Business Unit

Technology

DKSH

Your partner of choice for complete solutions in the chemical, oil and gas, polymers and plastics industries

Business Line
Scientific Instrumentation

Think Asia. Think DKSH.

Business Unit Technology

DKSH is a leading provider of Market Expansion Services, proficient across various industries. As a total solutions provider and system integrator, we serve our customers as a one-stop-shop and provide customized technology solutions. We provide professional after-sales services as well as cover the entire product life cycle including installation and commissioning, final acceptance testing, production start-up support, training, maintenance, repair, spare parts and consumables supply as well as trade-ins. We operate as a trusted link between suppliers from Asia, Europe or America and customers in Asia, enabling suppliers to expand their markets.

Sales and services are our core competencies. Our sales, service and applications specialists are highly trained and dedicated to deliver complete, integrated laboratory solutions to our customers. Industry-specific expertise, in-depth process knowledge and complementary product-service portfolio enable us to stand out as a total solutions provider.

Business Line Scientific Instrumentation
Business Line Scientific Instrumentation supplies a wide range of industries and sectors with advanced and innovative laboratory equipment, scientific instruments, life science products, consumables, professional technical services as well as applications support of the highest quality and integrity.

Your partner for process development and optimization:
Business Unit Technology provides a range of instruments and solutions to ensure our customers in the oil and gas sector can focus on their core competencies of process development and production.

The need in developing for cost effective and efficient processes for the continued refinement of crude oil and gas, conversion of renewable energy sources such as biomass and methods for carbon capture and carbon sequestration has increased tremendously. With such investments in process and chemical engineering it is important to protect and monitor the efficiency of the plants.

We understand the importance of optimal, fast, and on-spec production for a successful business in the oil and gas industry. Our scientific instruments ensure that you can perform fast and accurate product analysis in your laboratories to support your manufacturing and process development.

DKSH solutions are designed and engineered to be versatile for the entire processes within the value chain of chemical, oil and gas, polymers and plastics polymers industries. Our clients' technological products are made of world class standards tailored to our customers' concerns and demands. For the prove of concepts into customers' applications, we do offer free sample testing, demonstration and technical discussion as the pre-sales support. These activities are supported by seminars, workshop and events co-organized by DKSH and our clients to deliver knowledge and product information to Malaysia's market. After-sales service consists of high quality technical trainings that comply with international standards such as ASTM, ISO etc. Last but not least, DKSH's service team is backed up by fast and efficient preventative maintenance as well as the affordable service contract to extend the life and value of our client's instruments.

Market specific applications
With our profound market knowledge we are best positioned to serve our customers according to their needs. We provide products and services to the following industries across Malaysia.


Aerospace


Automotive


Chemicals and cosmetics


Dies and molds


Healthcare and hospitals

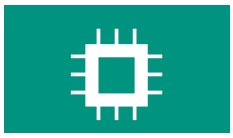

Metals, minerals and mining


Chemicals, oil and gas, polymers and plastics


Pharmaceuticals and biotechnology


Education and academics


Food and beverage


Semiconductor and electronics


Energy and environment

Analytical solutions for field, laboratory and process

Crude oil, a fossil fuel, is the most widely used energy source in the world. Crude oil has limited applications thus initial refining before use is needed. Refining crude oil results in several products, including gasoline, diesel, bunker fuels, jet fuel and asphalt.

Once produced, oil is classified and priced based on its quality. The classification is determined by density which ranges from "heavy" to "light" and sulfur content which ranges from "sweet" to "sour". Lighter, sweeter crudes are sold at higher price relative to heavier sulfuric crudes because it requires less processing to be converted into refined products.

The oil and gas sector can be divided into upstream, midstream and downstream segments. Upstream encompasses exploration and production; midstream includes transporting oil from production sites to refineries via pipelines, trains, tankers and trucks; downstream comprises refining and marketing refined petroleum products.

In the upstream sector, oil can be extracted either unconventionally or conventionally.

DKSH – your partner for efficient production processes

Polymers and plastics analysis

Plastics

Polymers is produced by the conversion of natural products or by the synthesis from primary hydrocarbon chemicals generally from petroleum, natural gas or coal.

Plastics typically are organic polymer of high molecular weight, which means each molecule can have thousands of atoms bound together via polymerization, i.e. addition reactions and condensation reactions to form polymers such as thermoplastic and thermosets.

Thermoplastic

Thermoplastic is a polymer in which the molecules are held together by weak secondary bonding forces that soften when exposed to heat and return to its original condition when cooled down back to room temperature. When a thermoplastic is softened by heat, it can then be shaped by extrusion, molding or pressing.

Thermoplastics applications:

Polyethylene
- Packaging
- Electrical insulation
- Milk and water bottles
- Packaging film
- House wrap
- Agricultural film

Polyvinyl chloride (PVC)
- Sheathing for electrical cables
- Floor and wall coverings
- Siding
- Automobile instrument panels

Polypropylene
- Carpet fibers
- Automotive bumpers
- Microwave containers
- External prostheses

Thermoset

Thermoset is a polymer that solidifies or 'sets' irreversibly when heated or cured. Thermosets are valued for their durability and strength and are used extensively in automobiles and construction industries including applications such as adhesives, inks and coatings. The most common thermoset is the rubber truck and automobile tire.

Thermoset plastics and their product applications:

Polyurethanes
- Mattresses
- Cushions
- Insulation

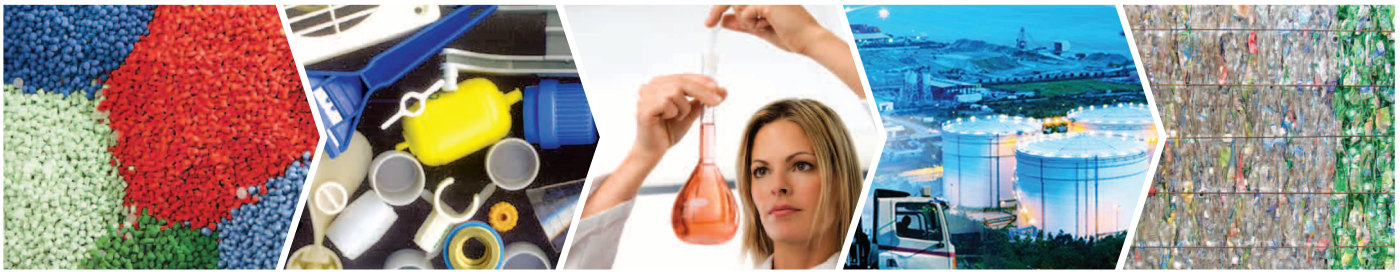
Epoxies
- Adhesive glues
- Coating for electrical devices
- Helicopter and jet engine blades

Unsaturated polyesters
- Boat hulls
- Bath tubs and shower stalls
- Furniture

Phenol formaldehyde
- Oriented strand board
- Plywood
- Electrical appliances
- Electrical circuit boards and switches

DKSH – your partner for efficient production processes

Raw material | Manufacture | Quality control and failure analysis | Distribution and retail | Disposal and recycling



Enhance Operational quality and productivity of the entire facility

Increase Staff satisfaction and productivity

Reduce Operational costs

Achieve Continuous improvement

Meet Regulatory compliance

Maximize Your facility performance

Sample preparation

Sample preparation is an essential part of laboratory processing and is often one of the most time consuming tasks in your laboratory. We provide a range of instruments for encapsulation of actives, temperature control of samples, water and gas production to support sample testing and deblistering of products as part of quality control. We provide a range of instruments. Regardless of your laboratory applications, we bring to you a variety of solutions that are efficient and reliable so you can focus on research and product development.

Binder ATEX Compliance Vacuum Drying Oven

ATEX compliance chamber's interior Ex II -/3G c IIB T3-T1 Gc X for drying of solvent containing samples at low temperature with maximum safety.

Applications:
- Antioxidant detection in petroleum wax
- Thermal sampling of lubricants
- Pyrolysis GC/MS of biodegradable plastic packaging
- Tri-step analysis of a latex glove

Claisse Automatic Electric Fluxer for XRF, AA and ICP Analysis

- Fully automated instrument with ten fusion programs that ensure high fusion success rate leading to superior analytical performances as well as accurate and precise results
- Instrument is designed with safety in mind which features automated safety door locks to provide extra security and protection against high heat contact

Applications:
- Dissolution of fuel oil using borate fusion for ICP-OES analysis in accordance with ASTM D5184, IP377 and IP501
- Preparation of mining and drying of geological samples

Hielscher Powerful Ultrasonic Laboratory Devices

Compact, easy-to-use and extremely versatile homogenizer for the processing of a variety of organic and inorganic materials in a wide range of volumes.

Applications:
- Identification of materials both on and below the surface of metals/plastics used to make pipes
- Homogenization of water in crude oil

Questron Microwave Digestion System

- Monitors temperature and pressure of each digestion vessel using OPGuard™ pressure protection mechanism safely where it only vents excess pressure then reseals the vessel
- Unique QSens™ technology ensures complete safety against extreme pressure release and exceptional temperatures by cutting off magnetron power, activating audible alarm and displaying visual warning

Applications:
Sample preparation of plastics and polymers for elemental analysis by ICP, ICP-MS and AA.

Questron Automated Block Digestion

- First automated workstation combining the two essential steps of sample preparation – digestion and work-up that gives freedom from manual acid handling and exposure to acid fumes
- It is the only true automation system accepting up to 84 samples of 50 ml vials with auto sampler racks ready to be analyzed

Applications:
- Kjeldahl digestion of agricultural and sail product for nitrogen and phosphorus analysis
- Acid digestion of petrochemicals for metal analysis

CDS Pyroprobe® Model 5150

Pyrolysis helps breaking apart of large complex molecules into smaller, more analytically useful fragments by the application of heat for chemical analysis.

Applications:
- Antioxidant detection in petroleum wax
- Thermal sampling of lubricants
- Pyrolysis GC/MS of biodegradable plastic packaging
- Tri-step analysis of a latex glove

Hermle Universal Centrifuge

- The small universal laboratory centrifuge offers a wide range of applications, which covers clinical laboratory requirements, research, as well as industrial laboratory usage
- Automatic rotor identification system with over speed protection, immediately activates upon rotor insertion to prevent damages to the centrifuge rotors due to excessive rotations
- Splash proof digital control panel with easy to program feature, requires little training to operate

Applications:
- Sample preparation of petrochemicals for elemental analysis to improve quality
- Sludge dewatering to determine the fraction of the soil

Welch Laboratory and Industrial Vacuum Pumps and Systems

- Automatic self-cleaning purge that maintains efficiency and extends diaphragm life for cost saving purpose
- Complete oil free dry vacuum systems for rotary evaporators and concentrators with corrosion resistant PTFE diaphragm that offers superior control and efficiency for each evaporation

Applications:
- Solvent recovery without contamination
- Vacuum filtration for solvent dewaxing, wastewater treatment and additive/ lubricant production
- Recover hydrocarbon vapors vented from storage

Lauda Aqualine Laboratory Water Bath

- Patented low-level protection, minimum fill level of only 2 mm that gives bath operation almost independent of the fill level
- Heating of the bath bottom across the entire base gives excellent temperature homogeneity in the bath and optimum use of the internal space
- No heaters, sensors or other fittings in the bath vessel for easy clean interior, no niches for hidden growth of germs and full use of bath

Applications:
- Hydrate prevention
- Heating of process fluid upstream of separation units to enhance respiration efficiency

Lauda Alpha Cooling Thermostat

- Large, clearly legible LED display for easy and intuitive menu navigation with three buttons operation
- Automatic compressor control supplies strong cooling output only when needed up to 425 W for cost-effective operation, no unnecessary energy consumption and equipment saving principle extends the life of the compressor
- Removal of the front cover without tools for easy cleaning of the cool air inlet and extended maintenance intervals

Applications:
Chemicals, environmental, petrochemicals and polymer.

Lauda Viscometers

- The modular automated viscometer PVS with up-to-date Windows software can be individually configured virtually for every application
- The iVisc is a computer-controlled, compact viscometer with excellent price/performance ratio for viscosities between 0.3 and 30,000 mm2/sec
- The fully automated filling and cleaning module VRM along with the auto-sampler VAS improves the efficiency in the lab

Applications:
- Viscosity number of polyamides (PA) and polybutylene terephthalates (PBT)
- Viscosity number and IV value of polyesters (PC, PMMA, PET)
- Molar mass and IV value of polypropylene and polyethylene
- Degree of polymerization of insulating paper using solution viscosity Viscosity index and kinematic viscosity of motor oils ISO 307/ASTMD 445 at application temperatures
- Low temperature characteristics (paraffin formation) of motor oils, diesel and kerosene
- Kinematic viscosity of transformer oils
- Pumpability of crude oils
- Absolute kinematic and dynamic viscosity of highly viscous liquids and their temperature dependence

Lauda Tension Meters

- Ranging from budget entry level to highly sophisticated tension meters
- TD4 model is a compact, fully automated and standalone device with a GLP compliant management system. Optionally this unit can be paired with a thermoelectric unit PTT+, allows it to excel in reproducibility and precise measuring instrument
- The TC1 is a manual tension meter which is compact, ease to use and highly precise in its class. With its GLP compliant management system and optional thermoelectric unit PTT+, this unit is unrivaled in its class for temperature control solution
- MPT model is a bubble pressure tension meter, suitable for exact surface tension measurements of fast surfactants and their dynamics, the whole operations can be completed within the millisecond range

Applications:
- Quality control of insulating oils using interfacial tension
- Checking cleaning water by determining the surface tension
- Characterization of surfactants for cleaning agents and cosmetics
- Production control of lamp oils

LabPRO Balances

- Quick and accurate ease of operations with precise measurements of up to 0.1 mg readability
- Stable readings of measurement up to +/- 0.0001 (S.D) (mm) repeatability
- Large backlit LCD screen for easy reading
- Dynamic temperature compensation accounts for changes in environment for accurate weighing

Applications:
Weight measurement of dry/wet biological/ chemical materials.

LabPRO Micropipette Series and Bottletop Dispensers

Micropipette
- Micropipette models for a range of volumes from 0.2 µl to 10,000 µl designed for maximum accuracy and precision
- Completely autoclavable to ensure minimal sample contamination in tightly regulated environments
- Universal tip cone design for compatibility with major brands of micropipette tips

Bottletop Dispenser
- Bottletop dispenser models for a range of volumes from 0.25 to 100 ml, designed for high chemical compatibility and smooth movement
- Designed with a recirculation valve for bubble free dispensing without any loss of reagent
- Adjustable dispensing nozzles with adaptors for fitting on a range of regular laboratory reagent bottles

Application
Volumetric handling for general laboratory activity.

Kirsch Laboratory Refrigerators and Freezers (ATEX Rated)

- Intelligently designed for cooling, which is excellent temperature stability and almost constant cooling temperature within the interior is achievable with its forced-air cooling design
- Height adjustable shelves are able to accommodate flexible storage needs and relocation
- The LABEX models are built according to the directive 94/9/EC (ATEX 95), fulfilling the safety requirements for explosion-proof areas of zone two (ATEX 94/9EG)

Applications:
Storage of chemical sample used for research in chemicals, environmental, petrochemicals and polymer.

SHEL LAB Digital Laboratory Incubator

- Industry best time and temperature control satisfies all global standards for decontamination: 180°C for 120 minutes
- Unique safeguard controller interrupts when detects overheating situations

Applications:
Controlled sample storage of organic and inorganic materials

Physical and chemical characterization

Material characterization is crucial in determining the compositions and properties of one substance, which then contributes to operational performance, productivity and customers' satisfaction. DKSH offers not only a diverse range of laboratory instruments but also the knowledge base of our experienced application specialists and a well-trained service support team to accommodate many different quality control and research and development applications.

AD System SP10 Automated Smoke Point

- SP 10 is an automated instrument that strictly follows ASTM D1322 and eliminates the subjectivity inherent to the manual test by giving resolution of flame height 0.1 mm precisely and recorded
- SP 10 totally eliminates visual observation of an open flame hence decreases fire risk in the lab
- Once the candle is prepared and positioned on the conveyor, the operator keys in all test details and test start automatically which reduces labour and saves 30 minutes per test

Application

Can be used at the following locations and more:

- Refineries
- Military
- Research and development
- Aircraft engine manufacturers
- Pipeline and terminals

Ad Systems ITR Tube Deposit Rater Instrument (Thermal Oxidation Stability of Aviation Turbine Fuels)

- DR10 test is simple and straightforward where heater tube is prepared according to ASTM D3241 test procedure then precise thickness measurements are taken at 1,200 points along and around the tube surface and detailed test report is ready in less than 15 minutes
- DR10 software automatically detects and reports the Standard Spot value which is the mean deposit thickness of the thickest 2.5 mm two area as defined in ASTM D3241 and provides a 3D profile of the deposit distribution on the tube surface

Application

Thermal oxidation testing of aviation turbine fuels including research, refining, pipeline, terminals and mobile laboratory applications – every location where thermal oxidation of jet fuel is evaluated.

Asahi Glassplant Laboratory Pilot Glass Reactor

AG advanced design of glass ring baffles reduce volume of heat transfer liquid throughout the jacket that allows efficient heating/cooling capability and precise temperature control from process thermostat.

Application

- Catalysts testing
- Purifications (HCL, HNO3, HAC, H2SO4)
- Hydrogenation plant
- UV sensitive chemicals processing
- Suspension polymerization
- Solvent recovery plant

ASD High Resolution Spectroradiometer (NIR)

- With the 3 nm VNIR, 8 nm SWIR spectral resolution and the full coverage range of solar irradiance spectrum (350 to 2,500 nm), ASD can be used for very accurate contact reflectance measurements in petroleum exploration
- Built-in wide optical slit delivers the best signal throughput with the capability in analyzing more than 1,000 samples a day, giving benefit measurements in low illumination conditions
- Provides non-destructive NIR spectroscopy analysis for raw material containing CH, -NH and -OH groups, where results can be obtained in less than 30 seconds, leading to more time and cost saving yield productions

Applications:
- Petroleum exploration
- Raw materials inspection and analysis

Filtra Vibracion Laboratory and Industrial Sieving Equipment

- 3D motion throughout the sieve column makes it extremely effective when performing particle separation granulometric
- Compact and light electromagnetic sieve shaker, for sieves from 60 to 203 mm in diameter
- Short sieving times with large sieving surface (315-400 mm) and effective movement of the product to be sieved

Applications:
Particle size tests, chemicals, minerals, fillers, coal, coke, ores, construction materials, plastics, sand and soils for
- Research and development
- Quality control
- Production process supervision

Fungilab Premium Series Rotational Viscometer

- Built-in graphic mode together with the implemented 2,600 speeds allows operators to analyze and visualize the characteristics of the flow curves and measurement across wide viscosity range from 1 up to 106.000.000 cP
- Designed with a bi-directional USB interface for 2-3 times faster data import and export throughput to external devices
- Auto-test feature allows viscometers to perform internal function checks and prepare unit to be ready to use

Applications:
- Viscosity measurement to improve quality of petrochemical, enviroment and polymmer products

LUM Dispersion Stability Analyzer

- The patented STEP-Technology allows accurate measurement and prediction of the effects of concentration, shape and colloidal forces on particle size distribution and stability of aqueous, non-aqueous, newtonian or non-newtonian systems
- Stability tests, which can be accelerated by up to 4,500 times compared to the conventional ways of testing, i.e. 3.5 hours in the instrument provides the data obtain after 365 days in real time, are achievable with reliable and accurate results complied with ISO 13318-2 and CFR21 Part 11

Applications:
- Comparative and predictive shelf-life analysis
- Direct accelerated stability analysis

Eralytics Continuously Closed Cup Flash Point Tester

- ASTM round robin test proofed that no statistical bias exits between ASTM D93 (Pensky Martens) and ASTM D7094 (modified continuously closed cup flash point, MCCCFP) and this data led to the acceptance of ASTM D7094 for fuel specification testing
- Pins create and electric arc to ignite sample inside a closed chamber without open flame that decrease fire risk
- Small sample volume (1 ml or 2 ml) resulting low oxygen amount within the closed cup and the flame is automatically extinguished after ignition

Applications:
- Fuel specifications testing
- Quality control for contamination and adulteration of petrol and chemicals
- Categoningising product for hazard classification

Eralytics Vapour Pressure Analyzer

- Direct vapour pressure measurement from floating piston cylinder that does not required sample preparation
- ASTM D5191 compliance give total vapour pressure result and this removes any operator bias results caused by errors during the air saturation step

Applications:
- All types of liquid, from gasoline to LPG
- Crude oil
- Solvents
- Fragrances
- Polymers

Eralytics Portable Oil Condition Monitoring

- ERASPEC OIL measures contaminants, degradation, additive depletion as well as calculated properties like TAN, TBN and viscosity in minutes which helps in avoiding unnecessary maintenance, lowers the risk of failure and saves cost if the lube oil is replaced dead on time
- ERASPEC OIL is a portable stand alone infrared analyzer for high speed lubricant oil analysis and condition monitoring in full compliance with ASTM, DIN and JOAP methods which provides laboratory grade results directly on site, which improves decision making process due to faster retrieved results

Applications:
- Oil conditioning monitoring (OCM)
- Oil testing labs
- Engine test labs
- Fleet maintenance shops
- Constructions or mining sites
- On-board ship
- Lubricating oils plants
- Synthetic lubricants plants

Microfluidizer High Shear Fluid Homogenizer M-110P

- High pressure pump generates forces up to 40,000 psi (2,578 bar) to force the product stream into precisely engineered micro-channels within patented interaction chamber, accomplishing uniform submicron particle size reduction with typically 50% smaller than those by conventional homogenisers
- Processing efficiency can be improved via the savings of time and cost in terms of less passes, easy operation and no extra media required during the reduction proces

Applications:
- Production of stable suspensions in various liquid medium choices
- Single and multi-wall carbon nanotubes and polymer resins

Malvern Mastersizer 3000 Laser Particle Size Analyzer

- The Mastersizer is a laboratory laser diffraction particle size measurement system designed to measure dry powder, suspensions and emulsion samples in the particle size range from 0.01 to 3,500 µm and depending on samples, PSD results can be generated up to 1 minute
- Reliable and stress-free operation decreases the Total Cost of Ownership (TCO) with simple, low cost routine maintenance keeping operations running at optimal levels 24/7

Applications:
- Suitable for chemical, rubber, plastic and polymer industrial applications.
- Formulation improvement of dispersion products

Malvern Zetasizer Nano ZS Particle Size Analyzer

- The Zetasizer series measures particle and molecule size from 0.3 nm (diameter) to 10 µm using patented NIBS (Non-Invasive Back Scatter) technology which allows measurement of low concentration samples with only a minimum volume as small as 12 µL needed
- Incorporated with static, dynamic and electrophoretic light scattering into a single instrument which is based upon first principles therefore no calibrations are required and stress free operations can be easily achieved

Applications:
Suitable for research and development and quality control colloidal applications in water treatment plant, chemical, rubber, polymer and plastic industry.

Malvern Kinexus Rheometer

The Kinexus rheometer has the highest sensitivity air bearing and widest torque range from 0.5 nNm to 250 mNm in the market, coupled with the unprecedented vertical (axial) control capabilities of the Kinexus platform, making it suitable for complex fluid and cure profile characterizations.

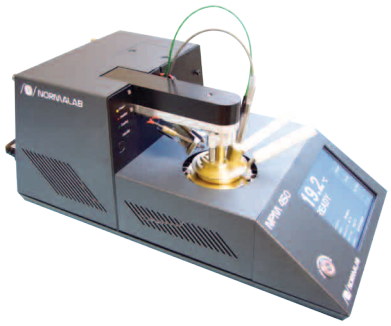
Applications:
- Oil recovery
- Polymer injection
- Rheological characterization of complex fluids and soft solids, including dispersions, emulsions, polymer and surfactant solutions, pastes and gels

Surface Measurement Systems Dynamic Vapor Sorption Analyzer

- A fully automated instrument operating under the control of a computer with dedicated DVS Data Analysis Suite, which runs from within Microsoft Excel®, provides a powerful and convenient environment for rapid plotting and quantitative analysis of data
- Capable of measuring sample mass difference lower than one part in 10 million, delivering long term stability required for accurate vapour sorption measurements, which may take up to days to complete depending upon the sample size and material

Applications:
- Quality control analysis techniques in packaging area, measuring efficacy and permeability
- Effects of humidity and temperature on the samples within the packaging
- Measurement of adsorption of high concentrations of organic vapour on activated carbon
- Measurement of diffusion of liquids and vapour through real polymer tube packaging devices
- Calculation of diffusion constants in thin polymer films using DVS

Normalab Petroleum Test Equipment
NPM 450 Automated Flash Point Tester



The fifth generation of automated flash point tester.

- Designed with dual detection system: thermal and ionization as well as the widest operating temperature range from 0 to 400°C, allowing measurements for most types of petroleum products such as gasoline, diesel, jet A1 and biodiesel
- Fully comply with ASTM D93, IP 34, NFM 07019, ISO 2719, DIN 51758, GBT 261 and JIS K2265-3

Applications:
Flash point determination.

Normalab Petroleum Test Equipment
NDI 450 Automated Atmospheric Distillation Unit

The fifth generation of automated atmospheric distillation instrument.

- Stand alone with built-in integrated touchscreen and Windows based software design gives the instrument its full flexibility in terms of minimum footprint and easy operation
- Offers incredible storage capacity with over 1,000 test and program files which can be viewed and compared easily either by direct reading on its large screen and data exportation to PDF, DOC as well as XLS files via USB, ethernet and RS232C connections
- Fully comply with ASTM D86, ASTM D850, ASTM D1078, ISO 3405, IP 123, IP 195, DIN 51751, JIS K2254, GOST B

Applications:
Volatility determination by distillation.

Claind Brezza NiGen Gas Generator

- Nitrogren gas generator has high purity and guaranteed by PSA technology that ensures 100% removal of hydrocarbons (HCT< 0,1 ppm for applications with high sensitivity detectors), eliminates the need for repeat purchase of gas cylinders, hence increases lab's efficiency and saves cost
- The 50 liter of air and nitrogen internal storage tanks means less frequent air compressor starts, effectively reducing noise levels and maintenance requirements
- The Carbon Molecular Sieves (CMS) utilised in PSA technology allows almost total adsorption of hydrocarbons inclusive with high efficiency hydrocarbon removal columns to ensure high purity nitrogen gas is generated for LC-MS

Applications:
LC-MS application, as well as feeding both carrier gas and as a gas supply for FID, NPD, FPD, TCD detectors.

Claind Brezza HyGen Hydrogen Gas Generator

- Stackable up to four Brezza units can be stacked that converses space and creates a neat installation
- Equipped with the innovative, patented HT PEM cell, with reliability certified by proton energy systems which uses pure deionized water as the electrolyte, eliminates the need to purchase or replenish gas cylinders and saves time and cost
- Easy replacement of the final filter element without contaminating the hydrogen outlet line with air
- Easily fill the removable water tank and auto-fill options

Applications:
LC-MS application, as well as feeding both carrier gas and as a fuel gas supply for FID, NPD, FPD, TCD detectors.

PANalytical XRF Epsilon 1 benchtop EDXRF Spectrometer

- Compact design with a built-in computer and touch screen panel reduces the valuable space to less than 0.15 m^2, providing this benchtop unit with full flexibility to operate in both laboratory and off shores with its basic installation requirements
- Equipped with the PANalytical self-designed and manufactured thin-window 50 kV Ag anode x-ray tube and the latest silicon drift detector technology, high quality of measurement data can be generated without any loss of accuracy or increased measuring times

Applications:

- Sulfur in fuels in compliance with ASTM D4294 and ISO 20847
- Additives in lubricating oils in compliance with ASTM D6481
- Characterization and analysis of any type of sample in many industry segments such as nanomaterials, petrochemicals and polymers

PANalytical Epsilon 3^{XLE} Benchtop Energy Dispersive EDXRF Spectrometer

- Combining a high performance, metal ceramic x-ray, a flexible choices of anode materials, flexible voltage settings from 4.0-50 kV and a maximum current setting of 3.0 mA, Epsilon 3^{XLE} is capable in defining optimum application specific excitation conditions across the periodic table from carbon (C) to americium (Am)
- Utilizing the latest silicon drift detector technology, the pulse reset electronics are able to give a linear count rate capacity to over 200,000 cps and a count rate independent resolution typically better than 135 eV, resulting in better separation of analytical lines in the spectrum and therefore ultra-light element analysis of carbon, nitrogen and oxygen is achievable
- No or minimum sample preparations are required using this instrument with an advantage to enhance the reliability and accuracy of results by avoiding any potential for inaccuracies caused by incomplete dissolution

Applications:

- Analysis of Au and Ag on activated carbon
- Non-destructive elemental quantification of carbon nanotubes
- Quantification of the degree of plastics and polymers polymerization and prove compliance with important regulations

Rigol High Performance Liquid Chromatography

- Unique features such as 9,000 psi operational pressure, 100 Hz sampling rate and 2.5 AU linear range allow capability in separating and analyzing compounds with high melting points, low thermal stability or high molecular weight more efficiently
- High detection sensitivity up to as low as 5 x 10-9 g/mL detection limit, creating a higher sensitivity measurement results with minimum noise level and thus better resolution of spectral data
- The high pressure injection pump could monitor the pressure status by its digital signal processer and adjust the motor operation status based on real time feedback which then able to be used together to realize a steady flow output together with the high performance proportional valve

Applications:

- Quality assurance quality control analyses
- Environmental
- Petrochemical engineering
- Agriculture and farming fields

Postnova Analytics Field Flow Fractionation

- Advanced systems for high resolution characterization by separating nanoparticles based on hydrodynamic size, density, molar mass and chemical composition without any tedious sample preparations and hence faster and more accurate results
- Fully controlled by the NovaFFF single system from auto-sampler to detector, reduces random operational errors and allows constant monitoring on temperature, pressure leak and gas sensor for reproducibly and stable operation even in rough production environments

Applications:

- Wide separation range and is able to separate smaller species, such as polymers from larger particles in one run with high resolution
- No special sample treatment is necessary as they can be injected directly without filtration, allowing the characterization of quite complex particulate sample systems without alteration and damage
- The Centrifugal FFF technique physically separates each particle fraction prior to sizing. This avoids numerous disadvantages of the batch techniques such as, low size resolution, discrimination and under estimation of smaller by larger particles
- Thermal FFF principle, using a temperature gradient as driving force for the separation which allows the separation by both the molar mass and chemical composition, enabling the separation of different polymer material having the same molar mass and the separation can be further optimized by the use of different eluents and various temperature programs
- Ideal for the separation of complex polymer samples in the area of petrochemical, adhesives, rubbers, polymers and micro and nano-materials

Schmidt + Haensch Refractometer

- Equipped with CCD sensor detectors for detection of the critical angle of total reflection which is done sequentially for all LEDs (colours) allowing concentration measurement at over the full wide visible range, with only a small sample volume of 0.3 ml is needed
- Built-in solid state Peltier thermostat covers wide operating temperature range from + 5°C up to + 80°C with excellent resolution of 0.01°C and is able to accommodate applications that require checks at different temperatures and eliminate needs for external temperature control devices such as water bath and thermostat

Applications:

Determination of concentration of dissolved substances polymer, adhesives, fuel oils and chemical.

Schmidt + Haensch Density Meter

- Intuitive user friendly software and the large 9 cm capacitive color-TFT touchscreen interface reduce the setup times for protocols and add powerful trouble-shooting capabilities, therefore each measurement can be generated quickly in less than 30 seconds
- Combining with other S+H laboratory devices such as refractometer and polarimeter allows instrument to perform complex analyses with only single approx. 2 mL liquid sample, one sample for two tests in one go avoids sample wastage when the sample is expensive
- Optional moisture and air pressure sensor and most accurate temperature control programs provide the extended usage also in difficult environment conditions, and hence allowing continuous density measurement in a broad range of applications

Applications:

- Quality monitoring
- Process control adhesives, fuel oils and chemical

Sherwood Magnetic Susceptibility Balances

- Built-in 8,751 microprocessor allows digital display of the measurement to be directly converted to volume susceptibility in c.g.s. units by entering the sample weight and length, leading to a faster measurements and easier operation procedures
- Implemented with a tare key with blank tube in sample position facilitates the auto-tare feature by automatically zeroes when sample is absent, hence shorter waiting time before analysis starts
- Lightweighted balance which is under 2.2 kg comes complete in its own robust carrying case and with rechargeable battery which allows up to eight hours of operation away from a mains power supply giving its true portability to be operated at different analysis sites

Applications:

- Lubricating oils
- Trace metal contaminants on industrial diamonds
- Pesticide analysis by the generation of free radicals
- Examination of chemical reactions on a microscale and in a protected environment
- Characterization of ion exchange adsorption and desorption processes
- Quality control of catalysts in the petrochemical and plastics industries

Sherwood Flame Photometer

- Single channel flame photometer which is easy to use and can analyse up to five elements (Na, K, Li, Ca, Ba)
- BlueNotes software ease for data collection, storage, manipulation, report generation as well as automate analysis with addition of Model 860 auto sampler

Applications:

- Determination of potassium in fertilizers/ plant material/soils
- Determination of sodium in fuel oil
- Determination of lithium in greases

Sherwood Chloride Analyzer

- Operating based on the classic coloumetric titration which is robust and an absolute method allowing accurate and reliable weak end point salt and salinity measurements with readable range from 10-999 mg/IL
- Optimised with a buffer system to eliminate interfering ions and incorporates a special dispersant to ensure reproducible formation of the silver chloride precipitate and enhance analytical performance

Applications:

- Measurement of salt concentration to detect contamination in industrial processes
- Measurement in the ppm range in boiler feed water and polymer washes

GBC XplorAA series Atomic Absorption Spectrometer (AAS)

- Eight-lamp auto turret with auto lamp align for rapid element selection and accurate lamp optimization
- Automatic wavelength and choice of 20 slit widths between 0.1 and 2.0 nm in 0.1nm increments in both normal and reduced height for ease of operation
- Automatic gasbox system with comprehensive safety interlocks
- Allows greater than 0.9 absorbance and less than 0.5% RSD using 5 ppm copper on the same measurement
- Optional accessories: System 5,000 graphite furnace, HG3000 hydride generator, MC3000 mercury concentrator, SDS720 high speed auto sampler and PS720 auto-dilutor

Applications:

- Metal content (Cu, Fe, Mn and Co) analysis in chemical, polymer and rubber sample
- The Measurement of Al, Cr, Cu, Ni, Pb, Si, Sn, Ti and V in engine oil
- Application of the GBC HSA3000 to samples with high dissolved solids
- Analysis of environmental water samples using graphite furnace AA with ULTRA-PULSE background correction

GBC OptiMass 9600 Time of Flight Inductive Coupled Plasma Mass Spectrometers (ICP-MS)

- World's only simultaneous Time of Flight ICP-MS, over seven times faster sample throughput compared to Quadrupole ICP-MS
- Mass range from one to 260 amu with low ppt detection limits
- Patented Smartgate for removal of interfering masses
- Octopole Collision Cell with mass independence for interference management during sample analysis

Applications:

- Simultaneous sampling mass analyses for wide range of elements such as Al, Sb, Fe, Hg, Mg, Ca, Pb, Ag, K and etc.
- Determination of isotopes
- Allows elemental fingerprint analyses

GBC Cintra UV-Vis Spectrometer

- Wide wavelength range of 190 – 1,200 nm
- Choice of fixed or variable slit width
- 7 X 7 carousel allows seven samples and seven reference samples or programmable for 12 samples and two reference samples for increased batch size sample analysis

Applications:

- Fully automated water nitrate analysis
- Suitable for trace organic analysis, colorimetric and specular reflection measurements coupled with a diverse range of wet chemical preparation techniques

Production (online and inline)

With the latest technology available, material analysis processes can be easily monitored and optimized through online and inline systems which are capable of providing fast, real-time data, allowing immediate response to process settings adjustment and control. The instruments and solutions DKSH will help in the overall efficiency and process cost optimization at manufacturing and the refining processes.

Eralytics Online Vapour Testing

Complying with ASTM D6378 that offers the advantage over the commonly used ASTM D5191 method, that no sample preparation is needed at all while maintaining the same methods used in laboratory vapor pressure testers. Therefore no correlation between the online vapor pressure tester and the laboratory instruments needs to be established because both are giving the same results.

Applications:
- Quality control measurement at terminals and refineries
- Blending of butane into gasoline

Schmidt + Haensch Compact in-line Refractometer iPR

- New stand-alone sensor comes with a measuring range up to 90% Brix (refractive index 1.52) protected by the stylish stainless steel housing which is partially equipped with a cooling jacket that helps to prevent electronic components from overheating in process temperatures up to 80°C
- Measurement is independent of light intensity from the light emitting diode (LED) and is free of signal drift so that color, turbidity, undissolved particles or gas bubbles has no significant effects, granting high precision and better process control
- Equipped with two switch outputs to run, for example, a connected valve (max. 1A, 24 DC) or relay which is capable of controlling the cleaning of measuring prism via a magnet valve, giving a more efficient cleaning process

Applications:
- Concentration monitoring
- Product interface detection
- Deviation from the nominal value (Quality control)
- Crystalization monitoring
- Dosage control

Malvern On-line Particle Size Analyzer

- Insitec systems measure particles in the size range 0.1 µm to 2.5 mm and deliver the online continuous particle size analysis needed for efficient, cost-effective monitoring and control of industrial processes from dry powders to hot sticky slurries, sprays and emulsions, whether milligrams of material or hundreds of tonnes per hour
- Helps to produce batches of raw materials that are "right first time" to reduce waste and the amount of material to be recycled every minutes
- "Close loop" feature allows direct feedback to control board and settings adjustment giving a more guaranteed result to ensure the mill operates closer to target limits

Applications:
- Streamlines fuel filter testing
- Power plant
- Particle size for mill control and optimization

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