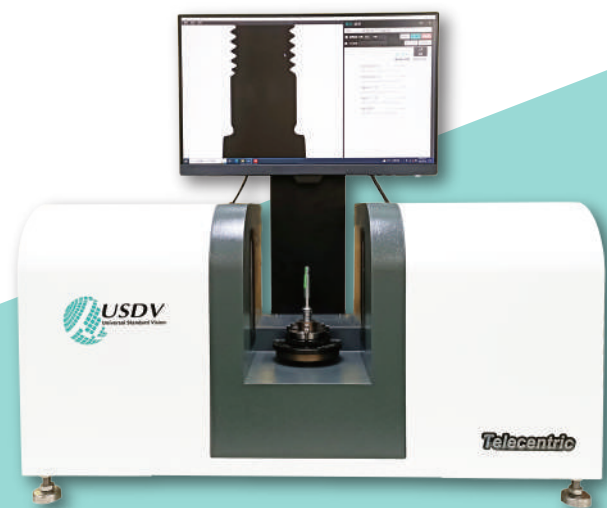# TIMI Optic Measuring Machine for Shaft

Precise◆Fast◆Effective

Quick Inspection in Process

- ◆**Fast and precise rotational object positioning and measurement.**

- ◆**Transcription-free measurement database system.**

- ◆**Micron-level measurement Precision.**

- ◆**Automated full-size inspection with a larger field of view.**

- ◆**Integrated multi-function gauging system.**

- ◆**Be compatible with any ERP system.**

The TIMI system integrates hardware and advanced software technology to swiftly and precisely measure the full dimensions of different shafts.
It is a professional solution, especially suitable for precision geometric metrology such as roundness, cylindricity, co-axiality, runout, and positional tolerance as well as the measurements of turn-mill parts and cam shaped parts.
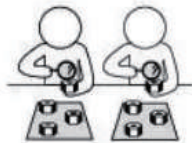
Applications

· Inspection of appearance dimensions of turned, turn-mill and ground shafts.

Application Context

· Automated optical inspections can replace a huge number of manual checks.

| IQC | FAI | IPQC | FQC | Intelligent Inspection |

Features

· Integrated multiple gauging functions into a single machine, i.e. micrometer, projector, 2.5D, gauges of concentricity/roundness , profilometer, and partial CMM capability.
· Consistent measurement, not varying from person to person.
· Easy creation of measurement scripts for automated measurements, reducing check time and increasing machine uptime.
· Directly records measurement results, transcription free and no input errors.
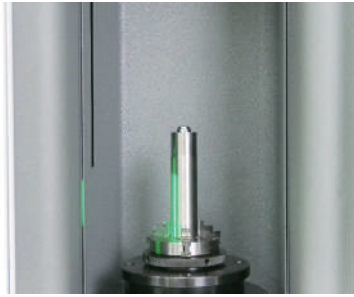
Applicable Industry

· Parts Manufacturing of Automobile, Motorcycle, Bicycle
· Power Tool Manufacturing
· Motor Spindles Manufacturing
· Tool Manufacturing
· ICT Components Manufacturing
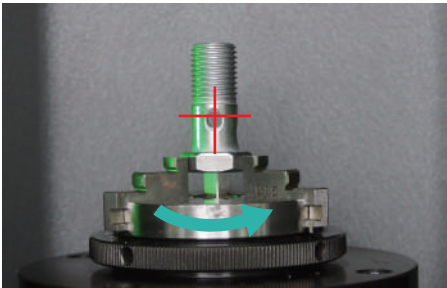· Medical Equipment Manufacturing

Features
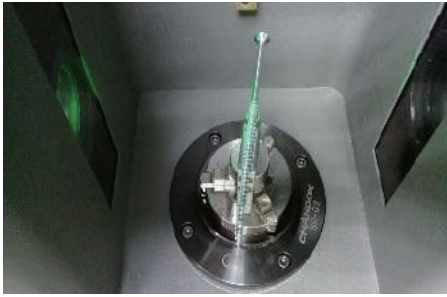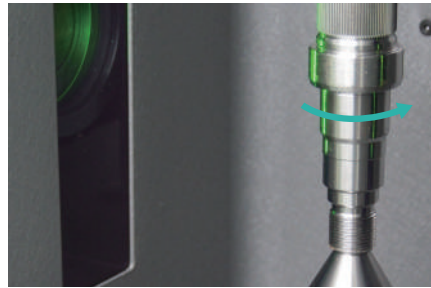

Horizontal placement

Vertical placement

Open • Flexible
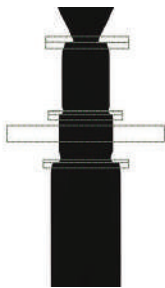Parts can be measured vertically or horizontally, expanding their applications.

Angular Positioning

Geometrical Dimensional Measurement

Professional
Parts can be rotated and measured, comparable to CMM measurement.

Large Field of View

Auto Full-size Measurement

Precise • Automatic
Quick full-size measurement

Immediate frame selection measurement
(Function Area→Image Area→Data Area)

One-touch measurement

Simple • Fast
Complete measuring functions with quick function keys.
Simple Operation and Easy to start.

Easily Placing

Three-jaw Chuck

Centering vise

Magnetic Fixture

Real-time saving of measuring data.

Inspection checklist output

Statistical process control

Complete • real-time
Complete recording of inspection data for traceability and production history querying.

Professional and Versatile Measurement

Basic Measurement
Diameter、Segment Height、Groove Width、Arc radius、Angle、Chamfer

Angular Positioning & Measurement
Angular Positioning of Side Plane / Side Hole、Positioning Angle、Circumferential Sizes
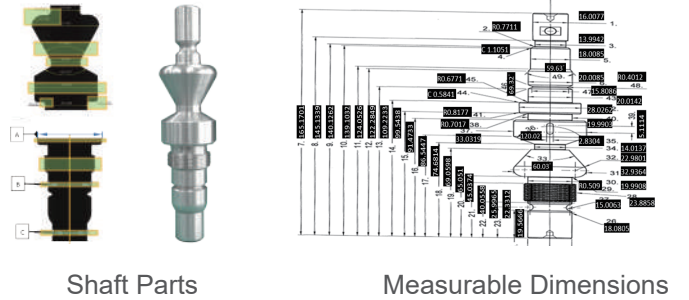
Mechanical Thread
O.D.、I.D.、P.D.、Pitch、Thread Angle、Helix Angle

Geometric Measurement
· Position tolerance
  Concentricity(Shaft/Thread)
· Form tolerance
  Straightness、Roundness、
  Cylindricity
· Directional tolerance
  Parallelism、Verticality、Slope
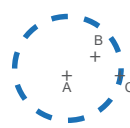· Deflection tolerance
  Run-Out

Full Dimension Measurement

Measure 40+ items in 30 seconds.

Shaft Parts   Measurable Dimensions

Center position of concentricity

Diameter change of roundness

U.S.Patent

Measurement of Drilling/Milling Dimension

Precise measurement of through-hole diameter, milling plane width, turning angle, and side hole deviation.
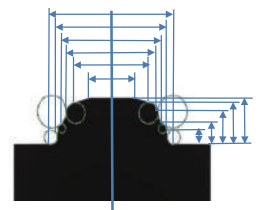
Turn-mill shaft   Angular View

Measurement of Contouring Arc Radius

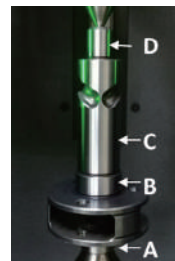Automatically inspect consecutive arcs, line segments along the profile without a profilometer in 10 seconds.
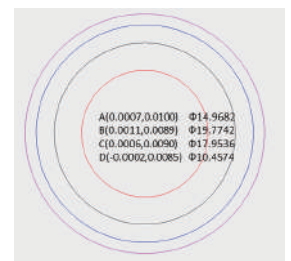
Punch   Measurable Sizes

Measurement of Concentricity

Automatically detects the center coordinates of any two cross-sections of a shaft to measure concentricity and calculate axial deviation.
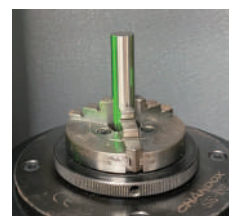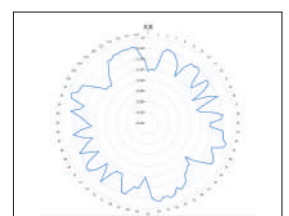
Turned Shaft   Center Coordinates and Outer Diameters

Measurement of Roundness

Measure roundness without centering the axis, and with the measurement resolution of 0.1μm.
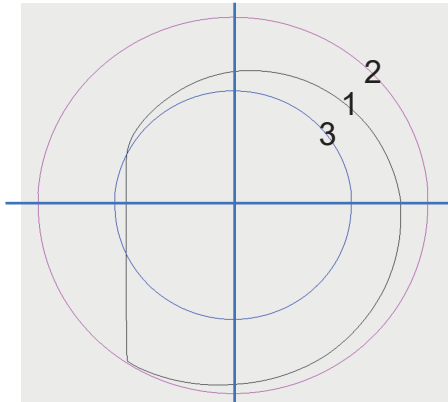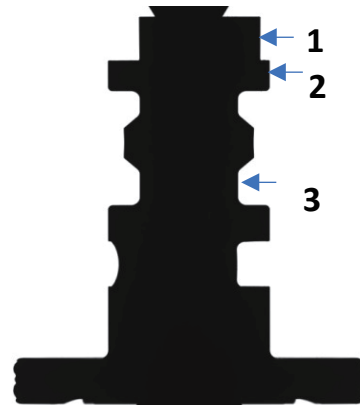
Shaft   Roundness

Auto Measurement of Turn-Mill Parts

· Inspect circumferential dimensions and relative position of the shaped shaft without CMM.

Circumferential Contour

Turn-mill parts with cam

Measurement of Cam Contour

· Inspect cam contour without using a contact probe.

· Analyze characteristic dimensions and accurately calculate center distances.
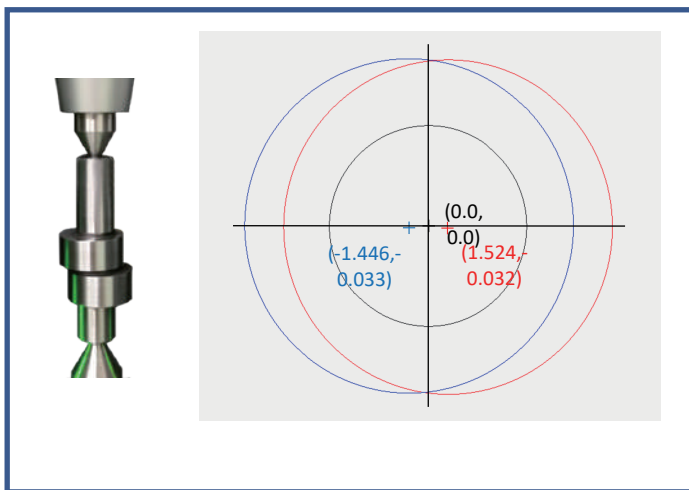
Cam shaft and different cross-sectional contour
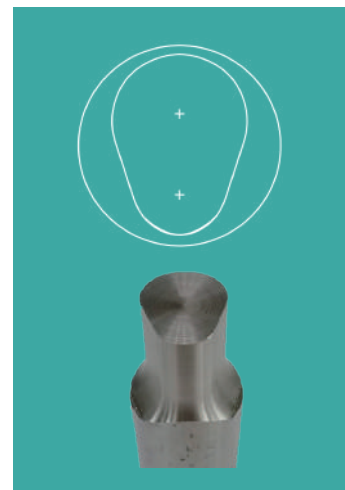
Cam contour

Axial Profiling Dimensional Analysis

· Inspect axial profile without using a profilometer.

· Profiling dimension analysis, accurately calculating the width of any cross-section.

Axial Contour

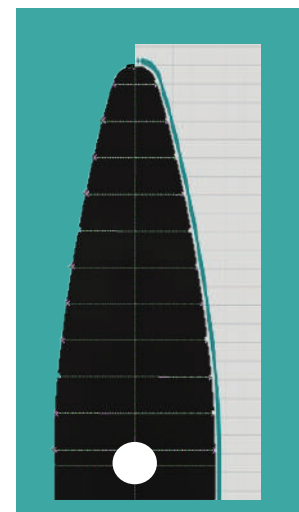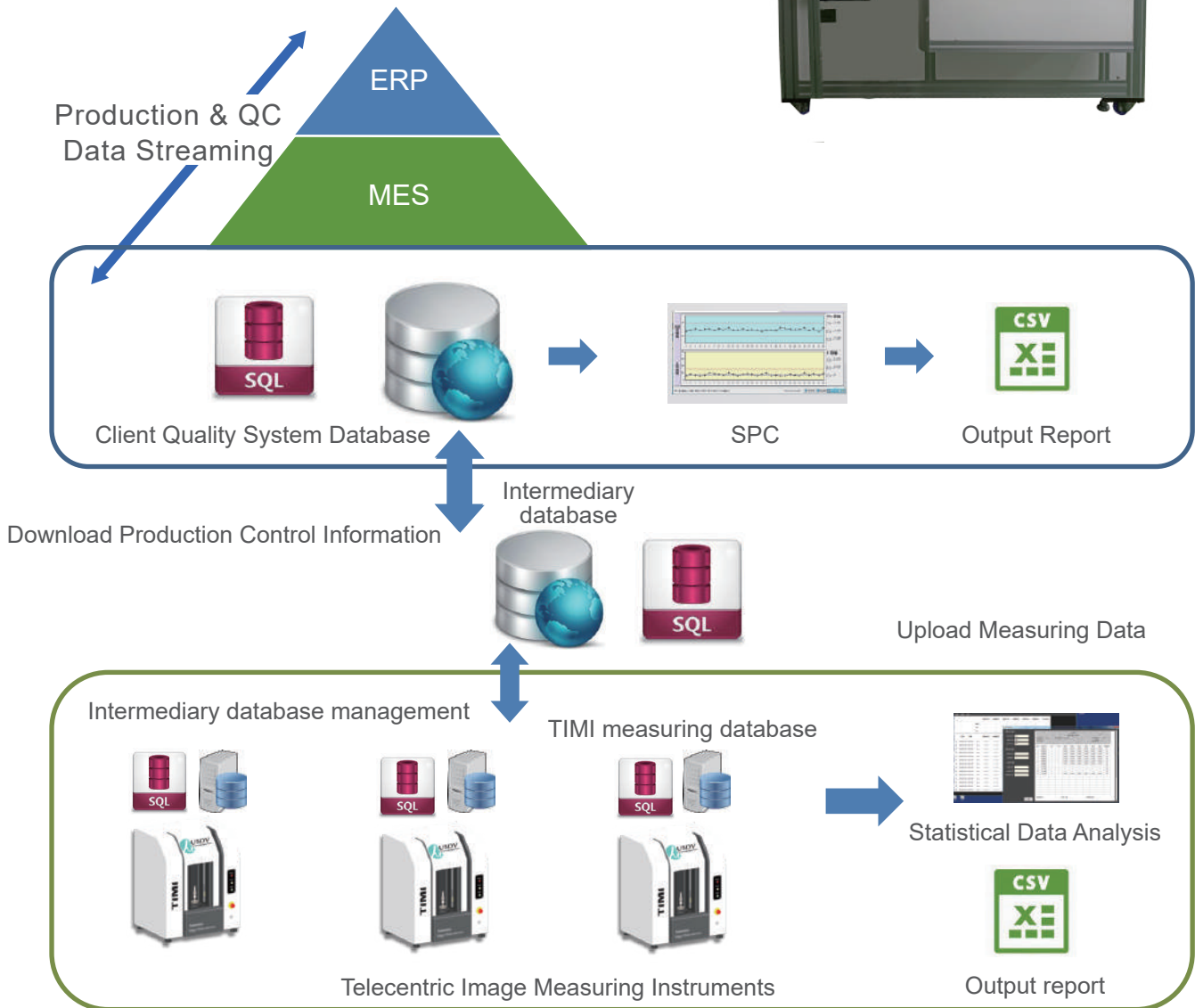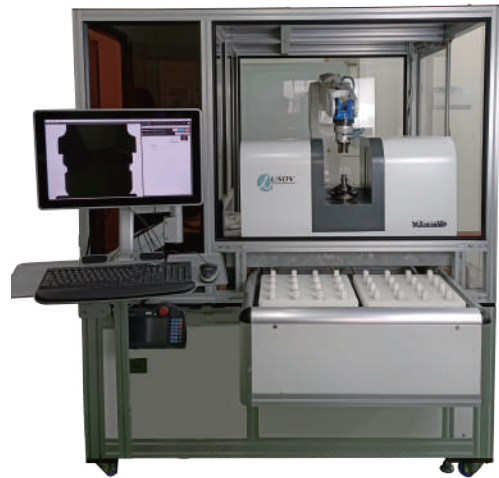# Intelligent Full-inspection in Production Line

One-stop Automated Inspection System

· Automatic Loading and Unloading of
  Workpieces with Robot.

· Automatic Full-Dimension Inspection.

· Integration of Measurement Database
  with Enterprise Resource System.

ERP

MES

Production & QC
Data Streaming

SQL — Client Quality System Database

SPC

CSV — Output Report

Download Production Control Information

Intermediary
database

SQL

Upload Measuring Data

Intermediary database management

TIMI measuring database

SQL

SQL

SQL

Statistical Data Analysis

CSV — Output report

Telecentric Image Measuring Instruments

Inline Inspection Case

Incoming
Material

Coding | Turning | Grinding | Wash | Measuring | Delivery

【Barcode Scanner 】

【Automated Loading & Unloading 】

【Automated Optical Measurement】

Measurement databank fully records production history for QA

◆ View basic analysis of measuring data at any time in-process.
◆ Export measuring data for process capability analysis.

MDB Database Application Software (Basic)

Real-time storage of measurement data.

Measuring data collection & statistics.

Export editable "Excel" report

Print inspection checklist and save as a PDF.

MDB Database Application Software (Advanced)

Link ERP/MES for import or export of
production/quality control information.

Hybrid data can be imported.
(including data from other gauges)
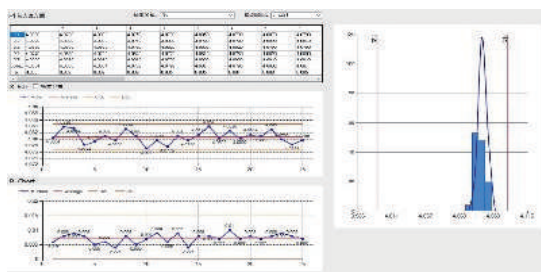
Query historical measurement data and analysis.
(e.g. X bar, R chart、Cpk)

Print and export inspection checklist,
as well as create your own.

Product Specifications

Spec \ Model	TIMI12F	TIMI30F	TIMI40F
Measuring Diameter (D)	ø12mm	ø30mm	ø40mm
Measuring Length(Z)	100mm	100mm / 200mm	
Rotatable range (R)	360°		
Repeatability (D)[#1]	±0.2µm	±0.3µm	±0.4µm
Uncertainty (D)[#2]	±(2+D[mm]/100)µm		
Image Resolution	7µm	15µm	19µm
Minimum display unit	0.1µm		
Rotational Resolution (R)	≦0.1°		
Clamping Method	Three-jaw clamp		
Central Processing Unit (CPU)	Intel Core i5以上		
Memory Capacity	8GB RAM，128GB SSD，500GB HDD		
Monitor	22〃LCD		
Operating System	Windows10		
Weight (without computer)	50~70Kg(Depends on the measurable length)		
Power Supply	110~240V，50~60Hz，10A		
Operating Ambient Temperature	0°~45°C		
Operating Ambient Humidity	≦ 80 %		

#1: Repeatability is calculated by measuring the fixed position of a standard gauge repeatedly without the connection of the motion mechanism and estimating the statistical value ±2σ.

#2: The measurement uncertainty is calculated by arbitrarily measuring a standard gauge without the connection of the linear motion mechanism and estimating the statistical value ±2σ.

Machine size

TIMI_100(Z)

TIMI_200(Z)
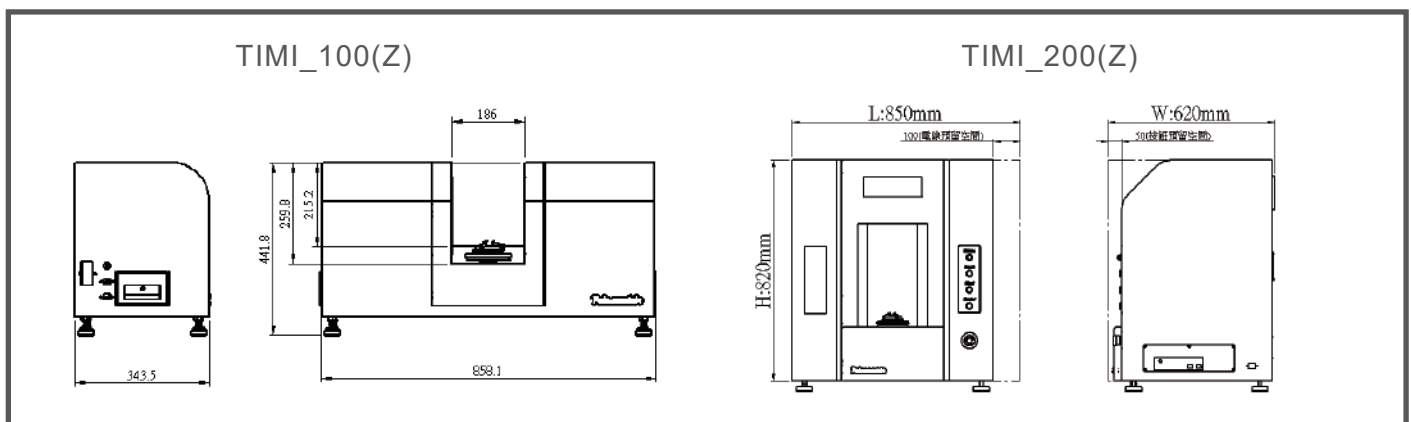
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