



ARA SPECTRON
Scientific & Laboratory Equipment Trading LLC

Laboratory Catalogue

SETA STANHOPE-SETA

KEM

SYKAM
CHROMATOGRAPHY

 **PalmSens**
Compact Electrochemical Interfaces

 **BASi**
RESEARCH PRODUCTS

 **Origalyr**

 **BVT**
Technologies

FRITSCH

PEAK 
SCIENTIFIC

stak**pure**

 **häberle**

Nabertherm
MORE THAN HEAT 30-3000 °C

 **CHEM-LAB**

FITOK



ARA Spectron is a full-line distributor of Scientific Instruments, and laboratory equipment, and an Analytical method developer and solution provider based on Spectroscopy, Electrochemistry, and Chromatography in collaboration with her International well-known Partners.

ARA Spectron is providing joint integrity solutions (Consulting and Contracting) to different fields including R&D Sector, oil & gas, petrochemical, Mining, Metals, power generation, Food & Beverage, and Environment industries in the Middle East Projects.

Our goal is to discover and bring cutting-edge products to the attention of our customers. ARA Spectron is a service-oriented company with our primary marketing focus on providing excellent customer service. We endeavor to provide our customers with a hassle-free buying experience. It is ARA Spectron's policy to establish business relationships with specialized and quality committed companies and to supply products, services, and consultancy that fully meet the specification, expectations, and satisfaction of our customers. This policy will be achieved in a professional, ethical and responsible manner.



ARA General Trading

Our History

In 2002 "ARA General Trading LLC" was established with a Team of Experienced Engineers in UAE, Dubai to become a part of the Fast Growing Trading HUB of the region. ARA General Trading was engaged as a supplier of Analytical Instruments and Laboratory Equipment. The division of Modular Spectroscopy based on Fiber Spectrometers started its activity in 2007. Our first Turn-key project was including Design, Supply & Installation of the Laboratory Furniture, Gas Distribution System, and Laboratory Equipment as well as Analytical Instruments of The Central Laboratory of a Refinery in 2009.

The company succeeded in obtaining the ISO 9001 standard certificate in 2010 New Company – New approach– New Service

To enable us to better serve a wide range of our Customers, and considering some limitations of "General Trading Company" formation Company, The Section of "Scientific Instruments and Laboratory Equipment supply" has been separated from Activities of "ARA General Trading LLC" and "ARA Spectron Scientific & Laboratory Equipment Trading LLC" has been established to handle it in 2020.

Applied Science Workshop & Training Center

Simultaneous with the introduction of ARA Spectron Co., we announced the launch of our "Applied Science Workshop & Training Center" located in office No. 929 Tamani Arts Offices Building, Business Bay, Dubai where we develop the solution for specific Applications of our Customers and will hold the training courses with the support of our Partners from the USA, The Netherlands, Germany, Japan, and the UK.



ARA Spectron

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Turn Key Laboratory Projects



“Turn-Key Laboratory Project”, is a very detailed process from understanding core project requirements and developing a solution that meets the customer’s targets, to finishing the laboratory. This covers Project design-selection of the right laboratory equipment and Analyzers-locating of the items-furniture and utility set up, and infrastructure according to installation guidelines–equipment related activities such as installation, commissioning, and training to ensure that the users reach the level to perform target applications confidently.



The comprehensive prospects of ARA Spectron enable us to supply most of the key elements in a Turn-Key Laboratory Project. Our experience and resources, make it possible to provide the highest quality instruments and services for our project.



Overview of Our Activities

Generally, laboratory projects consist of 5 steps:

- Planning and design
- Equipment Selection
- Required utilities instruction and furniture set up
- Equipment relocation
- Equipment installation, commissioning, and Training



Some of our projects are as below:

1. Laboratory of Petroleum Refining Project (Turn key)

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 Petrochemical Industry (Turn Key)

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 Heavy Oil Refinery Project (Turn Key)

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 Gas Field Development Project Plant 2 (Turn Key)

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 Aluminum company (Turn Key)

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 Petrochemical - Olefin Plant (Turn key)

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

7. Laboratory of Petrochemical - MEG Plant (Turn key)

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 Petrochemical - Olefin Plant (Turn key)

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 Petrochemical - SRU Plant (Turn Key)

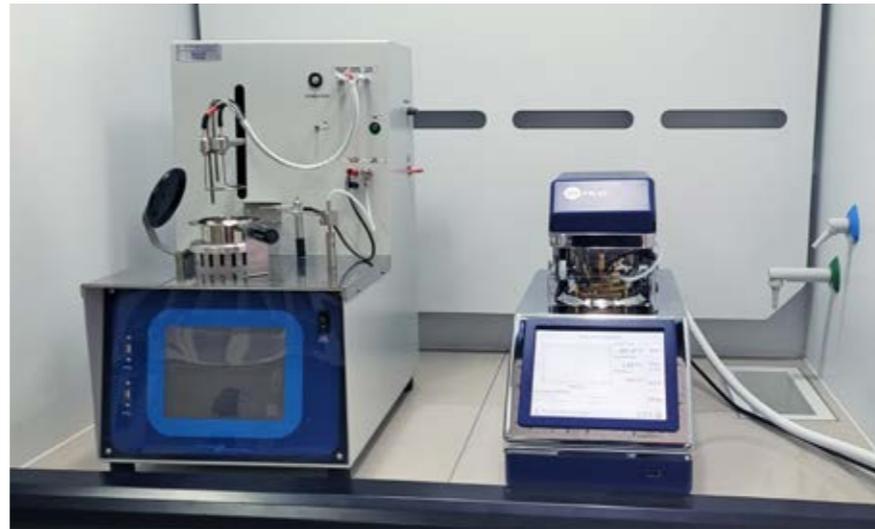
Project Scope: Supply of laboratory equipment, analyzers and chemicals, installation, commissioning and training, warranty and after-sales service

10. Laboratory of Petroleum Refinery (Turn Key)

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

11. Laboratory of Gas Field Development Project Plant 2

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





Our After sales service department 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.

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
- Users training, providing solutions and development of analytical methods



1

Material Testing



Materials testing is a regular technique used to determine the physical, chemical, and mechanical properties of materials and components. To meet the challenges posed in testing a wide diversity of materials we offer a vast range of high-performance materials testing machines, designed to make accurate and repeatable force measurements according to methodologies such as: American Petroleum Institute API, Universal Oil Products Laboratory Test Methods (UOL), ASTM, IP, JFTOT, DIN, ISO, EN, EPA, CAEAL, etc.



4/6 place - Seta Oil Test Centrifuge

The Seta Oil Test Centrifuge is a heated chamber centrifuge used to determine water and sediment in oils. The large diameter chamber, with four place rotor and cushioned adaptors allows the use of 6 and 8 inch conical, pear-shaped, trace sediment and 12.5 ml tubes.

The swing out rotor ensures that samples are held near vertical when at rest allowing precise measurement of sediment. The centrifuge features a hinged lid that opens to the fully upright position to allow easy loading and unloading of tubes between tests.

Speed, temperature, and timing are microprocessor controlled. Run parameters are entered via a liquid proof 'touch panel' and digital display.



AFIDA – Indicated Cetane Number Analyzer

The CFR Engine is a single cylinder engine, so it has a moving piston which changes the combustion chamber volume. To run this engine, laboratories need an engine expert, which is not typically on staff. In addition, the CFR engine takes up very valuable lab space. Due to the high noise level when running and their large size, they typically have their own rooms. The CFR Engine can also be costly since its initial investment and ongoing maintenance expenses are high. With these drawbacks, the industry demanded an easier to use instrument that does not require extensive operator training.

According to ASTM D8183, AFIDA covers determination of the indicated cetane number (ICN) of conventional diesel fuel oils, and diesel fuel oils containing cetane number improver additives.





Automatic Vapour Pressure Analyzer

The SetaVap4 is a fully automated vapour pressure analyzer which provides fast, reliable and precise analysis of a wide range of volatile liquids, including gasoline, solvents and light crude oil.

The measurement system uses a piston-based design in compliance with triple and single expansion test methods and regulations, reporting DVPE, RVP, EPA and CARB calculations. For precise results, the minimum dead volume design reduces sample carryover, and a fully automated test sequence removes possible operator bias.

Salt in Crude Analyzer

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.



H₂S Analyzer with Vapour Phase Processor

The H₂S Analyzer with Vapour Phase Processor (VPP) is a compact bench-top instrument, used to measure the total hydrogen sulfide (H₂S) content of fuel oils, such as marine residual fuels, distillates and petroleum blend stocks. The H₂S Analyzer can measure H₂S concentrations from 0 to 250 mg/kg (ppm) in the liquid phase.



Vapour Pressure Tester

The Setavap 2 vapour pressure tester is used for the measurement of gasoline, solvents, light crude oils, and 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.

Reid Vapour Pressure Bath

The Seta Reid Vapour Pressure Bath is a floor standing water bath specifically designed for the determination of vapour pressure with Seta Reid or Seta Vapour pressure cylinders.



Cloud & Pour Point

The Cloud and Pour Point test bath determines the lowest temperature at which petroleum oils will flow and the temperature at which wax crystals form. This identifies the minimum safe operating temperature.

The bath accommodates four test jackets and a bath thermometer and comes with a stainless-steel cover and a drain tap.



SetaCool-16

The SetaCool-16 is designed to provide fast, accurate and precise determination of Cloud Point, Pour Point and Cold Filter Plugging Point of petroleum products, diesel and cooling fuels to -78 °C.

Four independent units, each with four test jackets allows for easier maintenance and servicing. The instrument features a built-in cooling system and dry block bath which means no external cooling medium is required, whilst a built in heated top plate prevents ice formation.

A state-of-the-art cooling system eliminates the use of compressors and HFC (greenhouse gas) or flammable refrigerants, providing a safe and environmentally sustainable solution.

Compact Cloud and Pour Point Cryostat

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



Freezing Point Apparatus

Comprises sample tube, paddle, unsilvered flask, cork stopper/thermometer support, and an insulated metal case with a viewing slot.



Dry Ice Maker

Dry ice/liquid mixtures can produce temperatures down to -78 °C. The latent heat of vaporization of dry ice is 572 kJ/kg (246 BTU per lb). Seta dry ice makers are a safe, efficient and convenient method of producing pellets and blocks in a range of sizes.





Cold Filter Plugging Point (CFPP) Apparatus

The Cold Filter Plugging Point (CFPP) Apparatus determines low temperature flow characteristics of diesel fuels, gas oils and other distillate fuels. It comprises a 4-liter dry ice bath (Dewar Flask) and a CFPP test insert connected via a three way cock to a UKAS certified digital manometer and two 5 liter pressure equalizing vessels.

Color Comparator

The Seta-Lovibond Color Comparator is used for visual determination of the color of oils and petroleum waxes. Readings calibrated in accordance with ASTM D1500.

The three-section field-of-view optical system allows a sample and two reference standard color filters to be viewed simultaneously, allowing easy comparison of color. The color filters are mounted in two discs, one with full value standards and the other with intermediate value standards, giving improved discrimination over single disc comparators.



Multi-Colour Automatic Colorimeter

An automated spectrometric colorimeter designed for rapid colour analysis of petrochemical products. Selectable for Saybolt, ASTM, Pt-Co/Hazen/APHA, spectral data and CIE colour determinations.

Parameters are entered via a menu system, and subsequent testing is initiated by a single key press with results available within 25 seconds. Up to 32 results can be stored in the on-board memory.

The instrument can also be controlled and data processed on an IBM compatible personal computer using the software provided.



SetaCheck Colour

The SetaCheck Colour is a compact, handheld colorimeter used to electronically measure the color of a sample. Automatic, electronic readings ensure a fast, precise result.

Operated via a colour touch screen and with a simple user interface, the SetaCheck displays results as both color and numerical values simultaneously. Results are saved to the large internal memory.

The SetaCheck Colour can be used straight from the box, no instrument set up is required, saving operator time. The user interface features multiple language options for ease of use and its robust, compact design makes it ideal for both laboratory and field use.

This instrument has two versions.

- 1- SetaCheck Colour Saybolt Colorimeter
- 2- SetaCheck Colour ASTM Colorimeter



Handheld Conductivity Sensor

This Handheld Conductivity Sensor provides an accurate and rapid conductivity measurement of oils.

The analyzer can measure electrical conductivities between 0 and 2000 Pico siemens/centimeter (pS/CM), although it is optimized and normally used in the 0 to 500 pS/CM range. The conductivity analyzer is constructed of thermally stable internal electronics and two 316 SS coaxial electrode sensors.

This analyzer has three versions.

- 1- Handheld Conductivity Sensor for Oils
- 2- Handheld Conductivity Sensor for Jet Fuel
- 3- Handheld Conductivity Sensor for Ink



Cu-Ag Corrosion Bath

The Seta Copper / Silver Corrosion Bath is a stainless-steel water or oil bath, which is digitally controlled to ± 0.1 °C over a temperature range of ambient +5 °C to 120 °C.

The bath has nine test stations, each with a lid and hook for suspending either a Corrosion Pressure Vessel or a test tube Support Assembly. The test tube support can hold up to three Test Tubes. You can use any combination of copper corrosion vessels and test tube supports.



Oxi-Cor Bath

The Seta Oxi-Cor bath is a stainless-steel water or oil bath. Temperature controlled by a top mounted thermostat circulator with integral over-temperature and low fluid level protection devices.

The bath has four test stations. Each has a lid with a hook, from which you suspend either a Corrosion Pressure Vessel or a test tube Support Assembly, holding up to three Test Tubes. You can use any combination of these.

Distillation

The Setastill Distillation unit is a bench-top instrument used to carry out atmospheric distillation of petroleum products and liquid fuels to determine boiling range characteristics.

The unit can distil samples from ambient temperature up to 400 °C and consists of an electrically heated distillation enclosure with a cooling fan and an integral condenser.



Flash Point

Flash point is measured using either an open cup or closed cup flash point tester. Open cup tests are required in some specifications and regulations, and are intended to mimic conditions in open spaces, whereas closed cup tests are closer to most situations, where space is restricted.

When specifically testing for contaminants, certain test methods and procedures are more appropriate than others.

Generally, an equilibrium test method is recommended for testing samples that may contain traces of volatile contaminants.



Ramp mode

Ramp mode partially automates the process of flash point determination, reducing the time taken to find the flash point of a sample. The instrument heats the sample cup at a fixed ramp rate and prompts you to dip at specific intervals until a flash occurs or the cup temperature reaches the end of the test range.

Item	Industry	Application	Temperature range
1.	Adhesives and sealants	Testing esters and ketones for certification. Flammability classification for transport regulations	Up to 150 °C
2.	Aviation and aircraft	Quality control of incoming fuels and oils. Specification conformance	30 °C to 399 °C
3.	Biodiesel	Flash point testing checks that chemicals such as methanol, used in the manufacturing process are below safe levels	130 °C
4.	Bitumen and asphalt	Used for shipping and safety regulations and to indicate the possible presence of more volatile or flammable compounds	>200 °C
5.	Chemicals	Testing solvents used in production. Safety classification for transport regulations	Below 200 °C
6.	Chemical products	Flammability classification for transport regulations	30 °C to 150 °C
7.	Crude	Provides an indication about the volatility of crude oil and therefore how safely it	Below 0 °C
8.	Edible oils and fats	These products are used at elevated temperatures hence flash point is checked to ensure refining processes and safety limits are correctly maintained	Up to 30 °C
9.	Energy and power	Turbine and transformer oils are routinely tested for flash point to confirm product integrity from contamination that may affect performance or safety	Up to 20 °C
10.	Formulated pesticides	Research and flammability classification for transport regulations	Up to 150 °C
11.	Lubricants	Quality control and research. Used oil analysis to detect evaporation/	30 °C to 399 °C
12.	Oil and gas rigs	Quality of samples. Sump contamination of pump head machinery	30 °C to 399 °C
13.	Oil treatment/recovery	Quality control on base oils and checking contamination of used/recovered oils	30 °C to 399 °C
14.	Paints and varnishes	Research, quality control and safety. Flammability classification for transport regulations. Recommended for water-borne paints	Below 100 °C
15.	Perfumes, flavors, and fragrances	Tests on solvent/water mixtures. Flammability classification for transport regulations and safety in use	Ambient to 110 °C
16.	Petroleum and derivatives refining	Testing for QA/contamination where product is pumped through multi-product pipeline. Also used for H&S and transport regulations	30 °C to 399 °C
17.	Pharmaceuticals	Checks on manufacture stated flash points	<100 °C
18.	Printing inks	Flammability classification for transport regulations	Below 100 °C
19.	Road tanker terminals/shipping terminals	Quality control of storage tanks and deliveries. Safety classification for transport regulations	30 °C to 399 °C
20.	Synthetic resins	Tests on solvent-resin based base products. Quality and safety classification for transport regulations	15 °C to 150 °C
21.	Soap and synthetic detergents	Used for research and testing. Flammability classification for transport	Under 200 °C
22.	Transport regulations	Flammability classification for road, rail, air and sea	Extremely flammable <0 °C Highly flammable <21 °C Flammable <55 °C
23.	Waste disposal	Tests used to classify waste prior to disposal	Hexane <100 °C Pure oil >300 °C

Closed Cup

Closed cup tests aim to simulate a liquid in a closed or semi closed contained environment. If the liquid is at, or above its flash point, a fire or explosion is a risk when exposed to a potential ignition.

There are five types of Closed cup Flash point Analyzers.

- 1- Abel
- 2- Abel-Pensky
- 3- Pensky-Martens
- 4- Tag
- 5- Setaflash



Open Cup

Open cup tests simulate the potential ignition of a liquid spillage in uncontained conditions, for example a pool of liquid spilt on the floor. An open cup instrument will always give a higher flash point than a closed cup as the open cup allows loss of vapors to the atmosphere above the cup and the sample is more susceptible to the conditions in the laboratory. Fire point, combustibility and sustained burning tests all use open cup instruments. Fire point is the lowest temperature of the liquid at which vapor combustion and burning commences when an ignition source is supplied. Combustibility and sustained burning tests are usually carried out at a fixed temperature and test for the continuous burning of the test specimen.

There are two types of Open cup Flash point Analyzers.

- 1- Cleveland
- 2- Setaflash



Non-equilibrium

Non-equilibrium refers to a flash point test where the liquid is heated at a steady rate of temperature increase while the ignition source is applied at regular intervals. The term non-equilibrium means the vapor is not in equilibrium with the liquid.

Advantages: It is a universally standardized test well suited to automation.

Disadvantages: Potential loss of components able to escape each time the flame is dipped, the difference in temperature between the liquid sample and the vapors which can be quite significant and finally the required sample size of 50 to 80 ml per test.

There are four types of Non-equilibrium Flash point Analyzers.

- 1- Abel
- 2- Pensky-Martens
- 3- Tag
- 4- Cleveland



Equilibrium

Equilibrium refers to a flash point test in which the liquid sample in the cup and its vapours have the same temperature. Traditionally a complex procedure, the Setaflash small scale method has overcome this by using a small 2 or 4 ml sample which achieves a 'rapid equilibrium' in just 1 or 2 minutes.





Pre-Cooling Apparatus

Seta Pre-Cooling Apparatus comprises a soft copper cooling coil in a wide dewar flask supported in a protective metal case. An outlet valve controls the flow of liquid.

Dual Twin Foam Test Baths

These pair of highly transparent water baths are for detecting undesirable foaming characteristics in lubricating oils, which could cause inadequate lubrication, overflow, and cavitation.

The instrument comprises a high temperature (normally 93.5 °C) and a low temperature (normally 24 °C) bath, each with the capacity to hold four 1000 ml graduated glass cylinders.

Each bath assembly comprises an inner glass bath contained in a polycarbonate safety vessel, a top mounted thermostat unit.

The bath has integral backlighting with an opaque reflector which aids sample visibility and foam measurements. In addition, the low temperature bath has a cooling coil for use when the laboratory ambient temperature exceeds the required bath temperature, and two air normalizing coils to cool the air emerging from the high temperature bath test cylinders prior to passing to external volume meters.



Viscosity

Kinematic viscosity is a key property for fuels and lubricants. Kinematic viscosity is determined by measuring the time it takes for a sample to flow through a glass capillary viscometer at a known constant temperature.

Viscosity in fuels determines how well the fuel will pump to the engines. For lubricants, kinematic viscosity determines the ability of a lubricating oil to create and maintain

This instrument has three models.

1-KV-6 Viscometer Bath for 6 viscometers

2-KV-2 Low Temperature Viscometer Bath for 2 viscometers



Pressure Hydrometer Apparatus

Pressure hydrometer apparatus for determining the density or specific gravity of light hydrocarbons including LP gases.

Oil Arbiter

The Seta Oil Arbiter is an online condition monitoring suite designed to monitor in real time a constant flow of lubricant, reporting the following parameters:

- Metallic Wear Debris by size and metallic species (Machinery Condition)
- AC Conductivity, Permittivity (Oil Condition)
- Moisture Content (Dissolved water in oil, Contamination)
- Oil Pressure (Lubrication System Health)
- Oil Temperature (Lubrication System Health)



Portable Meter Oil in Water Measurement

The all-in-one Handheld Portable & Benchtop Device offers full real time Spectrometry for measurement and analysis and continuous real-time measurements with Immediate results.

It has a flexible, Durable Probe for Measurement, Data Logging and Graphical Representation and results can be correlated to official laboratory methods (USEPA 1664A and ISO 9377-1)



Micro Carbon Residue Tester

The Micro Carbon Residue Tester is 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. Includes: one six place holder for 16 ml sample tubes and one 12 place holder for 2 ml or 4 ml sample tubes (for sample tubes see Accessories).



Existent Gum Solid Block Bath

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.

The bath has removable taper-fit conical air jet adaptors with copper screens, and an air flow control valve and gauge. Along with five test wells and a thermometer well. Outlets can be individually checked for uniform flow of air.

Total Sediment Tester

The Setaclean Total Sediment Tester is a compact bench-mounted unit for determining the insoluble material content of distillate and residual fuel oils.



Crude Oil Filtration Apparatus

ASTM D4807 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 %.





Multi Filtration Tester (MFT)

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.

MFT is also used to determine the FBT for BX fuels containing bio components, such as FAME (biofuel), which have been 'cold soaked' at a temperature just above zero Celsius. During the 16 hour cold soak particles of saturated monoglycerides (SMG's) and sterol glucosides can be formed which do not dissolve when the temperature is raised back to ambient.

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.



FAME in MultiFuels

The patented FIJI has been developed to offer a rapid and easy check on Parts Per Million (ppm or mg/kg) levels of FAME in aviation fuel, distillates, residuals and gasoline.

FIJI uniquely utilises FTIR (Fourier Transform Infra-Red Spectroscopy) technology and a patented sample preparation system which allows FAME detection accuracy down to the 10 mg/kg level.

Check Biodiesel

SetaCheck Biodiesel is a handheld instrument designed to provide fast, accurate and repeatable on-site measurement of biodiesel content in diesel fuel blends.

Using unique, Mid-IR technology, the analyzer has a measurement range of 0.1% to 40% biodiesel. Only 2 ml of sample is required, and a test is completed in less than 1 minute with results displayed on a bright backlit screen.



Penetrometer

The Setamatic Penetrometer is a microprocessor-controlled instrument with a range of 0 to 63 mm (630 Pen). Plunger release and retention is automatic, and results are shown on the digital display in either millimeters or 'pen' units. Soak and penetration times may be set from 0 to 9999 seconds.

EMS viscometer

EMS viscometer is a new type innovative viscometer that changed the common sense of viscosity measurement in the world for the first time.

By applying torque to the spherical probe in the sample remotely from the outside of the sample container using the force of the magnetic field, we succeeded in completely separating the sample from the device.



Density/Specific Gravity Meter

The density/specific gravity meter is developed with the improvement in convenience and efficiency to meet market demands, inheriting reliability and technology established over many years.



Portable Density/Specific Gravity Meter

Portable Density Meter offers a lot in a small, ergonomically designed instrument. It can satisfy many applications, including Brix testing, and meeting the ASTM D7777 oscillation method standard.



Portable Refractometer

Portable refractometer, ergonomic and fast. Measures refractive index within a range of wide range of nD, with an acceptable accuracy. Measures Brix within a range of 0 – 85%, with an accuracy of $\pm 0.2\%$.

Portable Brix Meter

Portable Brix Meter BX-1 is a handy portable brix meter which can be used anywhere with easy measurement. After putting the sample on the prism, brix measurement will be displayed on the screen in 2 seconds.



Refractometer

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 (like US, European Japanese and UK Pharmacopoeia), norms (like ASTM 1218) and regulations of these industries.

2

Titration

titration, process of chemical analysis in which the quantity of some constituent of a sample is determined by adding to the measured sample an exactly known quantity of another substance with which the desired constituent reacts in a definite, known proportion.



KF Moisture Titrator

Karl Fischer titration is a classic titration method in chemical analysis that uses coulometric or volumetric titration to determine trace amounts of water in a sample. It was invented in 1935 by the German chemist Karl Fischer. Today, the titration is done with an automated Karl Fischer titrator.

- Volumetric Titration

This technique utilizes a standard solution (a solution of an accurately known concentration) which is titrated against portions of an unknown concentration until the reaction is just complete. This endpoint can be shown by using an indicator. Volumetric titrations are popular in acid-base reactions.

In this instrument, there are 4 versions.

1. MKV-710B: High-performance titrator at a lower price
2. MKV-710S: Large color TFT-LCD with a touch panel (8.4-inch)
3. MKV-710M: Large color TFT-LCD with a touch panel (8.4-inch) enables easy key entry Up to 4 titrators
4. MKV-710D: equipped with data integrity support functions without a PC.



- Coulometric Titration

Coulometric titration is an absolute determination technique in which the mass of a given substance is determined by measuring the quantity of electricity required to electrolyze that substance; it does not necessarily require a standard solution.

In this instrument, there are 4 versions.

1. MKC-710B: High-performance titrator at a lower price
2. MKC-710S: Large color TFT-LCD with a touch panel (8.4-inch)
3. MKC-710M: Large color TFT-LCD with a touch panel (8.4-inch) enables easy key entry Up to 4 titrators
4. MKC-710D: equipped with data integrity support functions without a PC.



Hybrid titration

“Hybrid titration method” automatically switches between the parallel measurement by “Volumetric titration method” and “Coulometric titration method” by monitoring moisture content in titration cell with high-speed & high-precision measurement, therefore can measure without adjusting the sample amount.



Automatic Potentiometric Titrator

Automating titration solutions means more than simply just the titration and results calculation performed by automatic titrators. It must also include sample preparation steps and operator independent sample series analysis. The focus is on the repeated analysis of routine tasks.

In this instrument, there are 3 versions.

1. AT-710B: High-performance titrator at a lower price
2. AT-710S: Large color TFT-LCD with a touch panel (8.4-inch)
3. AT-710M: Large color TFT-LCD with a touch panel (8.4-inch) enables easy key entry Up to 4 titrators

Multiple Sample Changer

Multi-specimen changer for AT-710M, AT-710S, AT-710B+AT-Win that can titrate 47 samples continuously. Titrations can be performed in a row by setting beakers onto the dedicated cartridges and select beakers by MCU-710. It is possible to set titration method or rinsing sequence for each sample. This instrument has 4 versions.

- 1- CHA – 600: this is the simplest sample changer and for 12 or 18 samples
- 2- CHA-700: For 6 or 11 samples
- 3- CHA- 740: For 24 Samples
- 4- CHA- 760: For 24 or 47 Samples



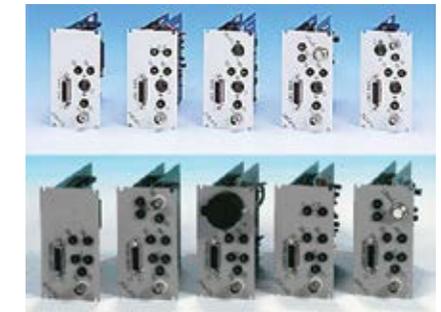
Burette unit

Burettes for automatic titration. These burettes are in 5 versions.

- 1- 1mL : EBU-610-01B
- 2- 5mL : EBU-610-05B, EBU-710-05B
- 3- 10mL : EBU-610-10B, EBU-710-10B
- 4- 20mL : EBU-610-20B(Standard), EBU-710-20B(Standard)
- 5- 50mL : EBU-610-50B

Preamplifier

Preamplifier for various titrations such as polarization titration, photometric titration, and conductivity titration.



3

Chromatography Systems & Column



Chromatography systems and columns are critical factors to the successful separation of your valuable components. We provide columns and systems from lab-scale to pilot and process-scale. From screening to large-scale production, our columns and systems are designed to provide robust, consistent performance with the processing flexibility you need. The system configuration is highly variable and several upgrade options make this system suitable for the whole range of analytical applications.



High Performance Liquid Chromatography (HPLC)

HPLC is a technique in analytical chemistry used to separate, identify, and quantify each component in a mixture. It relies on pumps to pass a pressurized liquid solvent containing the sample mixture through a column filled with a solid adsorbent material. Each component in the sample interacts slightly differently with the adsorbent material, causing different flow rates for the different components and leading to the separation of the components as they flow out of the column.

The system including:

- High pressure pump: Micro, Analytical, Semi-Preparative, Preparative, Isocratic, Quaternary Gradient, Binary High-Pressure Gradient, Steel and PEEK with Active Mixer, Dual-Piston Pump head, Piston Backflushing, 0.001 - 1000 ml/min flow rate, 0-600 bar maximum pressure
- Injection system: Manual and automatic sample injection system
- Column Oven: Three column capacity, heating and cooling system, leak sensor and switching valve
- Detector: UV/Vis, PDA, Fluorescence, RI, Conductivity, Electrochemical
- Vacuum Degasser: semi permeable membrane degasser
- Fraction collector: collecting sample after purification in wide range of flow rates

The possible HPLC configurations are:

- HPLC system with UV/Vis detection
- HPLC system with RI detection
- HPLC system with Fluorescence detection
- HPLC system with Conductivity detection
- HPLC system with Electrochemical detection
- HPLC system with Manual sample injection
- HPLC system with Automatic sample injection
- HPLC system with Isocratic pump
- HPLC system with Gradient pump
- UPLC system with all above configuration
- Semi-preparative HPLC with 10 - 40 ml/min flow rate
- Preparative HPLC with 1 – 1000 ml/min flow rate



Ion Chromatography Systems (IC)

Ion Chromatography is a method for separating ions (Anions and Cations) based upon their interactions with resin (stationary phase) and the eluent (mobile phase). These phases differ between an anion column, which attracts anions, and a cation column, which attracts cations. IC separates ions and polar molecules based on their affinity to the ion exchanger. The two types of ion chromatography are anion-exchange and cation-exchange. Cation-exchange chromatography is used when the molecule of interest is positively charged and anion-exchange chromatography for negatively charged.

These instruments have two versions.

- **Compact Ion Chromatography:** The compact ion chromatograph S 155 is an all-in-one IC system with integrated, pump, degasser, conductivity detector, anion auto-suppressor and column oven.
- **Modular Ion Chromatography System:** The Ion Chromatography System S 150 is a versatile system for a multitude of IC applications. Several options make it one of the most customizable systems. The possible configurations are One channel, Two channel, Isocratic, Gradient, Manual injection, Full automatic, post column derivatization with UV/Vis detection.



Model	Channel	Isocratic / Gradient	Auto Sampler	Auto Suppressor	Column Selector	Additional Oven	UV/Vis Detector
S 151-M	1	I	-	✓	-	-	-
S 151-M-S	1	I	-	✓	✓	-	-
S 151-G	1	G	-	✓	-	-	-
S 151-G-S	1	G	-	✓	✓	-	-
S 151-A	1	I	✓	✓	-	-	-
S 151-A-S	1	I	✓	✓	✓	-	-
S 151-AG	1	G	✓	✓	-	-	-
S 151-AG-S	1	G	✓	✓	✓	-	-
S 152-M	1	I	-	-	-	-	-
S 152-G	1	G	-	-	-	-	-
S 152-A	1	I	✓	-	-	-	-
S 152-A-S	1	I	✓	-	✓	-	-
S 152-AG	1	G	✓	-	-	-	-
S 152-AG-S	1	G	✓	-	✓	-	-
153-M Dual	2	I	-	✓	-	-	-
153-MG Dual	2	G	-	✓	-	-	-
153-A Dual	2	I	✓	✓	-	-	-
153-AG Dual	2	G	✓	✓	-	-	-
153-AG Dual-Uv	2	G	✓	✓	-	-	✓
153-M-S Dual+	2	I	-	✓	✓	✓	-
153-MG-S Dual+	2	G	-	✓	✓	✓	-
153-A-S Dual+	2	I	✓	✓	✓	✓	-
153-AG-S Dual+	2	G	✓	✓	✓	✓	-
153-AG-S Dual-Uv+	2	G	✓	✓	✓	✓	✓

Amino Acid Analyzer

The innovative automatic Amino Acid Analyzer 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.

- High resolution separations for free amino acids, food and feedstuff hydrolysates and physiological fluids
- High sensitivity along with a large dynamic measurement range for routine applications
- Application Specific High Speed and High Sensitivity versions with specific columns and a dedicated post-column reaction system for demanding applications
- Stable, low noise baselines – even with complex physiological samples – facilitating easy chromatogram integration
- Ease of use and low operational and maintenance costs
- International expert support on chromatographic and sample
- Access to expert training programs

This analyzer has two versions.

- S 433 Automatic Amino Acid Analyzer: gradient and isocratic pumps, automatic sample injection system, post column derivatization, visible detection
- S 633 Amino Acid Analyzer: sophisticated dual inert pump for reagent and buffers, automatic sample injection system, post column derivatization, visible detection



Columns

Liquid Chromatography columns for analysis of liquid samples, there are whole range of separation techniques. Especially polymer-based columns have a very long-life expectancy. Polymer-based columns are the great chemical stability leads to an extended pH range (2 to 13), the low bleeding allows the use of sensitive detection, large variety of material properties create 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 (2-3 times longer than silica-based).



- Analytical Column: separation is based on interaction between stationary phase and mobile phase. These type of columns used for quantitative determination, so it need small volume of sample amount and mobile phase.
- Preparative Column: separation mechanism is same as analytical columns. These type of column used for separation and Purification of sample components. So it need large volume sample amount and mobile phase volume.
- Sample pretreatment Column: The clean-up method is widely used to remove lipids, polymers, pigments and other high molecular weight compounds from a wide range of sample matrices including food, tissues, grains, plants and environmental samples.
- Reversed Phase (RP) Column: separation is based on partition equilibrium between stationary phase and mobile phase. The polarity of stationary phase is lower than that of mobile phase. Typically the mobile phase contains a mixture of organic solvents (methanol, acetonitrile, or THF) and aqueous solvents (water or buffer). Use of lower polarity mobile phases fasten the elution.
- Normal phase (NP) Column: Separation is based on the partition equilibrium between the stationary phase and the mobile phase. The polarity of the stationary phase is higher than that of the mobile phase. Typically the mobile phase contains a mixture of organic solvents with different polarities such as hexane and isopropanol. Using the higher polarity mobile phase causes a faster elution.
- Hydrophilic Interaction Chromatography (HILIC): Separation is based on hydrophilic interaction. A high polarity stationary phase is used. Typically the mobile phase contains a mixture of organic solvents such as acetonitrile and aqueous solvents (water or buffer). Using the higher polarity mobile phase causes a faster elution. Applicable for the analysis of high polar substances.
- Gel permeation chromatography (GPC) & Size Exclusion chromatography (SEC) Column: Network or pores on the surface of the packing material works as molecular sieve to separate molecules based on their sizes. To separate molecules solely based on their sizes, it requires an analytical condition without any compounds and packing gel interaction. The bigger the molecule size, the faster the elution sequence. Used for molecular weight or molecular distribution determination of macromolecules and qualification of oligomers.

4

Electrochemical Instruments



Electrochemistry is the study of electricity and how it relates to chemical reactions. In electrochemistry, electricity can be generated by transfer of electrons from one element to another in a reaction.

Electrical and chemical transport properties are measured with various methods. Most electrochemical work with an electrochemical cell is achieved using what is called a potentiostat. A potentiostat is an electronic device that controls the voltage difference between a working electrode and a reference electrode. Both electrodes are contained in an electrochemical cell. The potentiostat implements this control by injecting current into the cell through an auxiliary electrode.



PalmSens 4

PalmSens flagship instrument, the PalmSens4, is a USB and battery powered Potentiostat, Galvanostat, and optional a Frequency Response Analyzer (FRA) for Electrochemical Impedance Spectroscopy (EIS). The PalmSens4 has a large potential range (-5V to 5V or -10V to 10V) and current range (100 pA to 10 mA) with a high resolution and low noise. The economical PalmSens4 is a complete laboratory instrument, but its compact and rugged design makes it also ideal for field work. Connecting via Bluetooth guarantees a perfectly floating measurement.

This instrument has 2 versions.

1. Low range potentiostat with potential range of ± 5 Volt
2. High range potentiostat with potential range of ± 10 Volt



EmStat4S

The EmStat4S delivers desktop performance in the palm of your hand. The EmStat4S is a portable USB-powered Potentiostat, Galvano stat, and optional a Frequency Response Analyzer (FRA) for Electrochemical Impedance Spectroscopy (EIS).

This instrument has 2 versions.

3. Low range potentiostat with potential range of ± 3 Volt
4. High range potentiostat with potential range of ± 3 Volt



EmStat3 Blue

EmStat3 Blue is a small and low cost potentiostat with research grade capabilities. It has eight current ranges from 1 nA to 100 mA (EmStat3+ Blue) full scale, with a minimum resolution of 1 pA. It provides the most relevant electroanalytical measurement techniques and is used with the PStace software or with PStouch for Android.

This instrument has 2 versions.

1. Emstat3 blue potentiostat with potential range of ± 3 Volt
2. Emstat3+ blue potentiostat with potential range of ± 4 Volt



OrigaStat

This instrument enables the measurement of electrical currents of positive and negative polarity. It aims at regulating the voltage of an electrode by means of a reference electrode. Its main purpose is to maintain a sufficiently constant electrical current to be able to evaluate the electrical potential of an electrochemical cell.

This instrument has 3 versions.

1. OGS080 with current range of ± 100 mA
2. OGS100 with current range of ± 100 mA
3. OGS200 with current range of ± 2 A

OrigaFlex

Study electrochemical phenomena with a reliable and precise potentiostat/galvanostat. Discover their range of OrigaFlex Packs to perform very precise measurements of potential differences between the electrodes of the electrochemical measuring device

This instrument has 4 versions.

1. OFG10A with current range of ± 10 A
2. OFG500 with current range of ± 500 mA
3. OFG05A with current range of ± 5 A
4. OFG01A with current range of ± 1 A



Sensit BT

The Sensit BT is ideal for electrochemical sensor applications. The Sensit BT connects via Bluetooth to your smartphone or tablet and controlled via the Android app PStouch. You can use the USB-C port to charge the Sensit BT or connect to a classic USB port on your PC and control the Sensit BT via our PC software PStace.

This instrument has 3 versions.

1. Low Speed mode with maximum acquisition rate (datapoints/s) of 100 without EIS
2. High Speed mode with maximum acquisition rate (datapoints/s) of 1000 with EIS
3. Max Speed mode with maximum acquisition rate (datapoints/s) range of 100 without EIS



Sensit Smart

The Sensit Smart is the world smallest ready-to-go potentiostat available on the market. The Sensit Smart can be directly inserted in a smartphone or tablet and controlled via the Android app PStouch. You can use the USB-C Female to USB-A cable to connect the Sensit Smart to a classic USB port on your PC and control the Sensit Smart via our PC software PSTrace. The Sensit Smart supports most common electrochemical techniques, including Cyclic Voltammetry, Square Wave Voltammetry and Impedance Spectroscopy (FRA/EIS). This instrument has 3 versions.

1. Low Speed mode with maximum acquisition rate (datapoints/s) of 100 without EIS
2. High Speed mode with maximum acquisition rate (datapoints/s) of 1000 with EIS
3. Max Speed mode with maximum acquisition rate (datapoints/s) range of 100 without EIS



MultiPalmSens 4

The MultiPalmSens4 is a flexible multi-channel potentiostat, galvanostat and impedance analyzer which you can fully tailor to your requirements and budget. The MultiTrace software allows for using each channel individually or simultaneously or running a sequence of automated tasks on each channel. Each channel provides an additional auxiliary port for controlling peripherals or monitoring temperature or other analog signals. In this instrument, customer can select number of channels, and the maximum potential range of channels. Also, the customer can select ability of instrument for EIS and Bipot measurement.



MultiEmStat

The MultiEmStat4 is a compact Potentiostat, Galvanostat, and optional Frequency Response Analyser (FRA) for Electrochemical Impedance Spectroscopy (EIS) with 8 or 12 channels. The MultiEmStat4 comes in two versions; the Low Range version is great for applications that require a low current range down to 1 nA, whereas the High Range version is very suitable for applications that need a maximum current of 200 mA.

1. MultiEmStat4 low range potentiostat with potential range of ± 3 Volt and current range of ± 10 mA
2. MultiEmStat4+ High range potentiostat with potential range of ± 6 Volt and current range of ± 200 mA



- Consumables

These various consumables will expand your electrochemical workstation with a broad spectrum of options. Consumables will consist of Cells, Electrodes, battery holders, solutions, Cables, and multiplexers.



C-3 Cell Stand

The C-3 Cell Stand is a Faraday cage with integrated magnetic stir plate and purge lines. It firmly holds BASi electrochemical cell components and enables remote stir and purge control via the software. The C-3 cell stand package is perfect for setting up a new lab for electrochemistry experiments because it comes with all the necessary accessories.



RDE-2 Cell Stand

The RDE-2 Cell Stand is a rotator system for rotating disk electrode experiments. It is capable of 50-10,000 rpm rotation rates and has an integrated gas purge function that can be controlled manually or remotely. The rotator unit is easily raised and lowered into the solution for electrochemistry experiments.

CGME Cell Stand

The CGME Cell Stand is a controlled growth mercury electrode for polarography experiments. Mercury drop working electrodes are invaluable for certain applications due to their high overpotential for hydrogen ion reduction and the high reproducibility of the electrode surface. It has an integrated magnetic stir plate and gas purge function that can be controlled manually or remotely. This stand has three modes.

- 1- CGE: Controlled Growth Mercury Electrode
- 2- DME: Dropping Mercury Electrode
- 3- SMDE: Static Mercury Drop Electrode



Electrodes

Range of electrodes include some of types and materials to fit the customer requirements.

- 1- Working Electrodes
- 2- Reference Electrodes
- 3- Reference Electrodes
- 4- Reference Electrodes
- 5- Micro-Array Interdigitated Electrode



Glass Cells

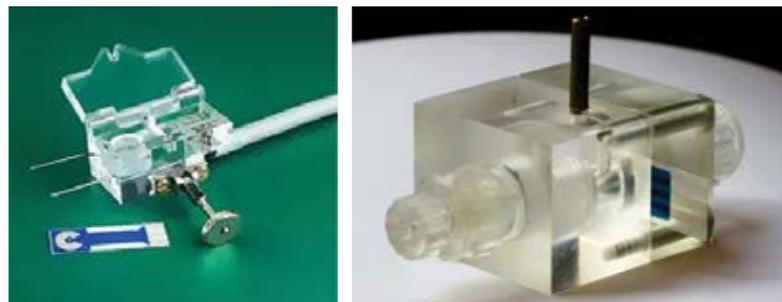
glass cells for electrochemical measurements which enable measurements with miniaturized and classical electrodes. The cells have a lid with NJ openings (NJ 10/8, NJ 12/10) – to fix electrodes, stirrer or connector in the cell. Stoppers are used for prevention of solution evaporation, for bubbling, for dosing by tubes or for measurements in an inert atmosphere. Some of glass cells are as below:

- 1- conic openings, termo stated by MT1
- 2- conic openings, termo stated by external thermostat
- 3- conic openings, easily washable
- 4- Cell with folder for electrochemical sensors



Flow Cells

An electrochemical flow cell consists of a working electrode, an auxiliary electrode, and a reference electrode. These work together with the electrochemical detector to apply a controlled potential for the sample to flow across and be oxidized or reduced.



Magnetic Stirrer with Switchbox

Extremely convenient magnetic mini-stirrer for mixing quantities up to 250 ml. This stirrer comes with a switch box for your PalmSens enabling your potentiostat to control the stirrer. The stirrer is automatically used during the depositing phase or for example switched on or off by using a script in the scripting window for a user defined time during the measurement.

Stirrer - Instrument controlled stirrer

This stirrer enables solution stirring during a measurement with screen printed electrodes and classical electrodes. The construction of the stirrer assures the optimal mass transport with minimum hydrodynamic noise. The supply voltage (3 V) and current the max current (150 mA) enable the user to control the stirrer via PStace, if it is connected to the D-Sub port. The speed range is 100 – 1000 rpm.



Mini thermostat

Mini thermostat device is designed for tempering an electrolytic bath for electrochemical measurements. The temperature is stabilized and the Peltier thermal element, which allows cool or warm the measured electrolytic samples.

Dual Channel Peristaltic Pump

The peristaltic pump is simple device for routine laboratory use. The pump has two channels. The flow is in one direction. The lifetime of tubing is optimized to maximal value. The pulsation is minimized for flow cell.

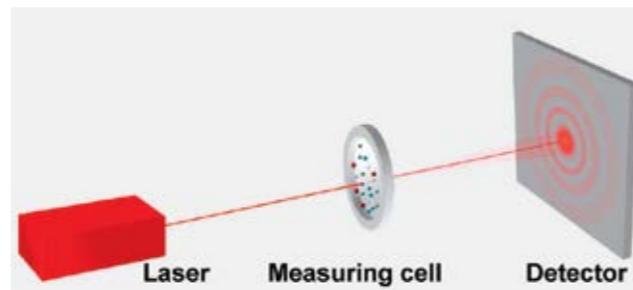


5

Particle Sizing



FRITSCH Particle Size and shape analyzer provide the reliable measurement accuracy, reproducibility and repeatability that you need for demanding analysis tasks in research and development or in quality control.



Static Light Scattering

Two models of the ANALYSETTE 22 NeXT are ideal for efficient particle size analysis in production and quality control as well as in research and development or for controlling manufacturing processes. Both Particle Sizers differ in design and measuring range.

The ANALYSETTE 22 NeXT Micro, which is reduced to one light source and one detector, measures robustly and reliably from 0.5 to 1500 μm .

The ANALYSETTE 22 NeXT Nano expands the lower measurement value by the intelligent arrangement of an additional detector system. This makes the recording of even larger scattering angles down to 0.01 μm possible in sideward as well as backward direction. The upper measurement limit is increased at the same time to outstanding 3800 μm .



Wet Dispersion Unit

The ideal method for perfect dispersion. Therefore, the sample material is fed into a closed liquid circulation system.

Automatic dispersion unit, suitable for most samples. A powerful centrifugal pump with individually adjustable speed ensures stable measuring in the dispersion unit of the ANALYSETTE 22 NeXT. It also transports heavy particles and facilitates a fast and uniform distribution of the sample material in the entire circulation system. This system could be equipped additionally with a powerful ultrasonic box which is simply inserted into the sample circulation system. It allows for an even finer adjustment of the wet dispersion to the respective sample material and operates extremely quietly with less than 45 dB.

- Suspension volume: 150 – 500 ml, variable
- Radial pump: With adjustable speed 3.5 l/min
- ultrasonic with max. 50 Watt ultrasonic output



Dry Dispersion Unit

Dry dispersion is especially suited for not too fine, free flowing materials, which react in water or other liquids. The sample material is transported with a feeder through the intake funnel into the dry measuring cell, where it falls directly into a Venturi nozzle operating with an adjustable flow of compressed air. Upon passing through the nozzle, agglomerates are broken up and the measurement of the particle size dispersion in the laser beam takes place.

- Sample volume: 1 – 300 cm³
- height-adjustable funnel and
- A stirrer made of stainless steel for optimal feeding.



Dynamic Image Analysis

The Particle Sizer ANALYSETTE 28 ImageSizer for dry measurement of powders and bulk solids and for wet measurement of suspensions and emulsions is ideal for applications that require accurate and reproducible measuring results for both particle shape and size. The optical process of Dynamic Image Analysis provides results for a wide measuring range, delivers multiple shape parameters and also offers a very easy and cost-effective alternative to sieving. Your advantage: Great flexibility in a wide range of measuring tasks – at a perfect price-performance ratio.



Dispersion Unit for Wet Measurement of Suspensions and Emulsions

Wet dispersion is particularly suitable for fine particles, poorly flowing, fine-agglomerating or sticky materials, which do not react in water or other liquids. Select an ultrasonic box if you frequently measure sample material that tends to agglomerate. A powerful centrifugal pump with individually adjustable speed ensures optimal transport of even heavy, high-density particles in the wet dispersion unit – enabling fast, uniform distribution of the sample material in the entire circuit. SOP's for easy operation, the completely free programmable dispersion process, the automatic cleaning ensures fast and reproducible measuring results.



Lenses for Dry / Wet Measurement

Choose different telecentric lenses for wet/dry measurement. By choosing the suitable lens, the measuring range can be optimally adapted to the measuring task. And if your application changes, all lenses can be retrofitted and easily replaced at any time

Dry Measurement

Enlargement / measuring range:

0.157x / ~ 90 μm – 20 mm

0.35x / ~ 40 μm – 9 mm

0.735x / ~ 20 μm – 4.5 mm

wet measurement

Enlargement / measuring range:

0.35x / ~ 20 μm – 3 mm

0.735x / ~ 10 μm – 2 mm

1.333x / ~ 5 μm – 1 mm



6

Sample Preparation



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 of the sample such as density, degree of hardness, feed size, sample quantity, grinding time and desired final fineness, any abrasion of the grinding parts, temperature sensitivity or residual moisture – all these factors are significant.



Mills

- PLANETARY MILLS

FRITSCH Planetary Mills are ideally suited for wet and dry comminution of hard, medium-hard, brittle and fibrous materials. Samples can be processed from a few milligrams to several kilograms at a wide range of fineness levels.

- Planetary Micro Mill PULVERISETTE 7 premium line (Max. feed size: 5mm, Max. sample quantity: 60ml, Final fineness: $< 0.1 \mu\text{m}$)
- Planetary Mill PULVERISETTE 5 premium line (Max. feed size: 10mm, Max. sample quantity: 450ml, Final fineness: $< 0.1 \mu\text{m}$)
- Planetary Micro Mill PULVERISETTE 7 classic line (Max. feed size: 5mm, Max. sample quantity: 40ml, Final fineness: $< 1 \mu\text{m}$)
- Planetary Mono Mill PULVERISETTE 6 classic line (Max. feed size: 10mm, Max. sample quantity: 225ml, Final fineness: $< 1 \mu\text{m}$)
- Planetary Mill PULVERISETTE 5 classic line (Max. feed size: 10mm, Max. sample quantity: 900ml with 4 working station and 450ml with 2 working station, Final fineness: $< 1 \mu\text{m}$)
- Vario-Planetary Mill PULVERISETTE 4 classic line (Max. feed size: 10mm, Max. sample quantity: 450ml, Final fineness: $< 1 \mu\text{m}$)



MORTAR GRINDER

The all-purpose mill for every application

The FRITSCH Mortar Grinder PULVERISETTE 2 is ideal for dry and wet grinding of hard, medium-hard, soft, brittle and temperature-sensitive samples for analysis, quality control and materials testing. It even grinds difficult samples with a moist, fibrous or elastic structure using liquid nitrogen.

- Mortar Grinder PULVERISETTE 2 (Max. feed size: 8mm, Max. sample quantity: 190ml, Final fineness: $< 10-20 \mu\text{m}$)



BALL MILLS

FRITSCH Ball Mills are effective for rapid batchwise comminution of hard, medium-hard, soft, tough, fibrous, temperature-sensitive and moist samples down to the finest particle sizes.

- Vibratory Micro Mill PULVERISETTE 0 (Max. feed size: 5mm, Max. sample quantity: 10ml, Final fineness: < 10 μm)
- Mini-Mill PULVERISETTE 23 (Max. feed size: 6mm, Max. sample quantity: 5ml, Final fineness: < 5 μm)

JAW CRUSHERS

FRITSCH Jaw Crushers for batchwise or continuous pre-crushing of very hard to medium-hard, brittle and tough materials. FRITSCH offers grinding parts made of various steel types, tungsten carbide and zirconium oxide.

- Jaw Crusher PULVERISETTE 1 classic line, Model I (Max. feed size: 60mm, Max. continuous throughput: 140 Kg/h, Final fineness: 1-15mm)
- Jaw Crusher PULVERISETTE 1 classic line, Model II (Max. feed size: 95mm, Max. continuous throughput: 200 Kg/h, Final fineness: 1-15mm)



KNIFE MILL

The FRITSCH Knife Mill PULVERISETTE 11 is the ideal laboratory mixer for very fast gentle comminution and homogenisation of moist, oily and fatty as well as of dry, soft, medium-hard and fibrous samples. The specially curved knife with up to 4 cutting edges achieves a homogeneous sample in a very short time.

- Mortar Grinder PULVERISETTE 2 (Max. feed size: 40mm, Max. sample quantity: 1400ml, Final fineness: < 300 μm)



CUTTING MILLS

Cutting Mills are ideal for comminution of soft, medium-hard, hard, brittle, fibrous and tough materials, for temperature-sensitive samples and plastics, as well as for preparation of heterogeneous mixtures. A feature that's unique to FRITSCH Cutting Mills: The entire grinding chamber can be opened without any tools in seconds with just two simple motions for complete cleaning of all the cutting tools. Unbeatably fast, simple and efficient!

- Cutting Mill PULVERISETTE 15 (Max. feed size: 70x70mm, Max. throughput: 50l/h, Final fineness: 0.25-20mm)
- Universal Cutting Mill PULVERISETTE 19 (Max. feed size: 70x80mm, Max. throughput: 60l/h, Final fineness: 0.2-6mm)
- Power Cutting Mill PULVERISETTE 25 (Max. feed size: 120x85mm, Max. throughput: 85l/h, Final fineness: 1-10mm)
- Cutting Mill Combination P U L V E R I S E T T E 2 5 / PULVERISETTE 19 ((Max. feed size: 120x85mm, Max. throughput: 60l/h, Final fineness: 0.2-6mm)

ROTOR/ BEATER MILLS

Due to their high grinding energy, Rotor/Beater Mills are the best choice for soft to medium-hard and temperature-sensitive samples like for example plastics. The final fineness of the samples depends on the selected sieve insert.

- Variable Speed Rotor Mill PULVERISETTE 14 premium line (Max. feed size: 15mm, Max. throughput: 15 l/h, Final fineness: 0.08-6mm)
- Variable Speed Rotor Mill PULVERISETTE 14 classic line (Max. feed size: 10mm, Max. throughput: 5 l/h, Final fineness: 0.08-6 mm)
- Cross Beater Mill PULVERISETTE 16 (Max. feed size: 25 mm, Max. throughput: 80 l/h, Final fineness: 0.12-10mm)





DISK MILLS

Fine-grinding of large quantities

FRITSCH Disk Mills PULVERISETTE 13 premium line and classic line are ideal for fine-grinding within the medium particle size range of soft to hard, tough and temperature-sensitive solids.

The FRITSCH Vibrating Cup Mill PULVERISETTE 9 is ideal for extremely fast grinding of soft to hard, brittle, tough and fibrous materials down to analytical fineness.

- Disk Mill PULVERISETTE 13 premium line (Max. feed size: 20mm, Max. throughput: 150 kg/h, Final fineness: 0.05-12mm)
- Disk Mill PULVERISETTE 13 classic line (Max. feed size: 20mm, Max. throughput: 150 kg/h, Final fineness: 0.1-12mm)
- Vibrating Cup Mill PULVERISETTE 9 (Max. feed size: 12mm, Max. throughput: 250ml, Final fineness: 10-20 μ m)

SIEVE SHAKERS

Comfort and precision for reliable sieve analysis

FRITSCH Sieve Shakers for sieves up to 450 mm in diameter offer maximum comfort and precision for reliable and precisely reproducible dry, wet and micro-precision sieving. These instruments feature automatic amplitude control, a high-quality sieve stack tensioning system, individual creation of sieve programmes and automatic evaluation of sieve analysis using the control and evaluation software AUTOSIEVE.

- Vibratory Sieve Shaker ANALYSETTE 3 PRO (Max. sample quantity: 2Kg, sieve diameter: 100mm,200mm, 8inch)
- Vibratory Sieve Shaker ANALYSETTE 3 SPARTAN (Max. sample quantity: 2Kg, sieve diameter: 100mm,200mm, 8inch)
- Heavy Duty Analytical Sieve Shaker ANALYSETTE 18 (Max. sample quantity: 15Kg, sieve diameter: 200-450mm, 8-18inch)



SAMPLE DIVIDERS

Guaranteed representative subsamples

With a representative sample preparation, the FRITSCH Sample Dividers are laying the foundation for a precise analysis. They create representative subsamples with absolutely identical properties like the original sample.

- Rotary Cone Sample Divider LABORETTE 27 (dividing head 1:8, Max feed size: 10mm, Max. sample quantity: 4000ml)
- Rotary Cone Sample Divider LABORETTE 27 (dividing head 1:10, Max. feed size: 10mm, Max. sample quantity: 2500ml)
- Rotary Cone Sample Divider LABORETTE 27 (dividing head 1:30, Max feed size: 2.5mm, Max. sample quantity: 300ml)

SAMPLE FEEDERS

The FRITSCH Vibratory Feeders LABORETTE 24 are your ideal assistants for slow and absolutely uniform feeding of even smallest quantities of sample dividers, mills, mixers, sieve shakers, balances and other laboratory instruments.

- Vibratory Feeder LABORETTE 24, V-shaped channel (Max. feed quantity: 1500 g/min, Min. feed quantity: 1 g/min, Suitable for narrow, directed sample discharge)
- Vibratory Feeder LABORETTE 24, U-shaped channel (Max. feed quantity: 2500 g/min, Min. feed quantity: 5 g/min, Suitable for uniform, wide sample feeding)



7

Gas Generators

An on-site gas generator is the practical and cost-effective alternative to pressurized gas cylinders, dewars or bulk storage of laboratory gas. Traditional sources of gas, for example nitrogen or hydrogen, incur on-going delivery, administrative and rental costs, all of which impact on business revenue or facility budgets. We provide nitrogen, hydrogen and zero air gas generators with high quality and excellent customer service. With a wide variety of gas generators to suit applications including GC, LC-MS, ELSD and Sample Preparation, and with local support available globally, thousands of laboratories trust these products to be their local gas generation partner.



Precision SL Hydrogen Generator

The smallest hydrogen generator for GC-FID, Precision hydrogen SL has been developed to offer a streamlined laboratory-grade hydrogen gas solution for GC flame detectors at a purity of 99.9995%. Precision hydrogen SL is safe, simple to use, easy to maintain and takes up minimal bench space.

With an impressive, streamlined form factor, Precision Hydrogen SL produces hydrogen at up to 100cc/min with no compromise on safety. A range of features ensure that Precision SL will produce hydrogen safely, storing a minimal volume of gas compared to cylinders. This generator also comes in a choice of black or white and includes a 2-year warranty as standard and are CE, FCC and CSA compliant.



In this category, there are 2 models:

- 1- Precision SL 100 Hydrogen Generator: Max Gas Flow: 100 cc/min, Optional auto-water fill or pressurized water fill
- 2- Precision SL 200 Hydrogen Generator: Max Gas Flow: 200 cc/min, Optional auto-water fill or pressurized water fill



Precision Hydrogen Generator

The Precision Hydrogen Standard generators are designed to provide the gas needed for GC detectors requiring hydrogen fuel gas, such as FID whilst the Precision Hydrogen Trace generators are capable of supplying GC carrier gas as well as detector gases for multiple GCs. One generator is capable of supplying multiple detectors, and there are various flow rates available to suit individual laboratory needs (99.9995% purity). These generators utilize a Proton Exchange Membrane (PEM) to create the hydrogen gas from deionized water and a desiccant filtration stage is used to dry the gas. The Precision Hydrogen generators are also suitable for providing collision gas for ICP-MS.

In this category, there are 5 models:

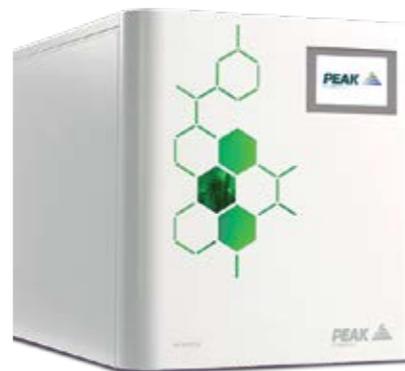
- 1- Precision Hydrogen 100 H2 Generator: Max Gas Flow: 100 cc/min
- 2- Precision Hydrogen 200 H2 Generator: Max Gas Flow: 200 cc/min
- 3- Precision Hydrogen 300 H2 Generator: Max Gas Flow: 300 cc/min
- 4- Precision Hydrogen 450 H2 Generator: Max Gas Flow: 450 cc/min
- 5- Precision Hydrogen 1200 H2 Generator: Max Gas Flow: 1200 cc/min

Precision Hydrogen Trace Generators

The Precision Hydrogen Trace generator is designed primarily for GC carrier gas use, and can also be used for detectors, requiring a hydrogen on demand solution for fuel gas such as FID and FPD. One generator is capable of supplying multiple GC instruments (99.99999% Purity (based on O2 content independently verified by National Physical Laboratory, UK)).

In this category, there are 3 models:

- 1- Precision Hydrogen Trace 250 GC Carrier Gas: Max Gas Flow: 250 cc/min
- 2- Precision Hydrogen Trace 500 Hydrogen Generator: Max Gas Flow: 500 cc/min
- 3- Precision Hydrogen Trace 1200 GC Carrier Gas: Max Gas Flow: 1200 cc/min



Precision Nitrogen N2 generators

The Precision Nitrogen and Nitrogen Trace generators have been developed to provide a constant and consistent source of nitrogen for detector make-up for GC applications, as well as headspace vial pressurization, purge and trap, tube conditioning for thermal desorption and sample preparation.

In this category, there are 4 models:

- 1- Precision Nitrogen 250 - GC N2 generators: Max Gas Flow: 250cc/min.
- 2- Precision Nitrogen Headspace 250 - N2 Generator: conceived and custom-engineered to meet the gas requirements for Headspace Sampler instruments requiring higher gas pressure. Max Gas Flow: 250cc/min.
- 3- Precision Nitrogen 600 - GC N2 generators: Max Gas Flow: 600cc/min.
- 4- Precision Nitrogen 1000 - GC N2 generators: Max Gas Flow: 1000cc/min.



Precision Nitrogen Trace N2 gas generators

The Precision Nitrogen Trace has been developed to provide a constant and consistent source of nitrogen for carrier, make-up and reference gas at trace detection levels for GC applications as well as for sample preparation. These generators are capable of delivering ultra-high purity nitrogen, removing oxygen and moisture via Pressure Swing Absorption using Carbon Molecular Sieve technology, as well as removing hydrocarbons by means of catalytic oxidation to ensure maximum purity output.

In this category, there are 4 models:

- 1- Precision Nitrogen Trace 250 - GC N2 generators: Max Gas Flow: 250cc/min
- 2- Precision Nitrogen Trace 500 - GC N2 generators: Max Gas Flow: 500cc/min
- 3- Precision Nitrogen Trace 600 - GC N2 generators: Max Gas Flow: 600cc/min
- 4- Precision Nitrogen Trace 1000 - GC N2 generators: Max Gas Flow: 1000cc/min

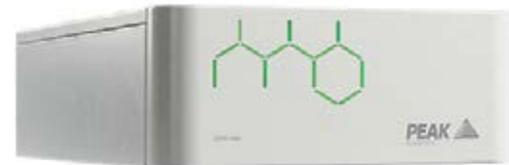
Other Nitrogen Generators Series

The culmination of over a decade's work perfecting on-site gas generation for LC-MS, suitable nitrogen generators available on the market today.

In This category, there are 4 versions:

- 1. Genius series including Genius NM32LA, N118LA, XE 35 Variable flow up to 35 L/min, Genius XE 70 Variable flow up to 70 L/min, Genius XE SMZ, Genius 1061, Genius SQ 24, Genius XE SCI 2, Genius XE QSD, Genius 1024 LC-MS, and 1050 PSA.
- 2. i-FlowLab nitrogen generator: including i-FlowLab 6XX1 and i-FlowLab 6XX2
- 3. NG-series ultra-high purity nitrogen generators including NG3000, NG3000A, NG5000 and NG5000A
- 4. Halo - MP-AES nitrogen gas generator: dedicated solution for MP-AES instruments supplying high purity nitrogen for plasma support gas or monochromator purge and dry air supply for POP gas and monochromator air purge.





Precision Zero Air Gas Generator

The Precision Zero Air generators are designed specifically to supply clean, dry, hydrocarbon-free air to be used as flame support gas for GC at both standard and trace detection limits. It integrates seamlessly with other Precision Units Hydrocarbon content (as Methane) < 0.05ppm for market leading purity.

In This category, there are 5 versions:

- 1- Precision Zero Air 1.5 Gas Generator: Max Gas Flow: 1.5 L/min
- 2- Precision Zero Air 3.5L Gas Generator: Max Gas Flow: 3.5 L/min
- 3- Precision Zero Air 7L Flame Support Generator: Max Gas Flow: 7 L/min
- 4- Precision Zero Air 18L Gas Generator: Max Gas Flow: 18 L/min
- 5- Precision Zero Air 30L Gas Generator: Max Gas Flow: 30 L/min



Halo - MP-AES nitrogen gas generator

Designed as a dedicated solution for MP-AES instruments supplying high purity nitrogen for plasma support gas or monochromator purge and dry air supply for POP gas and monochromator air purge, Halo produces 25 L/min of 99.5% or 10 L/min of 99.95% pure nitrogen with a supporting dry air supply of up to 36.5 L/min. Fitted with an oxygen analyzer, Halo will alert when operating purity has been reached through a purity status indicating LED light.

TOC 1000 carrier/combustion gas generator for TOC analyzers

The TOC 1000 has been engineered using the latest in PSA and air catalyst technology to supply clean, dry, CO2 and hydrocarbon-free air for Total Organic Carbon analyzers using combustion catalytic oxidation. The TOC 1000 provides a consistent and continuous supply of carrier and combustion air for TC, IC, TOC and NPOC analysis from a compact, bench-top system.



Solaris Air Compressor for ELSD

Solaris Air Compressor generator has been designed to support the Solaris Nitrogen generator for ELSD in labs without an external supply of high quality air. Available in both a 230v and 110v option this unit is suitable for all regions.



AD Air Dryer

The AD series is a useful attachment for any laboratory's external source of air, removing moisture and ensuring the delivery of dry air. Moisture content in house air can contaminate lab instrumentation, impacting on results and in some cases damaging the instrument itself. Compact in size, wall-mountable and light, the AD140L requires little space and its few moving parts mean minimal maintenance is required.

In This category, there are 3 versions:

- 1- AD70L - Air Dryer: Max Gas Flow: 70 L/min
- 2- AD140L - Air Dryer: Max Gas Flow: 140 L/min
- 3- AD302L - Air Dryer: Max Gas Flow: 302 L/min



Precision Air Compressor

The Precision Air Compressor is designed and engineered specifically to provide a dedicated, fully integrated compressed air source for Precision Nitrogen and Precision Zero Air gas generators. Housed within the same compact, stackable form factor as the generators, the Precision Air Compressor module can be added to any Precision stack-typically as the base unit - to give you a complete self-contained GC gas solution, even where no house supply is available.



8

Water Purifiers

Water purification is the process of removing undesirable chemicals, biological contaminants, suspended solids, and gases from water. The goal is to produce water fit for specific purposes. Most water is purified and disinfected for human consumption (drinking water), but water purification may also be carried out for a variety of other purposes, including medical, pharmacological, chemical, and industrial applications.



Type I Ultra Pure Water

Numerous factors influence your decision for an ultra pure water system that exactly matches your requirements, such as the availability of the feedwater, the daily requirements, purchasing and operating costs and other user specific requirements that are decisive for the choice of the right Omnia system.

This type of water purifier divided to below items.

- 1- OmniaLabED+ For H2O pure types I + II.
- 2- OmniaPure For H2O pure type I.
- 3- OmniaTap For H2O pure types I + II.



Type II Pure Water

laboratory tasks determine which Omnia system is required. Pure water is needed not only for laboratory autoclaves and washing machines, but also for feeding to ultra-pure water systems. You have the choice between only Type II water or additionally with Type I ultra-pure water.

This type of water purifier divided to below items.

- 1- OmniaLabED+ For H2O pure types I + II.
- 2- OmniaTap For H2O pure types I + II.
- 3- OmniaLabED For H2O pure type II.
- 4- OmniaLabUP For H2O pure type II.
- 5- OmniaLabDS For H2O pure types II + CLRW (CLSI) + DIN EN 285 + EN ISO 15883



Type III Water of Reverse Osmosis

This water quality is suitable for less critical applications, which simply need a lower amount of salts, silicates, and suspended solids. It is ideal for: buffer preparation, washing/ rinsing, feedwater for all stainless steel autoclaves, general chemistry, hydroponics, steam generators, feedwater for sterilizers, feedwater for Type I-ultra pure water systems. For this Type of pure water, we supply "OmniaLab RO"



9

General Laboratory Equipment

Laboratories requires a variety of equipment and instrumentation to run tests and research, complete everyday experiments, update existing tools, and maintain a well-functioning laboratory. We list thousands of items for comparison, including incubators, thermometers, desiccators, pH meters, glassware and etc.



Furnaces

Furnace is an appliance used to generate heat for all or part of a building. Furnaces are mostly used as a major component of a central heating system. Furnaces are permanently installed to provide heat to an interior space through intermediary fluid movement, which may be air, steam, or hot water.

Furnaces are in some categories:

1. Forced Convection Furnaces up to 850 °C
2. Muffle Furnaces up to 1400 °C
3. Chamber Furnaces up to 1400 °C
4. High-Temperature Furnaces up to 1800 °C
5. Tube Furnaces up to 1800 °C
6. Furnaces for Special Applications
7. Process Control and Documentation



Measuring and Testing

In this section ARA supply full range of measuring devices such as pH meters, Conductivity meters, Oxygen meters, Balances etc.....

Stirring, Shaking, Mixing

Stirring and shaking show results in the various ingredients being mixed together, however both actions also cool and dilute materials being mixed. The key difference between the two mixing methods is that the violent action of shaking achieves the same results quicker.





Heating and Cooling Technology

The science of flow and deformation of materials in dependency of temperature and mechanical stress, influenced by viscosity, fluidity and elasticity can be precisely analyzed using these products.

Customers will find here refrigerators, storage vessels, thermostats, cryostats, water baths, incubators, ovens, drying cabinets, incinerators, furnaces, hotplates, block thermostats and temperature controllers.

Distillation, Separation, Filtration

Without Distillation, Separation, Filtration in a laboratory, gaining exact results are impossible.

Our product range contains necessary products for the distillation. customers will find here as well greases, jointed glassware, rotary evaporators, filter paper, glass-fiber filters, membrane filters and a wide selection of filtration apparatus.



Liquid Handling

Correct dosage and transport of liquids is of great importance in laboratories.

A wide selection of various pipettes, dispensers, pumps, volumetric apparatus and titration equipment can be found in this section.



General Laboratory Consumables

Laboratory Consumables are equipment which have limited use, as in it can be used until it is 'run out' and then must be disposed of. Some examples of them include pipettes, syringes, beakers, funnels and test tubes. They can also include disposable gloves, face masks and shoe covers.

10

Standard Reference Material

A standard reference material is a material or artifact that has had one or more of its property values certified by a technically valid procedure, and is accompanied by, or traceable to, a certificate or other documentation.

standard reference materials represent one of the primary vehicles for disseminating measurement technology to industry.



Inorganic Standards

We provide high purity single and multi-element aqueous for analysis by AA/GFAA, ICP, ICP-MS, IC, wet chemistry techniques.

Organic Standards

We offer a breadth of organic reference materials hazardous to human beings and the environment including PAHs, PCBs, phenols, air pollutants, explosives, chemical warfare degradation products, plasticizers, disinfectant by-products, flame retardants, phthalates, volatiles, semi-volatiles, and many more.



Petroleum, Food & Biodiesel Standards

Petrochemical standards are essential to the evaluation of the physical and chemical properties of petroleum, gasoline, or other petrochemical products in various industrial applications. We offer a comprehensive neat standard as well as single- and multi-component solutions used in testing petroleum, gasoline, or other petrochemical-relevant substances.

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11

Sample Handling System



Sampling system, also known as sampling system, is a kind of equipment used for representative sample collection from industrial processes. Due to the growing complexity of the industrial processes, the requirements for product analysis increase continuously, and the safety for sampling process is given more and more consideration. The simple and primitive sampling system has evolved into a safe and reliable closed-loop sampling system.



Bottle Configuration Sampling Systems for Liquids

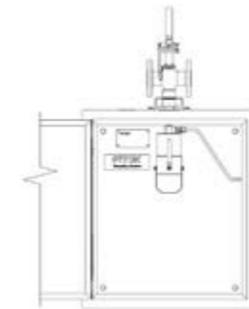
The material of wet part is stainless steel and in basic design form. It is containing Needle Assembly, Sampling Valve, Connections, required parts and 250 ml sleeve with bottle retaining clip.



- A-Series

This type of sampling system is in Seven versions.

- 1- BLA1: This Sampling system in basic design and is containing On-off valve.
- 2- BLA2: This Sampling system is containing purge system.
- 3- BLA3: This Sampling system is containing back purge system.
- 4- BLA4: This Sampling system is containing needle purge system.
- 5- BLA5 : This Sampling system is containing Back and Needle Purge system.
- 6- BLA6: This Sampling system is containing Purge and Continuous Needle Purge system.
- 7- BLA7: This Sampling system is containing In-line and Needle Purge system.



- B-Series

This is In-line sampling system and containing Fire safe and antistatic ball valve.

This type of sampling system has 3 versions

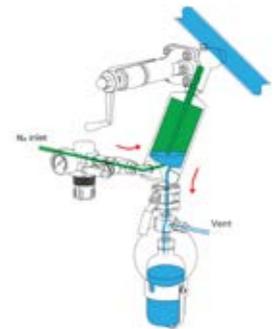
- 1- BLB1: This Sampling system is containing On-off Type with In-line Ball Valve system.
- 2- BLB2: This Sampling system is containing On-off Type with In-line Needle Valve system.
- 3- BLB3: This Sampling system is containing In-line and Continuous Needle Purge system.

- C Series

This system is related to getting Sample from vacuum, low or high pressure devices or process lines using a piston valve and utilizing Needle purge.

This type of sampling system has 4 versions.

- 1- BLC1: This Sampling system is containing Purge system.
- 2- BLC2: This Sampling system is containing Fixed Volume and Purge system.
- 3- BLC3: This Sampling system is containing Fixed Volume Type with Heating/Cooling Jacket system.
- 4- BLC4: This Sampling system is containing Solvent Purge system.



- D Series

This system will get Sample from medium or high pressure devices or process lines, using Fixed volume sampling, purge and needle purge systems.

This type of sampling system has 5 versions.

- 1- BLD1: This Sampling system is useful for Threaded Connection system.
- 2- BLD2: This Sampling system is containing Continuous Needle Purge system.
- 3- BLD3: This Sampling system is containing Heating/Cooling system.
- 4- BLD4: This Sampling system is containing Sampling by Gravity system.
- 5- BLD5: This Sampling system is containing Sampling by Gravity Type with Heating/ Cooling Jacket system.

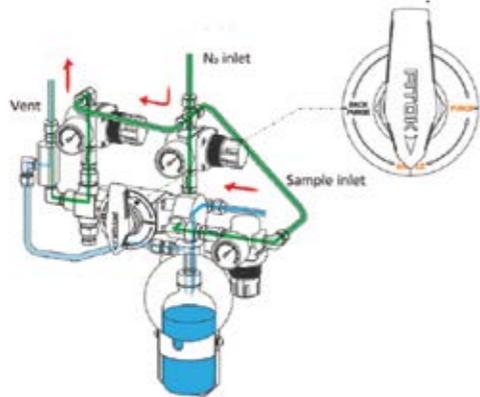


- E Series

This system will do Sampling from process lines at atmospheric pressure or vacuum condition using Back purge

This type of sampling system has 6 versions.

- 1- BLE1: This Sampling system is containing Back Purge Type with Vacuum Connection system.
- 2- BLE2 : This Sampling system is containing Back and Needle Purge Type with Vacuum Connection system.
- 3- BLE3: This Sampling system is containing Back Purge Type with Venturi Unit.
- 4- BLE4: This Sampling system is containing Back and Needle Purge Type with Venturi Unit.
- 5- BLE5: This Sampling system is containing Overflow Type with Vacuum Connection system.
- 6- BLE6: This Sampling system is containing Fixed Volume system.



- Cylinder Configuration Sampling Systems for Gases

This type of system will use for Gas sampling system using a purge system. In these systems a gearbox is applied controlling two ball valves simultaneous and ensuring sample accuracy and safety for the operator.

This type of sampling system has 3 versions.

- 1- CGG1 : This Sampling system is containing a purge system.
- 2- CGG2: This Sampling system is containing Bypass and System Purge system.
- 3- CGG3: This Sampling system is containing Vent to Flare system.



- Cylinder Configuration Sampling Systems for Liquefied Gases

This type of sampling system is Liquefied gas sampling system. In these systems, a fixed amount of sample is transferred to the expansion chamber to make sure that the cylinder is not fully filled. These systems will get samples from process with conditions of High temperature, high-pressure, corrosive, high-toxicity, high-volatility or environmental hazardous liquefied gases, liquids, and gases.

This type of sampling system has 7 versions.

- 1- CSF1: This Sampling system is containing Purge System with Expansion Chamber.
- 2- CSF2: This Sampling system is containing Expansion Chamber Purge system.
- 3- CSF3: This Sampling system is containing Bypass Purge system with Expansion Chamber.
- 4- CSF4: This Sampling system is containing Vent to Flare with Expansion Chamber.
- 5- CSF5: This Sampling system is containing Outage Tube.
- 6- CSF6: This Sampling system is containing Bypass Purge Type with Outage tube.
- 7- CSF7: This Sampling system is containing Vent to Flare Type with Outage Tube.



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