

Components for Automation



Accurate Sensors
To Improve Quality and Productivity

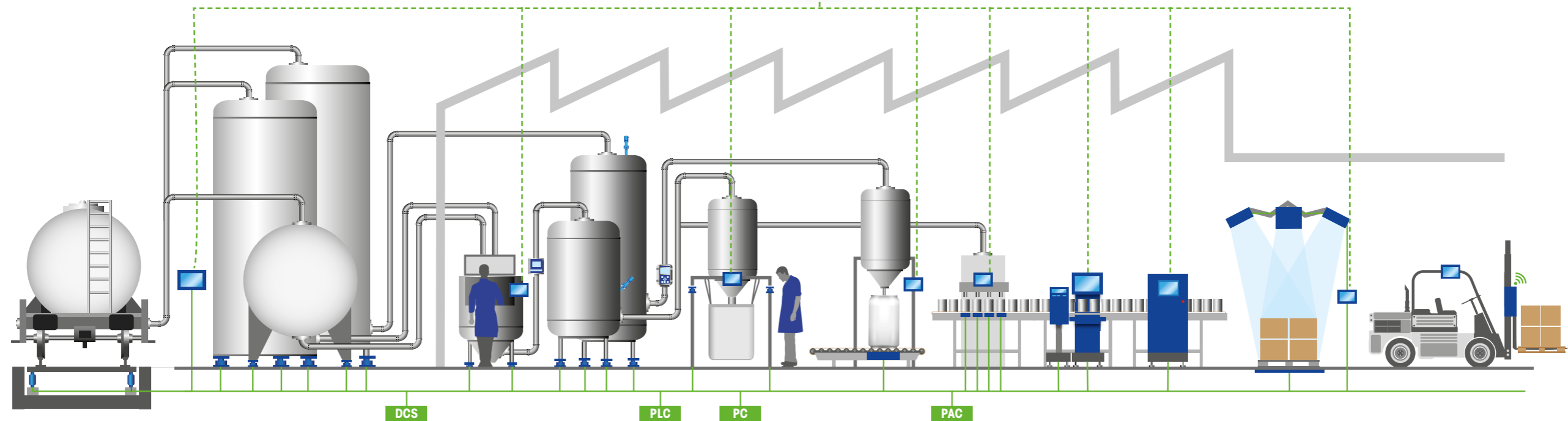
METTLER TOLEDO

Are You at Peak Performance – And Ready for Future Challenges

Remote Services

Cloud-based condition monitoring
and intervention solutions

Are high profitability, cost management, quality and reduced waste key themes for your customers? If you are supplying machines, production lines, or systems, METTLER TOLEDO can help you with the most advanced sensors for continuous, batch and discrete processes with connectivity to automation systems that you control.



Material Receiving

New, specially-designed or existing scales can be upgraded and easily connected to your automation system to make sure that you receive the exact amount of raw material required.



Inventory

Do you have enough material to start the next batch? Should you order today or tomorrow? Answer these questions by connecting METTLER TOLEDO weigh modules to your automation infrastructure.



Production

Reliable monitoring and control instruments support the pharmaceutical, beverage, chemical, and semiconductor industries. Real-time analysis promotes consistency and productivity, minimizing out-of-specification production.



Profitable Filling

METTLER TOLEDO products give you precise control of your filling processes to ensure that you package the right amount of product to keep your bottom line intact. Fill the smallest to the largest possible containers.



Product Inspection

Sensors designed to be easily integrated into your transportation and packaging systems including weighing, vision inspection, x-ray inspection and metal detection.



Packaging and Shipping

Many packaging and labeling systems include load cells, or scales for accurate shipping weights. METTLER TOLEDO dimensioning systems ensure you deliver accurate dimensions for transport.



Industrial Communication Sensors That Live in Your Automation Landscape

Flexible METTLER TOLEDO Automation Sensors can be connected to automation systems from ABB, Emerson, Rockwell Automation, Group Schneider, Mitsubishi, Siemens and more!



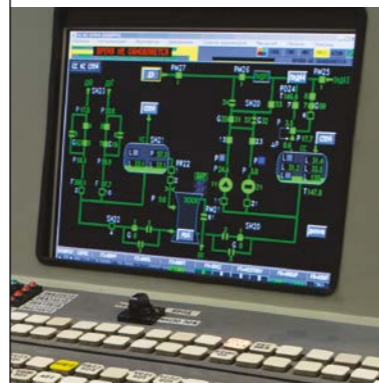
Industrial PCs and Servers



Choose RS232, USB or Ethernet TCP/IP

Easily connect sensors straight to Industrial PCs for tracking and tracing data critical to document and prove the quality of your products. "Alibi" function in many weighing products provide legally relevant local data should a server fail.

Distributed Control Systems for Process



Choose 4-20mA, HART, Foundation Fieldbus, Profibus, Ethernet/IP

DCS users will find very powerful interfaces on many METTLER TOLEDO sensors, scales and process transducers, including DO, O₂, CO₂ and turbidity equipment. Calibration services are available on our terminals and transmitters.

Programmable Automation Controllers



Ethernet/IP, Profibus, CC-Link and DeviceNet

Ethernet /IP, PROFIBUS, PROFINET and CC-Link allow you to connect many automation controllers to METTLER TOLEDO sensors. You pick and choose which data is relevant to you. Remote calibration and selectable filtering give you very powerful process control.

Communication

- HART, 4-20mA
- Foundation Fieldbus
- Ethernet TCP/IP
- Ethernet/IP™, PROFINET® IO
- PROFIBUS® PA & DP
- CC-Link
- DeviceNet™
- OPC UA



Weighing Terminals and Transmitters

IND131 is an example of a terminal/transmitter capable of fast and accurate weighing and 13 different types of industrial communication to an IPC, DCS or Programmable Automation Controller depending on your needs.

▶ www.mt.com/ind-act350
▶ www.mt.com/terminals

Inventory Control

Too Much, Not Enough or Just Right?

Are you sure that that your on-hand raw material inventory is sufficient for production? Does the volume of your product change? METTLER TOLEDO sensors are located outside your vessel and do not affect your product.

Railcar and Truck Weighing



Are you receiving everything you purchased?

Many manufacturers monitor bulk material transfer with METTLER TOLEDO scales to ensure that all material has been transferred into their storage silos and not left in the vehicle or transfer system. Weighing confirms that you are not losing money if your supplier ships by volume or mass flow. Convert your existing scale to METTLER TOLEDO.

► www.mt.com/vehicle

Accurate Bulk Inventory Control



Weighing maintains accurate inventory in tanks, silos or hoppers.

Weight is independent of vessel shape and size – perfect for non-self-leveling materials. And, because weigh modules do not come into contact with the process media, maximum precision and equipment lifetime are ensured.

► www.mt.com/tank-weighing

Weighing Bags, IBCs, Drums



Choose either standard or hygienic floor scales or unloading systems.

Many high quality machine builders integrate METTLER TOLEDO sensors / scales into their unloading systems, especially when time-based material discharge needs to be tightly controlled.

► www.mt.com/filling



Sensors for Inventory Control

- Bench Scales
- Floor Scales
- Truck and Rail Scales
- Load Cells
- Weigh Modules
- Automation Terminals



Weigh Modules

METTLER TOLEDO weigh modules provide the highest accuracy and reliability for static or dynamic applications where loading involves horizontal forces. PINMOUNT PDX is available in capacities of 20t, 30t, 50t. A broken cable or damaged cell signals an immediate message so you can respond quickly, minimizing downtime. SafeLock™ improves your site safety.

► www.mt.com/weighmodules
 ► www.mt.com/terminals

Automated Production

Less Rework and No Bad Batches

When accurate analytical and weighing measurements are performed, **METTLER TOLEDO** sensors reduce batch-to-batch variation and ensure that your processes are repeatable even under changing conditions.

Process Analytics Solutions



METTLER TOLEDO offers integrated in-line process control analysis into your systems via appropriate high-performance transmitters for pH, dissolved oxygen, CO₂, conductivity, and turbidity measurements. Immediate, reliable and continuous results provide the base for optimized plant performance.

► www.mt.com/ism

Liquid Weighing



In many processes, integrated weighing sensors have been found to yield better results than flow meters, because weighing sensors do not require cleaning when your materials change. Preweighing batch components can effectively speed up production. METTLER TOLEDO load cells precisely control the addition of liquids into your reactor or mixer.

► www.mt.com/filling

Solids Weighing



Dry materials are best processed by weighing, because weight is a more constant measurement than volume. If you are seeing variations in your weighing results, consider using METTLER TOLEDO automation sensors and METTLER TOLEDO load cells in your loss-in-weight systems.

► www.mt.com/ind-bulk



Instruments for Automated Production

- Sensors for:
 - pH
 - dissolved O₂ and CO₂
 - conductivity
 - turbidity
- Transmitters
- Housings
- Cleaning and Calibration Systems
- Load Cells, Weigh Modules
- Automation Terminals



Intelligent Sensor Management (ISM®)

"Plug and Measure" is an outstanding feature of METTLER TOLEDO ISM technology. It leads to fast, hassle-free system start-up and optimized maintenance routines in the field. This approach helps to minimize life-cycle costs of analytical in-line measurement systems throughout your entire plant.

► www.mt.com/process

Semiconductor and Solar Cells

Use Best of Class Automation Sensors

Integrated sensors improve quality, consistency and production yield for critical operations such as coating, bonding and abrasion. Conductivity sensors ensure ultra pure water.

Ultrapure Water



Conductivity measurements with WideRange™ open up new dimensions in measurement technology. Superior electrode surface finishes now make it possible to venture measurements in applications that previously were possible only with toroidal sensor systems.

► www.mt.com/cond

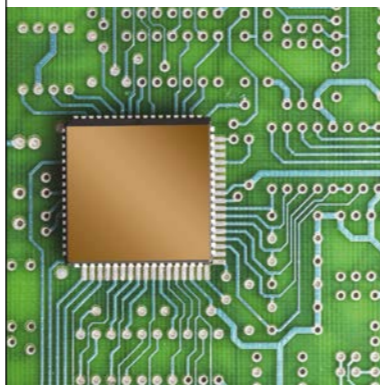
Wafers



Verify the correct sealing of integrated circuits, the thickness of solar wafers, or even coverage of post coating processes with high resolution weigh modules. Detect small variations in the consistency of very small objects.

► www.mt.com/apw

Screening



Semiconductor processing machines use industrialized WMC, the world's smallest ultra-high precision sensor. It offers laboratory resolution in a postage stamp sized sensor. WMC are used for calibrating dispensing devices.

► www.mt.com/WMC



Semiconductor Production

- Weight Transmitters
- High Precision Weigh Modules
- Connectivity modules



Lab Balance Accuracy

Accuracy in a compact industrialized sensor
The ultra-compact WMC weigh modules is specifically designed for the use in automated processes under industrial environmental conditions. Speed, ruggedness, precision and direct connectivity are the key features of this product. These innovative sensors can be used for weight control as well as filling/dosing applications.

► www.mt.com/apw

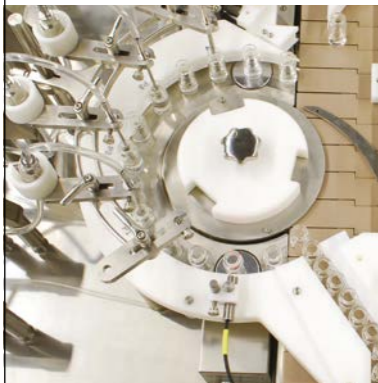
Filling Containers of All Sizes

Exact Fills Equal Profitability

METTLER TOLEDO offers a wide range of sensors to improve filling performance no matter if it is extremely small or extremely large. METTLER TOLEDO has the right sensor for filling.



Micro-filling of Small Bottles



Weigh modules from METTLER TOLEDO are tailored to machine and equipment manufacturer specifications for simple electrical and mechanical integration. Standardized interfaces allow easy communication with control systems. Stainless steel housings and overload protection ensure reliable operation in automated applications.

► www.mt.com/apw

Drums, IBCs, Big Bags



When your product is expensive, you shouldn't give it away through bulk container overfilling. METTLER TOLEDO load cells, weigh modules or scales can be easily integrated into your filling machine for accuracy in safe and hazardous environments, ensuring you deliver high fill accuracies to achieve cost savings.

► www.mt.com/filling

Trucks and Rail Cars



Filling your truck or railcar with a system including METTLER TOLEDO sensors will yield the lowest giveaway. When you can confirm your flow meter results with a scale in situations where re-filling is impractical, you will be surprised at how much you could be giving away.

► www.mt.com/vehicle

Designing Customized Weighing

- Load Cells
- Weigh Modules
- Bench and Floor Scales



WMS High Precision Weigh Module

WMS weigh modules are specifically designed to be easily integrated into automated processes under industrial environmental conditions. Speed, ruggedness, precision and direct connectivity are key features. These innovative sensors can be used for weight control as well as filling/dosing applications.

► www.mt.com/APW
 ► www.mt.com/load-cells

Automated Product Inspection For Consumer Protection

Completeness checking and quality verification can be built into transport systems between process steps by integrating space-saving weighing and metal detection sensors.



Checkweighers and Catchweighers



Weighing sensors integrated into both static and dynamic conveyors allow you to eliminate time-wasting manual transportation steps in production. Consider adding a weighing conveyor to your extruders, or using cutting machines to find production failures, gaps in components or incorrectly sized products.

► www.mt.com/checkweighing

Metal Detection and X-ray Inspection



When foreign bodies in your product could harm customers, or following processes, consider an in-process metal detector or x-ray inspection system to automatically reject non-compliant products. This not only protects consumers – but also downstream production or packaging equipment against damage.

► www.mt.com/metal-detection

Vision for Tracking and Tracing



METTLER TOLEDO vision inspection systems integrated into your automation landscape will validate and collect data such as accurate label presence, label position, label skew, label ID, label registration, and human-readable text.

► www.mt.com/ci-vision

Food and Pharmaceuticals

- Legal Filling Control
- Metal Detection
- X-ray Inspection
- Vision Inspection
- Automated Solutions



Metal Detection Transfer

The Profile Sealtite Gravity Fall system is a heavy duty metal detector for use on all bulk and free flowing powders as well as granular products that maintain a stringent inspection standard. A high speed "cowbell" style reject device incorporating METTLER TOLEDO Safeline's unique SealTite design reduces product waste for added cost savings.

► www.mt.com/metal-detection

Automated Shipments

Tracking and Revenue Recovery

Improved tracking is ensured when you build vision, weighing, and dimensioning components into your logistics process for accurate quality, billing and freight rate calculation.

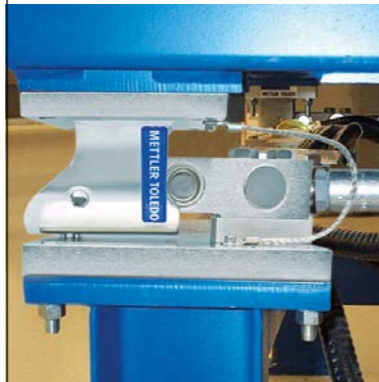
Forklifts and Scales



Specialized weighing components are available for integration into forklifts. Also, consider a standard custom floor scale for your packaging machines.

► www.mt.com/floor-scales

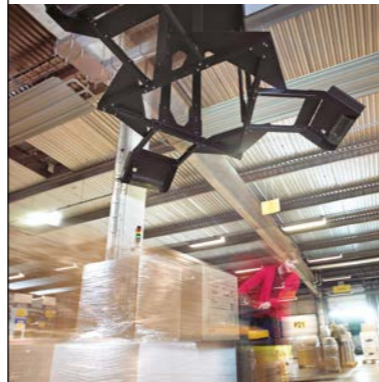
Accurate Weighing of Outgoing Goods



Prevent customer complaints and freight recharges by building, weight and measures approved, load cells or scales into your cartoning, wrapping and labeling machines.

► www.mt.com/load-cells

Dimensioning



Volume and weight are used to calculate shipping cost. Ensure that transport costs are covered and avoid back-charges that negatively impact your bottom by integrating dimensioning systems into your automation infrastructure.

► www.mt.com/dimensioning



Transport and Logistics

- Shipping
- Load Cells
- Bench Scales
- Floor Scales
- Dimensioning
- Fork Truck Scales

Automatic Dimensioning

The METTLER TOLEDO Pallet™ dimensioning, weighing and scanning system accurately calculates size and weight of pallets and larger items. Data is automatically transferred to your existing IT system.

Automatic dimensioning captures accurate size and weight data on any shape item, ensuring all surfaces are measured Legal for Trade and storage with accurate, secure results storage.

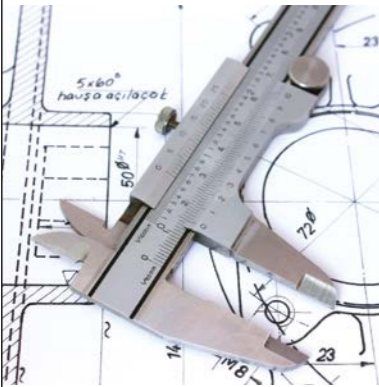
► www.mt.com/dimensioning

Engineered Machines and Systems With Automation Sensors

If you are a manufacturer, integrator or engineering group you can add more value by integrating high performance components and integrated systems from METTLER TOLEDO while reducing your overall integration effort.



Machine Building



OEM sensors designed to fit into your machine. High performance OEM components designed to fit your machine vastly improve your competitive edge by delivering high performance and reliability. World wide support ensures that we can solve problems no matter where your machines are located.

▶ www.mt.com/oem-weighing

Systems Integration



When your project calls for weighing, process and in-line inspection systems, METTLER TOLEDO sensors yield high performance and fulfill most world regulations for safety, quality, hygiene, traceability and hazardous-area use. Many end user customers prefer METTLER TOLEDO.

▶ www.mt.com/ind-eoi-video

Factory Engineering



METTLER TOLEDO brings you close to a one stop. Because a large variety of sensors are easily integrated into your new or existing production lines, METTLER TOLEDO brings you closer to being a one-stop shop. You can plan calibration and maintenance with you and assisted by services like iSense and Good Weighing Practice (GWP).

▶ www.mt.com/industrial

Engineered Machines and Systems Service

- Industrial Catalog
- Weighing Components Guide
- Weigh Module Handbook
- Vehicle Scales Selection Guide
- iSense
- Good Weighing Practice



Resources

METTLER TOLEDO provides many resources where you will find drawings, specifications, and approval details to make it easy to specify automation sensors into your engineered systems.

- ▶ www.mt.com/weighing-component-catalog
- ▶ www.mt.com/ind-brochure-components
- ▶ www.mt.com/ind-wp-weigh-module-design
- ▶ www.mt.com/pro
- ▶ www.mt.com/pi

Services for Uptime, Performance, Compliance & Expertise

The METTLER TOLEDO service team knows how to satisfy your business needs by getting the best from your instrumentation and equipment. Take advantage of the experience, skills and thorough know-how of our far-reaching team of thousands of dedicated service specialists, in your immediate vicinity.

The METTLER TOLEDO service offering ensures optimal equipment uptime, performance, and compliance, and offers the expertise necessary to maximize your investment.



Uptime



Profit from maximum uptime for your equipment and processes, receiving support whenever and wherever you need it:

- On-site and depot repair
- Wear and tear parts
- Spare parts and kits
- Refurbishment
- Remote monitoring and diagnostics

Performance



Realize highly accurate and precise results from your processes by optimizing equipment performance in all environments:

- Qualified Installation
- Setup and Configuration
- Preventive Maintenance
- Software Maintenance
- Instrument and Process Optimization
- Application Support

Compliance



Get peace of mind in complying with regulations and norms and with results that meet requirements every time:

- Calibration and Certificates
- Legal Verification
- Weights and Measures Support
- Qualification and Validation
- Documentation and Testing

Expertise



Ensure high efficiency and workforce expertise through training and seminars tailored to your needs:

- Basic User and Technical Training
- Advanced Application Training
- Consulting and Customization
- System and Process Integration
- Expert Seminars
- Literature and Downloads

Good Weighing Practice™

GWP® Recommendation: MTLABTEC-104-20090917-58

Balance
IP20002R

Weighing Parameters
Typical minimum weight for 0.1 % weighing accuracy (dispensation factor ≤ 3 , without safety factor)
Typical: 21 mg¹⁾ Required: 30 mg
Safety factor
Achieved: 2.4 Required: 2

For the determination of the actual minimum weight the testing of a minimum weight certificate according to USP is recommended

Installation, qualification and training²⁾
Quantity: 1

Service contract
Calibration, Maintenance & Repair

Control of weighing equipment
GWP Excellence™
The routine testing functionalities of the IP Balance ensure that your balance is always tested correctly and on time.

Tests³⁾

Calibration (by service)	yearly
Eccentricity (by user)	-
Repeatability (by user)	quarterly
Sensitivity (by user)	monthly
FACT (by balance)	daily

Weights

Weight 1:	200 g	Class:	F2, F1 or E2
Weight 2:	10 g	Class:	F2, F1 or E2

For correct handling of weights we recommend the use of appropriate tweezers and/or gloves.
Recalibration interval of weights: ⁴⁾ every two years

Measuring Practices

Optimal service throughout the solution lifecycle
METTLER TOLEDO Good Measuring Practices (GP) like Good Weighing Practice (GWP®) help customers to optimize their results while keeping cost at a minimum. GP offers a set of tailored services that form a systematic and efficient product evaluation to ensure professional installation, appropriate calibration and optimized routine use.

Global Presence with Field Support & Service

When it comes to instrumentation you need a powerful partner that has the strength and know-how in R&D to develop products that add true value to your processes and has a truly global presence to serve you even in the most remote global locations providing application support and technical assistance.



Extensive, highly experienced support force

METTLER TOLEDO serves customers worldwide with one of the largest sales and service networks in the industry. Over 5,000 factory-trained specialists in sales, application support and technical service are on-hand to assist you in increasing the efficiency, cost-effectiveness, safety and reliability of your operational processes. Local teams are able to maintain close relationships with users; they have the flexibility to adapt support and service to different user requirements.

Global presence

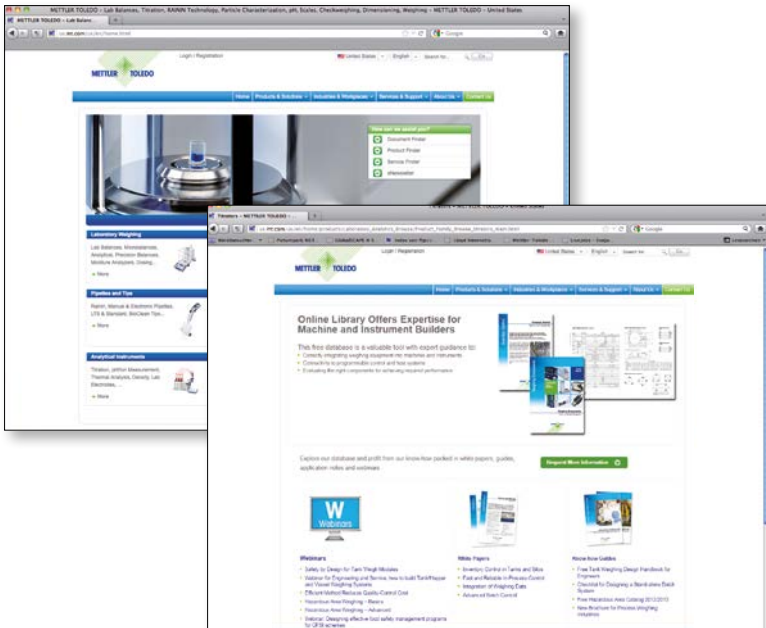
METTLER TOLEDO market organizations operate in most industrialized countries as well as selected partners in other regions, we are ready to serve customers well around the globe. In total METTLER TOLEDO products and services are available in over 100 countries. METTLER TOLEDO, geographically-focused market organizations are responsible for all aspects of sales, service and support.

Over
6 500
factory trained service
and sales specialists
worldwide

METTLER TOLEDO has its own Sales & Service Organizations in 39 countries as well as Distribution & Service Partners in most other countries around the globe.

Products are developed and produced in various locations in the United States, Europe and China.

Access Information and Know-How On www.mt.com



Learn more about how METTLER TOLEDO can assist you by visiting our global website. View up-to-the-minute product and application information, order our full catalog or request quotes or sales assistance and see for yourself how we can add value to your business.

www.mt.com/oem-competence

For more information

Mettler-Toledo AG
CH-8606 Greifensee,
Switzerland
Tel. +41 44 944 22 11
Fax +41 44 944 30 60

Subject to technical changes
© 01/2017 Mettler-Toledo AG
Printed in Switzerland
MarCom Industrial
MTSI 30129940