



INDUSTRIAL LABORATORIES SOLUTIONS



**Diamond
SPECTRUM**

شركة الطيف الماسية للأجهزة العلمية والمختبرات
Diamond Spectrum for Scientific & Laboratory Equipment Co.

PART OF TAAWON GROUP

CHOICE OF EXCELLENCE



CHOICE OF EXCELLENCE



ABOUT TAAWON GROUP

TAAWON GROUP

Taawon Group is specialized in the supplies of excellence level of high quality, compatible and best value laboratory and industrial equipment, disposables & chemical products in different market segments such as pharmaceuticals and bio-pharmaceuticals, food & beverage, chemicals & petrochemicals, oil & gas, academic institutions & research centers, IVF & genetics labs, hospitals & medical labs, environmental & testing labs and last but not least forensics labs.

Taawon Group was established in 2008 where the headquarter is based in Jordan and the group has expanded its activities internationally to reach Saudi Arabia (Diamond Spectrum), United Arab Emirates (Altayf Althahabi - TTSL) and Poland (Parameter EU). This was a result of the emerged need for a local supplier of laboratory supplies & solutions that has arised and increased to become a necessity after all.

We are focused on customers needs and we place their expectations at the central of our plans and actions. We understand the similarities and differences of markerts worldwide thats why we actively and continuously seek out improvements to the local and global markets.

We understand customers interests and deep concerns which we support to meet their goals with conviction. We embrace our work by adopting a target-focused, process-oriented and solution-driven approach besides facilitating cooperation among employees and customers. We value our customers by listening carefully, playing an active role and offering critical analysis as well as addressing conflicts dealing with them sensibly.



CONSUMABLES
STABILITY ROOMS
CHROMATOGRAPHY
DIGESTION SYSTEM ENVIRONMENT MONITORING
NIR SPECTROSCOPY
WAREHOUSE MONITORING **SPRAY DRYING**
LAB WEIGHING
STERILIZATION **EVAPORATION SYSTEMS**
ANALYTICAL INSTRUMENTS
SEPARATION **EXTRACTION SYSTEM**
LIQUID HANDLING SOLUTIONS
THERMAL ANALYSIS
DATA LOGGING
CALIBRATION

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WEIGHING SOLUTIONS

METTLER TOLEDO

LABORATORY WEIGHING SOLUTIONS

Complete outstanding quality and functionality are delivered through METTLER TOLEDO's comprehensive range of laboratory balances that provide users with flexibility and precision.

Enjoy the highest level of accuracy and reproducibility with these analytical, precision and micro & Ultra-micro balances. With a vast range of proven innovative technologies and advanced quality assurance functions, you can be sure of fast, reliable and valid results every time you weigh.

LABORATORY WEIGHING SOLUTIONS

ANALYTICAL BALANCES

Get the ultimate combination of high performance, reliability, robustness and ease-of-use with METTLER TOLEDO's **analytical and semi analytical balances** that measure mass to the highest degree of precision.

Covering a wide range of readability from 0.001 mg to 1.0 mg, minimum weight from 4.0 mg to 160.0 mg and maximum capacities from 22.0 g up to 520.0 g. You also have the choice to upgrade your balance with powder and liquid dispensing modules and benefit from fully automatic weighing, solution preparation and dilutions as well to the wide range of accessories of dosing modules, printers, software, density kits, antistatic solutions and much more!

Analytical balances come in three different levels, each level has different models:

- Excellence Level: XPR, XSR and XPR Automatic Balances.
- Advanced Level: MS and ML-T Balances
- Standard Level: ME Balances

All Excellence Level balances are 21 CFR Part 11 Compliant.



PRECISION BALANCES

Find all your weighing needs in METTLER TOLEDO's **Precision balances** from reliability and high-precision weighing to robustness and handling of harsh industrial conditions.

Covering a wide range of readability from 0.01 mg to 1000.0 mg, minimum weight from 1.6 mg to 820.0 g and maximum capacities from 120.0 g up to 64.1 g. Complement your balance with LabX® software set up for seamless integration and to ensure data integrity of the balance.

Precision balances come in three different levels, each level has different models:

- Excellence Level: XPR and XSR Balances
- Advanced Level: MS Balances
- Standard Level: ME and PL-T

All Excellence Level balances are 21 CFR Part 11 Compliant.



LABORATORY WEIGHING SOLUTIONS

MICROBALANCES & ULTRA MICRO BALANCES

METTLER TOLEDO's **microbalances** and **ultra-microbalances** weigh even the smallest amounts of samples instantly with great performance and high quality.

A micro balance or ultra-microbalance can deliver the highest precision of all lab balances. This high sensitivity in micro balance design allows for the weighing of sample quantities with a minimum weight as low as 0.3 mg and a capacity of up to 52.0 g with readability down to 1 µg (0.000001g).

Ultra microbalances offer an incredible full resolution of 61 million digits, with a capacity of 10.1 g and 0.1 µg readability (0.0000001g).

Mettler Toledo's portfolio includes a micro-analytical balance. It has a readability like a micro balance, 1 µg, and the shape of an analytical balance, with an outer and inner weighing chamber.

The XPE micro-analytical balances deliver the highest capacity, coupled with the lowest possible minimum weight . This enables dosing of very small amounts directly into a "large" tare containers.

Micro and Ultra-Microbalances features:

- Automatic doors
- Leveling guidance
- Password protection
- Users management
- Automatic Static Detection
- Static free samples
- Modern and user-friendly interface
- Ensured data integrity with LabX
- Smallest footprint for space-saving
- GWP approved

All Micro and Ultramicro balances are 21 CFR Part 11 Compliant.



LABORATORY WEIGHING SOLUTIONS

GO BEYOND WEIGHING



Specialized **weighing pans** can make the difference between a process that is easy and repeatable and one that is not

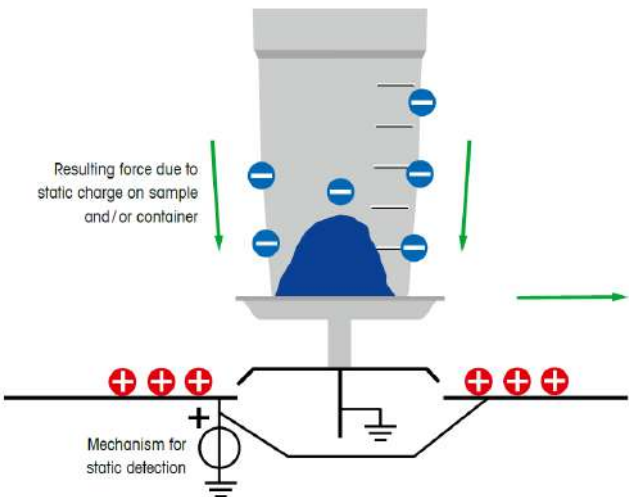
XPR analytical balances are easily extended to provide automated powder and / or liquid dosing. Automated dosing offers a level of accuracy and user safety which is impossible to match in a manual process.



Whether you want continuous results **printing** or sample **labelling** with IDs and bar codes, just plug your unit in and start printing



The **StatusLight™** built into the terminal uses color to indicate intuitively the status of the balance: Green means ready, yellow is a warning and errors are shown in red.



Anti-Static Solutions

Thanks to the patented StaticDetect function, XPR micro-analytical and analytical balances detect electrostatic charges on samples and containers and provide a warning to the user. With the use of an ionizer, electrostatic charges can be completely eliminated to avoid any influence on the weighing result.

LABORATORY WEIGHING SOLUTIONS

AUTOMATED POWDER & LIQUID DOSING

METTLER TOLEDO offers a wide range of **automated powder and liquid dosing and dispensing** instruments with the highest accuracy and safety.

Mettler Toledo's Automated Powder and Liquid Dosing features:

- High resolutions of 0.1 mg, 0.01 mg, 5 µg and 1 µg
- Fully automated process with unattended sample preparation
- Up to 30 samples can be dispensed in one run
- Full Traceability with RFID and barcode identification
- Automated powder dispensing from 1 mg to grams static-free
- Automatic data handling with SOP user guidance
- Ease-of-use
- Contamination-free dosing with one head for each powder
- Highly accurate concentrations



MOISTURE ANALYZER

METTLER TOLEDO's wide range of **moisture analyzers** are reliable, easy-to-use and high quality instruments with the highest measuring performance.

Mettler Toledo's Moisture Analyzers features are:

- Reliable results thanks to precise temperature control with halogen heating technology.
- Consistent measuring performance thanks to robust construction, comprehensive service offering and built-in tests of performance
- Intuitive operation with stepwise user guidance to prevent errors in daily operation
- Versatile data transfer and data management
- User-friendly operation
- Convenient reporting with barcode reader for ID management



LABORATORY WEIGHING SOLUTIONS

AUTOMATED FOR YOUR CONVENIENCE

Automated dosing with Quantos powder and liquid dispensing modules enables you to achieve the highest level of accuracy and safety in sample preparation. It can also reduce minimum weight by up to %30.



Draft shields provide environmental protection which is important when using balances with fine readability less than 0.001 g



Specialized weighing pans can make the difference between a process that is easy and repeatable and one that is not



Whether you want continuous results printing or sample labelling with IDs and bar codes, all your laboratory printing needs are covered. Just plug your unit in and start printing



LabX® software brings power to your laboratory bench with automatic data handling, high process security and full SOP user guidance. Full step-by-step guidance is brought directly to the instrument touch screen.

The StatusLight™ built into the terminal uses color to indicate intuitively the status of the balance: Green means ready, yellow is a warning and errors are shown in red.



LABORATORY WEIGHING SOLUTIONS

MOISTURE CONTENT IS NOT TO BE OVERLOOKED

Rugged by design

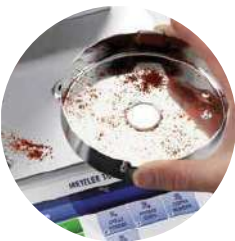
Free, unobstructed access to the weighing chamber from all sides simplifies handling of samples



Halogen heating guarantees Accurate temperature control between 40-230 °C



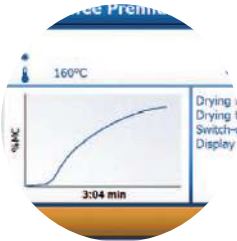
The instrument can be adjusted and tested at **operating temperature**, ensuring that the instrument is performing optimally under your specific working conditions.



Flat stainless steel surfaces, Easy to clean and robust



Real-time **drying curve** for Progress overview



Bright and sharp **touch-screen** that is Easy to read with Graphical user guidance Intuitive for anyone to operate



Professional level of moisture analyzers come with an **innovative hanging weighing pan** concept which moves the weighing cell away from spilled samples and from the heat of the sample chamber, and improves measurement results by eliminating adverse thermal effects on the weighing cell.



Aluminium sample pans and glass fiber filters are suitable for all applications to ensure best repeatability

LABORATORY WEIGHING SOLUTIONS

MASS COMPARATORS

Vacuum Mass Comparators

With its unrivaled repeatability Mettler Toledo's vacuum mass comparators are used by National Metrology Institutes to improve their measurement accuracy by performing mass determination at constant pressure or vacuum with up to 6 weights, fully automated and through Front Window, Load-Lock.

The METTLER TOLEDO M_one and M_10 comparators are designed for various artefacts with weighing capacity up to 10 kg and readability down to 0.1 µg that deliver results that are accurate to within 100 nanograms, whilst offering unique flexibility features.



Automated Mass Comparators

Solutions like AX automated weighing systems meet the highest accuracy requirements with a resolution up to 0.1 µg and a capacity up to 64 kg. Errors are eliminated due to software-controlled automatic operation of the -4place weight handlers. Measurement data is securely stored and handling effort minimized.



Robotic Mass Comparators

These comparators allow you to avoid a time-consuming and labor-intensive process of manual weight calibration.

Automating process with METTLER TOLEDO's e_Line and a_Line mass comparators provides traceability and assured results in significantly less time.

By automating the weight handling any errors in weight mix ups or eccentric weight placement are prevented. All data is transmitted online preventing of any transcription errors.





WEIGHING SOLUTIONS

METTLER TOLEDO

INDUSTRIAL WEIGHING SOLUTIONS

METTLER TOLEDO is also specialized in the high-performance industrial and process scales, interfaces, software, and their accessories. These industrial scales and systems are designed to be the most innovative, accurate and reliable systems of their kind.

INDUSTRIAL WEIGHING SOLUTIONS

BENCH SCALES, FLOOR SCALES & PALLET SCALES

Bench Scales and Portable Scales

Mettler Toledo's Bench Scales and Portable Scales are ideal for maximum efficiency in industrial applications with capacities up to 60 kg and a readability down to 0.2 g

The broad range of bench and portable scales includes:

- InVision Smart Scale with error-free operation.
- Bench Scales for a wide range of applications.
- Automotive Paint Mixing Scale.
- Industrial Basics Scales for basic weighing applications.



Platform Scales

Industrial weighing solutions that measure objects of very small size or up to 600kg at high accuracy. Their low-profile, ergonomic design increases operator efficiency, and complementary, user-friendly software solutions can be added to enhance overall productivity.



Floor Scales and Heavy-Duty Scales

Mettler Toledo offers maximized uptime and increased productivity floor scales and heavy-duty scales:

- Industrial Basics Scales for basic weighing applications with capacity up to 3000 kg.
- Floor Scales / Floor Scale with Ramp for heavy-duty weighing
- Pallet, Pallet Truck and Mobile Scales



Pallet, Pallet Truck and Mobile Scales

Mettler Toledo's Pallet Scales & Pallet Scale Calibration are easy-to-use and accurate thanks to the following features:

- Rugged construction with hot-galvanized steel or stainless steel for long-term durability.
- Safe, simple and easy loading procedures.
- Corrosion/explosion resistant.
- Shock absorbers that ensure secure, accurate weighing.



INDUSTRIAL WEIGHING SOLUTIONS

SCALE INDICATORS, LOAD CELLS & SOFWTARES

Scale Indicator & Scale Controller Systems

Mettler Toledo offers a variety of scales indicators and scale controller systems:

- Tank, Silo, Hopper and Bin Scale Indicators
- Vehicle Scale Indicators for vehicle and rail-weighing
- Bench, Portable and Floor Scale Indicators
- Hazardous-Area Applications Scale Indicators
- Custom Programmable Scale Indicators
- Scale Indicators and Transmitters for OEMs and System Integrators



Load Cell, Weigh Module, Load Sensor

Mettler Toledo's weigh modules, load cells and weight sensors and tailor made to the needs of instrument and machine manufacturers. Weight sensor / high precision load cells features high accuracy, high speed, weigh modules. Mettler Toledo offers a range of load cell, compression weigh module, load sensor, tension weigh modules, beam load cells, ring load cells and S load cells.

- Tanks on concrete or steel foundation.
- Wide capacity ranges from 5 kg up to 300 ton per weigh.
- Versatile usage for most industries.
- Reliable performance.
- Stainless steel version for food and pharma usage.



Softwares for Formulation & Statistical Quality Control

FreeWeigh.NET offers all relevant tools to avoid underfilling and comply with legislations including 21 CFR Part 11 Modules and Audit Trail. Also, it analyzes weighing data to continuously monitor critical process parameters. Its modular license model allows system adoption for any need.

FormWeigh.Net reduces operator errors and material waste to a minimum which results in more predictable manufacturing and greater profitability. It also delivers process transparency and automated batch evidence reporting. Easily achieved adherence to global food safety standards as well as full compliance with 21 CFR Part 11 for pharmaceutical and nutraceutical industries.



INDUSTRIAL WEIGHING SOLUTIONS

ALWAYS ROBUST, ACCURATE & RELIABLE

Bar code Scanner simplify material lot and batch tracking



Configure equipment, **create and manage recipes** and orders, generates track and trace data and reports



Meaningful diagrams help users to identify quality issues in the production process.



terminal prints batch data automatically and on demand

Hinged load plates are supported by **pneumatic springs** to guarantee safe opening and closing and provide fast access for service

Lifts **reduce downtime** required for cleaning which increases productivity



The robust **load-cell housing** features integrated overload protection and durable mechanical interfaces.



The built-in **lever and bearing mechanical structure** ensures the scale maintains peak performance, regardless of the application.



Weighing Platforms can be directly connected to any automation system.



For optimum **corrosion prevention**, the entire platform is made out of high-grade stainless steel

INDUSTRIAL WEIGHING SOLUTIONS

SOFTWARES AND SCALES DRIVERS

FormWeigh.Net

Recipe Management and Material Dispensing System that provides complete control over the recipe management and material dispensing process, which helps to ensure that each batch is made accurately and efficiently. Operator errors and material waste are eliminated resulting in greater profitability and predictable manufacturing.

Every action in FormWeigh.Net is automatically recorded, providing complete process transparency and automated batch evidence reporting. Quality checks are enforced directly at the weighing stations and are electronically documented for full track and trace. Adherence to global food safety standards as well as full compliance with 21 CFR Part 11 for pharmaceutical and nutraceutical industries is easily achieved.



FreeWeigh.NET

A Statistical Quality and Process Control is a PC based software solution that allows to control and fine tune perfectly customer production process. Modular license model allows system adoption to any needs. Flexibility and ease of use allows further optimization of production, increase quality and productivity.

FreeWeigh.Net provides all relevant tools to avoid underfilling and comply with legal legislations, including its Audit Trail and 21 CFR Part 11 Modules. At the same time production process is still monitored to reduce undesired overfilling and provide your production cost optimization.



Data Collection and Monitoring Softwares

Eliminate the need to enter data manually on a terminal, and skip directly to entering data on a PC. By streamlining this process, you save effort and increase processing speed up-to 20X's.

Use Data+ across multiple machines to improve consistency in processing and reporting. Achieve consistent quality that is reliable and easily traceable especially during an audit.

Use Collect+ to gain insight into your production, whether your portioning food products, counting metal or plastic components, or monitoring levels in your chemical tanks. Watch the video to see what Collect+ can do for you.



ANALYTICAL SOLUTIONS

METTLER TOLEDO

ANALYTICAL INSTRUMENTS

METTLER TOLEDO's offer a whole range of analytical Instruments for potentiometric titrators and Karl Fischer titrations, besides the range of basic handhelds and flexible multi-channel meters, METTLER TOLEDO offers a full spectrum of premium quality pH, conductivity, DO and ion meters as well as refractometers and UV/VIS Spectrophotometers and thermal analysis instrumentation.

C-Therm delivers thermal conductivity instruments that simplifies thermal conductivity and thermal effusivity analysis for researchers and material scientists.

ANALYTICAL INSTRUMENTS

TITRATORS & PH METERS & DENSITY METERS

Volumetric, Potentiometric & Karl Fischer Titrators

Mettler Toledo offers a complete range of titrators and accessories to cover your whole titration applications:

- Excellence Titrators with complete application range including Karl Fischer and full user and data management including FDA 21 CFR 11 with LabX software.
- Potentiometric Compact Titrators that are suitable for expert and routine user groups and pre-programmed optimized method setup.
- Karl Fischer Titrators with volumetric and coulometric autotitrators, Easy One Click water determination and InMotion Karl Fischer oven autosampler for full automation
- High-throughput titration systems with autosampler systems and liquid handling automation.



pH and Conductivity Meters

These meters include the measurement of pH, ion concentration, ORP and dissolved oxygen as below:

- Benchtop pH meter for the highest precision and solid compliance.
- Portable pH meter for mobile pH applications in the lab and field.
- Analytical sensors for measurement of pH, ORP, conductivity, ion concentration & DO.
- pH standard solutions to ensure high measurement precision.
- pH automation & software for higher productivity & compliance.



Density Meters

Mettler Toledo's wide range of accurate, fast and intuitive benchtop and portable digital density meters are divided into the following types:

- Excellence density meters that measure almost any sample with high reliability and guaranteed precision
- Standard EasyPlus density meters that assure high accurate results
- Portable density meter that measures different types of samples within seconds.
- Automated density measurement for increased results repeatability and reliability.
- Multiparameter systems which measure all parameter at once for increased data quality.



ANALYTICAL INSTRUMENTS

UV/VIS SPECTROPHOTOMETER & REFRACTOMETERS

Spectrophotometer UV/VIS

Mettler Toledo's UV VIS Micro-Volume Spectrophotometry features:

- Wide concentration ranges without further dilutions.
- Secure locking of the arm during measurement.
- Automatic or manual pathlength selection.
- Ergonomic Design that allows a comfortable and safe workflow.
- Open access to the sample area.
- Fast and easy cleaning of the instrument with the removable stainless steel top cover.
- The ability to choose between two measurement modes.
- Easy and intuitive way to run tasks with One Click Operation.
- The instrument can be operated as stand-alone with no need of PC.
- Compact versatile layout of optical components.



Refractometer

Mettler Toledo's digital refractometers (Brix meters) are designed for use in the production line and in the laboratory and can convert the measured refractive index into other units like HFCS, Alcohol %, Brix and more.

Mettler Toledo's digital refractometers include:

- Excellence refractometers that measure any sample with high reliability and precision.
- Standard EasyPlus refractometers with remarkably simple user interface & accurate results.
- Portable refractometers that can be used in the lab and on-the-go.
- Automated refractometry measurement
- Multiparameter system.
- Refractometry software & accessories.



ANALYTICAL INSTRUMENTS

MELTING POINT & DROPPING POINT

Melting Point Apparatus

There is no need for continuous visual observation with our Excellence Melting Point Systems. The measurement is done fully automatically, detection of transmitted light combined with video observation that ensures that the melting point, melting range, slip melting point, boiling point, and cloud point measurements are reliable.

- Simple One Click™ Operation

The One Click™ user interface enables users to start measurements with a single click of the button.

- Color video recording

With the high resolution on-screen video, measurements can be observed in real time or conveniently replayed to verify the results.

- Trusted performance

The instrument offers automatic detection of melting, boiling, cloud, and slip melting points all in one.



Dropping Point Apparatus

Mettler Toledo's Dropping Point Excellence System facilitates the measurement of the dropping point or softening point of pitch, asphalt, resins, and many more materials. Manual determinations can be performed automatically, and videos and results are stored on the instrument or can be exported to a network.

- Simple One Click™ Operation

The One Click™ user interface enables users to start measurements with a single click of the button.

- Color video recording

With the high resolution on-screen video, measurements can be observed in real time or conveniently replayed to verify the results.

- Trusted performance

With the visual camera observation and digital image analysis, highly accurate dropping/softening point temperatures are obtained fully automatically.



ANALYTICAL INSTRUMENTS

EXCELLENCE TITRATORS

Security thanks to real Plug & Play

Automatic burette recognition feature ensures that all quality-relevant data are promptly read in and checked. The password-protected user management system coupled with user rights guarantees that critical data cannot be changed by mistake.



Stay connected with a glance

One quick glance at the LED indicator light on the top of towers lets you know if your analysis is still running, needs your attention or is ready to run more samples.

Powerful cleaning for powerful automation Rinse off your testing components with the appropriate solvent with a high powered multi-angle rinse sequence to ensure no carry over.



Complete efficiency – One Click® Titration The Titration Excellence line ensures you get your results easily and quickly. You can define a Shortcut for any operation you like and store it on your Homescreen.



Regardless of which submenu you are currently in, one single keystroke on the Home button takes you directly back to your Homescreen. Here you have added security: you are prompted to save your changes.



ANALYTICAL INSTRUMENTS

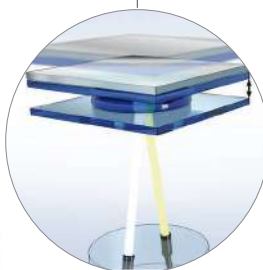
UV VIS SPECTROSCOPIC WORKFLOWS

LockPath ensures that the available wavelengths at 0.1 and 1 mm are accurately defined. Thanks to the rugged patented design, pathlength drift is excluded.



Fully automated **multi-parameter measurements** e.g.:

- Determination of absorbance at specific wavelength, pH, and acidity of drinking water.
- Determination of absorbance at specific wavelength, pH, acidity, Brix



FastTrack UV/VIS technology comprises modern fiber optics in combination with array detection and a Xenon flash lamp. A full spectrum scan is performed within just 1 second.



Exceptional ruggedness and reliability, thanks to the **lack of moving parts in the optical section**, long-lasting Xenon flash lamp and state-of-the art optical fibers. Their flexible connectivity to printers, PC, storage devices and barcode scanners, make UV/VIS.



Spectrum **scans**, fixed **wavelength absorption measurements**, quantification with **calibration curves or kinetic analyses** are ready to use as direct measurements: Simply enter parameters, define the preferred workflow, store as a shortcut, and start the measurement with One Click.

ANALYTICAL INSTRUMENTS

SELECTIVE & EXCELLENT FOR EXPANSION



Offering the highest possible flexibility as you can **expand the instrument** at any time, adding new measurement parameters



it is possible to use our perfectionION™ series of combined ion selective electrodes as well our collection of half-cells. For measurements with half-cell sensors there is an input for connection of a reference electrode.



ISM sensors are automatically identified by the instrument, preventing the use of the wrong sensor ID by mistake



USB, Ethernet and RS232 interfaces allow the connection of a barcode reader, Rondolino sample changer, USB stick, network and METTLER TOLEDO printers and a PC with LabX direct software



The **optional uMix™ magnetic stirrer** provides an extra degree of flexibility for methods

Stirring can be setup individually for measurement or waiting steps in your method and the stir speed adjusted to reflect the sample's vessel size and viscosity.

By a single keypress you can switch **between two different views** with varying degrees of information

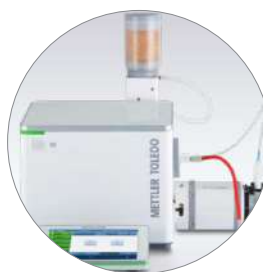


INDUSTRIAL LABORATORY SOLUTIONS

AUTOMATED REFRACTOMETRY



Regular calibration with certified and traceable standards ensures accurate measurements. Start verification immediately without the need to manually enter additional texts: simply scan in the barcode on the standard, and run the calibration



Fill and rinse the measuring cell with the **SPR200 sampling pump**. Utilize the DryPro drying pump for quick and efficient drying of your density meter.



The **status light** will show if the instrument is ready (green), busy (flashing), or waiting for operator interaction (orange).

The **Peltier thermostat** maintains the measurement cell at a constant temperature, enabling highly accurate density and refractive index measurements.



Accurate and reliable **results**

Brix, refractive index and more: Our refractometers master measurements of a wide variety of challenging samples with high repeatability and an accuracy of up to 5 decimal places



The **large touchscreen** terminal with the intuitive One Click user interface minimizes training and operator influence. Simply press on the pre-programmed shortcut to run your analysis. The instrument status light will show you if it is ready, busy, or waiting for operator interaction.

ANALYTICAL INSTRUMENTS

AUTOMATIC DETERMINATION



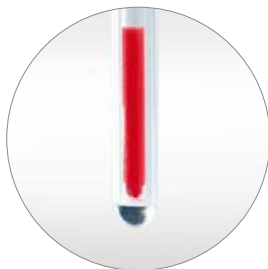
Boiling Point

The boiling point is a characteristic physical property of a compound. Knowing the boiling point of a liquid can help in selecting the optimal process temperature.



Cloud Point

The cloud point is defined as the temperature at which an aqueous solution becomes turbid or "cloudy". Knowing the cloud point helps in determining the best performance temperature range.



Slip Melting Point

The slip melting point is the melting point of waxy solids and is defined as the temperature at which a sample has softened sufficiently to rise in an open capillary tube. It is used to characterize cosmetics, fats and many others



The **unique design** allows you to insert the capillaries directly into the instrument.



With the Excellence Melting Point System, you can run **up to six samples** simultaneously, saving you valuable time and effort.



One Click™ determination is as simple as it sounds: all you need to do is press a button to start your measurement. Clicking the "Home" button on any menu takes you directly back to the initial screen.



Measurement results can be influenced by the operator. Save time and money and reduce operator training and influence with **fully automatic determination** of melting, boiling, slip melting, and cloud points.

ANALYTICAL INSTRUMENTS

MULTIPARAMETER

LiquiPhysics™ Excellence can combine more than density and refractive index. The systems can also be flexibly upgraded to measure pH, conductivity and color simultaneously.

The UV/VIS Excellence line encompasses **three models for cuvette measurements** and one dedicated micro-volume instrument for life science applications.

- Using **pressurized air** instead of suction enables reliable sampling of highly viscous samples (up to 000'36 mPa*s) and prevents bubble formation.
- The **measurement cell** is automatically rinsed with one or two different solutions
- **Sample protection:** Vials can be sealed and opened just before the actual measurement.
- Superior sampling, Simple and efficient cleaning and Sample protection.



Our **space-saving** system enables you to combine a density meter with a refractive index cell to measure both parameters in one go

intuitive touchscreen operation and high measurement performance combined with a complete security package for safe results and solid compliance



With **Smartcodes™**, LiquiPhysics™ Excellence takes a decisive step forward in barcode reading initiatives



Versatile
The **powerful SC1 and SC30 automation** units can completely automate the measurements of such products, even for samples that are solid at ambient temperature.

ANALYTICAL INSTRUMENTS

THERMAL ANALYSIS

Differential Scanning Calorimetry (DSC)

the DSC instruments are the best choice for manual or automatic operation, from academic research and industrial development to quality assurance and production.

Measure samples with the most sensitive DSC on the market – ideal for investigating all kinds of materials and effects

The DSC utilizes an innovative patented DSC sensor with 120 thermocouples which guarantees unmatched sensitivity.



Chip Calorimetry (Flash DSC)

The Flash DSC +2 revolutionizes rapid-scanning DSC. The instrument can analyze reorganization processes that were previously impossible to measure. The Flash DSC +2 is the ideal complement to conventional DSC. Heating and cooling rates now cover a range of more than 7 decades.

Take advantage of the fastest commercially available DSC – perfect for studying rapid crystallization and reorganization processes in a temperature range from -95 to 1000 °C.



High Pressure Differential Scanning Calorimetry (HPDSC)

Increased pressure influences all physical changes and chemical reactions in which a change in volume occurs.

Study thermal effects under pressure – increase the reaction rate or shift evaporation to higher temperature

For material testing, process development or quality control there is often no alternative to DSC measurements under pressure.



Thermogravimetric Analyzer (TGA)

TGA instruments deliver trustworthy results using the world's best micro and ultra-micro balances with sub-microgram resolution over the whole measurement range.

Routine measurements are started quickly, safely and easily with the unique One Click™ function from the instruments' color touchscreen display. Sample identification can be done with a bar code reader.

Efficient and reliable operation around the clock is ensured by the robust, factory endurance tested sample robot.



ANALYTICAL INSTRUMENTS

THERMAL ANALYSIS

Simultaneous Thermal Analysis (TGA/DSC)

The TGA/DSC +3 provides trustworthy results using a TGA balance from the worldwide leader in weighing technology with position independent weighing, automatic internal calibration weights, a wide measurement range, the best minimum weight performance and the highest weighing accuracy and precision. It allows users to analyze a wide variety of sample types up to 1600 °C.



Thermomechanical Analysis (TMA)

The TMA/SDTA +2 can be used for a wide range of applications due to its broad temperature range and the wide choice of force parameters in compression and tension modes. As a result, the TMA/SDTA +2 quickly provides characteristic information on numerous types of samples, for example very thin layers, large sample cylinders, fine fibers, films, plates, soft or hard polymers, and single crystals.



Dynamic Mechanical Analyzer (DMA)

DMA is an important technique used to measure the mechanical and viscoelastic properties of materials such as thermoplastics, thermosets, elastomers, ceramics and metals. In DMA, the sample is subjected to a periodic stress in one of several different modes of deformation (bending, tension, shear and compression). Modulus as a function of time or temperature is measured and provides information on phase transitions.



Hot Stage Microscopy Systems

Hot-stage microscopy is a powerful method which is widely used to visually examine all kinds of thermal transitions when the sample is heated or cooled. Observe your sample while it is heated or cooled – and understand better the physics of a transition. The heart of all hot-stage systems is the furnace with a heating element beneath and above the sample, which guarantees outstanding temperature uniformity in the sample.

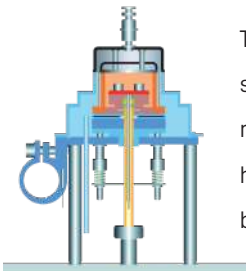


ANALYTICAL INSTRUMENTS

OBSERVE COMPOSITIONAL & MECHANICAL PROPERTIES



The **sample robot** can process up to 34 samples even if every sample requires a different method and a different crucible.



The **silver furnace** is very symmetrical to improve the resolution by incorporating direct heating through heating block beneath the DSC sensor



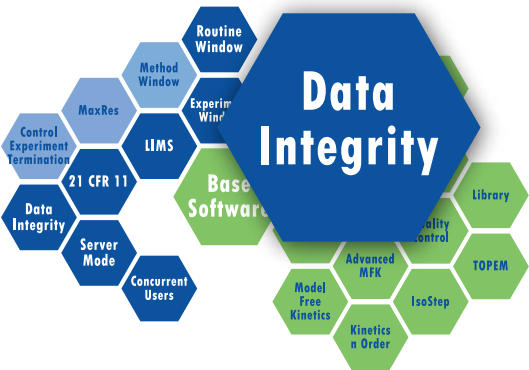
The **FRS +5 sensor** has **56 thermocouples** and provides high sensitivity and unprecedented temperature resolution.



Ergonomic design; If you insert samples manually, you can rest your hand on an ergonomically shaped support surface.



The **One Click™ function** allows you to easily and efficiently start a predefined method.



STARe SOFTWARE is the most complete and comprehensive thermal analysis software on the market and provides unrivalled flexibility and unlimited evaluation possibilities. Data is securely protected against loss or modification.

Unique lid piercing accessory
This unique feature prevents the sample from taking up or losing moisture between weighing-in and measurement. It also protects oxygen-sensitive samples from oxidation.

ANALYTICAL INSTRUMENTS

LABX SOFTWARE

LabX™ Balance software

LabX™ Balance software offers central control of instruments, tasks and users, SOP guidance on the balance terminal, and elimination of manual transcription.

**LabX™ Titration software**

LabX™ Titration software connects to your laboratory instruments and speeds titration analyses via electronic data flow, while ensuring flexibility and compliance across all users.

**LabX™ Density and Refractometry software**

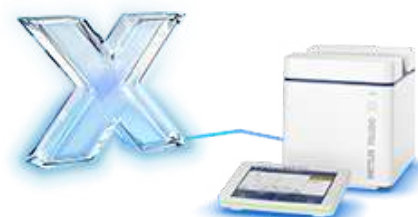
LabX™ Density and Refractometry software provides electronic data management, supports compliance and connects your instruments for simultaneous analyses.

**LabX™ pH software**

LabX™ pH software connected to the SevenExcellence™ pH Meter provides full data integrity. In combination with the InMotion™ Autosampler, it enables automated measurements of more than 300 samples.

**LabX™ UV Vis Spectrophotometer software**

LabX™ UV Vis Spectrophotometer software stores all your data automatically in a secure database to support easy result handling. Stay compliant with automated performance verification.

**LabX™ Melting Point software**

LabX™ Melting Point software provides secure and flexible data handling, and supports compliance with 21 CFR Part 11 and seamless integration into LIMS, ELN or ERP systems.



ANALYTICAL INSTRUMENTS

MULTIPLE INSTRUMENTS, ONE SOFTWARE

Streamline processes and reduce system maintenance with LabX™ laboratory software

- Manage instruments, resources, SOPs, tasks and users centrally, then distribute to connected instruments.
- Seamlessly integrate your lab systems into ELNs, LIMS or ERPs via the single LabX interface to cover complete workflows.
- Reduce effort for validation, maintenance and support of your computerized lab systems.
- Ensure smooth operation of your lab systems with a single interface to learn.

Compliance Made Easy:

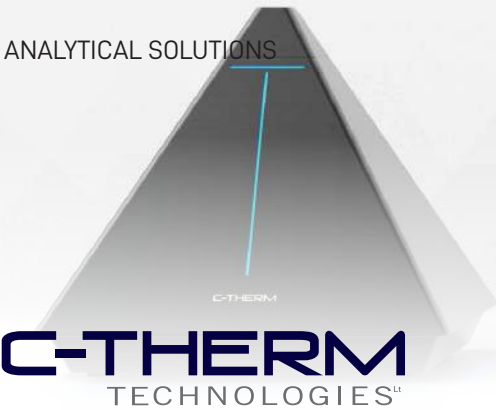
- Fulfill regulation and data integrity requirements efficiently with LabX™ laboratory software:
- Ensure traceability and data integrity according to the ALCOA+ framework throughout the workflow.
- Keep all technical features, including the audit trail and electronic signatures, at hand to support compliance with regulations such as 21 CFR Part 11.
- Access all your data quickly and easily during an audit.



Increased Workflow Efficiency

Speed up your daily work with LabX™ laboratory software:

- Automate your multi-parameter workflows to increase throughput and reduce cost per sample.
- Prevent transcription errors thanks to electronic data management functionality that automatically collects complete data from your analyses.
- Program your standard operating procedures (SOPs) into LabX workflows, then let the software guide operators step by step at the instrument terminal to prevent errors.
- Ensure only adjusted and calibrated resources are in use with LabX asset management



C-Therm Technologies provides sensor solutions for R&D, manufacturing and quality control environments, offering the latest in rapid, non-destructive thermal analysis instrumentation

THERMAL CONDUCTIVITY

TRIDENT - 1 Instruments and 3 Methods

Trident unleashes the power of three different transient methods with the ultimate toolbox for thermal conductivity measurement. MTPS, TPS and TLS all in one modular package

It has the fast, easy and highly accurate. A single-sided, "plug & play" sensor suitable for testing solids, liquids, powders and pastes. Offers maximum sample versatility. Conforms to ASTM D7984.



TCi™ - Thermal Conductivity Analyzer

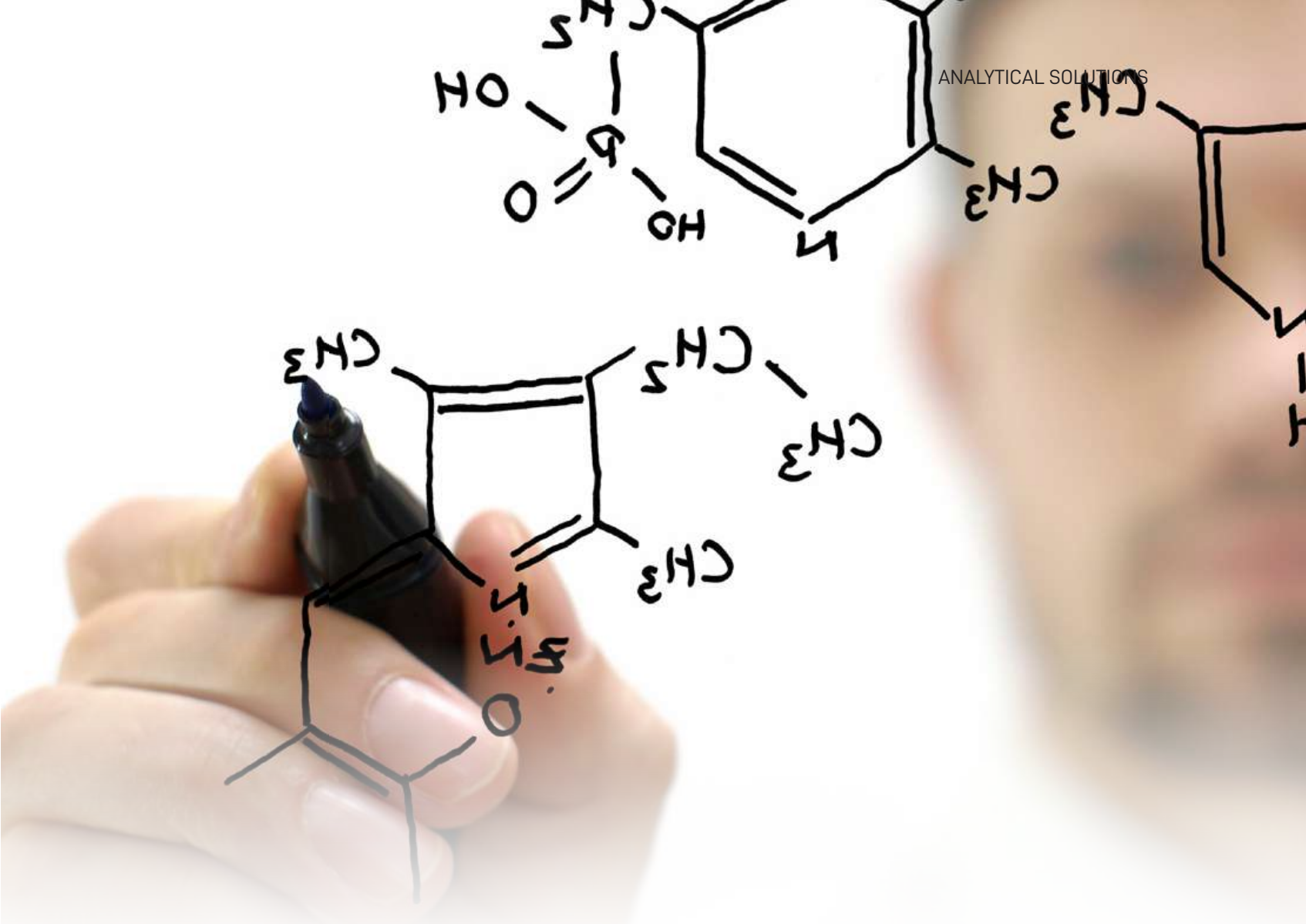
C-Therm's touch tester is the only product for quantifying touch performance that fully complies with ASTM D794. The Tx Touch Tester is employed by the top global sports apparel brands and textile testing labs including: adidas, Columbia Sportswear, Marks (Canadian Tire), Intertek, the Taiwan Textile Research Institute, and Bureau Veritas.



TCKit – Thermal Conductivity Kit

An economical "do-it-yourself" solution, the TCKit is targeted primarily towards academic researchers. Employing the Transient Plane Source (TPS) method, the TCKit includes the tools & software needed to build and customize a thermal conductivity analyzer at a fraction of the price.





ANALYTICAL SOLUTIONS

METTLER TOLEDO

AUTOMATED REACTORS AND IN SITU ANALYSIS

METTLER TOLEDO is the technology leader in the unmatched, very precise and accurate liquid handling laboratory instruments and solutions which guarantee better results at higher sensitivities.

Commitment to quality, innovative design, and state-of-the-art production results in high-quality pipette products that deliver years of accurate and reliable operation. Together, Mettler Toledo's pipetting products and services form a complete solution that are called Pipetting °360™.

AUTOMATED REACTORS AND IN SITU ANALYSIS

AUTOMATED REACTORS FOR CHEMICAL PROCESS DEVELOPMENT

ReactIR In Situ Reaction Analysis

Mettler Toledo ReactIR is the first system that truly merges the power of real-time, in situ FTIR with equivalent operational convenience. ReactIR is ready for every chemist and for every experiment. It uses solid-state cooling technology to deliver best-in-class performance. Small, stackable units save valuable space in the fume hood offers flexibility to deploy ReactIR in various locations across the lab



Automated Synthesis & Process Development

The innovative chemical synthesis reactors, EasyMax and OptiMax, are easy-to-use platforms that accurately and precisely control reaction parameters and execute recipes, thus enabling every chemist to perform reactions reproducibly.

Connect and automate your jacketed reactor in the lab and control thermostats, stirrers and pumps with a single touchscreen interface that provides a consistent control platform across all laboratory reactors.



Automated Synthesis & Process Development

Automated sampling is an approach used to overcome challenges associated with common laboratory sampling tools (such as pipettes and syringes), including accuracy, reproducibility and availability of personnel.

EasySampler is an automated and unattended sampling technology – delivering high-quality samples, day and night. This unique, patented probe-based technology has a micro-pocket



Reaction Calorimeters

EasyMax 102 HFCal, EasyMax 402 HFCal and Optimax HFCal are small-scale heat flow calorimeters that combine the benefits of a synthesis workstation and a reaction calorimeter. These small-scale reaction calorimeters are designed for process safety screening and scale-up, and provide relevant reaction information early in the development process.



iC Software

Capture, prepare and share data with iC Data Center, determine process variables with iControl and iControl RC1e, analyze reactions with iC IR, optimize reactions with iC Kinetics, analyze particle size and shape with iC FBRM, iC Vision, and iC PVM.

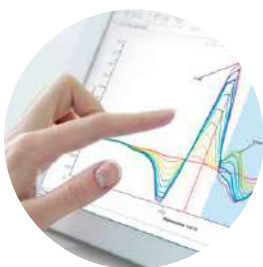


AUTOMATED REACTORS AND IN SITU ANALYSIS

AUTOMATED REACTORS FOR CHEMICAL PROCESS DEVELOPMENT

**No More Liquid Nitrogen**

ReactIR 702L uses solid-state cooling technology to deliver best-in-class performance without the need for liquid nitrogen.

**One Click Analytics™**

Designed specifically for time-resolved reaction analysis iC IR combines a peak picking algorithm with functional group intelligence to drastically reduce analysis time

Study all Reactions

Probe- and flow-based sampling technologies enable scientists to study liquid and gas phase chemistry in batch or continuous setups

**Small, Portable, Flexible**

Small, stackable units save valuable space in the fume hood and offer flexibility to deploy ReactIR in various locations across the lab



SEPARATION & NIR SOLUTIONS



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY AND NIR SOLUTIONS

BUCHI offers tailor-made solutions to cover a wide range of distinct needs and achieve highest convenience for your laboratory and industrial applications

EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

EVAPORATION SOLUTIONS

Laboratory Rotary Evaporation

Dedicated, tailor-made laboratory rotary evaporation solutions from BUCHI and get high flexibility, smart distillations processes with unattended operation, automated execution of customized methods, flexible Interface positioning, intuitive system operation with one touch commands and fast reaction times thanks to real-time system control. BUCHI also offers a 7" touch screen to give you the ability to view and control all process parameters at real-time.



Parallel Evaporation

Accurate parallel evaporation solutions with full-automation, ease-of-use, highest analytical precision, decreased pressure to reduce boiling point as well to safe and environmentally friendly procedures. The evaporators perform a fast and gentle evaporation process with vacuum-vortex evaporation that ensures the protection of volatile and heat-sensitive analytes, even when using high boiling point solvents such as water, DMSO, or DMF.



Industrial Evaporation

The ultimate industrial evaporation solution from the market leader in industrial evaporation. BUCHI's dedicated solutions offer durability, robustness, maximum flexibility with the widest range of glass assemblies, continuous operation with automatic draining, extremely fast and effective distillation due to the high heating capacity and large batches in flasks of 50L, unique flask coupling and high performance for fastest distillations rates.



Recirculating Chiller

Space saving cooling deviceas that combines chiller and trolley in one centralized operation that leads to convenient handling as well as easy and effective operation



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

DRYING & ENCAPSULATION SOLUTIONS

Spray Dryers

Processing of the smallest sample amounts into submicron particles with little loss are the key features characterizing BUCHI spray dryers. The spray dryer enables applications in the pharmaceutical industry, in life- and material sciences – whenever small particles make the difference. It features a patented heater module, user-friendly spray head, efficient collecting electrode, innovative nebulizers, Inert Loop B-295 that condenses organic solvents out of the stream of drying gas and Dehumidifier B-296 Nano for the removal of humidity from the drying gas.



Freeze Dryers

Take your freeze-drying techniques to the next level with the first laboratory freeze dryers with Infinite-Technology and Infinite-Control from BUCHI. Offering you continuous sublimation with two alternately working and hygienically cleansed condensers, infinite ice capacity due to alternate loading, stable pressure due to Smart-Switch, Lyophilization of water and organic based solvents at 105- °C as well to the ability to control all relevant parameters via mobile devices.



Nano Spray Dryer B90- HP

With the Nano Spray Dryer B90- HP, gently process the smallest sample amounts into submicron particles with minimal product loss. The user-friendly system improves productivity in areas where small particles make a big difference.



Encapsulator B390- / B395-

The Encapsulator B390- / B395- is a versatile system for encapsulation of active ingredients and materials for R&D purposes. From pharma to food samples, the adaptability of the device lets you obtain innovative microbeads and microcapsules.



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

DIGESTION AND STEAM DISTILLATION

KjelMaster

Operate your KjelMaster K-375 without being physically present. High-throughput processing of up to 48 samples is possible with KjelMaster K-377 or up to 24 samples with KjelMaster K-376. Enjoy high automation levels with perfect process synchronization of all steps from digestion to automated sampling. Use two independent racks with KjelMaster K-377 to achieve a continuous batch workflow.



Kjel Line

BUCHI's latest steam distillation units are extremely accurate, ensure the sustainable use of resources and offer maximal safety during operation. The instruments have been designed to fit your individual needs and to enable the highest performance in the most convenient way.



Dist Line

The Dist Line is extremely versatile and is designed for a broad range of analytes while offering the highest operational safety. The instruments perfectly fit your individual needs and enable the highest performance in the most flexible way.



KjelDigester K-446 / K-449

The KjelDigester K-446 / K-449 reduces the block digestion process by up to 2 hours and meets the highest safety requirements. The high degree of automation is the perfect match to the KjelMaster System allowing more samples per day to be processed.



SpeedDigester K-425 / K-436 / K-439

Set new standards for digestion speed, flexible use and result reproducibility with the IR SpeedDigester. Achieve higher sample throughput for nitrogen determination by Kjeldahl digestion and multiply functionality with this entry level IR digester.



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

CHROMATOGRAPHY SYSTEMS

Pure Chromatography Systems

Perform any flash or prep HPLC application easily and safely with our extremely compact Pure Chromatography Systems. The Pure platform is fitting to your needs and environment and offers maximum user and sample safety, while using minimal space.



Sepiatec SFC Systems

Sepiatec SFC systems were designed for preparative separations by SFC chromatography and are extremely easy to use. They take less space than expected to satisfy any requirements, from basic to complex tasks, on a small or large scale.



Pure Essential Flash Chromatography System

The Pure Essential Flash Chromatography System focuses on the essentials for any basic flash application. The design of the instrument, its modularity, and user-friendliness make it easy for you to take the first steps into automation and profit from increased speed and endless possibilities.



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

EXTRACTION SYSTEMS

FatExtractor E-500

The FatExtractor E-500 is designed for quick and compliant fat extraction. Readily adapt your FatExtractor E-500 to changing needs with the interchangeable glass assembly and execute extractions according to Soxhlet, Randall or Twisselmann.



UniversalExtractor E-800

The UniversalExtractor E-800 is powerful and perfect for demanding extraction tasks. Distinct extraction positions enable individual process control and simultaneous operation of 6 different extraction methods with high speed and reproducibility.



SpeedExtractor E-914 / E-916

Combine maximal speed and throughput with SpeedExtractor E-914 / E-916, your best solution for Pressurized Solvent Extraction (PSE). Increase productivity by processing more samples in parallel, easily loading samples and quickly collecting extracts.



HydrolEx H-506

If you perform acid hydrolysis as a sample preparation step for total fat determination, discover HydrolEx H-506 as a complementary and robust addition to your FatExtractor E-500. Benefit from a smooth, safe process with convenient system handling.



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

NIR SOLUTIONS

ProxiMate

A robust, compact and easy to use at-line NIR instrument for the food and feed industry; dairy, meat, grain, feed and edible oil. Designed to efficiently work in the toughest conditions assuring unaffected measurements by humidity fluctuations or temperature, reducing downtime in production and providing fast quality control of batches. The instrument can be placed where results matter: right next to the production line. ProxiMate can be pressure-hosed down to meet even the most stringent hygiene standards.



N500- FT-NIR spectrometer

provides reliable analysis results for quality control as well as research and development in the pharmaceutical and the chemical industry.



NIRMaster

The world's first dedicated FT-NIR standalone spectrometer available in food-grade PMMA or stainless steel with IP65 protection class for NIRMasterPro.



NIR-Online

Monitors parameters such as moisture, fat or protein continuously to collect accurate measurements within seconds to guarantee maximum production efficiency with a payback period less than 1 year



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

CONVINCING EVAPORATION SOLUTIONS



Additional interface

Control and regulate all process parameters conveniently with the optional Interface I300- or I300-Pro.



Interface

Make your rotary evaporation more efficient, convenient and customized by using distinct operating modes, from automatic to manual.



Ergonomic handle

Ergonomic handle to conveniently change the position of the lift. Electronic and manual version available.

Direct rotation speed control

Immediate adjustment of rotation speed with intuitively positioned control knob in case of an urgent or unexpected event.



Combi-Clip

The multifunctional Combi-Clip with snap lock mechanism allows connection of the evaporating flask with one hand.



Integrated display

The heating bath temperature, rotation speed and lift position are shown on the integrated heating bath display.

Glass assemblies

Seven different glass assemblies enable a wide range of applications, solvents and sample properties.



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

HIGHEST THROUGHPUT AND MAXIMIZED FLEXIBILITY



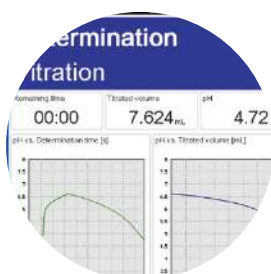
Maximized productivity

Highest sample throughput by using automation and streamline procedures



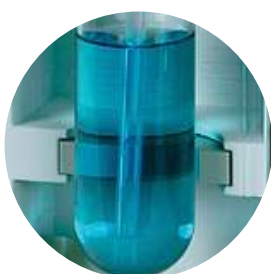
Intuitive and easy to use

Large color touch screen



Reproducible distillation

Smart distillation mode "IntelliDist" allows for reproducible results and saves time.



Comprehensively safe

Comply with any official method, data management and ensure safety



Compliant without exception

The KjelMaster allows both potentiometric & colorimetric titration.



Data security

The KjelLink PC software is a useful supplement for advanced programming and bidirectional data exchange.



EVAPORATION, DRYING, EXTRACTION, CHROMATOGRAPHY

MASTERING ALL APPLICATIONS



Simple Operation

ProxiMate operation has been optimized to make it logical, easy and straightforward.

The touchscreen follows the proven interface logic of other BUCHI products, making it easy for everybody to setup applications, test samples or set preferences



Extreme Robustness

Measurements are unaffected by temperature or humidity fluctuations. With IP66 ingress protection ProxiMate can be pressure hosed down to meet even the most stringent hygiene standards.



Magnetic drive

Samples are rotated using a magnetically coupled drive unit. When the analysis is complete, this is removed to facilitate easy cleaning.



multiple USB ports for maximum flexibility. Available with waterproof covers to maintain IP protection during operation.



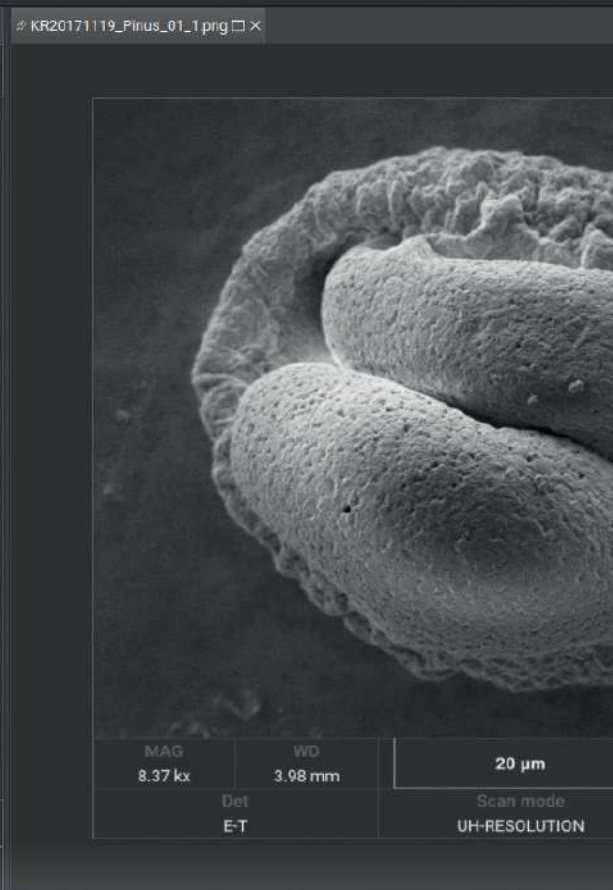
Color determination

Fast and simple color measurements enable quick assessment of an additional quality parameter. No further preparation is required as color data is captured at the same time as NIR.

Applicative fit

Setting ProxiMate up to get accurate results requires minimal effort and can be done by everybody.





SEMS, FIB-SEMS AND MICRO-CT'S

Scanning electron microscopy is a well-known non-destructive technique that uses an electron beam probe to analyse samples surface down to nano-scale. The scanning electron microscopes produce high magnification images with high resolution, a feature of which makes them suitable tools for a wide range of applications in numerous fields of science and industry.

SEMS, FIB-SEMS AND MICRO-CT'S

SCANNING ELECTRON MICROSCOPY (SEM)

Achieving a sub-nanometer resolution, the Tescan **SEM systems** will reveal the finest details about the structure of your material. Tescan's unique Wide Field Optics™ allow you to quickly locate areas of interest at magnifications as low as 2x before zooming in to understand their makeup.

For the micron and the sub-micron level there are SEM VEGA and SEM MIRA systems and for the nanoscale and sub-nanoscale there are SEM CLARA and SEM MAGNA systems.

Key features

- UHR imaging of non-conductive beam sensitive samples at low-kV
- A routine investigation of heavy-metal stained ultra-thin sections with excellent contrast using the In-beam BSE detector at extremely low kV
- Easy-to-use STEM detector as a cost-effective alternative to routinely used TEM
- Compatibility with major cryo-system suppliers on the market
- Easy-to-use, fully customizable, application-oriented and modular user interface



FOCUSED ION BEAM SCANNING ELECTRON MICROSCOPY (FIB-SEM)

Focused ion beam scanning electron microscopy (FIB-SEM) combines two beams (electron and ion) in one instrument. The FIB column is used for cross sectioning or sample modification, while the SEM column provides high resolution imaging.

The geometry of FIB-SEM systems is such that the electron and ion beam focal points coincide, making simultaneous SEM imaging during FIB milling possible – a significant leap in terms of performance and throughput for FIB operations that demand ultimate levels of precision.

Tescan offers two different ion species for FIB sources: gallium ions and xenon ion plasma. Ga ion source FIB is preferred for all applications that need ultimate precision for fabrication and nano-patterning. Xenon plasma FIBs deliver much higher ion beam currents compared to Ga-FIB to remove large volumes of material in times frames that can be up to 50× shorter than Ga-FIB.

There is a full range of FIB-SEM Systems such as Tescan SOLARIS, Tescan SOLARIS X, Tescan AMBER, Tescan AMBER X.



SEMS, FIB-SEMS AND MICRO-CT'S

MICRO-CT SYSTEMS

Provides high throughput and flexibility; offering novel **dynamic CT workflows** enabling a wide range of 4D applications. Studying the change or evolution of a sample non-destructively. Our micro-CT solutions are specifically designed to facilitate high-throughput and dynamic CT workflows, expanding your in-situ research capabilities.

Micro-CT provides direct 3D information on the porosity, mineral distribution and microstructure of geological samples with micrometer resolution. Due to the unique design of the TESCAN micro-CT systems, it becomes possible to quantify fast dynamic in situ processes in the lab. It is specifically designed to facilitate high-throughput, multi-scale and dynamic CT workflows.

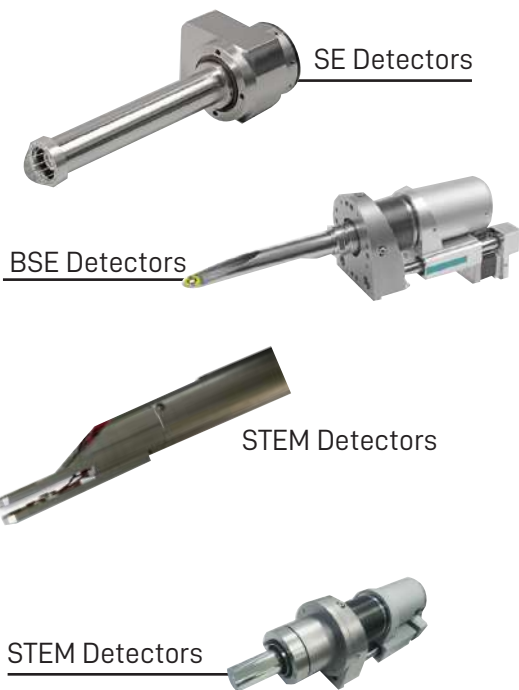


DETECTORS

TESCAN offers a wide range of **proprietary and third-party detectors** that can be integrated into our SEM and FIB-SEM systems.

Detectors offered by TESCAN:

- SE Detectors
- BSE Detectors
- Beam Deceleration Technology
- Electron Backscatter Diffraction
- STEM Detectors
- CL Detectors
- Low Vacuum Secondary Electron TESCAN Detectors
- Electron Beam Induced Current Detectors
- X-ray Spectrometry Detectors
- Secondary Ion TESCAN Detectors
- TOF-SIMS Detectors
- EDS Detector





ATOMIC SPECTROSCOPY

HORIBA
Scientific

ATOMIC SPECTROSCOPY AND MEASUREMENTS

HORIBA provides an extensive array of instruments and systems for applications to a broad range of scientific R&D and QC measurements. Proven quality and trustworthy performance have established widespread confidence in Horiba.

ATOMIC SPECTROSCOPY AND MEASUREMENTS

ATOMIC SPECTROSCOPY

Quantum Microscopes - AFM Technology

The first scanning NV (nitrogen-vacancy) microscope for the analysis of magnetic materials at the atomic scale. The Qnami ProteusQ system comes with state-of-the-art electronics, software and AFM optical platform.

Its flexible design allows for future adjustments and scaling, expansion and capability upgrades.



Raman Imaging And Spectrometers

A complete Raman spectroscopy solutions for analytical measurements, research Raman, UV Raman, QC/QA and industrial Raman applications. They are well-known for Stability/Reliability obtained from a robust design approach, high-performance and speed enabled by our many Ultrafast Imaging patented functionalities, and ease of use thanks to the renowned LabSpec software suite.



AFM Optical Platform

The myriad of AFM (Atomic Force Microscope) techniques that allow study of topographical, electrical and mechanical properties can be performed with any laser source available in Raman spectrometer, or with other external illumination (e.g., solar simulator or other tunable or continuum source).

The AFM-Raman platform is a two-way road; where complimentary techniques provide novel and unique imaging capabilities to each other.



Fluorescence Spectroscopy

These steady-state fluorescence spectroscopy looks at the long-term average Fluorescence of a sample when irradiated with UV, Visible or near-IR Light. The research-grade fluorimeters are compact, benchtop or modular, and customizable for any sort of Fluorometry, be it Fluorescence detection or Phosphorescence studies your research requires.

Besides, Fluorescence Spectroscopy software was tailored precisely for the types of experiments you perform by controlling all aspects of your system.



Energy Dispersive X-Ray Fluorescence (ED-XRF)

This range guarantees simple analysis operation with no preparation required and non-destructive analysis. The measurement points can be accessed quickly through high-precision optical observation, even in the microscopic range.

The clear and High-speed Image mapping ensures shortened analysis time facilitates efficient measurement work. and X-ray images with very little noise allow for even clearer observation.



ATOMIC SPECTROSCOPY AND MEASUREMENTS

PARTICLE MEASUREMENTS

Surface Plasmon Resonance imaging (SPRi)

Advanced antibodies exploration Thanks to Label-free Surface, Plasmon Resonance Imaging Technology, as well as Streamlined SPRi-MS coupling to detect and identify a kinase in Cell lysate using the DARPin as binders.



Glow Discharge Optical Emission Spectrometry (GDOES)

Providing ultra-fast elemental depth profile analysis of layered materials, simultaneously offering quantitative measurement of all elements and thickness with nanometer depth resolution



Spectroscopic Ellipsometry

The most suitable technique for thin film characterization. It allows a range of thin film properties to be characterized, like layer thickness, optical properties (n,k), optical band gap, interface and roughness thickness, film composition, uniformity by depth and area, and more. It can also be used to study solid-liquid or liquid-liquid interfaces.



ICP-OES Spectrometers

High resolution, high sensitivity and high stability ICP-OES spectrometer with the highest performance on the market and is specially designed to handle the most challenging applications. Its high quality optical design integrates a high density holographic grating and one meter focal length. Providing lowest detection limits in ICP-OES spectrometry thanks to the radial viewing and total plasma view



Sulfur-in-Oil Analyzer

From EDXRF to MEDXRF to combustion UV-Fluorescence, to combustion chemiluminescence to microcoulometry, our range of Sulfur-in-oil analyzers meet all of your needs.



Particle Characterization

Designed for Characterization of Particle Size by Laser diffraction, Particle Shape by Image analysis, Zeta Potential by Electrophoretic Light Scattering, Surface Area by Flowing gas adsorption and Particle Concentration



TESTING INSTRUMENTS



INSTRON

MATERIAL MECHANICAL TESTING

Instron product line includes: universal, dynamic & fatigue, impact, rheology, HDT and Vicat, automated testing systems, torsion testers, structural durability testing and crash simulation systems. We also have available controller upgrades, static hydraulic upgrades and software upgrades as well as repair and refurbishment for Instron® testing machines to assure accurate, repeatable test results and to extend your system's useful life.

MATERIAL MECHANICAL TESTING

UNIVERSAL TESTING SYSTEMS

6800 & 3400 Series System Retrofits

Instron® 3400 and 6800 Series electromechanical universal testing machines can perform a wide range of mechanical tests including tensile, compression, bend, peel, tear, friction, and shear testing. These systems are designed to test materials, components, and products in accordance with ASTM, ISO, and other industry standards. Compatible with hundreds of accessories for a wide range of applications, these universal testing systems are available in a multiple sizes and configurations for R&D, QC, and other mechanical testing up to 300 kN force.



Industrial Universal Testing Systems up to 2000 kN

Instron® industrial universal testing machines can perform a wide range of mechanical testing including tensile, compression, bend, peel, tear, shear, and friction testing per ASTM, ISO, and other industry standards. These systems are available in a range of sizes and force capacities up to 2000 kN. From testing high strength metals and alloys to advanced composites, components, and materials used in civil infrastructure, Instron has systems suitable for all applications.



Multi-Station Test Frames

The 6800 Series Multi-Station System offers enhanced throughput with its ability to perform simultaneous, independent tests on up to five (5) separate specimens using a single load frame. This system is especially suitable when test times are lengthened due to high elongation or slow test speeds. If your test methods and expected results are similar for the specimens you are testing, this system is the ideal solution for cost-effective and efficient materials testing. This system will help labs keep up with the high throughput demands of high speed or multiple production lines.



Custom Universal Testing Machines

For those testing applications that require more than a standard frame offers, our Engineered Solutions Group is available to design specialized systems to fit your needs – including taller or wider frames, custom safety features, high-speed frames, automation/robotics, and more.



MATERIAL MECHANICAL TESTING

THE NEXT GENERATION OF UNIVERSAL TESTING SYSTEMS



Tensile Testing

- Temperature Chamber with AVE 2
- Cord And Yarn Grips
- Manual Wedge Action Grips & T-Slot Table
- Dual Column XL Extensometer
- Bio Bath & 250 N Pneumatic Grips
- Screw Side Action Grips
- 1 kN Pneumatic Grips

Compression and Flexure Testing

- Syringe Compression Fixture
- Three-point Bend Fixture
- 10 kN Compression Platen
- 100 kN Compression Platen
- Perforated Compression Fixture with Swivel Platen

Peel, Friction, and Torsion

- Testing Solutions
- Syringe Test on Torsion Add-On 2.0
 - Quick Change Load Cell
 - Variable Angle Peel Fixture
 - Fully Enclosed Safety Shield
 - Coefficient of Friction

Powered by Bluehill® Universal

The 6800 Series Universal Testing Systems are powered by Instron's Bluehill Universal Software. Equipped with easy-to-understand icons and workflows, Bluehill Universal makes it simple to train users and set up tests, helping you maximize lab efficiency while minimizing costly errors.

QuickTest

For when you need results fast, QuickTest allows users to enter a few simple parameters and run their test within seconds.

Pre-Loaded Templates

Bluehill Universal includes an extensive library of pre-configured methods for some of the most commonly used ASTM, ISO, and EN standards.

Workflow

Users can be guided through the entire testing process with step-by-step instructions, ensuring that their tests remain repeatable, simple, and error-free.



MATERIAL MECHANICAL TESTING

AUTOMATED TESTING SYSTEMS

CT6 Cobot Test System

The CT6 cobot testing system introduces the benefits of automation to the testing of biomedical devices and components. This system pairs a collaborative robot with a 6800 or 5900 Series universal testing system to increase the efficiency of small to mid-sized testing labs.



AT2 Automated XY Stage

The AT2 Automated XY Stage can be installed on any new or existing 6800 or 5900 Series universal testing system to automate compression, tensile, and flexure testing of devices or components with multiple test points or multiple components with repetitive test points.



AT-3 3Axis Non-Robotic Automated Testing System

The Instron TestMaster AT3 and AT+3 automated testing system utilizes an innovative design for the automatic tensile, compression, and/or flexural testing of a variety of plastics, thin films, elastomers, foils, foam, and more. Meeting the testing requirements of many different testing standards including ASTM D638, ASTM D790, ISO 527, and ISO 178



AT-6 6Axis Robotic Automated Testing System

The Instron AT6 Automated Testing System utilizes an innovative design for the automatic tensile and/or flexural testing of metals, plastics, thin films, components, elastomers, sutures, and composites. Conforming to ISO and ASTM standards for a wide range of materials, this system has a flexible platform to deliver high throughput with repeatable results



ElectroPuls® Automated XY Stage

The Instron Automated XY Stage for the ElectroPuls test instrument is designed for repetitive and multilocation durability testing. It can easily be adapted to suit many different testing scenarios with many different specimens, devices, and components



6800 Series Multi-Station Test Frame

The 6800 Series Multi-Station System offers enhanced throughput with its ability to perform simultaneous, independent tests on up to five separate specimens using a single load frame. Based on our standard 68TM30-testing frame (30 kN capacity), this system is especially suitable when test times are lengthened due to high elongation or slow test speeds



MATERIAL MECHANICAL TESTING

AUTOMATED TESTING SYSTEMS



WHAT CAN A COBOT DO FOR YOUR LAB?

Instron's CT6 offers the benefits of automation to labs with shifting test requirements and specimen geometries. The CT6 integrates an easy-to-program cobot with a universal testing machine and Bluehill® Universal software to better enable QC and DV labs to meet their growing testing demand while improving the overall reliability of the data. Utilizing the CT6 avoids the hassles associated with using third party integrators by leveraging Instron's automation capabilities and application expertise.



IMPROVED LAB EFFICIENCY

The CT6 is an ideal automation solution for small to mid-sized labs where engineers often spend valuable time operating testing systems. The CT6 acts independently to load specimens, run tests, and unload specimens

USER-DRIVEN FLEXIBILITY

The CT6 is designed to be quickly and easily programmed with little to no help from Instron. New devices or specimen sizes can be automated in-house with minimum time required for the initial setup.



ENHANCED SAFETY & ERGONOMICS

The CT6 mitigates risk by ensuring that the operator is outside of the test space at all times when the frame is in motion. It also reduces operator interaction with hazardous specimens such as sharps and avoids the strains associated with repetitive loading and unloading of the system

IMPROVED DATA REPEATABILITY

The use of the CT6 eliminates any operator introduced errors related to specimen alignment or data collection

MATERIAL MECHANICAL TESTING

TORSION TESTERS

MT MicroTorsion Series

The MT Series torsion testing systems are available in six standard models with force capacities ranging up to 5,650 N-m (50,000 lbf-in) and are used for torsion testing and component in-service simulation. The compact design requires minimal lab space and offers superior frame stiffness and alignment. Packaged with Instron high-performance control electronics, the MT Series provides highly accurate test data and control for testing wire, fasteners, metal components, switches, and springs used in the biomedical, automotive, aerospace, and construction industries.



Convert an Axial-Only Testing Machine Into a Biaxial Testing System

The recently redesigned Torsion Add-On 3.0 performs simultaneous axial and torsional loading on components and materials on any 6800 or 5900 Series table model system, allowing you to expand product development capabilities and simulate real-world applications of your products. Completely integrated with Bluehill Universal software, the Torsion Add-On 3.0 offers a simple solution for characterizing the performance of medical devices, electronics, consumer products, packaging, and automotive components that require both axial and torsional testing – and can meet various international testing standards, including ISO 4-11040, ISO 80369, ASTM F543, and more.



ElectroPuls®

Maximize Your Test Throughput

WaveMatrix™2 Dynamic Testing Software provides users the ability to quickly and easily construct a wide range of dynamic and quasi-static test methods using minimal steps within a simple matrix structure.

Simplify Your Working Environment

Made in our UK manufacturing facility, the all-electric ElectroPuls instruments simplify dynamic testing; it is a clean, quiet, plug & play system that is economical to maintain and can be located practically anywhere.

Stiffness Based Tuning

Instron's Stiffness Based Tuning is used to quickly optimize the performance of your fatigue testing system, with no expertise required and no pre-cycling on the specimen.



MATERIAL MECHANICAL TESTING

TORSION TESTERS



Features and Benefits

- Dual linear slide design offers high-torsional stiffness and low-axial friction
- Adjustable crosshead locking system allows crosshead to be free-floating or fixed
- Torque cells available from 5,650 - 0.225 Nm (50,000 - 2 lbf-in) provide superior accuracy and zeroing capability
- Comprehensive torsion testing software provides graphical data plots and performs a wide range of calculations on torque and angle data
- Torque cell protection device prevents damage to low-capacity torque cells during test setup
- MT1 and MT2: Interlocked enclosure protects the operator from the rotating drive by preventing testing when the guard is open

Simulate Real-World Use of Your Product

Functional testing is all about simulating real-world use of your product. Many consumer products, especially packaging for pharmaceuticals, food, makeup, etc. are subjected to simple multi-axis loading.

Speed-Up Product Development

When developing new products in the medical device and electronics industries, ensuring product durability under biaxial loading is crucial. Many companies isolate axial-only and torsional-only testing.

Free-Up Lab Benchtop Space

Benchtop space is valuable real estate for many labs – and those that perform axial-only and torsional-only tests on separate machines can free up space by adding torsion capabilities to their traditionally axial-only machine.



Increase Your Peace of Mind and Concentrate on Your Testing

Prevent sample debris from leaving the test area and reduce the risk of multiple operators simultaneously controlling the system. The integrated guard and single point of control maintain the highest level of operator safety.

Keep Your Users Safe During Test Setup and Whilst Running Tests

The low drive power mode restricts the force and velocity of actuator movement during setup and interlocks prevent pneumatic grips from opening during testing.

MATERIAL MECHANICAL TESTING

DYNAMIC AND FATIGUE TESTING SYSTEMS

ElectroPuls®

Maximize Your Test Throughput

WaveMatrix™2 Dynamic Testing Software provides users the ability to quickly and easily construct a wide range of dynamic and quasi-static test methods using minimal steps within a simple matrix structure.



General Purpose Hydraulic Fatigue

All systems are equipped with the advanced features of the 8800MT Controller, Console Software and Instron's unique fatigue-rated Dynacell™ load cells. WaveMatrix™2 Dynamic Testing Software provides the backbone for running many dynamic tests. Other application specific software modules, such as LCF3 or any of Instron's Fracture Mechanics Suite, allows other standardized tests to be run.



Low Strain Rate 8862 Servo-Electric Systems

The 8862 testing systems feature a single screw electromechanical actuator that has been developed for slow speed static, slow strain rate and quasi-dynamic cyclic testing. The systems are completed with high stiffness, precision aligned, two-column load frames to give unparalleled testing performance.



High Strain Rate VHS Systems

Many materials exhibit different behaviors under various strain rates, i.e. they have strain rate dependent properties. Characterizing these dynamic properties across a wide range of velocities becomes very important in applications where components are exposed to high strain rates, especially on investigating material failure and also identifying the most optimal design for weight.



Axial-Torsion 8850 Systems

The Instron 8850 series system is a floor model biaxial servohydraulic dynamic test system that provides axial and torsional load on the specimen in an integrated biaxial actuator. With a precision aligned, high-stiffness twin-column frame, the 8850 series meets the challenging demands of a varied range of both static and dynamic biaxial testing requirements. Instron provides a wide range of high capacity axial-torsional accessories and custom options to suit your testing needs



MATERIAL MECHANICAL TESTING

DYNAMIC AND FATIGUE TESTING SYSTEMS

ElectroPuls® -16Station Testing System

Maximize Your Test Throughput

The ElectroPuls -16Station testing system performs high cycle fatigue testing on multiple samples simultaneously, with a fatigue-rated load cell included on each station. The fixture uses a carousel designed with high stiffness and low mass to enable high frequency testing and reduce test time.

Testing can be carried out in a clear, polycarbonate saline bath at up to °37C and is controlled by the test software allowing temperature measurements to be recorded alongside your test results.



Biaxial Cruciform Test Systems

The Instron® planar biaxial cruciform testing systems feature high-stiffness, precision-aligned annular load frames combined with 4 advanced actuators mounted in-plane and perpendicular to one another. Using the advanced features of the 8800 controller to provide translation and deformation control of each axis, these systems are ideal for large strain field coverage in two-axis tensile, low-cycle fatigue (LCF), high-cycle fatigue (HCF), thermo-mechanical fatigue (TMF), and fracture tests.

Console software provides full system control from a PC: including basic waveform generation, calibration, limit set up, and status monitoring. WaveMatrix™ Dynamic Testing Software is used for sychronized test control of each axis with simple or complex tests being developed from the Graphical method setup screen.



Biaxial Cruciform Test Systems

High temperature fatigue testing systems include Low Cycle Fatigue (LCF), Thermomechanical Fatigue (TMF) and Electro-Thermal Mechanical Testing (ETMT) systems. LCF systems assess the performance of materials at elevated isothermal conditions when subjected to high loads and plastic deformations.



8800MT Controller / Controller Upgrades

The 8800MT is the latest fatigue testing controller from Instron®, designed for both cyclic and static testing applications. Having released the world's first all-digital controller for materials testing in 1987, we have taken our expertise and produced our best ever digital controller.



MATERIAL MECHANICAL TESTING

RHEOMETERS & MELT FLOW TESTERS

SR20 & SR50 Capillary Rheometers

The Instron® capillary rheometer systems of the CEAST SmartRHEO Series are specifically designed for R&D, and for advanced quality control of thermoplastic materials, as they accurately determine the rheological properties of polymer samples over a wide range of shear rates and testing conditions. The CEAST SmartRHEO Series is a popular product line for capillary rheometry, they meet the market demand for compact, stiff, reliable and technical advanced instruments for the testing field.

The capillary rheometer systems are available in either Single or Twin Bore barrel configurations. The Twin Bore configuration allows two simultaneous and independent rheological tests with direct comparison of the behavior of two different samples or two lots of the same material. With a wide range of available accessories, the testing capabilities are expanded to include the determination of fundamental properties like Melt Strength, Die Swell, and PVT behavior, allowing to simulate processes such as injection molding, extrusion, blow molding, and film blowing.



Melt Flow Testers

Instron® MFi Series of melt flow index testers are specifically designed for easy and accurate measuring of Melt Flow Rate (MFR) and Melt Volume Rate (MVR) according to Melt Flow Rate testing procedure A, procedure B, procedure C and procedure D, determined by ASTM D1238 and ISO 1133 standards.

Why Melt Flow Testing Optimizes Your Productivity

Melt flow testing is simply a measure of the flow of a polymer when melted. The result of a melt flow test, called the melt mass-flow rate (MFR) or melt volume-flow rate (MVR), is defined as the amount of mass or volume of a polymer that flows through a small die at a specified temperature and pressure.

The melt flow test itself is simple and straightforward. A small amount of a thermoplastic sample (usually in granule or flake form) is heated in a barrel at a specified temperature, melted to a viscous fluid, and is forced out of a capillary die by a piston loaded with dead weights. Once enough sample extrudate has exited the die, it is removed and weighed, or the volume of the sample is measured by the machine.



MATERIAL MECHANICAL TESTING

RHEOMETERS & MELT FLOW TESTERS



Features and Benefits

- Rigid "H" frame for high strength and stiffness
- Brushless servomotor for accurate piston movement
- Accurate barrel temperature control with 3 heating zones and multiple PT100 sensors, ensuring minimum delay in reaching the test temperature and rapid recovery after sample loading
- Twin Bore barrel configuration allows two simultaneous and independent rheological tests, increasing time saving
- Crosshead with independent load cell on each piston provides superior accuracy, increasing the repeatability and reliability of test results
- Two interchangeable and independent barrel-mounted pressure transducers allowing accurate data acquisition
- The test data are collected, managed, and elaborated by a dedicated software. Additional modules provide deeper rheological data analysis.
- Wide selection of optional devices and capillary dies are ideal for multiple testing applications within a single machine

Application Range

- Plastics - raw polymers, composites, compounds, recycled materials, MIM, ceramic materials, and fibers
- Rheological tests - R&D, advanced quality control, and process optimization (injection moulding, extrusion, blow moulding, and thermoforming)

Which Melt Flow Index Tester is Right for the Growth of your Business

Melt Flow Index Tester: MFi5

The MFi5 is a compact and manual instrument for rapid inspection of the melt mass flow rate of plastics to Procedure A, B and C.



Melt Flow Index Tester: MFi7

The MFi7 is a melt flow index tester for a growing volume of Procedure A, Procedure B and Procedure C tests. Designed to increase production speed, it offers high level of accuracy and shorter cycle times overcoming manually powered limits thanks to fatigue-free motorized cleaning and automatic material compacting and purging.



MATERIAL MECHANICAL TESTING

IMPACT DROP TOWERS & PENDULUMS

Drop Weight Impact Testers

Instron Dynatup drop weigh impact testing machine next generation is the Instron 9400 Series. A drop weight impact testing machine is used to determine the energy required to break or damage a material in which a defined weight falls onto a specimen or a component from a specific height and with a specific impact energy and velocity.

The Instron® 9400 Series drop weight impact testing machine complies with all the main impact testing standards ranging from 0.3J - 1800J

Puncture Test Method and Other Impact Test Methods

Puncture resistance test, CAI test (Compression After Impact), Tensile Impact Test, 3 Point Bending Test and Wedge Peel Impact Test are the most common drop weight impact test methods. They determine the toughness of polymers, load-deflection curves and total energy absorption of impact events. The main ISO and ASTM standards for impact test of plastics are: ASTM D3763 multi-axial impact test, ISO 6603 for the puncture resistance test method, ASTM D7136 for the CAI test method, ISO 11343 for the wedge peel impact test method, ISO 8256 for the tensile impact test method.



Pendulums

Instron pendulums are designed to meet the growing demand for accurate and repeatable impact testing on a wide range of materials. Used to determine the mechanical and physical properties of metals, polymers, composites, and finished products for both research and development (R&D) and quality control (QC), the pendulum family is capable of performing Charpy, Izod, and Tensile tests according to international standards. As uninstrumented systems, they provide the absorbed energy value. By fully instrumenting the pendulum, a more complete study of how the material reacts to impact can be gathered. This information is useful when evaluating the type of failure and the dynamic response of the material.

CEAST 9050 Impact Pendulum

The easily customized and controlled CEAST 9050 Impact Pendulum can test the resilience of plastics and composites with hammers, vices, or supports.

MPX Series Motorized Pendulum Impact Tester

Ideal for high volume testing, the MPX Motorized Pendulum Impact Tester is the safest Charpy testing system on the market.



MATERIAL MECHANICAL TESTING

IMPACT DROP TOWERS & PENDULUMS



The CAI test procedure is described in the ASTM D7136M, ASTM D7136, ISO 18352 & Airbus AITM 1.0010 standards.

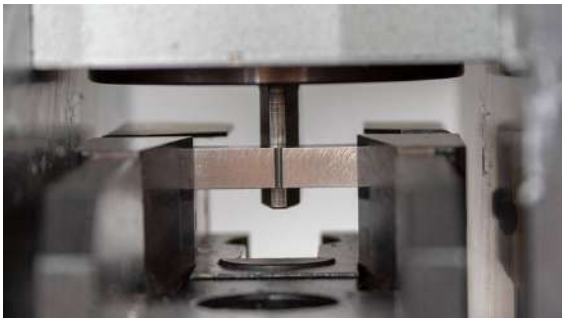
The first step is using a drop weight impact testing machine to induce Barely Visible Impact Damage (BVID) into the panel followed by a compression test of the damaged coupon with electromechanical machine, to measure the residual strength of the composite laminate after the impact event.



A drop weight impact testing machine performs the impact of a guided striker perpendicular and centered on the specimen. The tup or striker insert has a hemispherical striking insert with a suitable diameter (e.a. 20 mm) and tup holder can be equipped with additional weights. Round or square specimens, clamped in a pneumatically activated clamping ring with a suitable diameter (e.a. 40 mm), are used.



A tensile impact test measures the toughness of polymers using an impact tester for plastic according to the ISO 8256 standard. Polymers that are too flexible or thin for a Charpy or Izod impact test generally require an uniaxial tensile impact test with a relative high strain rate. The Instron impact test apparatus can reach a wide range of impact velocities from relatively low (0.7 m/s) to very high (22m/s).



Simpler Efficient Testing

Pendulum Impact Hammers

The ergonomic set-up of the hammers and specimen supports enable the user to work safely and efficiently.

Pendulum Impact Energy

Switching from high (50J) to low (0,5J) energy hammers and from Charpy to Izod configurations is quick and easy.

Integrated Control Panel

The integrated touch panel PC enables you to take control of your testing and maximize lab efficiency with an extensive set of test parameters stored for prompt use.

Double Braking Mechanism

The hammer disk brake on the manual pendulum assures high torque, low effort and smooth operations, along with double braking surface and convenient position.

MATERIAL MECHANICAL TESTING

HDT & VICAT

HV3S, HV6M, HV6X HDT & Vicat Testers

The Instron HV Series of HDT Vicat testing machines bring you an enhanced user experience and outstanding productivity. Our HDT and Vicat testers with Bluehill® HV Software make materials testing SIMPLER, SMARTER, SAFER.

Ergonomic HDT and Vicat Testing Machines

The testing stations are safe and easy to raise and lower thanks a smooth lifting mechanism and ergonomic handles.

Intuitive Weight Application

The intuitive design of the weights eliminates the risk of selection mistakes. The weights are stackable, enabling the user to handle them with confidence. A wide range of stress values can be achieved with no additional tools needed.

Touch Screen Interface

HDT and Vicat tests setup and data export are quick and easy to perform thanks to a user friendly touch screen that can be operated without a computer. The pre-formatted templates enable you to run a test in a few simple touches.



HV500 Oil-Free HDT & Vicat Tester

The Instron® CEAST HV500 is the latest instrument design to perform HDT and VICAT tests at high temperatures, up to °500C, making this instrument ideal for research and quality control applications as it is ensuring the capability to test the new generations of techno-polymers, characterized by their excellent properties at high temperature. Using three independent testing stations and with a new cutting-edge heating system for specimens, the CEAST HV500 is simple to use and eliminates environmental concerns associated with oil based systems, such as vapor emissions and oil disposal.



MATERIAL MECHANICAL TESTING

HDT & VICAT



Effortless Workflows

The optional Bluehill HV Software enhances the ease of use. The user can run tests, edit methods, analyze results or configure the system with a few clicks. The user-friendly software allows you to run tests with minimal effort increasing your laboratory efficiency and throughput.

Oil degradation control

The system constantly monitors the oil, alerts when the bath level is out of range and reports when oil degradation, that could adversely affect test results, has occurred. This feature helps reduce the risk of running invalid test and increases productivity.

Efficient Cooling

The HV Series is designed for superior cooling efficiency, rapidly returning the oil to the starting temperature after a test run. This allows you to begin the next test with minimal wait time and reduces water consumption costs.

Advanced Electronic Technology

The advanced electronics on the HV Series automatically zero the position of the LVDT measuring sensors before starting a test, reducing test time and human errors.

Small Footprint

The HV Series compact design helps maximize valuable laboratory space resulting in enhanced testing efficiency.

Superior Results and Repeatability

Our factory trained engineers provide comprehensive verifications, checking the dimensions of critical components and temperature behavior, to assure results are accurate and repeatable.

TESTING INSTRUMENTS



PHARMACEUTICAL TESTING

Internationally leading manufacturer for the high-value test devices and systems. Offering a complete product range from manual, physical testing instruments to fully automated, analytical test systems to analyze the active chemical composition of a dosage form as well as its release rate.

PHARMACEUTICAL TESTING

DISSOLUTION

Tablet Dissolution Testing Instruments

Reflects the availability of active substance and allows the prediction of the time for complete release of the material from the dosage form.



Offline Automated Dissolution Systems

Automated sampling for a dissolution test instrument at pre-programmed times that includes a dissolution bath, a pump and a fraction collector which collects the sampled dissolution media



Online Automated Dissolution Systems

Unlike the off-line systems where samples are removed from the dissolution vessels and stored either for transfer to a measurement system or for further preparation (e.g. dilution), the samples here are circulated in a closed loop.



Media Preparation

Media preparation and degassing are vital parts of a tablet dissolution test as deaerated media are critical to the reproducibility of dissolution results.



PHARMACEUTICAL TESTING

GALENIC INSTRUMENTS

Tablet Disintegration Testing

Evaluating the disintegration characteristics of formulations and the quality control of different dosage forms.



Suppository Testing

Measuring the disintegration time by placing the samples into rotating baskets inside a heated water bath and measuring the softening time by which the suppository melts at a certain temperature.



Tablet Hardness Testing

Testing the breaking point and structural integrity of a tablet prior to storage, transportation, and handling before usage.



Ampoule Testing

ampoule breakpoint tester to control the quality during production of empty ampoules.



Tablet Friability Testing

Testing the durability of tablets during packing processes and transit by repeatedly dropping a sample of tablets over a fixed time, using a rotating drum with a baffle



Leak Testing

Checking the integrity of tablet strips, blister packs and small bottles by checking the air-tightness of sweet packets, ready-to-eat pre-packed foods, confectionery packaging, packs of noodles, sauces to name but a few



PHARMACEUTICAL TESTING

SOLID DOSAGE FORMS TESTERS



Vessel Centering System

Rigid and precise three-point individual centering system for each dissolution vessel

Each **USP Borosilicate glass vessel** has a batch code on top of the flange for easy visibility and positioned placement inside the water bath cover.



User Interface

The large color, touch screen allows control of the various me-chanical features of the instrument such as the tool stirring speed, lift drive and heater

Space Requirements

The space saving designs and the display module can be mounted either of two positions on the drive head



Heating System

The heating system is contained in a separate stainless steel housing.



The **Vacuum-Moulded** Water Bath con-tains a water diffuser for faster heating and to ensure that heated water is evenly distributed throughout the whole bath.



Stirring Tools

Pharma Test MonoShaft™ tools consist of the main shaft plus interchangeable tool heads (adapters).





TESTING INSTRUMENTS



HANDHELD & FULLY AUTOMATIC TORQUE TESTERS

Sure Torque offers the widest range of closure torque testing solutions from the handheld units to the fully automatic torque testers.

Many of the major cap producers, beverage and pharmaceutical companies are using automatic Torque Testers from Sure Torque

HANDHELD & FULLY AUTOMATIC TORQUE TESTERS

CAP TESTERS

ST-LAB

The low cost ST-LAB with several options makes it ideally suited for torque testing in laboratory and pharmaceutical production environments



ST-INLINE

The fully automatic ST-INLINE Bottle Cap Torque Tester samples and tests caps right on the production line



ST-S3

The S3 can also be programmed to perform tests to a set degree of rotation



ST-50

The ST-50 will perform fullrelease torque testing to protocol as well as perform final cap tightening to a setpoint



ST-M

The ST-M can record both the primary and the secondary peak torques during a release (or application) process, so both the initial release torque and the warranty-rings, bridge breaking torque can be measured.



ST-H5 Torque Meter

With the ST-H5 you can accurately measure the torque applied by each head for the desired torque settings



SureVac – Leak Tester

The SureVac™ allows a user to test a sealed package in a water-filled vacuum chamber to a preset vacuum level for a specific amount of time.



HANDHELD & FULLY AUTOMATIC TORQUE TESTERS

THE CAP TEST SPECIALIST



- Real time, automatic display.
- NIST traceable calibration procedure.
- Strain gauge transducer technology.
- Automatic container clamping and closure gripping.
- Adjustable torque application rate.
- 180 degree chuck rotation.
- Counter balance system for height adjustment.
- Heavy duty components.

Additional parts

ST-LAB additional cap collet



Additional parts

ST-LAB additional clamps



- Customer defined set point.
- Release Torque measurements
- Measuring Peak/Transient Torque, engagement torque and the peak of the bridge break torque.



Application angle measurement

A release test where after passing the initial release torque the closure will be fully removed, and the original application angle will be measured too



Topload seek test

Topload will be increase automatically until the closure starts to open (force increment and increment dynamics is configurable)

Kits and Peripherals

- Serial dot printer for direct record printing with battery and charger
- Torque Standard Bottle for quick calibration check on any closure torque tester



AVESTIN

AVESTIN Inc. is a company specialized in Homogenizers, Emulsifying, mixing and dispersing equipment for uniform separation in your laboratory.

HOMOGENIZERS



EmulsiFlex-B15
Capacity: 3 to 15 mL batch
Pressure: 3000 bar
Min. sample volume: 3 mL
Air pressure: 10 - 5 bar



EmulsiFlex-C50
Capacity: 15 to 50 L/h
Pressure: up to 2000 bar
Min. sample volume: 25 mL
Air pressure: 6 - 8 bar



EmulsiFlex-C5
Capacity: 1 to 5 L/h
Pressure: up to 2000 bar
Min. sample volume: 7 mL
Air pressure: 8 bar



EmulsiFlex-C55
Capacity: 55 L/h
Pressure: up to 2000 bar
Min. sample volume: 100 mL
Air pressure: 8 bar

MIXING, DISPERSING, AND EMULSIFYING



EmulsiFlex-C3
Capacity: 3 L/h
Pressure: 2000 bar
Min. sample volume: 10 mL
Air pressure: 4 - 8 bar



EmulsiFlex-C160
Capacity: 160 L/h
Pressure: up to 2000 bar
Min. sample volume: 250 mL
Air pressure: 8 bar



EmulsiFlex-D20
Capacity: 20 L/h
Pressure: up to 2000 bar
Min. sample volume: 50 mL
Air pressure: 8 bar



EmulsiFlex-C55
Capacity: 500 or 1000 L/h
Pressure: up to 2000 bar
Min. sample volume: 5 L
Air pressure: 8 bar

GENERAL LABORATORY INSTRUMENTS

MISCELLANEOUS

Hermle Cintrifuge

Hermle is specialized in the development and manufacturing of laboratory centrifuges. The Germany based company is one of the key players in centrifugation worldwide, and certified ISO 9001 and ISO 13485 for IVD-products. Centrifuges from Hermle have been used in laboratories for more than 60 years in countries all over the world.



Temperature Freezer

Arctiko offers a wide selection of ultra low temperature freezers, standard freezers and refrigerators. With the biomedical freezers, ultra low temperature freezers and cryogenic freezers, your samples are stored safely under a stable temperature. In addition to this line of freezers, Arctiko also provides pharmaceutical and blood bank refrigerators.



Thermo Scientific Viscometers

Measuring instruments for the determination of the flow behavior of fluids are called viscometers. Viscosity is a material property which is dependent on different parameters such as mechanical stress and strain, time as well as temperature and other ambient conditions.



IKA Shakers

IKA offers the perfect lab shaker for mixing and shaking tasks. In addition to the tried and tested orbital shakers and horizontal shakers. IKA products boast speeds of up to 3,000 revolutions per minute during continuous operations. A digital display, timer function.



GENERAL LABORATORY INSTRUMENTS

MISCELLANEOUS

IKA Hot Plates

IKA hotplates allow for precise and safe heating and tempering due to a platform made from glass ceramics that ensures the best possible chemical resistance. The universal lab hotplates offer a high level of safety due to a fixed safety circuit, the Hot Top Indicator, and the error code display. An electronic contact thermometer may be connected for highly precise temperature control.



IKA Overhead Mixer

IKA offers the ideal overhead stirrer for your stirring and mixing tasks in the lab-for lower to high viscosities. IKA overhead stirrers effortlessly process stirring quantities of up to 200 liters. IKA lab stirrers and overhead stirrers stand out due to their indispensable features, including an electronic safety circuit, a digital display, two speed ranges, and a controlling option via the lab software Labworldsoft.



IKA Dispersers

The T 25 easy clean control is a high-performance dispersing instrument with electronic speed control from 25,000 - 3,000 rpm for working volumes of 2,000 - 1 ml (H₂O). The new tool S 25 EC-T-C18-G-ST allows temperature measurement and operation time detection through RFID

Device overheating is prevented by continuous temperature monitoring and the setting of temperature limits



Sonicators

Ultrasonic cleaning is one of the most modern processes today that particularly effectively and efficiently removes dirt and other contamination in the shortest time and without damage from many different products to be cleaned.



ROTRONIC MEASUREMENT SOLUTIONS



ENVIRONMENT SOLUTIONS

rotronic

MEASUREMENT SOLUTIONS
A PST BRAND

TEMPERATURE & HUMIDITY MEASURING & MONITORING

The portfolio includes temperature measurement and monitoring of relative humidity, industrial probes, humidity sensors, measurement probes, data loggers, handheld instruments, transmitters and OEM products that conform to GAMP and FDA requirements.

Apart from humidity and temperature measurement, Rotronic products are designed for monitoring of CO₂, differential and process pressure, flow, dew point, water activity and analog signals.

TEMPERATURE & HUMIDITY MEASURING & MONITORING

DATA LOGGERS, TRANSMITTERS & PROBES

Humidity

Rotronic humidity measuring instruments measure temperature too at the same time with Data Loggers for barometric pressure, humidity, temperature and dew point, as well as Humidity and Metro probes and transmitters.



Temperature

Rotronic offers a range of temperature measuring instruments to this end: from temperature probes and transmitters to handhelds and data loggers



CO2

Rotronic CO2 transmitters are equipped with sensitive probes and are ideal for the demanding monitoring of indoor air. They simultaneously measure temperature and air humidity.



Differential Pressure

Rotronic differential pressure measuring instruments are optionally equipped with temperature probes and humidity sensors or can be expanded with digital and analog add-ons to include additional parameters.



Pressure

Rotronic uses the piezo-resistive effect for its pressure measurement equipment, thereby supplying a premium transmitter to the market.



TEMPERATURE & HUMIDITY MEASURING & MONITORING

DATA LOGGERS, TRANSMITTERS & PROBES

Water Activity

The measurement of water activity or equilibrium relative humidity (ERH) is a key parameter in the quality control of moisture sensitive products or materials.

Manufacturers of foods and pharmaceutical products must, for example, show to the FDA that the water activity of a product has declined to such an extent that bacteria can no longer grow



Dew Point

The Rotronic low dew point probes are ideal for measurement of trace moisture; for example, in compressed air systems or in refrigeration or desiccant dryers.



O2 - Oxygen Analyzer

Oxygen analyzer are used to control the purity of gases such as Nitrogen, Argon, Helium and Carbon Dioxide during manufacture, quality in air separation plants, or for quality assessment of bought gases.



Software

The RMS software meets all requirements for server-based monitoring. It is linked to a database that stores all measured data and system activities. It is thus possible to access the data on all popular platforms from anywhere in the world as long as you have an Internet connection.



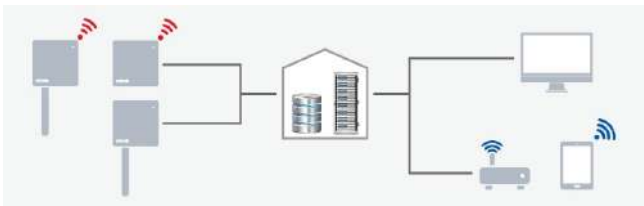
Monitoring Systems - RMS

The adaptive RMS Rotronic Monitoring System documents and visualizes all necessary measured data in one system. It consists of analog and digital hardware elements and a server software.



TEMPERATURE & HUMIDITY MEASURING & MONITORING

ROTRONIC MONITORING SYSTEMS (RMS)



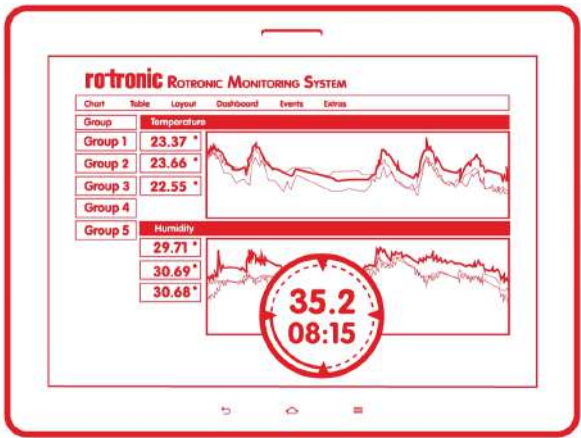
The Rotronic Monitoring System is a **modular system** of hardware elements and web-based software. It provides maximum flexibility in installation and ensures readily available data. The data loggers record measurements from Rotronic and third-party sensors and transmit them to the secure database. It stores information and makes it available to users, regardless of whether they access the database via a PC, Mac, tablet or smartphone.



have a **continuous data logging** and get access to your data via all major platforms



Existing hardware can be **integrated into the Rotronic system** and, vice versa



RMS

Fast & Easy with the **Rotronic SaaS Cloud solution** that remains you compliant to GxP regulations



Run the RMS software with an **SQL database** on your own IT infrastructure and have complete control over your entire system and comply to your own internal regulations, access the interface via most browsers.



Have all incidents **logged and documented** and ready to view and downloaded wherever you go



Our **configurable and continuous Monitoring System** allows you to monitor all kinds of various parameters from temperature to particles including analogue inputs.



The **system analysis** the data, if a threshold is exceeded, RMS immediately triggers the alarm and willotify all relevent people in accordance.



ENVIRONMENT SOLUTIONS

KAYE

THERMAL VALIDATION & ENVIRONMENTAL MONITORING

Kaye products are designed to meet the most demanding requirements for process improvement, thermal validation and environmental monitoring. With patented Asset Centric Data Management Features - a new flexible approach to Validation, Kaye Validator AVS - Advanced Thermal Validation combines accurate sensor measurements with all GMP requirements for calibration and traceability to national standards, while generating compliant reports and managing the validated assets and validation equipment.

Kaye ValProbe® RT (Real-Time) is a wire-free real-time process validation and monitoring system designed around the measurement and reporting requirements of the most intensely regulated industries.

TEMPERATURE & HUMIDITY MEASURING & MONITORING
VALIDATION SYSTEMS & WIRELESS VALIDATION LOGGERS

Kaye Validator AVS - Advanced Thermal Validation

The Kaye Validator AVS (Advanced Validation System) combines accurate sensor measurements with all GMP requirements for calibration and traceability to national standards, while generating compliant reports and managing the validated assets and validation equipment.

The Validator AVS offers improved hardware features, an easy to use data handling concept and an intuitive, user-friendly software interface.

With our integrated validation system and improved data management concept, the Kaye Validator AVS saves time and money by simplifying the entire validation process.



Kaye ValProbe Real-Time Wireless Data Logger

Kaye ValProbe® RT (Real-Time) is a wire-free real-time process validation and monitoring system designed around the measurement and reporting requirements of the most intensely regulated industries.

The ValProbe RT family of data loggers provide accurate, convenient, and reliable process measurement for a wide range of pharmaceutical, and medical device applications. The wireless design greatly simplifies monitoring and validation of severe and hard-to-reach environments. See the table below for logger-types and recommended applications.

It is a state of the art validation system design that meets industry and regulatory (FDA / GAMP) requirements for thermal validation. The ValProbe RT system combines high accuracy measurements, automated sensor calibration, an intuitive metro style user interface, and extensive reporting to simplify the complete validation process.



TEMPERATURE & HUMIDITY MEASURING & MONITORING

ADVANCED VALIDATION TECHNOLOGY

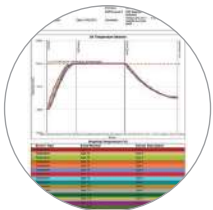


Two ways to Connect the Validation Console to the Kaye Validator AVS:

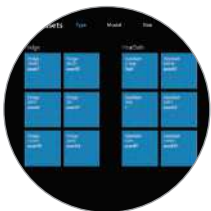
- Docking Mode
- Network Mode



- Portable Validation Console -Pre-loaded Software
- Dedicated to Validation Tasks
- Simplified Compliance and Easy Validation
- Data Integrity and 21 CFR Part 11 Compliant



- AVS Wiring Layout
- Setup Report
- Calibration Report
- Graph Report
- Detailed Report:
- Summary Report
- Verification Report
- Pass / Fail Criteria Report
- Audit Trail Report



The Kaye Validator AVS includes an intuitive Asset Centric Data Management concept which allows you to store and access your data faster and more efficiently.



- Robust industrial design with two handles
- IP55 rating, chemical resistant ABS housing
- Dedicated Validation Console for improved user interface
- On-board docking station for Kaye Validation Console
- Battery backup with field replaceable battery pack (3 hours)

- Up to 4 SIMs 48 channel capacity
- Scan speed of 48 channels per second
- SIMs for TCs, 20-4mA, 10-0V and RTDs
- Improved Sensor Connectivity (quick-fix & lock connectors)
- Accepts a wide range of thermocouple types (T, T premium, J, K, E, B, R, N, S)

TEMPERATURE & HUMIDITY MEASURING & MONITORING

WIRELESS REAL-TIME DATA COLLECTION

The ValProbe Transport/Storage Tray is an accessory designed to simplify the carrying, storage, and management of Kaye ValProbe RT loggers during use. The ValProbe RT Transport/Storage Tray can accommodate up to 20 Kaye ValProbe Loggers of any type.



Kaye ValProbe RT delivers reliable life data under harsh conditions at high or low temperatures



The System guarantees ease of use and dedicated reliable validation; allowing focus on validation tasks, not the technology



- 21 CFR part 11 compliant (Data Integrity)
- OS and Hardware controlled and validated by Kaye
 - Common Software tools for Kaye Hardware
 - Backward compatible to existing Kaye Products
 - Elimination of IT control



The Kaye Validation Console can establish wireless connections by utilizing any kind of available Wi-Fi infrastructure. This feature simplifies your daily routine work. You can access live data wirelessly on the console screen. You can start or stop studies and read live data from a Kaye ValProbe RT system in a cleanroom without entering the room.



ENVIRONMENT SOLUTIONS



PARTICLE COUNTING & MONITORING

Particle Measuring Systems specializes in viable and nonviable particle counters that measure and monitor contamination levels in clean and controlled environments.

With Particle Measuring Systems, they lead this industry of cleanroom particle counters and contamination monitoring worldwide by actively developing their instruments to perfection

PARTICLE COUNTING & MONITORING

AIR & LIQUID PARTICLE COUNTERS & SENSORS

Airborne particle Counters

Providing real-time measurement of yield-impacting particles with multiple configurations and meets the requirements of ISO 1:2015-14644 and ISO 4-21501.



MiniCapt® Microbial Air Sampler

These instruments help you effectively meet regulations including ISO 14698 and (c)GMP, such as EU GMP Annex 1



Liquid Particle Counting

Our liquid particle counters can determine the size, amount, and nature of particulates in liquid substrates, computer components, medical devices, sensitive equipment, or an assortment of other precision devices



Airnet Particle Sensors

These sensors meet the specifications of ISO 4-21501 to measure the size and number of particles suspended in the air for real-time monitoring of defect-causing particles.



IsoAir Particle Sensors

Real-time particle monitoring gives quick notification of particle anomalies, detecting 0.5 and 5.0 µm for GMP and FDA compliance.



Cleanroom Monitoring Solutions

Industrial control systems assure data integrity, process automation, simplicity of use, and data integration.



PARTICLE COUNTING & MONITORING

COMPLETE CONTAMINATION CONTROL SOLUTION

The **touchscreen's simple menu** options facilitate logical navigation, and the instrument status is rapidly communicated through the color screen display.

The exterior makes **cleaning quick and easy** and is compatible with a variety of disinfectants.



Particle Counter is designed with the latest technology to meet **global requirements** for data integrity



Real-time download to Facility Net, Pharmaceutical Net Pro, FacilityPro® SMART NG, or FacilityPro SCADA NG software, USB download, automatic clock adjustment with NTP server



240 - 100 V, 60-50 Hz, 2.5 A. Up to **two rechargeable lithium ion batteries** for portable use

Sampling can be **remotely managed** over Ethernet, and all collected data meets 21 CFR Part 11 compliance regulations.



Unlimited **users and recipes** configurable with NFC access cards

Four 20-4 mA **inputs** (<0.5% of Span), four 20-4 mA **outputs** (<1.0% Span), one 5V pulse **output**





Air Techniques International (ATI) has a heritage for supplying instrumentation and testing solutions for the clean air and containment industry.

CLEAN AIR & CONTAINMENT SYSTEMS

Photometers

Digital Photometer is a rugged and an ideal instrument for in-situ filtration system integrity testing.



Aerosol Generators

Testing of filter systems ranging from small glove boxes to large cleanroom plenums and providing the ideal solution for creating a polydispersed, submicron aerosol to certify and qualify in-situ filter systems.



Aerosol Injection & Conditioning

The Positive Injection Pump (PIP) provides the user with a safe and reliable system for directing aerosol from a Thermal or Laskin Nozzle Generator through a tube into the injection point.



Fixed Installation Ports & Specialty Probes

Fixed aerosol injection ports can be easily installed to a ceiling duct in a clean room or an adjoining room that feeds the cleanroom
Fixed aerosol sampling ports allow air-tight connections to the photometer for sampling upstream aerosol challenge from a fixed ceiling point.



Automated Filter Tester

The Automated Filter Tester is designed for test and quality control validation of filter media, cartridges and masks used in medical and industrial hygiene applications.



ENVIRONMENT SOLUTIONS



PARAMETER
GENERATION & CONTROL

STABILITY ROOMS AND CONDITIONERS

Parameter has long been on the cutting edge of innovation, offering precise temperature & humidity control with greater precision that no other manufacturer has replicated.

STABILITY ROOMS AND CONDITIONERS

TEMPERATURE & HUMIDITY CONTROL ROOMS, COLD ROOMS, FREEZER ROOMS, DRYING ROOMS

Freezers

Split system freezer is designed to precisely and reliably hold freezing conditions down to 3- degrees. Applications for freezers include diverse industries such as pharmaceuticals, medical devices, textiles, and food storage. However, These split systems provide very precise/constant control and good uniformity which is very important for regulated industries.



Cold Rooms

Innovative split system cold room is designed to precisely and reliably hold refrigeration conditions above 2 degrees. Applications for cold rooms include diverse industries such as pharmaceuticals, medical devices, textiles, and food storage.



Packaging Rooms/Walk-Ins

Custom walk-in rooms for the packaging, pulp and paper industries that comply with ICH, ASTM and TAPPI standards. Each room is built to your exact specifications and the systems provide the precise temperature and humidity control required by both TAPPI T402 om88- and preconditioning specification, TAPPI T 402. The system can automatically cycle between the two conditions.



Pharmaceutical Rooms / Walk-Ins

Each Pharmaceutical Room is custom built to meet ICH and FDA guidelines for storage conditions for pharmaceutical products. These rooms are used by many drug companies for active substances stability studies, stress testing, photostability testing and degradation examinations.



STABILITY ROOMS AND CONDITIONERS

CONDITIONERS

Horizontal Conditioners

Since this generating unit is self-contained, it can be easily used to condition existing spaces, small walk-in rooms, and custom chambers. The size of this unit allows it to sit on top of existing chambers or rooms and circulate conditioned air through the contained space.

The conditioner is controlled by the Smart Pad, a user-friendly system that provides optimum accuracy and control. The Smart Pad is equipped with direct readings for both temperature and humidity. It also features 60 segment programming for automatic cycling. High-low or deviation alarms and serial communications port (with software) are standard.



Vertical Conditioners

Parameter manufactures relative humidity/temperature conditioners for rooms provided by Parameter and existing rooms or enclosures. These systems are designed to provide precise temperature and humidity control.

The vertical conditioner is a great choice if you do not have ceiling space above to house a conditioner. This vertical unit attaches directly to the wall of the room to minimize floor space required.

This unit does not require compressed air or ultra pure water (tap water is generally fine). The interior and exterior are constructed of corrosion-resistant stainless steel. Low watt-density heaters also contribute to the unit's durability. Various safety devices are also included.

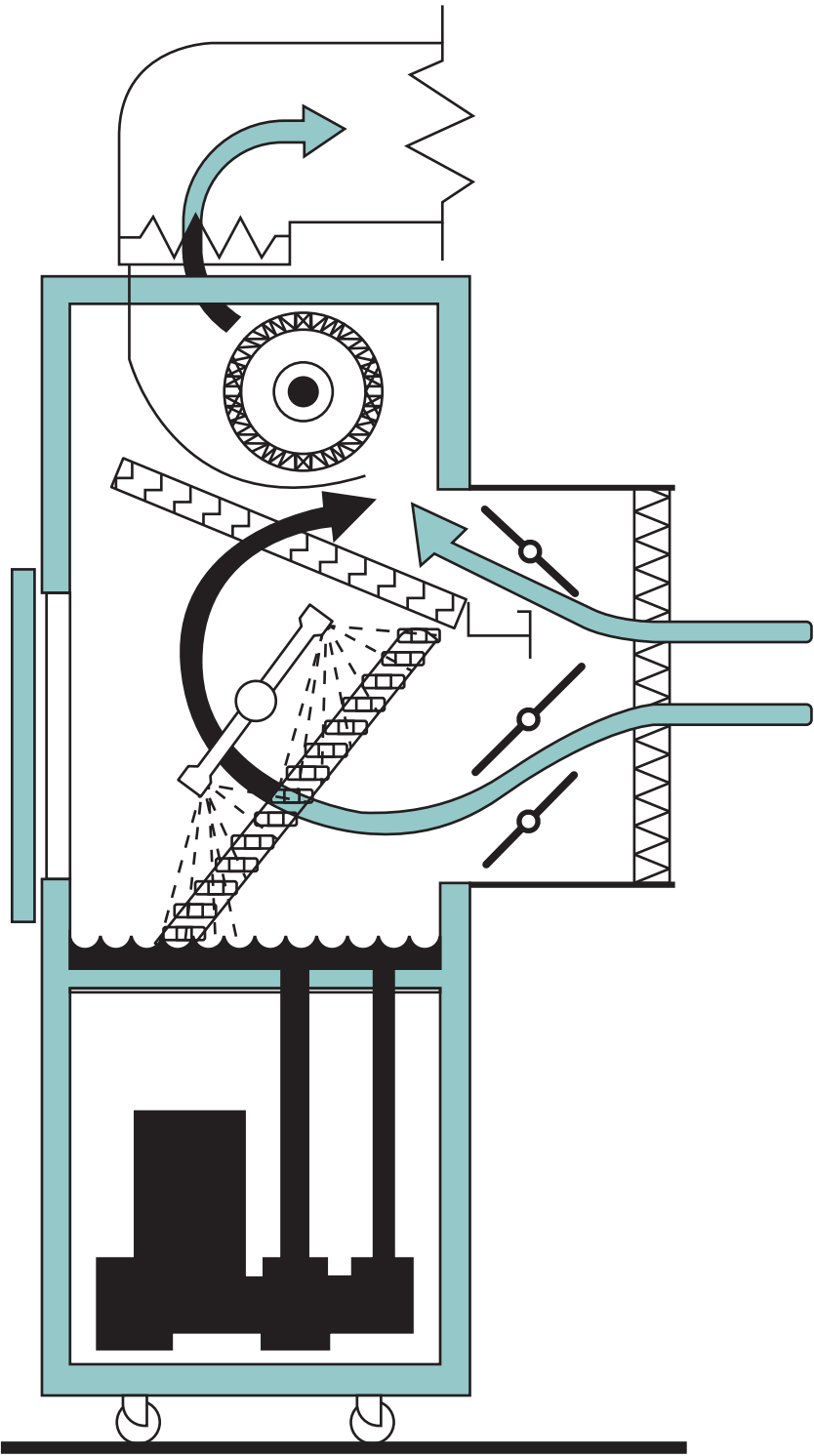


STABILITY ROOMS AND CONDITIONERS

HOW IT WORKS

PGC's method of control is the same for both reach-in chambers and conditioning systems. In short, the environment to be conditioned is controlled at a targeted dew point temperature and then reheated to a specified air temperature.

This methodology follows a proven technique that maintaining a constant dew point and air temperature will produce a very constant relative humidity.





Bioquell's validated and compliant surface and airborne biodecontamination allows you to focus on managing risks to your patients or workspaces, and reducing operating costs.

ISOLATOR WITH HYDROGEN PEROXIDE VAPOR TECHNOLOGY

Systems for Life Sciences

Bioquell Qube ideal for Sterility Testing, Gene & Cell Therapy, Small Batch Production, Compounding and Cytotoxic Preparation

Bioquell SeQure ideal for Pass-Throughs & Material Airlocks, Lab & Room Decontamination, Spaces Smaller Than 150 Cubic Meters, Viral & Bacterial Vector Work, Biosecurity and Small Research Areas

Bioquell L4- Ideal for Enclosed Systems & Equipment, Isolators, RABS, Freeze Dryers (Lyophilizers), Bio-Safety Cabinets, Cage & Rack Washers, Incubators, Filter Banks and Room Decontamination.

Bioquell Z2- ideal for Production Labs, Room Decontamination, Bio-Safety Labs and Cleanrooms.



HYDROGEN PEROXIDE VAPOR GENERATOR

Vaporization and Aeration in one

Bioquell Z2- system provides a proven -6log kill (%99.9999 elimination) of bioburden from every exposed surface in a selected zone

Scalability to meet your needs

Bioquell Z2- system can remove contaminants in areas up to 250m³, with the potential for much larger areas under Bioquell's advise

Quick setup, rapid decontamination

There is no need to wait for a limited temperature or humidity range to be reached to begin the process



Vaporizer and Distribution

Each Bioquell Z2- vaporizer can accommodate spaces up to 250m³

Touchscreen Control Panel

The control panel detaches from the system and is hosted outside of the zone being decontaminated.

Built-In Aeration

Aeration capabilities are built-in to the body of the system as a standard feature.



Flow Sciences, Inc. (FSI) designs and manufactures safety containment solutions for Research and Development Laboratories.

CONTAINMENT SOLUTIONS

Glovebox Workstation

The Glovebox Workstation series provides containment for highly toxic applications using APIs that need more safety than an opened face enclosure



CLASS I Single and Dual HEPA

Preventing loss of containment with the use of airfoils and plenums, creating a laminar airflow across the work surface, which reduces eddies and turbulence



NITROGENEMA™ Glove Box

Protecting your process by nearly eliminating moisture or oxygen with the flow of inert gas.



Chemical Fume Hood

Overlapping sash bypass to provide better containment and eliminating the need for changes if vav is installed in the lab fume hood



Vibration-free Balance Hood

The Flow Sciences Top Mounted Containment Enclosures eliminates vibration both on the work surface and on the work bench.



TOC, MERCURY ANALYZERS & ICP-OES



PRODUCTIVITY-ENHANCING INSTRUMENTATION

World's leader in the design and manufacturing of analytical instrumentation for the laboratory providing productivity-enhancing instrumentation and solutions to a number of industries.

PRODUCTIVITY-ENHANCING INSTRUMENTATION

TELEDYNE TEKMAR

Total Organic Carbon (TOC)

The Fusion was designed with the pharmaceutical and drinking water applications in mind. With its extremely low detection limit of 0.2 ppbC and its ability to handle high levels of carbon, acid, particulates, and salt, it is a very versatile analyzer for many sample matrices. The accuracy of the Fusion's UV/Persulfate oxidation is unmatched. UV/Persulfate has very little background carbon, lower than TOC combustion systems, making it the best choice for drinking water and ultra-pure water applications.



TELEDYNE LEEMAN LABS

Mercury Analyzer

Fully automated instruments that address the analysis of solids, semi-solids and liquids. They are equipped to assist today's laboratory technician, chemist or lab manager in meeting the myriad of challenges that face today's modern laboratory.

Easily maintained with readily accessible consumable and operator-friendly serviceable items and commonly serviced parts



Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES)

Prodigy Plus brings together the latest in solid-state detector technology and Leeman Labs' advanced high dispersion Echelle spectrometer to provide the most powerful ICP available today. Not only does Prodigy Plus provide superb resolution, stability and detection limits for reliable results, it also provides a wide variety of optional features that are guaranteed to enhance the capabilities of your organic analysis lab.



PRODUCTIVITY-ENHANCING INSTRUMENTATION

UNMATCHED ACCURACY



Sample History, Electronic Signatures, Metadata, Replicates Collection and User IDs are some options you can choose with the exporting data function

Septum Piercing Needle
Allows for the use of vial caps with a septa thus eliminating sample exposure time to the atmosphere

Autosampler

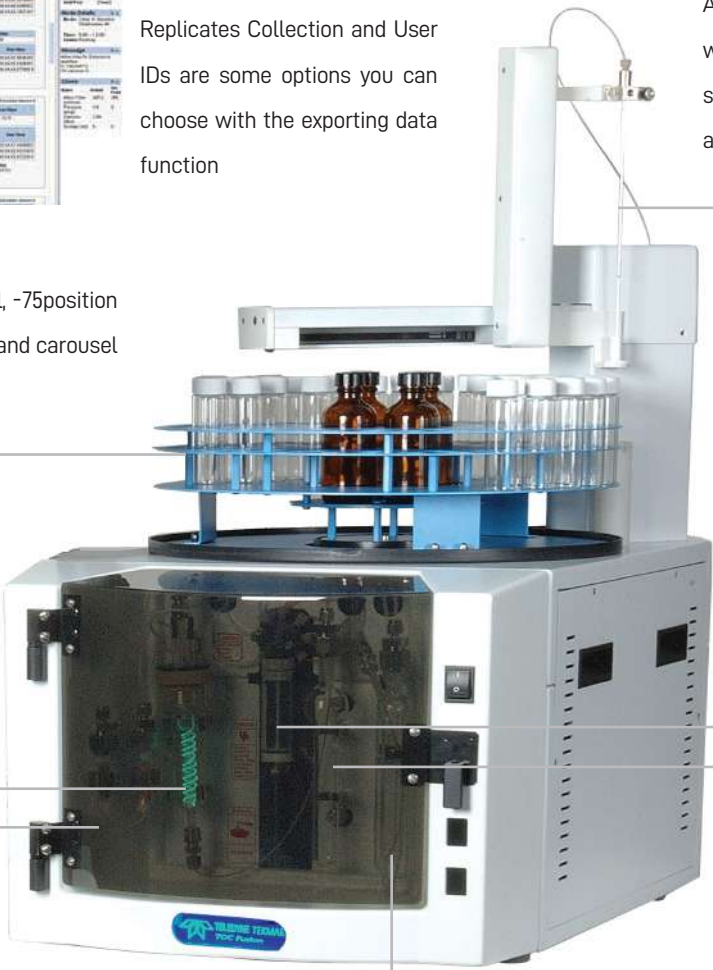
The Fusion has a standard 40mL vial, -75position integrated autosampler with an arm and carousel for position selection

UV Oxidation Reactor

Tekmar's improved UV reactor increases sample conservation and improves radiation interaction with water samples and oxidant.

Halogen Scrubber

The halogen scrubber removes chlorine and other halogens from the CO2 before it enters the detector.

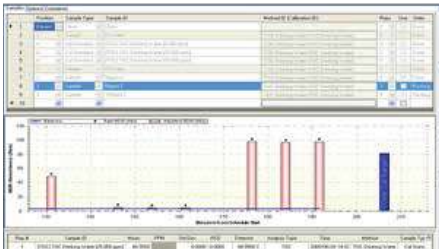


Syringe and Valve
The syringe driver has a volume delivery range of 125µL to 25mL and sample delivery between 2mL and 10mL depending on the applied method

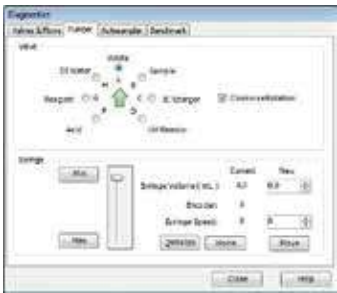
Moisture Control System
Consists of a mist trap and permeation dryer, both of which are designed to remove moisture from the sample

IC Sparger

Purge gas flows through the sparger, removing the IC from the sample



The **sample run screen** shows a blue status bar indicating that the current sample has exceeded the defined calibration range and the intellidilution feature has been initiated.



This screen demonstrates **full control diagnostics**, which allows for manipulation of all hardware components.

MICROBIOLOGY LABORATORY SOLUTIONS



STEAM STERILIZATION APPARATUS & SYSTEMS

FEDEGARI had gained a worldwide reputation for reliability and quality in the production of innovative steam sterilization apparatus and systems, thanks to the knowhow acquired and the experience and technologies developed in over 50 years' activity in this sector

STEAM STERILIZATION APPARATUS & SYSTEMS

STERILIZERS & WASHERS

Saturated Steam Vertical Sterilizers

The innovative FVA/A1, FVS and FVG series of vertical automatic steam sterilizers have been designed to meet the strictest requirements of the most demanding applications.



Saturated Steam Horizontal Bench Top Sterilizers

The FOB series are suitable for many different applications, making it the perfect choice to satisfy modern laboratory needs. FOB series autoclaves combines technology and know-how, and can be used by very different laboratories.



Stand-alone Lab Sterilizer

The FOB4 Lab Sterilizer is suitable for the use in laboratory for many different applications, such as:

FOB5 Lab Sterilizer presents a great flexibility of use, ranging from quality assurance laboratories in pharmaceutical or food industries, to BSL4 – 3 laboratories in research centres and/or hospitals.



Lab Glassware Washer

FGW Lab Glassware Washer uses a steam generator to improve washing performances: steam has an optimized emollient effect on greasy and sticky dirt.



STEAM STERILIZATION APPARATUS & SYSTEMS

EXPERIENCE TRUE STERILIZATION

Filter Decontamination

of exhaust air with sterile filter



Easy **handling of large volume sterilization** treating materials and goods as glassware and plasticware, media preparation, liquids in open and sealed containers, mixed regular and biohazard wastes, as well as porous loads, packed instruments, textiles, rubber articles, etc. for hospital use.

Transformer

Modulating Valve on feed steam inlet



Performance

Improved performances thanks to more efficient and faster processings.

Configuration

All models can be configured using a wide range of process and software options and an extensive choice of accessories.

GMP / GLP compatible data management

offering full traceability and documentation meeting the most stringent worldwide safety and quality standards. Options for compliance to EN 285 and HTM.



Thema4Lab

The pharma process controller customized for lab applications. Engineered and pre-validated by Fedegari according to GAMP 5, Thema4Lab process controller is a revolutionary solution, a completely customized system for laboratory needs that benefits from the pharmaceutical expertise of the industrial Thema4 process controller. his innovative system guarantees a reliable and cost-effective process development and is already available on FOB5 steam sterilizers and FGW glassware washers.

Separate steam generator



Valving system

Sanitary diaphragm valve in 316L stainless steel with pneumatic actuator for maximum reliability and tightness.



INTEGRA

Moving liquids in a precise and productive way is core to many tasks of laboratory professionals in the life sciences industry.

MEDIA PREPARATION & DISPENSING AND LIQUID HANDLING

Media sterilization

MEDIACLAVE allows for a much shorter process in which medium formulation and sterilization is carried out in one single step. The temperature of the agar medium is precisely monitored and controlled during the entire process



Media Automatic Dispensing

MEDIAJET can process up to 1100 dishes in a single hour and provides truly reliable walk-away operation. Equipped with a UV lamp, the filling chamber where Petri dishes are automatically filled with agar medium, is kept free from contamination.



Peristaltic Pumps

DOSE IT peristaltic pump is an easy to use device that can be used for many purposes. It is extremely light it is also easy to create individual programs, e.g. dispensing with continually increasing speed for density gradients.



Flame Sterilization

FIREBOY: Two different types of safe Bunsen burners for connection to a gas distribution system or gas cartridges.

FLAMEBOY: Flame pistol with piezoelectric ignition for connection to a gas distribution system or gas cartridges.





The world's largest manufacturer of serial-production environmental simulation chambers for scientific or industrial laboratories

TEMPERATURE, CLIMATE & ENVIRONMENTAL SIMULATION CHAMBERS

Incubators

CO2 Incubators that guarantees optimum, reproducible growth conditions for cell cultures, Standard Incubators with natural and forced convection and Cooling incubators that are gentle on samples and provide high-quality performance



Freezers

Binder freezers come with multi-layered safety concept allows users to mix and match elements to suit any environment. With practical unit sizes appropriate, sophisticated options and practical accessories, users have everything they need for reliable long-term storage of highly sensitive samples.



Chambers

Drying and heating chambers, Safety drying chambers, Vacuum drying chambers, Constant climate chambers, Dynamic climate chambers.



Ovens and Vacuum Ovens

Binder ovens guarantee short drying time with high temperature accuracy and defined ventilation where the vacuum drying chamber models enable effective drying without residue or damaging the material being dried



INNOVATIVE SOLUTIONS FOR FERTILITY CLINICS & LABS

TEMPERATURE, CLIMATE & ENVIRONMENTAL SIMULATION CHAMBERS

Heat jacket

This heated jacket heats the incubator chamber directly from all directions, resulting in a fast temperature recovery time and more uniform heat distribution.



Intuitive Touchscreen Controller

Internal data recording, can be read out in open format via USB interface.

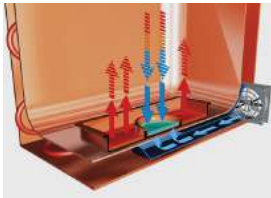


3 perforated shelves, stainless steel.

Lockable door handle.



Binder technique to prevent condensation with **integrated cold spot** to condensate the excess humidity



The new drift free CO₂ sensor technology

the new detector and source are inherently stable without the need for compensation with direct access to the sensor making maintenance easier

DuoDoor™ system: Unit door and glass door can be opened with one handle.

- Temperature range: ambient temperature plus 4 °C to 60 °C
- Humidity range: 90 to %95 RH
- CO₂ control range: 0 to 20 vol% CO₂
- O₂ control range: 0.2 to 20 vol% O₂ for versions with O₂ control
- Maximum usable space with minimal footprint and excellent ease of use
- Minimum risk of contamination thanks to uncompromising hot-air sterilization





INSTALLATION, QUALIFICATION, VALIDATION & REPAIR

OUR SERVICE TEAM

We understand the importance of adequate services and the need for a properly qualified service team to perform their tasks as expected along with the continuous changing of technologies.

Therefore, our service team receives professional training through dedicated training programs provided by our manufacturing partners and by Diamond Spectrum internal programs.

INSTALLATION AND COMMISSIONING

It is one of our responsibilities to serve a complete successful installation and commissioning of the equipment we supply; That also includes staff training on the operation of the instrument and other optional services.

CUSTOMER TRAINING

We offer training on the application and the preventive maintenance of all the equipment we supply.

MAINTENANCE & REPAIR

Maintenance and repair are performed by a well trained team of engineers and technicians. With the aid from manufacturing companies manuals, most repairs can be done at customers' sites or at Diamond Spectrum's workshop if needed which is fully equipped with specialized tools and instruments for different tasks.

CALIBRATION & CONTRACTS

We offer calibration services for selected instruments such as weighing solutions, titrators, particle counters, humidity sensors and thermal analysis. For some instruments we offer to do the adjustment based on calibration reports generated.

We also offer annual contracts that includes routine visits and emergency calls, it also includes different options for quality control assistance.



INSTALLATION, QUALIFICATION, VALIDATION & REPAIR

QUALIFICATION

Qualification is a critical step to which we are dedicated to perform for pharmaceutical industries including all the instruments and equipment we supply. we also perform qualification in other sectors as well.

SUPPORTING APPLICATIONS & REGULATIONS

With the continuously evolving technologies and the need to comply with local and international regulations and requirements, we update our staff and our clients knowledge and skills constantly to be part of our contribution and support for our customers within our field of specialty

TRAINING

Training is performed by qualified trainer's of Diamond Spectrum's team.

our trainers have training experience with different industrial and medical sectors along with special training they have received from different manufacturing companies.

CERTIFICATES

Trainees who attend our training programs will receive certificates of attendee with details about the training and training period.

Trainees who apply and pass training exams will receive training certificate with training program details.

TRAINING VENUES

Training for small groups (up to 7 persons) can be conducted at our training room and work shop in Diamond Spectrum offices, for theoretical and practical parts. For larger number of participants training can be arranged at selected proper locations.

Contact us

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