

Automotive



## **Process Reliability and Productivity** with Smart Measuring Solutions

**METTLER** **TOLEDO**

# Process Reliability and Productivity For Total Customer Satisfaction



## Material Receiving

Ensure your suppliers meet your specifications with the latest weighing and measuring solutions. Verify the amount of incoming goods quickly and accurately with vehicle, floor and bench scales. Test the material with moisture analyzers and other analytical instruments for quality and reliability.



## Quality Control Product Development

Quality control, failure analysis and new product development require reliable and powerful analytical instruments. Material characterization by thermal analysis is a key application. Karl Fischer titrators determine water contents down to 1ppm. Exact analyses are crucial for long-term market success.



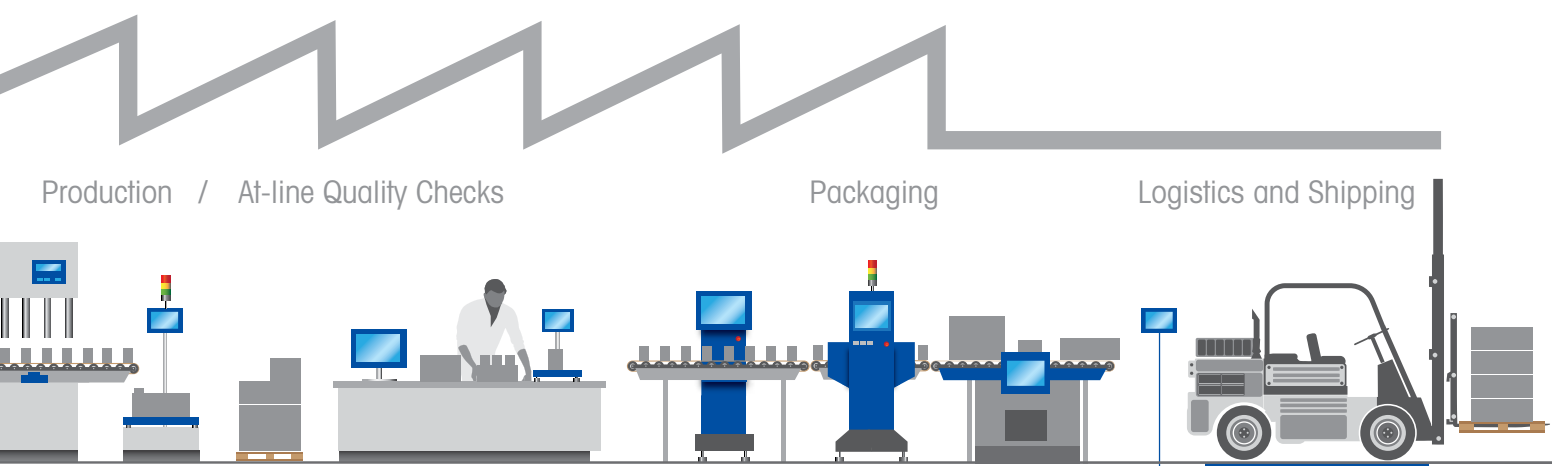
## Warehousing

Smart weighing and counting solutions keep track of stock movements, ensure flawless goods storage and help avoid out-of-stock situations through direct integration into ERP systems. Mobile counting scales facilitate and speed up commissioning.



**In the automotive industry, it's key to keep process reliability under control while improving productivity. Save time and money while speeding up your processes and controlling quality. METTLER TOLEDO provides complete weighing and measuring solutions and services that help enhance your business excellence.**

► [www.mt.com/automotive](http://www.mt.com/automotive)



## Production

Process automation and fast user guidance are essential to increase production efficiency and consistency. Batching scales mix raw materials automatically, while counting scales and recipe-weighing solutions guide the operator quickly and reliably through each step of the working process.



## At-line Quality Checks

Process reliability is indispensable to maintain high product quality and to ensure customer satisfaction. Damaged or incomplete products or cavities in castings are discovered through manual over/under checkweighing or integrated high-precision weighing modules in production machines.



## Packaging

Make sure you pack the correct amount of parts and ensure correct packaging and labeling. Static or dynamic checkweighers guarantee that no product leaves the factory with missing parts. Vision inspection verifies packaging and labeling and ensures brand integrity.



## Logistics & Shipping

Prior to shipping, orders must be complete, on time and properly documented for tracking and tracing. METTLER TOLEDO weighing and labeling solutions make sure you meet all regulations and fulfill your customers' requirements.



# Material Receiving

## Reliable Verification of Incoming Goods

**Ensure you are receiving the right quality and quantity of products with weighing and measuring solutions from METTLER TOLEDO. Raw materials with out-of-specification characteristics jeopardize your product quality and reputation. Smaller-than-declared delivery quantity negatively impacts your profitability.**

### Vehicle Weighing



#### **Unmatched accuracy and long uptime with latest technology**

Optimize plant efficiency with transparent inbound material control. Our latest POWERCELL® PDX® load cells and DataBridge™ vehicle-scale software help to save time and money by giving you increased uptime, precise results and complete control of your vehicle-weighing operation.

### Completeness Checks



#### **Fast and flexible verification of goods**

Reliably check completeness of goods with rugged bench, floor or pallet scales. You also can verify small quantities up to large volumes with two-scale counting solutions. For more comfort and flexibility, use the optional barcode scanners, mobile carts or access ramps.

### Moisture Determination



#### **Accurate verification of material quality**

Moisture plays a crucial role in many manufacturing processes. For example, polymer granules for injection molding should not exceed the permissible water level to avoid processing problems, poor surface quality or reduced mechanical properties of the molded parts.





## Solutions for Material Receiving

Vehicle Scales

Weighbridges

Vehicle-Scale Management Software

Bench Scales

Counting Scales

Floor & Pallet Scales

Halogen Moisture Analyzers

Precision Balances



## Halogen Moisture Analyzer HX204

### Moisture analysis when you need it

The HX204 combines speed and high resolution, providing reliable analyses of substances with very low moisture content, down to 10 ppm. Robust components ensure trouble-free operation, even at production sites. Real-time graphics show the measurement progress. Individual control limits for each product simplify pass/fail decisions.

► [www.mt.com/moisture](http://www.mt.com/moisture)

# Quality Control in Laboratories

## For Reliable Parts from A to Z

**Parts and components for automotive use have to fulfill high quality standards to excel in the market. Rejects or even the recall of an entire batch translates into high costs and reputation damage. Analytical instruments and balances from METTLER TOLEDO help you achieve quality targets with highly efficient testing.**

### Thermal Analysis at its Best



#### The universal tool for material characterization

The differential scanning calorimetry (DSC) technique is ideal for quality control, material development and research. It determines thermal quantities, analyzes thermal processes and characterizes or compares materials. DSC yields valuable information relating to processing, application, quality defects, identification, stability, reactivity, chemical safety and the purity of materials.

### Water Content of Polymers and Resins



#### Get the water specifically and precisely

Karl Fischer titration is the standard method for the specific water-content determination. It provides accurate and precise results within minutes. The coulometric technique applies from 1 ppm to 5%. The volumetric technique is designed for a range of 100 ppm to 100%.

### Analytical and Microbalances



#### For your lab weighing tasks

Facilitate and speed up laboratory weighing tasks with Excellence Balances. Master weighing tasks, such as sample preparation, formulation or density determination, with easy-to-use touchscreen features. Master static charges with StaticDetect™ and achieve fast and trustable results.



## Solutions for Quality Control

Thermal Analysis Instruments

DSC, TGA, TMA, DMA

Karl Fischer Titrators

Halogen Moisture Analyzers

Analytical Balances

Microbalances

Precision Balances

Potentiometric Titrators

Dropping Point Systems

### TGA/DSC 1

#### **The key to compositional and thermal stability analysis**

The TGA/DSC 1 is a versatile tool for the characterization of material properties under precisely controlled conditions. It yields valuable information for development, quality control or failure analysis. The TGA/DSC also measures the heat flow. This enables you to detect thermal events unrelated to a change in mass, such as melting or glass transitions.

Also available: TMA, DMA, Hot-stage microscopy, high pressure DSC, ultra fast scanning DSC.

► [www.mt.com/ta](http://www.mt.com/ta)

# Warehousing

## Fast and Flexible Stock Control

**Speed up your warehousing and achieve lean processes with efficient commissioning and inventory control. The automated management of your expendable items stock allows you to focus on more important tasks. Mobile weighing and counting solutions offer time-saving flexibility and eliminate unnecessary walks. Their wireless connectivity optimizes your operations in the warehouse and guarantees end-to-end stock control.**

### Order-Picking



#### **Efficient order-picking with mobile scales**

Achieve significant time savings due to short order-picking routes with mobile weighing solutions. METTLER TOLEDO counting scales facilitate error-free commissioning in the blink of an eye. Battery operation and WLAN connectivity to your warehousing or ERP system allow maximum flexibility for your daily operations.

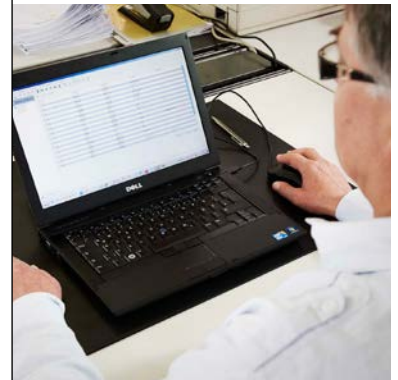
### Remote Inventory Control



#### **Survey and optimize your inventory remotely**

Benefit from efficient and transparent stock control with integrated smart-shelf weighing systems. The quantity of every bin is checked remotely, giving you full stock control, accountability and the opportunity to optimize your supply chain.

### Data-Management and Integration



#### **Analyze and integrate your weighing results**

Customizable databases allow for easy article data download and analysis of the weighing results. A selection of interfaces simplifies the integration of your measuring devices into your existing back-end systems. It increases efficiency by ruling out overlaps and bringing together all relevant data in one central database.





## Solutions for Warehousing

Mobile Counting Scales

Database Solutions

Label Printing

Inventory Scale Solutions

Bench / Portable Scales

Floor & Pallet Scales

Mobile Pallet Truck Scales



### ICS685

#### Multifunctional Counting Scale

**Designed for fast operation  
when accurate quantities count**

This compact bench scale is designed to accurately weigh and count thousands of parts or products. With the ICS685, operators can handle numerous articles and match average piece, sample or tare weights with unrivaled speed. The ICS685 Compact Weighing System features user management functions plus database software to easily manage either a central host or different scale embedded databases. It enables you to establish full traceability, from worker ID or article number, along your supply chain. Attach to printers for AIAG- and ODETTE-compliant labels.

► [www.mt.com/ICS685](http://www.mt.com/ICS685)

# Production

## High Throughput and Consistency

**Speed counts in today's competitive environment. Automotive suppliers must not only deliver error-free, high-quality products, but they also need to produce on time. Benefit from intuitive user menus facilitating your daily counting and recipe-weighing jobs and automated batching solutions to deliver consistent products.**

### Piece Counting



#### **Fast and accurate counting with high throughput**

Reduce inefficient transportation time by directly counting parts at the production machine. Automate piece counting and completeness checks by integrating counting scales into your production process. Profit from various interface options, such as digital I/O, to control conveyor belts and redirect material flows.

### Formulation



#### **Error-free recipe weighing and traceability**

Accurate, reproducible mixtures are essential for product quality and safety. Our stand-alone or fully-networked formulation solutions guide operators step-by-step through their daily tasks, helping to avoid human errors. High-precision scales guarantee consistent quality and smart software solutions offer reliable documentation for traceability.

### Batching, Dosing, Filling



#### **Reduced waste and reliable results**

Efficiently manage raw materials, reduce waste and avoid errors with automated batching solutions. Batching scales accurately mix raw materials according to predefined recipes, even in difficult environments. Benefit from complete batch-control solutions or integrate terminals for precise filling, which communicate with your control system via Fieldbus or Ethernet.





## Solutions for Production

Counting Scales

High-Precision Reference Scales

Formulation Solutions

Batching Solutions

Process Weighing Terminals

Weigh Modules

Bench & Floor Scales



### IND780batch Batching Controller

#### **Powerful and flexible batching technology**

Batch processing requires a control solution that manages not only recipes, but also weighing scales, valves and order management. The IND780batch terminal supports these needs and makes sure the material flow is constant. Up to 1,000 recipes can be stored in the terminal and a PC configuration tool allows easy management of batching data.

► [www.mt.com/IND780batch](http://www.mt.com/IND780batch)

# Quality Control in Production

## Reliable Processes & Error-Free Products

To manufacture high-quality products or parts, regular quality checks are essential to satisfy your customers. Defective pieces must be sorted out from the manufacturing process and incomplete shipments must not be sent. With **METTLER TOLEDO** solutions, you can gain more control over your production process. Check parts or packages in- and off-line for intactness, completeness and other parameters and statistically monitor the results.

### Quality Checks by Weight



#### Ensure high quality and customer satisfaction

To maintain high product quality, you must know about production errors, such as small deviations in assembling, cavities in castings or damage to coatings. Static over/under checkweighing scales deliver those results reliably. Operators benefit from intuitive user interfaces with colored displays (colorWeight®), which immediately indicate when products are out of spec.

### In-Process Control



#### Automated weight-based quality control

Check quality quickly and maintain customer and brand protection by measuring weight before and after each production step. Dynamic checkweighers and in-process weigh modules protect downstream equipment and reduce downtime. With real-time monitoring and statistics, they instantly deliver 100% process control.

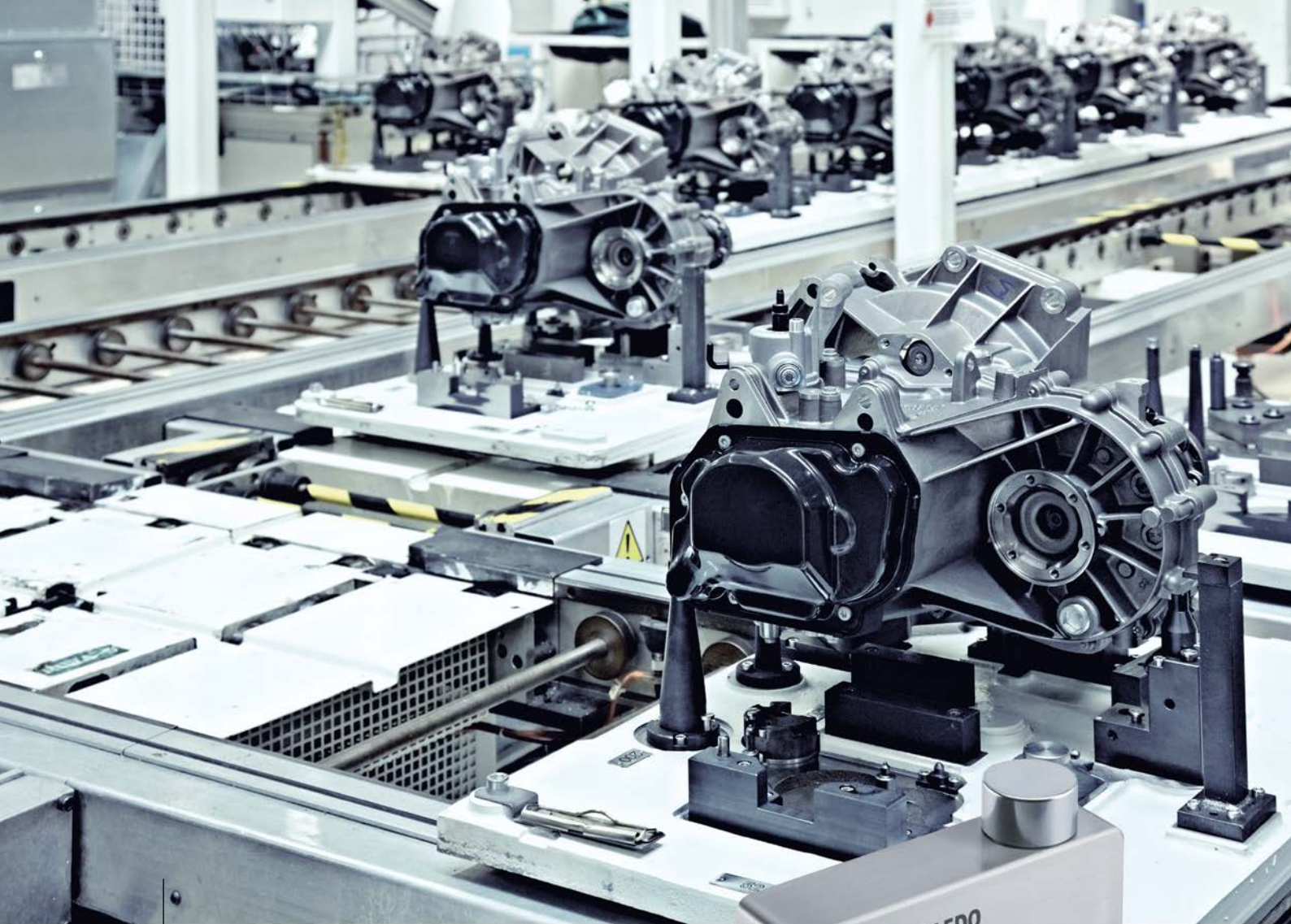
### Statistical Quality Control



#### Monitored and fully documented quality

Reduce waste and the amount of raw materials used in production through Statistical Quality Control. Our networked quality control software monitors and analyzes real-time quality parameters, such as weight, density or wall thickness. Alarms, statistics and reports allow for immediate process optimization and full documentation for traceability.





## Solutions for Quality Control in Production

Over/Under Checkweighing Scales  
colorWeight® Colored Weight Display  
High-Precision Weigh Modules & Platforms  
Statistical Quality Control Solutions  
Halogen Moisture Analyzers  
Dynamic Checkweighers

## WMS Line High-Precision Weigh Module

### **Accurate and reliable testing during automated production**

Efficient in-process control demands simple electrical and mechanical integration. WMS weigh modules feature a high-speed interface on your control system with 92 weight values per second. The transmitted data can be converted to all common fieldbus systems. The proven ruggedness guarantees prolonged reliable operation to 0.1 mg readability.

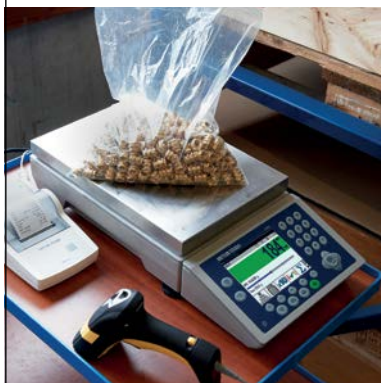
► [www.mt.com/WMS](http://www.mt.com/WMS)

# Packaging

## Completeness, Reliably Checked

**When packaging customer orders, it is important to fill the right quantity. Products reaching the customer must be correct and complete. METTLER TOLEDO checkweighing and product inspection solutions reliably control packaging completeness and integrity.**

### Packaging Completeness



#### Display colors quickly and precisely guide operators

When carrying out completeness checks, operators normally have to concentrate intensely on the scale's display to avoid errors. The colorWeight® function shows the checkweighing results in different colors and spares the operator's concentration, eliminates human errors and saves you time and money.

### Dynamic Weighing



#### Accurate and fast dynamic weighing for 100% control

Ensure at the end of a production line that your quality standards are met and complete packages are shipped to the customer. Garvens checkweighing and bespoke weighing systems can be integrated into each manufacturer's existing or new production line. This highly accurate in-line weighing equipment provides process reliability, productivity and profit.

### Vision Inspection Solutions



#### Ensure consumers have the right information

65% of consumers rely on package label information when choosing a product. An incorrect or defective label could mean lost customers and profits, or worse, a company recall. Vision inspection systems remove packages with missing, incorrect or poor-quality labels, safeguarding your brand against the damage flawed products cause.





## Solutions for Packaging

Dynamic Checkweighers  
Vision Inspection Solutions  
Data Management Solutions  
Over/Under Checkweighing Scales  
colorWeight® Colored Weight Display  
Floor Scales

### XS40 / XS100 Checkweighers

**For high demands and heavy load  
with maximum precision**

The Garvens design sizes 40 and 100 cover a weigh range up to 120 kg with maximum precision. Easy-to-use touchscreen with a modern navigation approach and "user profiles" offer clear operator guidance. The weighing terminal can be tilted for optimum visibility. This state-of-the-art dynamic weighing technology has many software and hardware options. The modular concept makes the X series particularly service friendly, requiring little maintenance.

► [www.mt.com/pi](http://www.mt.com/pi)

# Logistics & Shipping

## Fast and Accurate Order Fulfillment

**Delivery quality is essential for both customer satisfaction and your reputation. Accurate scales, automotive standards-compliant labeling and full documentation help to ship complete orders quickly. METTLER TOLEDO's simple and efficient solutions make sure your customers will continue to purchase from you, their most reliable supplier.**

### Fulfill Orders



#### **Correct order fulfillment for customer satisfaction**

Prevent customer complaints by making sure that you pack the right parts, the right amount and ship it to the correct address. Smart weighing solutions guarantee that customer orders are filled accurately with exactly the right products, on time and with the required documentation.

### Ensure Traceability



#### **Proper labeling for efficient logistics**

Ship your packages with the right labels and ensure full traceability of your manufacturing output. Use predefined printing templates or AIAG- and Odette-compliant formats. Different information can be included, such as article numbers, date and time, customer logo or other company-specific data.

### Weigh Heavy Loads



#### **Accurate weighing of outgoing goods**

To accurately weigh and count heavy and bulky outgoing items, you can choose from a variety of floor, pallet and pallet truck scales. With a range of capacities up to 12,000 kg, free-size dimensions and rugged construction, there surely is one that meets your requirements.





## Solutions for Logistics & Shipping

Bench & Counting Scales  
Printers  
Case-Weighing Solutions  
Floor / Pit Scales  
Ultra Low-Profile Scale  
Heavy-Capacity Scales  
Pallet & Pallet-Truck Scales

### PUA574 Ultra Low-Profile Scale

#### **Rugged drive-through scales for industrial environments**

To maximize productivity in logistics and shipping, easy and fast loading of floor scales can be essential. The low overall height of 35 to 45 mm allows smooth driving via a ramp and makes a pit installation unnecessary. Thanks to side and end guards that protect the weighing cell against side shocks, the scale provides reliable and accurate weighing results.

► [www.mt.com/floor-scales](http://www.mt.com/floor-scales)

# Improved Productivity For Excellent Business Results

**Maximize uptime and throughput to protect your profit margins. Process inefficiencies are reduced through the intuitive handling of our products, while the ergonomic setup options minimize operator fatigue to speed up production. Measuring results can be integrated into your network applications, but they also can trigger a process step to improve throughput.**



## Data Capturing and Analysis

To simplify various measuring processes, you need to handle numerous article IDs, reference values and process parameters. For efficient data handling, METTLER TOLEDO products offer integrated data storage and advanced connectivity to your existing systems or computer. This also allows you to easily retrieve and analyze data, such as weight and other quality parameters via USB or Ethernet. With this you can use measuring results for statistical process control (SPC) or other optimization initiatives to reduce waste and rework to a minimum. Use the CollectPlus™ data-collection software and watch the efficiency of your weighing processes in real-time.



## Integration and Automation

The right interface option simplifies the integration of your measuring equipment into your existing network applications. It increases efficiency by ruling out overlaps and bringing together all relevant data in one central database, where the data can be monitored and analyzed. The most commonly used interfaces allow for easy integration. To speed up measuring processes, use barcode scanners, RFID readers, external keyboards and alarm lights connected to METTLER TOLEDO equipment. Additionally, digital I/Os allow the control of manufacturing processes based on the measuring results.





## Error-Proof and Easy Operation

Easy-to-use software, intuitive menus and user-prompting options make weighing fail-safe and prevent operator fatigue during repetitive tasks.

- User prompting and recipe-weighing solutions guide the operator efficiently step-by-step through the process to avoid human errors.
- The colorWeight® checkweighing function indicates unmistakably whether the result is within tolerance.
- One Click® operation is built in to many lab instruments and balances for simple and secure operation with just one keystroke.



## Flexible Ergonomics

In order to improve productivity, distances between devices need to be reduced and weighing equipment needs to be integrated in your environment for convenient scale operation. METTLER TOLEDO offers independent terminals and platforms, which can be mounted as a compact, stand-up or separate version. For further comfort, the scales can be operated on a mobile cart, using batteries and with wireless communication. The dust-proof and rugged design of the measuring equipment guarantees a perfect fit for your industrial environment.

# Accuracy, Compliance & High Quality For Your Success

**Whether you are producing small air filters or complete motor blocks, high-quality production demands reliability and accuracy. METTLER TOLEDO's measuring solutions help you ensure consistent product quality and compliance to standards, such as ISO 16949 standard at all times.**



## Customized printouts and labels

METTLER TOLEDO provides tailored printing solutions, meeting the demands of your automotive customers. A broad range of METTLER TOLEDO standard printers and third-party printers can be used. To easily create barcodes, company logos or a specific customized layout, use the METTLER TOLEDO DatablCS software. You can customize printout templates to meet your requirements and to comply with AIAG, Odette or other standards. Include barcodes, such as Code 128, EAN-13, UPC or others, as well as pictures or company logos in standard image formats.



## Compliance through Calibration

The automotive industry's ISO16949 certification requirements clearly demand that measuring equipment shall be calibrated or verified at specific intervals or prior to use, against measurement standards and traceable to international or national measurement standards. Calibration hereby ensures quality and compliance with unmatched ease and consistency. With MiraCal™, the unique METTLER TOLEDO calibration and certification system, you can rest assured that your operations are compliant.

► [www.mt.com/service](http://www.mt.com/service)





## Accuracy Where it Counts

Selecting the right counting solution saves money and provides peace of mind from the start. The GWP® Recommendation for Counting is a unique qualification service to determine the right counting scale for any specific process requirement. Counting accuracy is not accidental. With each quote for a counting scale, be sure to ask for a GWP Recommendation for Counting.



## Good Measuring Practices

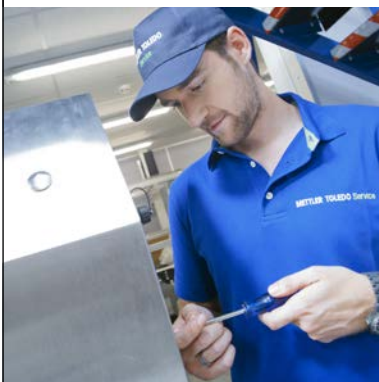
For better results through performance verification – balances, scales and analytical instruments must be inspected, calibrated and tested at regular intervals to ensure accuracy and precision. In just 5 steps, the METTLER TOLEDO Good Measuring Practices program provides the right tools, procedures and services to give peace of mind to quality, laboratory and production managers.

► [www.mt.com/gp](http://www.mt.com/gp)

# Global Services Ready For Local Reach

**Day-to-day laboratory and production processes are highly repetitive yet innovative, characterized by very complex applications and the need for guaranteed data quality and strict control of process risks. It is a world very sensitive to the total cost per data point, demanding the utmost precision and accuracy while constantly complying with legal and industrial regulations and norms.**

## Uptime



Easy access to support know-how and regular equipment checks according to standard procedures ensure maximum uptime at minimal cost. Your equipment is often subjected to tough environments and high utilization in critical processes, requiring every minute of uptime, guarding against equipment breakdown, parts failure, and wear and tear.

## Performance



Professional installation and setup of your equipment along with the use of thoroughly tested applications guarantee high performance from day one. Regular preventive maintenance according to manufacturers' procedures ensures efficient and consistent performance throughout the life of your equipment, preventing out-of-spec results at all times.

## Compliance



Full compliance with your industry's regulatory norms is a must all over the world. This ensures good audit results and provides you with peace of mind. Take advantage of our comprehensive equipment qualification and calibration packages combining standard DQ/IQ/OQ documentation with recommendations for maintenance and routine testing specific to your application.



METTLER TOLEDO is represented with Sales & Service Organizations in 36 countries as well as Distribution & Service Partners in most other countries across the globe. In total, our products and services are available in over 100 countries.

## Expertise



Your expertise paired with the know-how of our Service Team are key to maximum uptime, optimum performance and 100% compliance. Benefit from our large portfolio of optimized applications, scientific publications, SOPs and technical documentation. In our tailored trainings and seminars, your personnel acquire the know-how and skills to run your business.

► [www.mt.com/service](http://www.mt.com/service)

## Global Presence

With our market organizations operating in most industrialized countries, as well as selected partners in other regions, we are ready to serve you well around the globe. Our geographically focused market organizations and partners are responsible for all aspects of sales, service and support. Six-thousand factory-trained service and sales specialists worldwide support you.

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



# Access Information and Know-how At mt.com



## Application Know-how

Benefit from a wide array of brochures and guides.

Comprehensive information enables you to improve your processes.

- ▶ [www.mt.com/count](http://www.mt.com/count)
- ▶ [www.mt.com/ics5-quality](http://www.mt.com/ics5-quality)
- ▶ [www.mt.com/moisture](http://www.mt.com/moisture)
- ▶ [www.mt.com/ta-applications](http://www.mt.com/ta-applications)

## Webinars

METTLER TOLEDO offers both live webinars where you can speak directly with our specialists and recorded on-demand webcasts, which are available at your convenience 24 hours a day.

- ▶ [www.mt.com/webinars](http://www.mt.com/webinars)

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