

Your definitive partner for comprehensive solutions in the chemical, oil and gas, polymers and plastics industries



Business Unit Technology

From exploration to production, we focus on sustainability and safety practices, guided by stringent environmental standards, aiming to reduce emissions and protect biodiversity

DKSH Technology 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 application 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

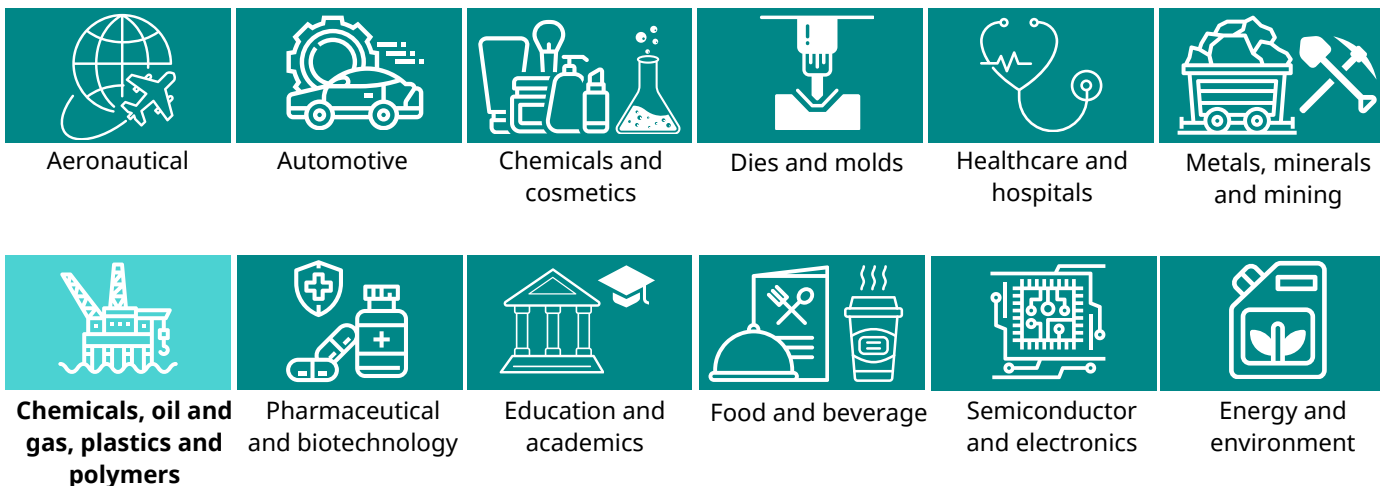
Business Unit Technology offers instruments and solutions for oil and gas customers, allowing them to concentrate on their core competencies in process development and production.

The demand for cost-effective and efficient processes for refining crude oil and gas, converting renewable energy sources like biomass, and carbon capture and sequestration, has surged. To safeguard and track plant efficiency, we appreciate the significance of efficient and accurate production in the oil and gas sector. Our instruments facilitate quick and precise product analysis in your labs, supporting manufacturing and process development.

DKSH solutions are tailored for the chemical, oil and gas, polymer, and plastic polymer industries. Our products meet world-class standards based on their specific needs. We provide free sample testing, demos, and technical discussions as pre-sales support. This is complemented by seminars, workshops, and events organized with customers to impart knowledge and product insights to the Malaysian market. After-sales service includes top-notch technical training meeting international standards (ASTM, ISO, etc.). The DKSH service team provides fast, efficient maintenance and affordable contracts to extend equipment lifespan and value.

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.



Analytical solutions for field, laboratory and process optimization



Ensuring the quality of crude oil

Crude oil, the most widely used energy source globally, requires refining before use due to limited applications. Classification is based on density (ranging from heavy to light) and sulfur content (ranging from sweet to sour).

Lighter, sweeter crudes command higher prices as they require less processing for conversion into refined products.

The oil and gas sector is divided into upstream, midstream, and downstream segments.

Upstream involves exploration and production. Midstream involves transporting oil to refineries. Downstream involves refining and marketing petroleum products. In the upstream sector, oil can be extracted unconventionally or conventionally.

DKSH - Your reliable partner for efficient production processes



Acquisition and exploration



Production



Transportation



Refining



Quality assurance and quality control



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 thermoplastics and thermosets.



Thermoplastics

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)

- Sheeting for electrical cables
- Floor and wall coverings
- Automobile instrument panels

Polypropylene

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



Thermosets

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 reliable partner for efficient production processes



Raw material



Manufacturing



Quality control and failure analysis



Distribution and retail



Disposal and recycling



Key advantages of efficient production

With efficient production processes, you can achieve several benefits and improvements within a business or manufacturing environment. Some of the key advantages include :



Enhance

Operational
quality and
productivity of
entire facility



Increase

Employee
satisfaction and
productivity



Reduce

Operational
costs



Achieve

Continuous
improvement



Meet

Regulatory
compliance



Maximize

Facility
performance

Solutions for precise and accurate result

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 activities, temperature control of samples, water and gas production to support sample testing and debustering 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.



Claisse FORJ™

Key features :

- World's fastest, safest and most accurate fusion instrument for sample preparation
- Robust, reliable, high-throughput, repeatable results, easy to install and use

Key applications :

- Preparation of glass disks for XRF analysis and liquefied sample solutions for ICP and AA analyses
- Dissolution of fuel oil using borate fusion for ICP-OES analysis in accordance with ASTM D5184, IP377 and IP501



Hielscher Powerful Ultrasonic Laboratory Devices

Key features :

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

Key applications :

- Ultrasonically assisted desulphurization in hydrodesulphurization application
- Ultrasonication of enzymatic plastic recycling



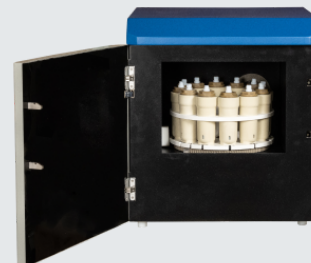
Questron Microwave Digestion System

Key features :

- **OPGuard™ pressure protection mechanism** is employed to safely monitor and regulate the temperature and pressure within each digestion 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

Key applications :

- Microwave digestion of specialty polymers for elemental analysis by ICP, ICP-MS and AA



Questron Automated Hot Block Digestion System

Key features :

- 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

Key applications :

- Kjeldahl digestion of agricultural and soil product for nitrogen and phosphorus analysis
- Acid digestion of petrochemicals for metal analysis



LabTech Centrifuge

Key features :

- Steady and soft deceleration with dynamic brake technology
- Anti-vibration and air-cooling system to minimize noise and heat dissipation
- Sturdy structured, two to three layered lid for noise reduction and safe operation
- Intuitive control interface with numeric input buttons displaying graphic pictograms for the setting and editing of running conditions

- In house customization upon specific requirement for rotors, sample containers and adaptors

Key applications :

- Crude oil analysis
- Drilling fluid testing
- Chemical synthesis
- Polymer processing



Welch Laboratory and Industrial Vacuum Pumps and Systems

Key features :

- 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

Key applications :

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



Labtech Organic Sample Preparation

Key features :

- Automated process that allows consistent and reproducible sample processing for larger sample preparation
- Efficient extraction methods for complex matrices, ensuring reliable results during subsequent analysis
- Low contamination possibility during sample preparation

Key applications :

- Analysis of hydrocarbon compounds in oil and gas matrices such as crude oil, petroleum products, and natural gas
- Additive analysis in plastic by evaluating performance and safety characteristics of plastic products
- Resin and adhesive analysis enables the assessment of adhesive strength, curing properties, and the identification of potential impurities



Lauda Hydro Water Bath

Key features :

- No dripping back of condensate – double walled lid with inner curvature
- Heating concept – homogenous bath temperature
- Controller – self explanatory, easy operation
- Operation – easy to handle from filling to cleaning
- Safety functions – 2-fold temperature protection

Key applications :

- Perform demulsibility studies in chemical, oil and gas, polymers and plastics
- Complementary equipment used in heat and stress testing to measure the mechanical properties of plastic materials



Lauda Cooling Thermostat

Key features :

- Large, clear legible LED display for easy and intuitive menu navigation with three buttons operation
- Automatic compressor control offers cost-effective cooling with 425W output, reducing energy consumption and equipment life
- Easy front cover removal for cool air inlet cleaning and maintenance

Key applications :

- Cooling of reaction mixtures
- Temperature control in distillation process in the chemical industry
- Used alongside printing machines, injection moulding equipment and laser processing machines



Nabertherm Muffle Furnaces up to 1400 °C

Key features :

- Maximum temperature up to 1400 °C
- Heating elements on support tubes ensure free heat radiation and a long service life
- Controller B510 (5 programs with each 4 segments)
- Solid state relays provide for low noise operation
- NTLog Basic for Nabertherm controller: recording of process data with USB-flash drive

Key applications :

- Calcination and pyrolysis in chemical processes, oil and gas applications and polymers and plastics production
- Determine volatile content in polymers and plastics production



Neptec Halios Lab Water Systems

Key features :

- Modern 10L storage tank with quality recirculation
- Compact and efficient production unit with minimum operating costs
- External tabletop dispenser with ergonomic design
- Innovative user interface with large intuitive touchscreen and real-time TOC monitoring
- Integrated leak-water detector
- Superior deionization and TOC removal

Key applications :

- Removes impurities such as ions, particles and organic compounds from water in research and development of new materials in polymers and plastics industry
- Ultrapure water ensures that there are minimal impurities or contaminants in the water used for sample preparation and analysis



Ohaus Balances

Key features :

- High precision and consistent readings
- Built with durable materials and advanced engineering for long-term reliability and performance
- Comes with calibration functions to ensure accurate readings and allow for periodic recalibration
- Integrated with advanced weighing technology to improve speed and accuracy

Key applications :

- Accurately measure and mix various chemicals and reagents in the formulation of drilling fluids, corrosion inhibitors, and other specialized chemicals used in oil and gas operations
- Weigh materials for batch production to ensure that each batch of plastic or polymer produced meets the specified requirements



LabPro Micropipette Series and Bottletop Dispenser

Key features :

Micropipette

- Range of volumes from 0.2 μl to 10,000 μl designed for maximum accuracy and precision
- Autoclavable to ensure minimal sample contamination in tightly regulated environments.

- Smooth movement
- Designed with a recirculation valve for bubble free dispensing
- Adjustable dispensing nozzles with adaptors to fit on a wide range of reagent bottles

Bottletop Dispenser

- Range of volumes from 0.25 to 100 ml, designed for excellent chemical compatibility

Key applications :

- Volumetric handling for general laboratory usage



Kirsch Laboratory Refrigerators and Freezers (ATEX Rated)

Key features :

- Design for intelligent cooling, achieving temperature stability and constant interior temperature
- Height adjustable shelves enable flexible storage and relocation
- The LABEX models are built according to directive 94/9/EC (ATEX 95), fulfilling the safety requirements for explosion-proof area of zone two (ATEX 94/(EG))

Key applications :

- Storage of chemical samples and solvents in environmental, petrochemicals and polymer industries



SHEL LAB Laboratory Oven

Key features :

- The modern laboratory and process facility
- Triple walls construction that keeps laboratories and oven surfaces cool for energy efficiency and safety
- Turbo blower-assisted airflow design and heavy duty motors that offers excellent temperature uniformly and fast temperature recovery

Key applications :

- Drilling fluid testing in oil and gas
- Curing and drying in coatings used in oil and gas equipment
- Thermal analysis in polymer samples
- Heat aging test of polymer components



ICSPI Benchtop Redux AFM

Key features :

- High spatial resolution to image surfaces with nanometer-scale resolution
- 3D Surface Topography Imaging with information about the surface roughness, morphology and other surface features.
- Nanoindentation enable the mechanical property analysis to evaluate the performance and durability of materials.

Key applications :

- Surface morphology and roughness analysis
- Mechanical property characterization
- Polymer and composite analysis
- Adhesion and friction studies
- Scale formation analysis on the minerals on the surface of oil and gas equipment
- Corrosion studies in oil and gas infrastructure



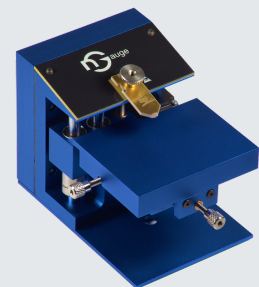
ICSPI Benchtop nGauge AFM

Key features :

- 3D nanoscale images in 3 clicks
- Go from sample loading to 3D nanoscale data in two minutes
- "One-click" automatic approach brings the tip to the sample in seconds
- Collect topography, morphology, film thickness, roughness and phase data
- Simple benchtop set-up and plug-and-play operation
- Ultra-durable probes capable of hundreds of scans

Key applications :

- Surface morphology and roughness analysis
- Polymer film thickness measurement
- Mechanical property mapping
- Defect detection
- Polymer blends and composites
- Nanoindentation and scratch testing
- R&D for polymer formulation



LabTech Rotary Evaporators

Key features :

- Digital rotation speed control and temperature display ensure accurate and stable unit operations
- PTFE seal loop ensures excellent elasticity and resistance at high temperature acid/ solvent corrosion
- Automatic lift-up protection in case of electric power failure
- Self calibration function and wide temperature range control from room temperature up to 230°C

Key applications :

- Solvent recycling and distillation
- Purification of chemical compounds
- Vacuum distillation of sensitive substances
- Liquid mixture separation
- High-boiling point solvents
- Fractional distillation



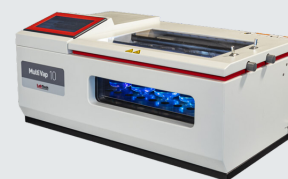
LabTech MultiVap10 Automated Concentrator

Key features :

- Vortex nitrogen purge to get the highest concentration efficiency.
- The location and direction of nitrogen purge can be adjusted according to the concentration cup size and sample volume
- Built-in digital nitrogen gas regulator to control nitrogen flow and evaporation speed
- Low liquid level and pressure alarms to ensure safe operations
- Touch screen control interface

Key applications :

- Environmental organic analysis
- Organic analysis
- Organic analytical chemistry
- Petroleum analysis
- Geochemistry



LabTech Liquid Nitrogen Generator

Key features :

- Extremely easy to use
- Remove the need for liquid nitrogen tanker deliveries
- Built-in low noise air compressor
- Built-in Oxygen analyzer with alarm
- PSA technology
- Built-in Dewar tank
- Color graphic touch screen
- Low noise level
- Unique interlock safety system

Key applications :

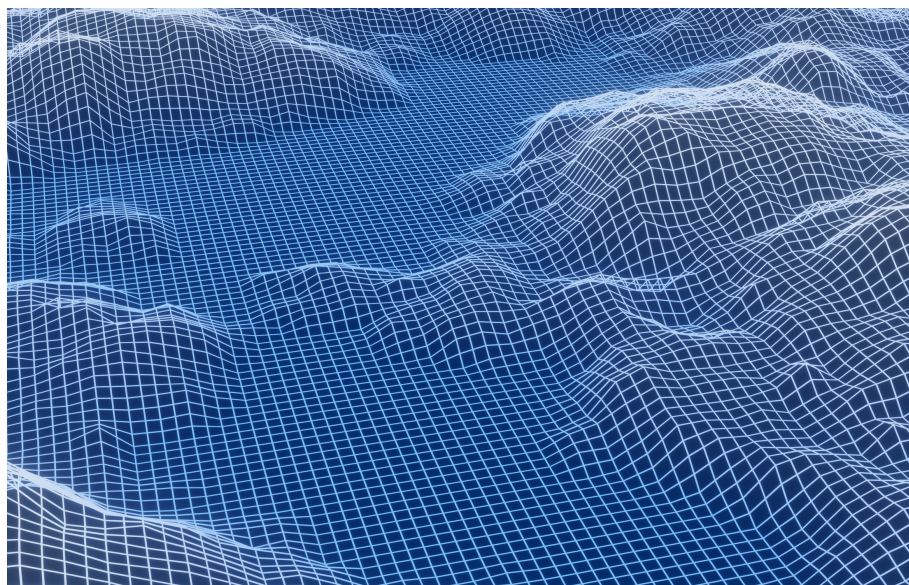
- Industries of different kinds (shrink-welding, CCD cameras, NMR spectrometers and MRI systems, high field superconducting magnets, spacecraft thermal testing, shielding materials from oxygen exposure, controlled evaporation or very low temperature reaction processes in chemistry)
- Cryogenic insulation in oil industry



Solutions for precise and accurate result

Physical and chemical characterization

Analyzing materials is vital for understanding the composition and traits of substances. This information directly impacts operational efficiency, productivity, and customer contentment. DKSH provides not just a wide array of laboratory equipment, but also leverages the expertise of our seasoned application experts and a proficient service support team, catering to a broad spectrum of quality control and research and development needs.



Biolin Force Tensiometer (Sigma 700/701)

Key features :

- Automated system, perform measurement with just one click
- Real-time data visualisation
- Robust design ensuring consistent performance over extended periods

Key applications :

- Surfactant research in detergent formulation, oil recovery, and emulsion stabilization
- Polymer characterisation in plastics and polymers industries
- Oil-water interfacial tension to enhance stability of oil-water mixtures
- Quality control and formulation optimization



Biolin Force Tensiometer (Sigma CMC)

Key features :

- Full critical micelle concentration (CMC) automation for high precision
- User-friendly and intuitive
- Autosearch software function reduces CMC measurement time by automatically increasing the number of data points only around the CMC point

Key applications :

- Measures critical micelle concentration, powder wettability, adhesion force, surface free energy and density
- Study interfacial rheology at the oil-water interface. The elasticity at the interface is known to correlate with the stability of the oil-water emulsion



Biolin Force Tensiometer (Sigma 702)

Key features :

- Stand-alone system
- Automated surface tension and interfacial tension measurement
- Simple open design and easy-to-use user interface

Key applications :

- Surface tension measurement optimizes formulation stability, wetting, and adhesion in chemical industry
- Measurement of interfacial tension for improved oil recovery technique
- To achieve surface tension balance in achieving defect free coating in the paint and coating industry



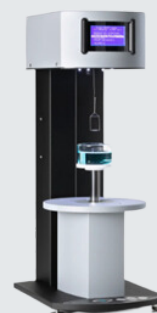
Biolin Force Tensiometer (Sigma 702ET) - Transformer Oil Analyzer

Key features :

- Standalone functionality - no need for an external computer
- Automated surface tension and interfacial tension
- Designed to simplify the work for you - it guides you through the measurement process of interfacial tension of transformer oil and water according to relevant standards

Key applications :

- Enhanced oil recovery method for reservoir improvement
- Improve emulsion characterisation to prevent oil-water emulsion formation in pipelines
- Ensure crude oil quality and stability, which impact transportation and refining processes
- Quality control of transformer oils, follows ASTM D971-12 and IEC 62961



Biolin QSense Omni

Key features :

- Fully automated multi-channel real-time monitoring of adsorption, desorption, and interaction between molecules and surfaces
- Direct injection fluidics
- High sensitivity for detecting surface mass and viscoelastic properties changes
- Flexible flow rate between channels

Key applications :

- Nanoscale analysis of surface interactions and reactions
- Study of polymer-surface interaction of polymer films and coatings
- Offers a possibility to view an enhanced oil recovery process in real-time, on a molecular level, via surfactant adsorption on multiple surfaces



Biolin QSense Pro

Key features :

- Fully automated liquid handling
- High-throughput
- Precise sample handling
- High precision flow-control
- Separately controlled syringe pumps
- Integrated cleaning station
- Compatible with external accessory chambers
- Temperature controlled measurement chamber

Key applications :

- Examine oil-water interfaces, oil-surface interactions, additives, surfactants, and recovery processes
- Study of polymer-surface interaction of polymer films and coatings



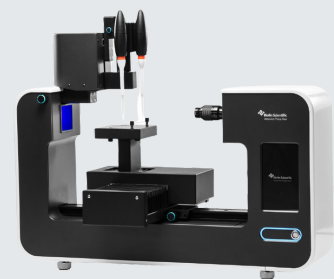
Biolin Attension Theta Flex

Key features :

- Reliable and repeatable measurements of wettability and adhesion
- Offers interfacial dilatational rheology functions
- With liquid handling customization options
- Accurate and repeatable measurements
- User-friendly interface for experimental setup, data acquisition, and analysis

Key applications :

- Contact angle measurement
- Surface tension measurement
- Surface free energy analysis
- Interfacial rheology measurement
- Adsorption studies
- Quality control and process optimization



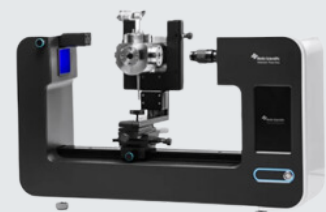
Biolin Attension Theta High Pressure

Key features :

- Convenient and versatile contact angle meter for measuring at high pressures and high temperatures for samples that require high pressure condition such as crude oil
- Designed for surfactants and brine
- The OneAttension software features live analysis and automatic measurements

Key applications :

- Enhanced oil recovery (EOR) studies
- Drilling fluid analysis - study of wettability and adhesion properties
- Investigate gas-water interfaces during oil and gas production



ASD High Resolution Spectroradiometer (NIR)

Key features :

- 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, improving time and cost savings

Key applications :

- Petroleum exploration
- Raw materials inspection and analysis



LUM LUMiReader® PSA

Key features :

- Specially designed PSA module allows for high resolution particle sizing and measurement of velocity distribution of separating particles
- Optical detector assembly features micro-scale spatial resolution
- Uses a patented tilt technology based on the Boycott effect

Key applications :

- Enhanced oil recovery method for reservoir improvement
- Improve emulsion characterisation to prevent oil-water emulsion formation in pipelines
- Ensure crude oil quality and stability, which impact transportation and refining processes
- Flocculation study of asphaltenes in heavy fuel oils



LUM LUMiFrac®

Key features :

- Employs CAT-Technology® (Centrifugal Adhesion Testing Technology) to stress multiple samples at once
- Test specimen for determination of tensile and shear strength
- Wide range of test forces (0.1 N up to 6.5 kN)
- Easy preparation of your test specimen
- Up to 8 samples are analysed under identical conditions

Key applications :

- Determination of adhesive and bonding strength of coatings
- Standardised short-time measurements for QC testing of the tensile and shear strength of bonded joints
- Long-term fatigue testing
- Shear and tensile pull-off test



LUM LUMiFuge®

Key features :

- Enables direct accelerated stability testing through high centrifugal force technique
- Measures extinction of light through the sample in real-time using STEP-Technology®
- Allows analysis of multiple samples simultaneously
- Works with high sample concentrations in a wide range of temperatures

Key applications :

- Emulsifier efficiency
- Surfactant efficiency
- Measure particle size distribution in polymer and crude oil dispersions
- Sedimentation stability evaluation in polymer and crude oil
- Rheological capabilities to analyze viscoelastic properties of polymer and crude oil dispersion
- Phase separation in crude oil



LUM LUMiReader® X-Ray

Key features :

- First dispersion analyzer analyzes dispersability, stability, separation, and consolidation in real-time for various materials
- Patented X-Ray vision technology combines STEP-Technology® for high spatial resolution
- Employs monochrome and parallel X-rays with a special crystal

Key applications :

- Study various instability mechanisms
- Detect concentration gradients within phases and sediment
- High-end analyser for QC, process monitoring and R & D
- In-situ analysis of transparent as well as opaque particulate systems
- Pigment segregation and sediment profiling



Grabner MiniVap VP/VPL Vision - Vapor Pressure

Key features :

- Best-in-class Sampling Pro™ valve design
- US EPA and CARB approved Grabner test method for highest accuracy
- Pressure range from 0-2000 kPa (290 psi)
- Cockpit™ software for remote multi-instrument and multi-location management
- Integrated shaker for Crude Oil with adjustable speed
- Unique 2-D Calibration™
- Customizable user templates

Key applications :

- Verify fuel sample's vapor pressure for quality, performance, and industry compliance in fuel testing laboratory
- Vapor pressure measurement for hydrocarbons
- Determination of the quality of the foam and the foaming kinetics in plastics
- Vapor pressure behavior of new petroleum formulations
- Measure absolute vapor pressure of paints, varnishes and solvents



Grabner Crude Oil Package for Vapor Pressure

Key features :

- Complies with crude oil / LPG standards
- Up to 70 bar pressure
- unique Floating Piston Cylinder allows safe sample transfer of "live crude oils" according to ASTM D3700
- Only 10 mL sample per test required
- Manual or pressurized filling possible

Key applications :

- ASTM D6377 - Standard Test Method for Determination of Vapor Pressure of Crude Oil: VPCR_x (Expansion Method)
- ASTM D323 - Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)
- ASTM D3700 - Standard Practice for Obtaining LPG Samples Using a Floating Piston Cylinder
- GOST R52340 - Determination of crude oil vapour pressure with expansion method



Grabner MINIFLASH FP Vision - Flash Point

Key features :

- Excellent correlation to Pensky Martens Method ASTM D93
- Maximum safety: continuous closed-cup flash point testing with no open flame
- Multiple patents for safety and performance features
- Total connectivity with COCKPIT Software

Key applications :

- Petroleum
- Biofuels
- Chemicals
- Flavors and fragrances
- Lube and used oils
- Paints and varnishes
- ASTM D6450 and D7094
- EN ISO 3679 and EN ISO 3680



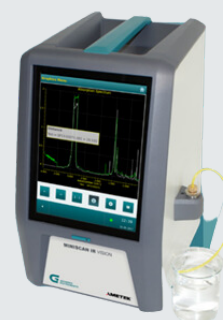
Grabner MINISCAN IR Vision - Fuel Analysis

Key features :

- Portable fuel analyzer for gasoline, diesel, jet fuel and biofuel lends
- Contamination Detection: Automatic Distance Analysis between Spectra
- Fast and comprehensive analysis of 100+ fuel parameters
- 10" Industrial Full Color Touchscreen
- Remote Access

Key applications :

- Gasoline, gasohol
- Diesel
- Jet Fuels
- Fuel Adulteration & Water
- Fuel grade alcohols



LM20 Microfluidizer® High Shear Fluid Processor

Key features :

- Diamond Interaction Chamber™ (ceramic chamber is standard on LM20-20 model)
- Digital pressure control
- 300 ml glass reservoir
- Integrated stroke counter with maintenance reminder
- Multiple languages (selectable by user)

Key applications :

- Production of stable suspensions in various liquid medium of choice
- Single and multi-walled carbon nanotubes and polymer resins



M110P Microfluidizer® - High Shear Homogenizer

Key features :

- Diamond Interaction Chamber™
- Highest shear rates in the market
- Achieve processing pressures up to 30,000 psi (2068 bar)
- Customizable options to suit every application
- 7" HMI color touchscreen control
- CE-compliant
- Guaranteed scalability
- Upgrade path to full cGMP model

Key applications :

- Create stable oil-water emulsions for improved oil recovery, drilling fluids, and lubricant
- Develop nanoemulsions for improved oil mobility and production efficiency
- Catalyst preparation in chemical industry
- Improved refinery processes, enhance product quality and efficiency



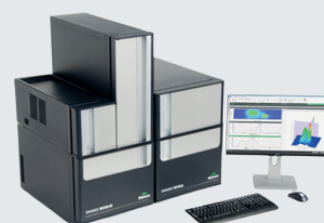
OMNISEC - Advanced Size Exclusion Chromatography System

Key features :

- Multi-detector array including light scattering, refractive index, UV and viscometer detectors
- Reliable measurements with market leading light scattering sensitivity
- Accurate molecular weight analysis
- Viscometer measures polymer intrinsic viscosity
- Software for easy data analysis, automation, and reporting

Key applications :

- Comprehensive molecular characterization of synthetic and natural polymers
- Measure conjugate and copolymer compositions
- Measure absolute molecular weight, intrinsic viscosity, hydrodynamic radius, Mark-Houwink parameters, radius of gyration, conformation and more
- Biopolymer research
- Polymer blends and formulations



Malvern Panalytical Mastersizer 3000 Particle Size Analyzer plus Hydro Insight

Key features :

- Combining both Vision Analytical's dynamic imaging expertise with Malvern Panalytical's flow cell technology, the samples are then photographed by a high-resolution digital camera at up to 127 frames per second
- Rapid high-resolution measurement enables precise particle size analysis with advanced data analysis
- Compatible with dry and wet sample analysis
- Complement imaging data with laser diffraction particle size distributions

Key applications :

- Particle size determination of wet and dry samples
- Formulation improvement of dispersions
- Study of material characterization in polymers and plastics



Malvern Panalytical Zetasizer Ultra Particle Size Analyzer

Key features :

- Multi-Angle Dynamic Light Scattering (MADLS) for characterization of multicomponent nanoparticle dispersions with improved resolution
- Dynamic Light Scattering (DLS) measures particle and molecule size, from below 1 nm to 10 μm
- Electrophoretic Light Scattering (ELS) measures the zeta potential of particles and molecules, indicating sample stability and/or propensity to aggregate
- Non-Invasive Back Scatter (NIBS) optics for versatile, high sensitivity particle and molecular size measurements
- ZS Xplorer software suite for simple and flexible method set-up and data analysis

Key applications :

- Colloidal Silica
- Zeta potential of Titanium Dioxide
- Paint, ink and coating formulations



Surface Measurement Systems Dynamic Vapor Sorption (DVS) Carbon Analyzer

Key features :

- CO₂ gravimetric sorption analyzer
- Water vapor sorption analyzer
- Co-adsorption of CO₂ and water vapor
- Easy access to kinetics, sorption/desorption and hysteresis measurements
- Patented Speed of Sound for CO₂ measurement
- True0 drying at 0.0% RH
- Dual configuration for broad range of CO₂ concentrations
 - High (0-98%)
 - Low (e.g. 400 ppm)

Key applications :

- Carbon capture
- Post-combustion capture (PCC)
- Carbon sequestration
- Temperature/moisture swing sorption
- Direct air capture (DAC)
- Solid sorbent characterization



Koehler Automatic Cleveland Open Cup Flash Point Tester

Key features :

- Conforms to ASTM D92 and related specifications
- Simple automation routine for easy operation
- Flash point operation for samples with an open cup flash point below 79°C
- Fire suppression system floods the instrument with inert gas in the event of a fire
- Equipped with emergency safety switch

Key applications :

- Volatility compliance control of gasoline-oxygenate blends and aviation gasolines
- Crude oil testing in the laboratory



Koehler SV4000 Saybolt Viscosity Bath for Automatic Viscosity Timing

Key features :

- Microprocessor control of temperature between ambient and 240 °C (464°F)
- Four tube capacity
- Dual digital displays show setpoint and actual temperature
- Selectable temperature scale - Celsius or Fahrenheit
- Automatic timing option for simplified, accurate measurement of efflux times
- Conforms to ASTM D88, D244, E102, and related specifications

Key applications :

- Fuel and lubricant development
- Fuel blending
- Petrochemical industry



Koehler Oxidation Stability Test Apparatus for Lubricating Greases

Key features :

- Conforms to ASTM D942 and related specifications
- Four sample testing capacity
- Available Oxidata® Pressure Measurement System
- Consists of Oxidation Bombs, Sample Dishes, Pressure Measuring & Recording Equipment, and Oxidation Bath

Key applications :

- Determine oxidation stability by exposing the sample to a measured oxygen flow at elevated temperature in the presence of metal catalyst
- Calculation of the service life of lubricants
- Determines the quality and type of base oils as well as additive packages used in lubricants



Claind DOMINUS NL - Nitrogen Generators

Key features :

- Eco mode minimizes air and energy consumption by automatically adjusting process time and phases
- Process self-adjustment to maintain desired purity level
- Pre-set operating programs with a long-life, high-sensitivity oxygen analyzer
- Continuous availability (24 hours a day, 7 days a week)

- Remotely control the generator by using the Claind4You portal via touchscreen display

Key applications :

- LC-MS application, carrier gas supply for FID, NPD, FPD, TCD detectors
- Welding for electronics
- Inertisation of chemical and biological processes



Claind PICO - Hydrogen Generators

Key features :

- Available in three models for 200-400-600 Nml/min flows with > 99.9999% purity
- Safety system with acoustic alarms, screen messages and automatic production stoppage in case of gas leaks
- Removable water tank for easy cleaning and water change
- Parallel connection up to 4 stackable tower configuration generators

Key applications :

- Designed for carrier gas in GC, GC-MSD and "FAST GC"
- Inertisation of chemical and biological processes
- As reducing gas used in thermal processing atmospheres



Claind H Series - Hydrogen Generators

Key features :

- Available in three models for 200-400-600 Nml/min flows with > 99.9999% purity
- Safety system with acoustic alarms, screen messages, and automatic gas leak shutdown
- Removable water tank for easy cleaning and water change
- Hydrogen production proportional to consumption, minimal instrument storage
- CPU with touch screen display, CAN-BUS for monitoring

generators, maintenance, alarm, and functional parameters

- Designed for carrier gas in GC, GC-MSD and "FAST GC"
- Parallel connection up to 4 stackable tower configuration generators

Key applications :

- Carrier gas
- In GC as flame fuel in FID, NPD, FPD detectors
- In ICP for collision reaction interface



Malvern Panalytical Zetium Spectrometer (Petro Edition)

Key features :

- The first XRF spectrometer to combine WDXRF and EDXRF test methods in a single instrument, with the inclusion of the innovative ED Core
- The 1 kW SST-R Rh tube delivers exceptional performance for the majority of applications (upgrades to 2.4, 3 and 4 kW available)
- SumXcore and Small Spot Mapping streamline analysis times and identify unexpected elements in samples
- SuperQ software offers a streamlined interface, advanced

matrix correction algorithms, ED deconvolution integration, and virtual analyst intelligence

Key applications :

- Sulfur in petroleum products in accordance with relevant ISO and ASTM international test methods
- Additives in unused lube oils according to ASTM 4927 and D6443
- Additives and wear metals in used lube oils
- Oil-trace package offers single calibration for various oils, fuels, and petrochemicals



Malvern Panalytical Epsilon 1 for Ultra Low Sulfur (ULS)

Key features :

- Compliant analysis with low running costs
- Maximum sensitivity for sulfur and chlorine by using vanadium as the anode material
- High-sensitivity excitation and detection components eliminate the helium gas requirement for ISO 13032 compliance and many other sulfur-related international test methods including ASTM D4294, ISO 20847, ISO 8754, IP496, IP336, and JIS K2541-4

- Provides spillage protection and safeguards the system's delicate heart

Key applications :

- Designed and manufactured for petrochemical applications, specifically for refineries where sulfur and chlorine are critical elements



Malvern Panalytical Epsilon 4 Benchtop XRF Spectrometer - Chemical, Oil and Gas

Key features :

- Flexible configurations for elemental analysis for higher sample throughput in refineries
- comply with international test methods and regulations, like TIER 3, ISO 13032, ISO 20847, ISO 8754, ASTM D4294, ASTM D4929, JIS K2541-4, IP 336 and IP 496.
- Unique detector electronics offer linear count rate capacity over

1,500,000 cps and resolution over 135 eV for better spectrum separation

Key applications :

- Analysis of oils, fuels and lubricating oils
- Additives and wear metals in fresh and used lubrication oils



Malvern Analytical Epsilon 4 Benchtop XRF Spectrometer - Polymers and Plastics

Key features :

- Validate the raw material quality and analyze additives, catalyst residues, and toxic elements in final products
- The unique calibration solutions for ADPOL, TOXEL, and RoHS ensure consumer safety and consistent product quality
- Require low running costs and non-destructive sample analysis

Key applications :

- RoHS-2/ WEEE / ELV analysis of polyolefins (PE,PP) in accordance with ASTM F2617
- Analysis of additives and catalyst residues in polyethylene using ADPOL standards



ASD FieldSpec Spectroradiometers

Key features :

- Solar spectrum range detection capacity (350 nm – 2500 nm) provides uniform VIS/NIR/SWIR data collection across the entire spectrum
- Rapid scan collection enables high-quality measurements in limited time
- Superior signal throughput, signal-to-noise and radiometric performance
- Single element detectors ensure seamless measurements, eliminating missing pixels, data

interpolation, and smoothing with SWIR instruments

Key applications :

- Petroleum exploration and raw materials inspection and analysis
- Ground truthing
- Biomass analysis
- Spectral remote sensing



Schmidt + Haensch Refractometer

Key features :

- Measure both solid and liquid samples
- Modular and connectable to web browsers, e.g. Google Chrome, via smartphone or tablet
- The VariRef allows multi-point calibration for full measurement range
- Fast temperature control, rapid measuring results
- Easy cleaning with its ergonomic flat shape

Key applications :

- Controlling caprolactam-water ratio for quality assurance in polyamide or nylon synthesis
- Determine density and refractive index (ASTM D1747-99) of hydrocarbon liquids
- Measure antifreeze concentration and freezing point depression in thermal liquid
- Identifying polymer film properties, including thickness and composition



Postnova Analytics TF2000 Thermal Field-Flow Fractionation

Key features :

- The most advanced system for separation of natural and synthetic polymers and gel particles
- Advanced channel design, sample introduction, and cooling system enhance resolution and faster separation time
- Direct sample injection, no sample preparation steps necessary.

- Low shear forces during separation protect sample integrity

Key applications :

- Latex coatings
- Nanoparticles
- High-tech materials
- Technical/ industrial polymers
- Polymers and particles ranging from 10 kDa to 100 MDa in organic/aqueous solvents



Schmidt + Haensch Benchtop VariDens Density Meter

Key features :

- Modular use but connectable to the internet browser and tablet or smartphone
- User-friendly interface for multiple users
- Rapid temperature control
- Easy cleaning
- Compliant with 21 CFR Part 11
- ELN/LIMS ready

Key applications :

- API gravity determination in crude oil
- Measurement of liquid parameters
- Purity control of raw materials



Sherwood Magnetic Susceptibility Balances

Key features :

- A digital read-out simplifies magnetic susceptibility calculation, saving time and effort
- Compact, lightweight, portable
- Microprocessor-controlled balance detects magnetic properties of gases, liquids, and solids

Key applications :

- Quality control of catalysts in the petrochemical and plastics industries
- Determination of sodium in fuel oil
- Chemical precipitates
- PVC
- Colloidal Graphite in Oil
- Measurement of various diamagnetic and paramagnetic materials



Sherwood Flame Photometer

Key features :

- Single channel analogue flame photometer which can analyse up to five elements (Na, K, Li, Ca, Ba)
- BlueNotes software eases data collection, storage, manipulation and report generation
- High sensitivity with fine manual control of air, and stable flame design
- Ergonomic design, front loading, and an unobstructed sample area for easy cleaning

Key applications :

- Determination of sodium in fuel oil
- Determination of lithium in greases
- Chemical precipitates
- PVC
- Ion-exchange resins
- Colloidal Graphite in Oil
- Cellulose
- QC of catalysts in the petrochemical and plastics industries



Sherwood Chloride Analyser

Key features :

- The coulometric method is very robust and versatile allowing accurate and reliable weak endpoint salt and salinity measurements with readout range from 10-999 mg/l
- Ergonomically designed for ease of use and maintenance
- Coulometric titration method to generate Silver Ions, detecting conductivity changes when excess is detected by detector electrodes

Key applications :

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



SI Analytics TitroLine® 7000 Titrator

Key features :

- High resolution pH/mV-electrode and temperature inputs for pH, ISE, redox (ORP) or photometric titrations
- Polarizable electrode input for set endpoint titrations („Dead-stop“)
- Linear (fixed increment) and dynamic equivalence point titration mode
- Titration to pH/mV and μ A-endpoint

Key applications :

- Suitable for use in the chemical, petrochemical, and plastic industries
- Measurement of total base number (“TBN”) in oils
- Measurement of total acidity in mineral oils (“TAN“)
- Measurement of epoxy content in petrochemical



SI Analytics TitroLine® 7500 KF Titrator

Key features :

- Online display of curve and measurement drift during titration
- High visibility, full color display that can be easily viewed from a distance and at extreme angles
- Reagent data is securely stored in the intelligent and interchangeable modules
- Suitable for dosing tasks and sample preparation
- Polarizable electrode input for set endpoint titrations ("Dead-stop" + KF)

Key applications :

- Oils and lubricants, creams, pastes
- Viscous materials (bitumen, tar, sewage sludge)
- Petrochemicals
- Measurement of total base number ("TBN") in oils
- Measurement of total acidity in mineral oils ("TAN")
- Measurement of epoxy content in petrochemical



SI Analytics Viscometry Autosampling System AVS® Pro III

Key features :

- Fully automatic and highly precise measuring station.
- Time measurement with an accuracy of ± 0.01 s
- Designed for highly aggressive media
- ProClean system eliminates the need for manual filtration of samples
- Configurable for individual use, including rinsing, solvents, and viscometers

Key applications :

- Measurement of intrinsic viscosity, viscosity number and K value for plastics
- Measure viscosity of mineral oil products
- Worldwide, most producers of polyamide, polyesters and other polymers trust in the AVS® Pro III



SI Analytics Ubbelohde Viscometer (ASTM), Calibrated for Manual Measurement

Key features :

- Ubbelohde glass capillary viscometer according to ASTM D446 and ISO 3105
- Filling volume: 15 ml to 20 ml
- Overall length: ca. 285 mm
- Calibrated for manual time measurement, using a stop watch
- Include calibration certificate

Key applications :

- Viscosity measurement of liquid chemicals
- Process optimization
- Formulation development for chemical and polymer products
- Polymer solution characterization
- Adhesive and coating applications
- Quality assurance for polymer



Streamlined Precision for Maximum Efficiency in Inline and Online Operations

Production (online and inline)

With the latest technology available, material analysis procedures can now be seamlessly overseen and enhanced via online and inline systems. These systems offer swift, real-time data, enabling prompt adjustments and control of process settings. DKSH's instruments and solutions contribute significantly to boosting overall efficiency and optimizing process costs in manufacturing and refining processes.



Grabner MiniVap On-Line RVP Analyzer

Key features :

- Highest precision and performance
- US-EPA and CARB approved method
- Fully automatic calibration, verification and pressure correction
- Built-in diagnostic and safety features
- Modular configuration
 - Multiple sample streams
 - Sample conditioning systems
 - Optional sample recovery system

Key applications :

- Quality inspection of fuels
- Determination of vapor pressure of gasoline (D6378 / D5191), crude oil (D6377 / D323), liquid petroleum gas (D6897 / D1267) and the vapor-liquid ratio temperature of gasoline (D5188)



Schmidt + Haensch Compact in-line Refractometer iPR

Key features :

- 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, 24DC) or relay

which is capable of controlling the cleaning of measuring prism via a magnet valve, giving a more efficient cleaning process

Key applications :

- Concentration measurement of solvents in the chemical fibre production. E.g. sulphuric acid, hydrochloric acid, phosphoric acid, caustic soda, alkali, DMF/DMSO/DMAC and other solvents
- Concentration of urea during the production of fuel additive
- Ammonia concentration in fertiliser production
- Interface detection in the oil phase separation



Malvern Panalytical On-line Particle Size Analyzer (Insitec Systems)

Key features :

- Insitec systems measure particles in the size range 0.1 μm to 2.5mm and deliver the online continuous particle size analysis needed for efficient, cost-effective monitoring and control of industrial processes from dry powder 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 results to ensure the mill operates closer to target limits

Key applications :

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



Malvern Panalytical Epsilon XFlow

Key features :

- Fast, simultaneous multi-element analysis
- Real-time results
- Leading EDXRF Technology
- Highly repeatable results enabled by the latest flow cell technology
- Interface to manufacturing execution systems
- Proven user interface for easy operation and maintenance
- Applicable for a wide range of liquid processes

Key application :

- Accurate blending of ultra low sulfur fuels
- Control real-time desulfurization processes to optimize margins
- Enable pro-active reaction on catalyst killers (Fe, Ni, V) to extend catalyst life-time
- Control the blending and production of lubrication oils
- Accurate dosing of additives in polymers
- Monitor homogenous catalysts in polymerization processes
- Control PTA production processes



LabVantage Oil and Gas LIMS

Key features :

- Centrally hosted for global deployment, supporting hundreds of concurrent users
- Improve operational efficiency with laboratory instrumentation and SAP ERP systems
- Real-time information access improves production process efficiency
- Eliminate paper-based systems and manual processes for digital collection
- Visualize and monitor environmental testing compliance using image-maps

Key application :

- Batch & Sample Management
- Hierarchical sample collection, automated scheduling, and hot-spot visualization for facility excursions using image-maps
- Instrument Maintenance and Calibration
- Pre-configured Master Data
- Standard reports, dashboards, and visualizations for presenting transactional data
- Validation and verification of product shipment specifications for batch processing



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