

# Automatic Test Systems

Automatic Test Systems for the volume production of meters



Our focus is on executing perfectly the critical processes and steps for an efficient meter test system.

For increasing the output volume, global meter manufacturers are asking for solutions to modernize their production processes and enhancing their efficiency.

MTE's Automatic Test Systems are the answer for a sustainable increase in the output (testing) volume of single- or three-phase meters while improving the productivity.

Due to the comprehensive, flexible and modular system components, MTE is able to provide the optimal customer orientated solution for the volume production of meters.

Whatever the needs, wherever the customers, MTE has the innovative solutions and the focus to contribute to the efficiency, profitability and quality of our customers.

## Key Advantages

- Reduced cycle time and less manpower
- Increasing throughput and better productivity
- Easy handling and fast loading / unloading of meters

- Horizontal alignment of meters, no readjustment of scanning heads needed
- High degree of automation and standardization
- Process optimization and operational excellence
- High testing reliability and repeatability
- Accurate and verified testing results
- Single manufacturing cell

## Principal system characteristics

- Individual MTE system components (electronic power sources, reference standards, error evaluation systems, scanning heads etc.)
- Customized degree and choice of system automation (automatic or fully automatic Smart Test System)
- Integration of various test modules
- Definition of number of measuring positions and throughput of meters

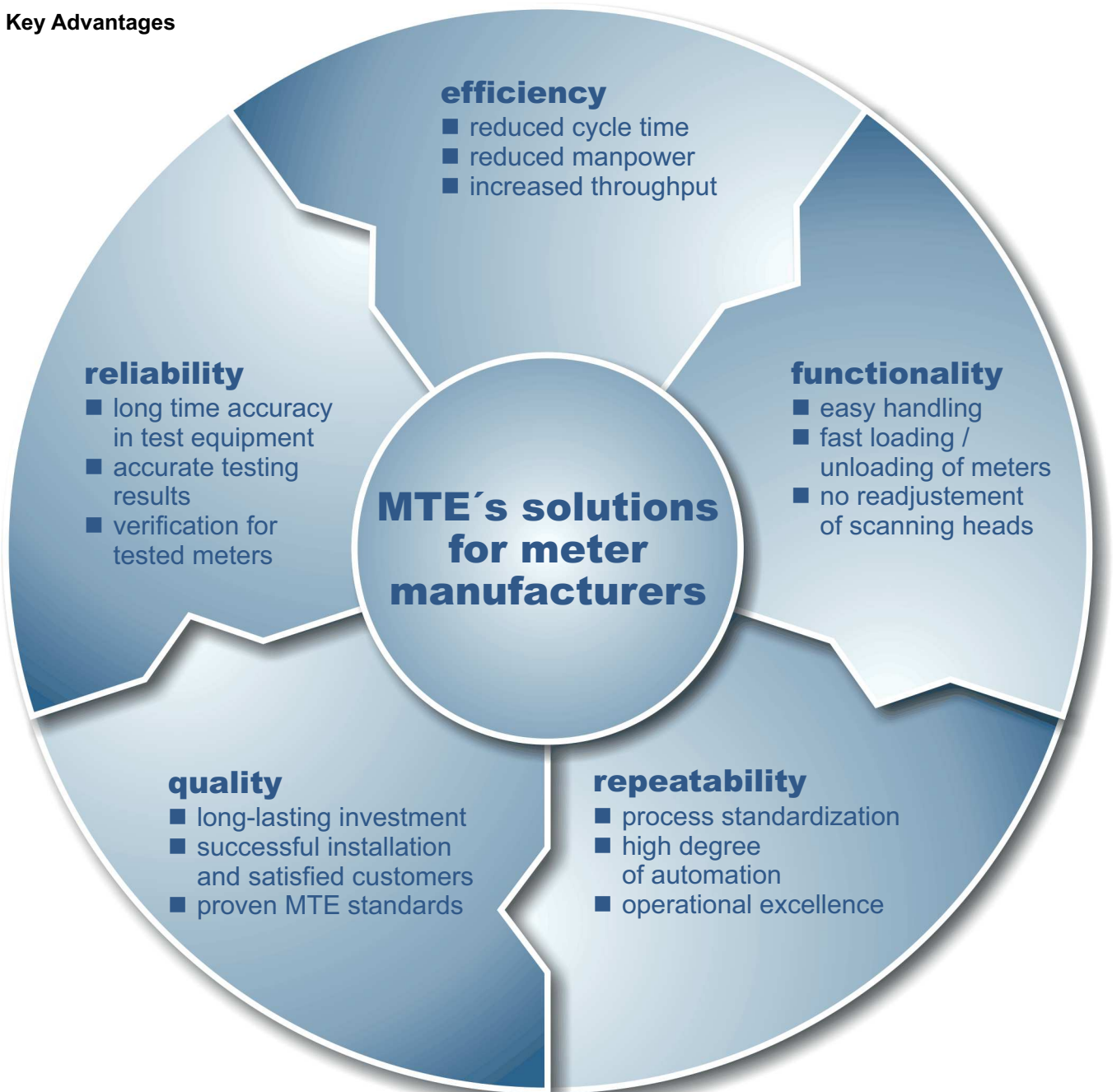
# Solutions for meter manufactures

## Overview

For increasing the output volume and succeeding in major "Smart Meter Rollout Projects", global meter manufacturers are asking for solutions to modernize their production processes and enhancing their productivity.

As an experienced and innovative engineering company, MTE provides customized automatic and fully automatic test systems (Smart Test Systems) and supports their clients in achieving substantial throughput of single- or three-phase meters.

## Key Advantages



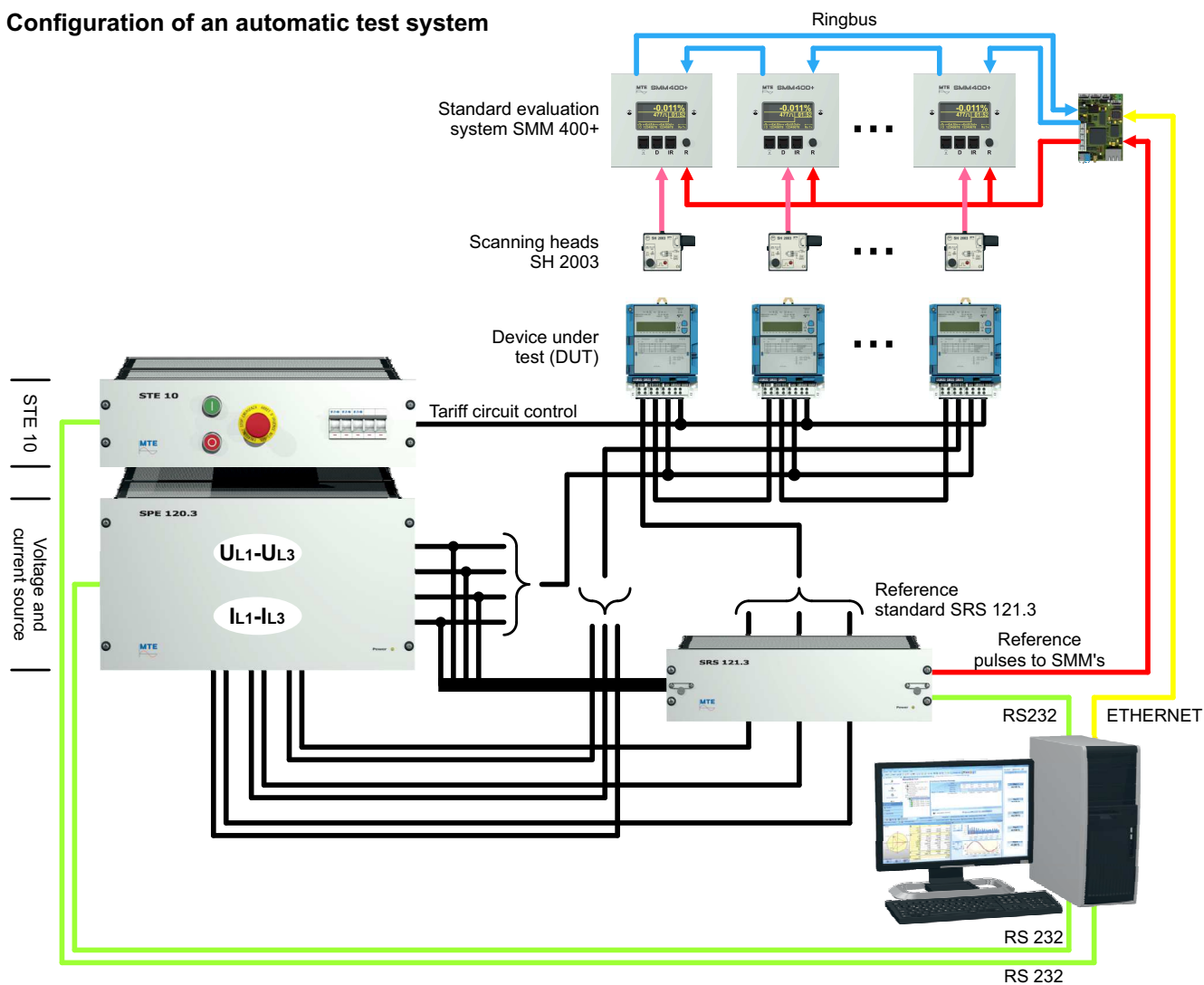
In this highly customized approach MTE combines and merges the key advantages and success factors that will enable the global meter manufacturers smoothening their production processes and enhancing their productivity.

MTE offers a broad range of customized high precision test systems for customers such as utilities, meter manufacturers and meter test laboratories.

The individual system components of a MTE meter test system are modularly developed and can be combined in any order for testing of single- and three-phase meters with or without closed I-P links. This modular design gives flexibility and enables MTE to provide the optimal customer orientated solution for each single- or three-phase meter test system the customer requires to meet the changing needs in the metering world.

Whatever the needs, wherever the customers, MTE has the innovative solutions and the focus to contribute to the efficiency, profitability and quality of our customers.

### Configuration of an automatic test system



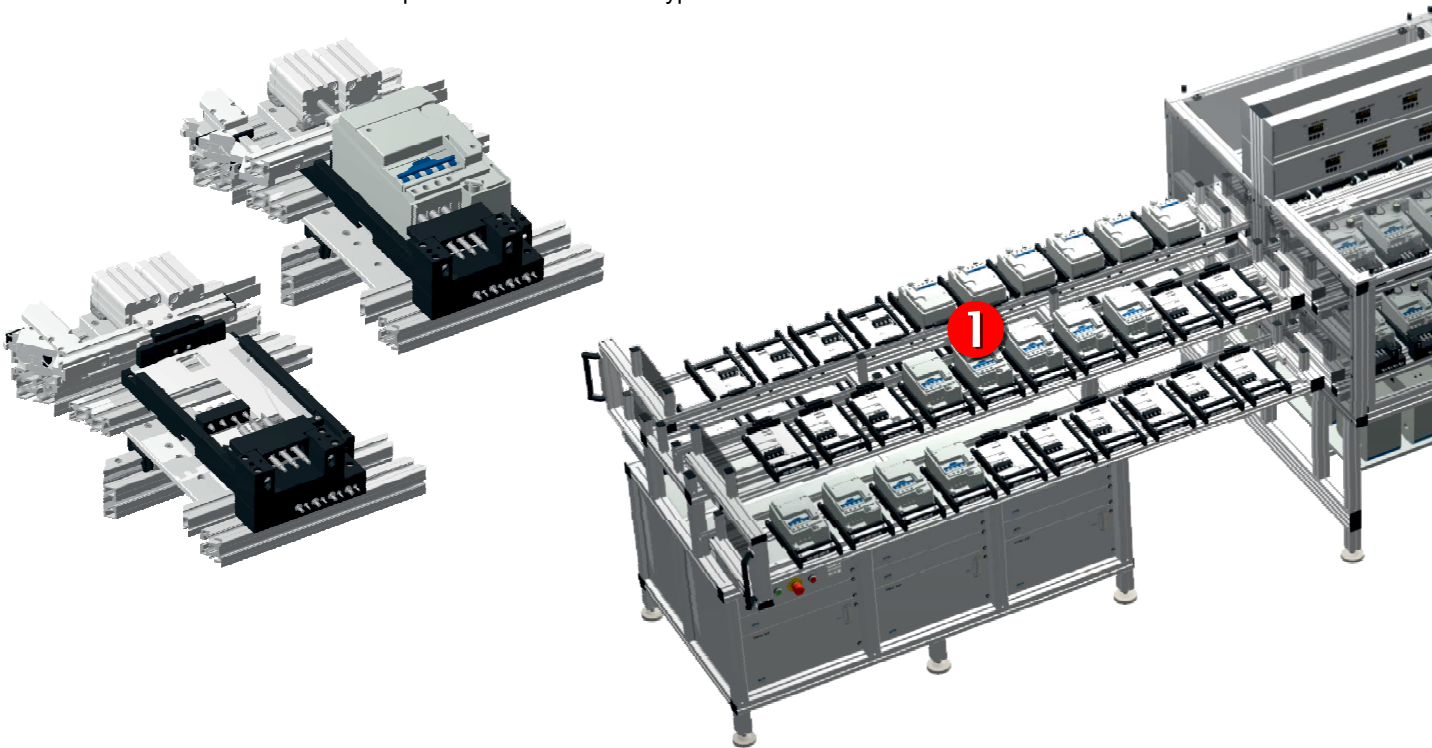
# Automatic test systems for the volume production of meters

## Specific project characteristics

The project example stated below illustrates an Automatic Test System with 40 measuring positions that has been installed and further customized for numerous meter manufacturers around the globe. This system can be divided basically into three sections. In the left or right section the meters are assembled, in the middle section the meters are tested. Once calibrated, configured and examined, they are removed from the test system in the right or left section. While the test of the meters of the first load is running, a second load of meters can already be assembled on the other sledge, providing a continuous flow of tested meters and substantial throughput.

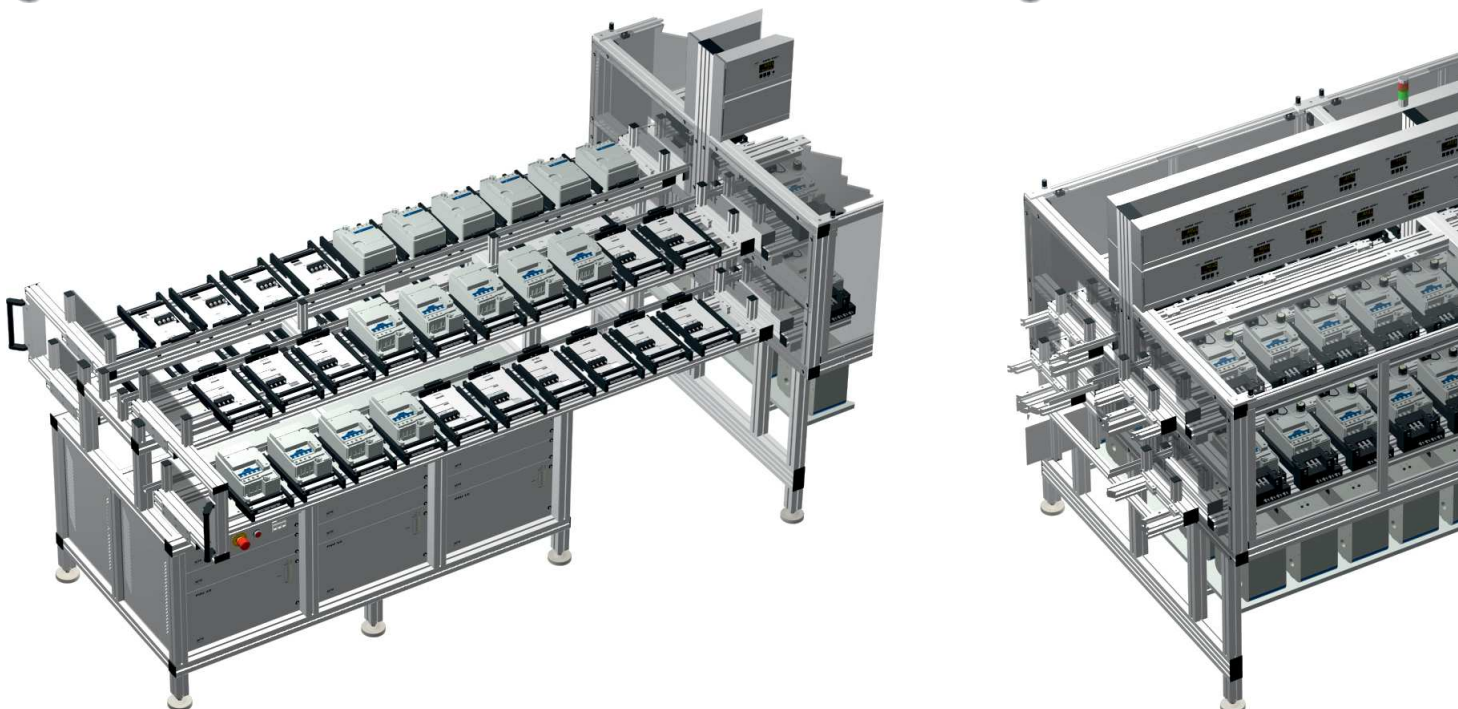
## Pneumatic meter fixation and connection

Various different inlets for the flexible adaptation of different meter types



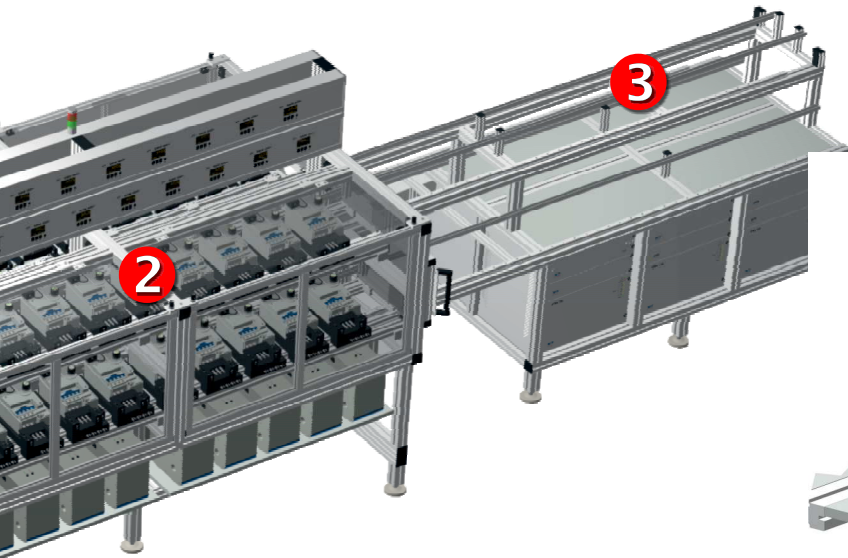
**1** Left section: Assembling / loading / unloading meter sledge

**2** Meter testing (calibration / configuration)

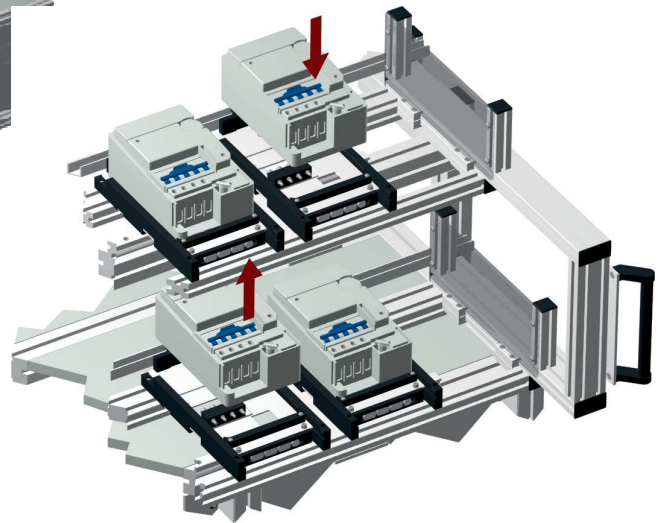


With such a solution from MTE, customers can experience following advantages:

- Cycle time of approx. 20-30 min. per test load (depends on the number of load points / testing sequence)
- Throughput of around 100 meters per hour, allowing a volume of more than half a million tested meters per year, if operated in 3 shifts
- One single manufacturing / testing cell on little floor space
- In case of meter type changes (e.g. new series) easily adaptation by exchange of tailor made quick connection inlets



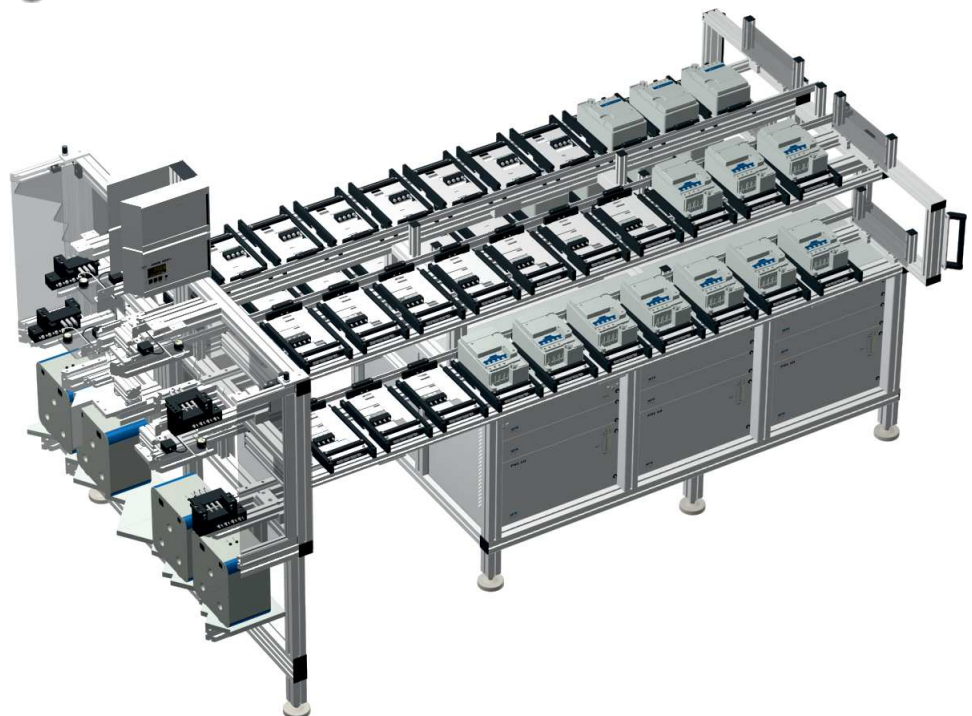
**Sledge loading / unloading system**  
No waste of floor space by shunting trolleys



figuration / examination)



**3** Right section: Assembling / loading / unloading meter sledge



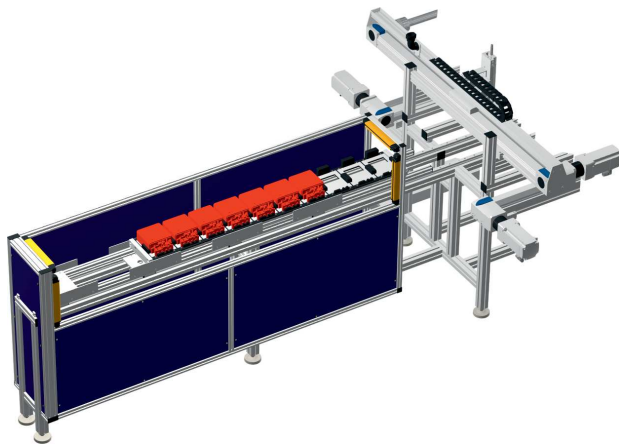
# Automatic Smart Test System

## Specific project characteristics

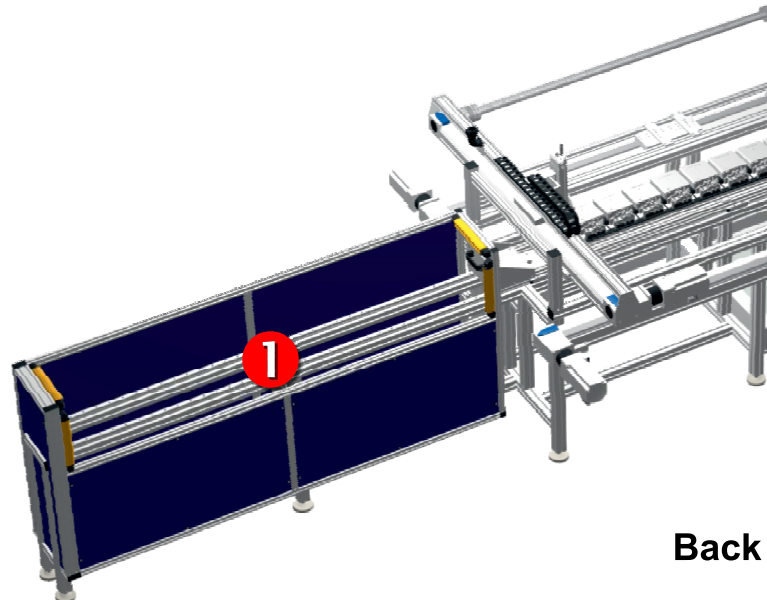
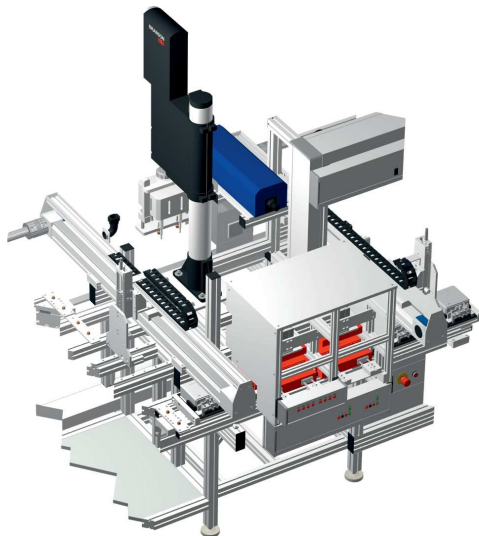
This project example shows a highly customized fully Automatic Smart Test System for a global meter manufacturer. The specific system is divided into six sections and is testing electronic single-phase meters, which are located on 5 trays with 10 measuring positions each. Following steps and individual test modules can be integrated in the system:

- Function and high voltage test, LCD test, switch winding test, bottom test and meter cover remove test
- Voltage and current connection / meter calibration
- Meter configuration and programming of security algorithm
- Automatic laser printing of name plates

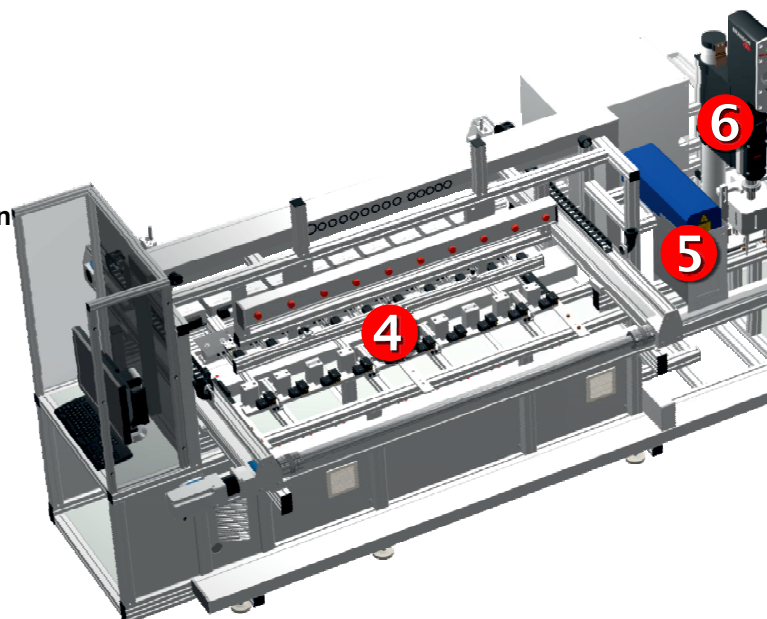
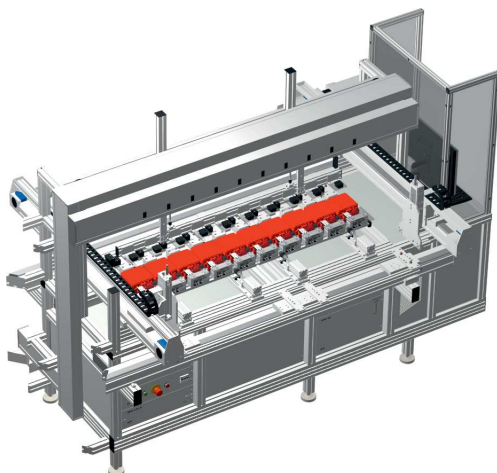
### 1 Loading / Unloading meter tray



### 2 Function test with cameras and high voltage test



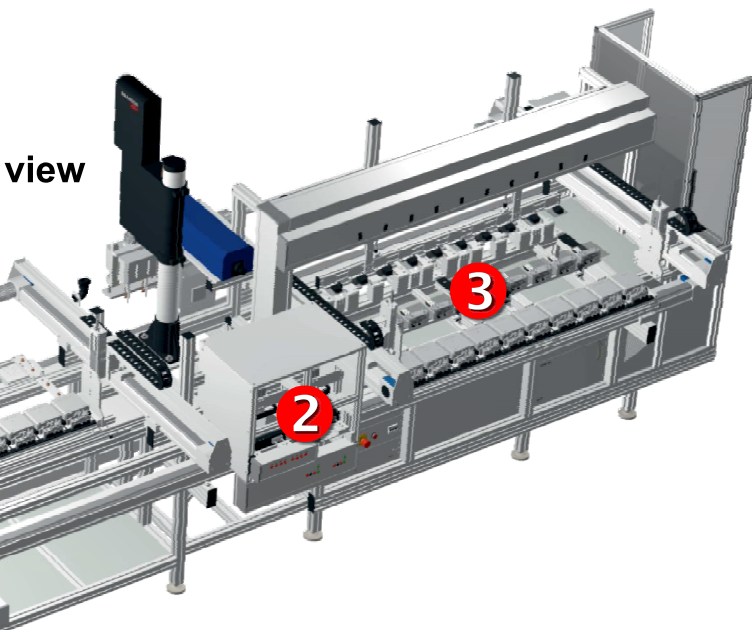
### 3 Voltage and current connection / meter calibration



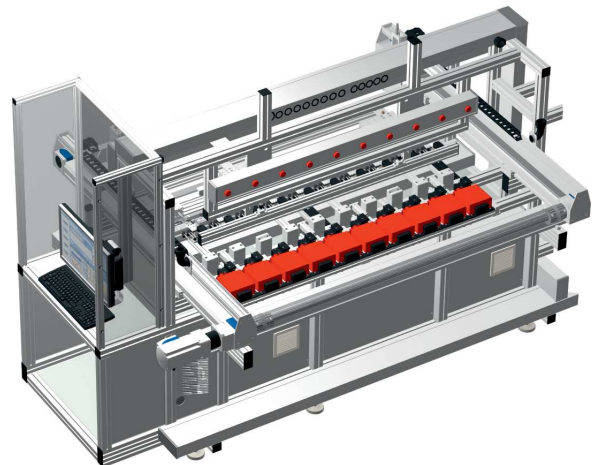
With this innovative MTE solution, the customer has achieved the following benefits:

- Cycle time of 1 meter every 30 sec (typical 90 sec)
- Throughput of 120 meters per hour (typical 40 meters)
- Volume of up to one million tested meters per year, if operated in 3 shifts (typical 300'000 meters)
- 2 employees for the particular work section (typical 4 persons)
- One single manufacturing cell

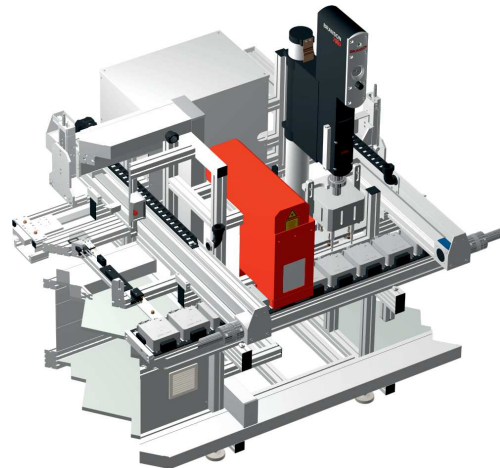
Furthermore, this Smart Test System got the approval for the security of their system according to the ISO 27001 standards that are describing best practice for an Information Security Management System (ISMS).



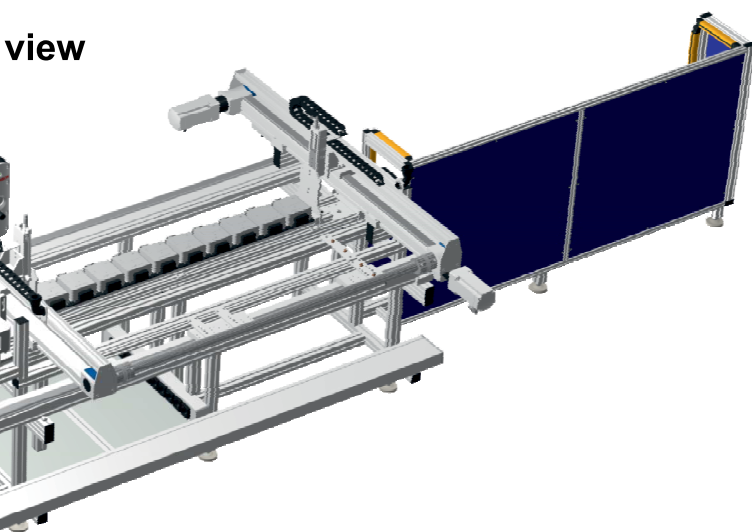
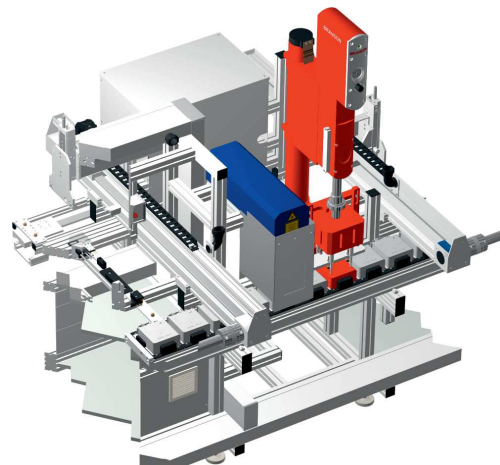
**4 Meter configuration and examination of displays**



**5 Automatic laser printing of name plates**



**6 Ultrasonic welding of housing cover**



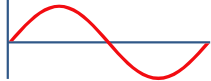
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**The following MTE leaflets are available:**

Overviews:	Company Portrait / Portable Test Equipment / Stationary Meter Test Systems Automatic Test Systems / Transformer Monitoring / E-Mobility Testing
Comparator:	K2008
Portable Reference Standards:	PRS 600.3 / CALPORT 300
Portable Working Standards:	PWS 3.3 <i>genX</i> / PWS 2.3 <i>genX</i>
Portable Standards:	CheckMeter 2.3 <i>genX</i>
Portable Test Systems:	PTS 400.3 PLUS / PTS 3.3 <i>genX</i> / PTS 2.3 <i>genX</i> CheckSystem 2.3 / CheckSystem 2.1 / CheckSystem 2.1 S
Portable Power Sources:	PPS 400.3 / PPS 3.3 <i>genX</i> / CheckSource 2.3
Software:	CALegration®

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# **MTE Meter Test Equipment**



## **MTE Meter Test Equipment AG**

Landis + Gyr-Strasse 1  
P.O. Box 7550  
CH-6302 Zug, Switzerland  
Phone: +41-41 508 39 39  
Internet: [www.mte.ch](http://www.mte.ch)  
e-mail: [info@mte.ch](mailto:info@mte.ch)

## **EMH Energie-Messtechnik GmbH**

Vor dem Hassel 2  
D-21438 Brackel, Germany  
Phone: +49-4185 58 57 0  
Fax: +49-4185 58 57 68  
Internet: [www.emh.eu](http://www.emh.eu)  
e-mail: [info@emh.de](mailto:info@emh.de)

## **MTE India Private Ltd.**

Commercial Unit - 118 & 119, First Floor  
Plot No. 10, Aggarwal City Square, District Centre,  
Mangalam Place, Rohini Sector-3, Delhi 110085, India  
Phone: +91-11 40218105  
E-Mail: [info@mteindia.in](mailto:info@mteindia.in)

## **EMH Energie-Messtechnik (Beijing) Co. Ltd.**

Section 305, Building 2, Ke-Ji-Yuan  
Nr.1 Shangdi-Si-Jie, Shangdi-Information-Industry-Base  
Haidian District  
Beijing 100 085, P.R. China  
Phone: +86-10 629 81 227  
Mobile: +86-139 0 103 6875  
Fax: +86-10 629 88 689  
e-mail: [guo@emh.com.cn](mailto:guo@emh.com.cn)

## **MTE Meter Test Equipment (UK) Ltd**

4 Oval View  
Woodley Stockport  
Cheshire SK6 1JW, United Kingdom  
Phone: +44-161 406 9604  
Fax: +44-161 406 9605  
e-mail: [info@mte.uk.net](mailto:info@mte.uk.net)



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### **MTE Meter Test Equipment AG**

 Landis + Gyr-Strasse 1 • P.O. Box 7550 • 6302 Zug • Switzerland  
Phone +41-41 508 39 39 • Internet [www.mte.ch](http://www.mte.ch)

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Subject to alterations