap Drinking water according to DIN 2000
Operating pressure: 2 - 6 bar
Supply voltage: 90 – 240/50 – 60 Volt/Hz, Connected load: 0.1 kW
Connector size: 3/4"
Ambient temperature: + 2 up to + 35 °C



OmniaLabED: H2O pure type I + II in High Capacity

OmniaLabED is the system of choice when the complete laboratory pure water and ultrapure water requirements are to be fulfilled. The system complies with international water standards such as ASTM, ISO 3696 and CLSI. The economy of it is maximized by the inclusion of a continuously self-regenerating electro deionizer, without having to give any demanding analytical applications a pass. Further to this, each OmniaLabED system holds storage tank that is equipped with quality recirculation. OmniaLabED is exactly right as pure water supplier to autoclaves and laboratory washing machines.

Specifications:

Pure water performance: 20, 40, 70 l/h
Conductivity: $0.055 \mu S/cm$ (Type I), $0.067-0.1 \mu S/cm$, (Type II) TOC Value: 1-5 ppb
Low level Particles, Bacteria
Feed water requirement: Softened water according to DIN 2000
Operating pressure: 2 - 6 bar
Supply voltage: 90-240/50-60 Volt/Hz, Connected load: 0.25 kW
Connector size: 3/4"
Ambient temperature: + 2 up to + 35 °C



OmniaLabRO: H2O pure type III in High Capacity

OmniaLabRO fulfils your requirement when constant large volume of reverse osmosis water is needed. For this, OmniaLab RO holds 100 liters of such water in a storage tank. It is an optimal supplier to autoclaves, lab rinsing machines, air humidifiers and entry water for ultrapure water systems.

Specifications:

Pure water performance: 20, 40, 60, 80 l/h
RO membrane retention rate in (ions, germs and bacteria): >98% (Type III)
Feed water requirement: Softened water according to DIN 2000, Operating pressure: 2 – 6 bar
Supply voltage: 90-240/50-60 Volt/Hz, Connected load: 0.1 kw
Connector size: 3/4"
Ambient temperature: + 2 up to + 35 °C



Water quality	Type I ultrapure water			Type II pure water		Type III water from reverse osmosis
daily water quantity	< 50 liter	20–100 liter	> 50 liter	< 50 liter	> 50 liter	> 50 liter
feedwater	tap water	pretreated water	pretreated water	tap water	pretreated water	pretreated water
applications	<ul style="list-style-type: none">• AAS (Atomic Absorption Spectroscopy)• IC (Ion Chromatography)• ICP (Inductively Coupled Plasma)• ICP-MS (Inductively Coupled Plasma Mass Spectrometry)• HPLC (High-performance liquid chromatography)• HPLC + (Ultratrace Element Analysis)• Electrochemistry and Electrophoresis• TOC-Analysis• Molecular- and Microbiology• cell culture mediums			<ul style="list-style-type: none">• Reagent Preparation + Sample Dilution• Buffer and media preparation• Photometry + Spectrophotometry• RIA (Radioimmunoassay)• ELISA (Enzyme-linked immunosorbent assay)• Pathology + Histology• General chemistry• Feeding of ultrapure water systems:<ul style="list-style-type: none">- laboratory washers (OmniaLab)- autoclaves + sterilizers		<ul style="list-style-type: none">• Feeding of ultrapure water systems:<ul style="list-style-type: none">- laboratory washers- autoclaves- sterilizers- steam generator- climatic chamber

Potentiostat/ Galvanostat Origaflex

Design Your Own Potentiostat
The Origaflex is a One or Multi Channel Potentiostat/Galvanostat in three different models: 500 mA, 1 A and 5 A current and 15 V potential applied. Each model is a real Potentiostat/Galvanostat allowing independent measurements (including temperature control). In case channels are added, simultaneous measurements on different channels can be synchronized.
Up to 10 channels can be connected to a Drive Unit power supply. An impedance module (10 μ Hz - 5 MHz) can be added to each channel, without limitation with the Drive Unit. The Origam μ module can be added to system if low current measurement is needed (down to 1 pA range with 30 aA resolution).



Origastat

All in one
This Potentiostat/Galvanostat, Impedancemeter from Origalys Electrochem SAS is specially designed for Research. Complete solution: Potentiostat/ Galvanostat, Impedancemeter (10 μ Hz - 1 KHz), RDE Speed Controller, PC Software. A magnetic stirrer can be added if needed. Performing pH and T°C measurements is also possible.
Origastats can be connected to all the Origalys' modules such as: OrigaBooster (from 5 A to 20 A) and OrigaM μ (down to 1 pA range with 30 aA resolution). It can be fitted with other external devices, as pump, heating circulator and many other.



General laboratory consumables

- Vessels
- Heating
- General laboratory aids



Occupational safety, Security

- Eye protection
- Breathing protection
- Ear protection
- Gloves
- Skin protection
- Protective clothing
- Safety containers



Analytical measurement and testing

- pH-measurement
- Conductivity measurement
- Oxygen measurement
- Multiparameter measurement
- Balances
- Thermometers
- Climate measurement



Stirring, Shaking, Mixing

- Magnetic stirrers / Hotplates
- Overhead stirrers
- Shakers and mixers



Distillation, separation, filtration

- Distillation, synthesis
- Rotary evaporators
- Separating, centrifuging
- Filtration



Liquid Handling

- Volumetric apparatus
- Pipettes
- Dispensing
- Pumps



Vacuum technology, Drying, Dry storage

- Diaphragm pumps
- Rotary vane pumps
- Vacuum controller
- Desiccators
- Laboratory Freeze drying



Optical instruments and Microscopes

- Microscopy
- Photometers



Chromatography consumables

- Vials
- Syringes
- Sample preparation
- Thin-layer chromatography



Muffle furnaces

The muffle furnaces are the right choice for daily laboratory use. These models stand out for their excellent workmanship, advanced and attractive design, and high level of reliability. The muffle furnaces come equipped with either a flap door or lift door at no extra charge. In these furnaces maximum temperatures are 1050 °C to 1300 °C, also heating from two sides by ceramic heating plate with integral heating element which is safeguarded against fumes and splashing, and easy to replace. The housing made of sheets of textured stainless steel and Dual shell housing for low external temperatures and high stability are used.



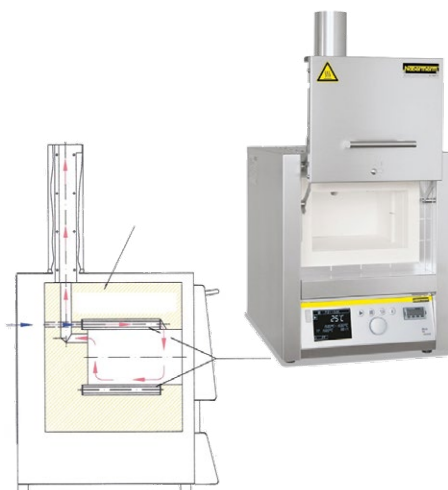
Compact Tube Furnaces

The RD tube furnaces convince with their unbeatable priceperformance ratio, very compact outer dimensions and their low weight. These all-rounders are equipped with a working tube which also serves as support for the heating wires. Thus, the working tube is part of the furnace heating which has the advantage that the furnaces achieve very high heat-up rates. The tube furnaces can be supplied for 1100 °C or 1300 °C. Both models are designed for horizontal application. If the customer requires protective gas atmosphere, a separate working tube incl. gas supply system 1, e.g. made of quartz glass, must be inserted in the working tube.



Ashing Furnaces

The ashing furnaces are especially designed for ashing in the laboratory. A special air intake and exhaust system allows air exchange of more than 6 times per minute. Incoming air is preheated to ensure a good temperature uniformity. The maximum temperature of these furnaces is 1100 °C and Heating emitted from two sides utilizing Ceramic heating plates with integral heating element.



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