

TTC on-machine Measurement system

Innovation expands your horizon



TOLTEC MEASUREMENT SYSTEM TO EXPAND PRECISION OPTICAL MEASUREMENT

Quality comes from a good production and off-line quality control is the last stage of process; therefore the key to good production quality is self-inspection in production line. TOLTEC on-machine optical measurement system can be installed on machines to allow user operating on-line inspection anytime when needed, it is no need to remove workpiece for measuring and therefore to minimize the defects.

▶ **EASY AND QUICK TO OPERATE**

Quick set up and easy measuring operation

▶ **ON LINE MEASURING**

Directly measure workpiece on the machine without removing the piece thus reducing errors and production time

▶ **INSTANT CORRECTION**

Worker acquires measuring results and can adjust the machine immediately

▶ **NON CONTACT**

Non-contact optical measuring tech, four zooms 30x, 50x, 120x and 250x are available

▶ **MULTIPLE APPLICATIONS**

Can apply to different types of machine and the camera allows different applications depending on needs. Standard clamping fixtures available in Erowa, 3R, Hirschmann and Universal, customized fixture is also available

▶ **MEASURING RANGE**

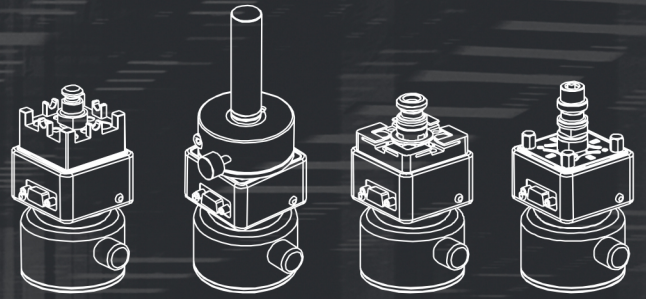
As the working machine's working range

▶ **SOFTWARE APPLICATION**

Measuring with Toltec software enhances the measurement and the result can be saved and printed out. Can compare workpiece with a CAD drawing, sync the position data from working machine and uses reversed engineering in getting dimensions of workpiece

▶ **FOR INDUSTRY**

Mould and die, precision process, aerospace, automotive, electronics and components industries



Environment-Friendly Product

At TOLTEC, we take seriously our responsibility to protect and preserve the environment and its beauty for future generations. TTC equipment passes EU's RoHS test and helps reduce harmful waste.

TTC LCD 15 MONITOR

Built-in crosshairs working with a TTC camera can measure dimension, circle, square and angle



TOLTEC IPC

This Industrial Integrated display computer combines TTC Monitor and industrial computer, working with a TTC camera for on-line measurement



TTC CAMERA 3R FIXTURE



TTC CAMERA EROWA FIXTURE



TTC CAMERA UNI FIXTURE



TTC CAMERA HIRSCHMANN



SPECIAL FIXTURE



FACIAL FIXTURE



MB 80 FIXTURES

Can attach on machines, working with NB Fixture Adapter



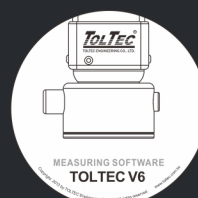
TTC NB FIXTURE ADAPTER

Convert Erowa, 3R and Hirschmann fixtures into Universal (NB) fixture



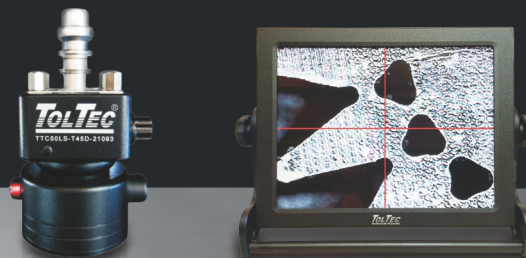
TOLTEC MEASURING SOFTWARE

The measuring result can be saved and printed out, CAD overlay for comparing between workpiece image and CAD drawing, and the software can sync position data from working machine



Set **A**
BASIC SET

- ▶ TTC CAMERA (ANALOG SIGNAL)
- ▶ TTC LCD15 MONITOR



Set **B**
ADVANCED SET

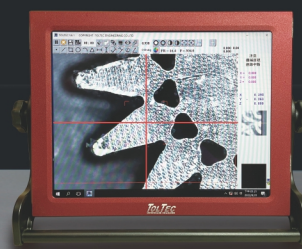
- ▶ TTC CAMERA (DIGITAL SIGNAL)
- ▶ LIGHTING AND IMAGE INTERFACE
- ▶ TOLTEC MEASURING SOFTWARE

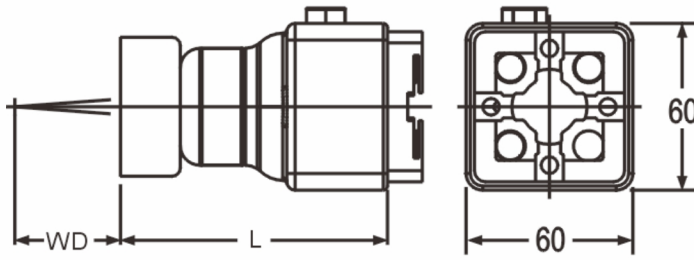


- ▶ A computer is needed for the set, please buy from a computer vendor
- ▶ PC is essential but not included.

Set **C**
PROFESSIONAL SET

- ▶ TTC CAMERA (DIGITAL SIGNAL)
- ▶ INDUSTRIAL PC
- ▶ TOLTEC MEASURING SOFTWARE





- ① Dimension = length X width X height, excluding the clamping fixture
- ② WD: working distance, distance from camera to workpiece
- ③ Magnification: observe through 15" Monitor with different magnification cameras

Basic version specifications

CCD	TV System	EIA	CCIR
	Total Pixels	~410K	~470K
	Image Sensor	1/3 inch CCD Image Sensor	
	Power Supply	DC 12V+/-1V 120mA	
Light	Emitted Colours	Red/ hte	
	Viewing Angle	20°	
Operating Temperature		0~50°C	
Storage Temperature		-20~60 °C	

Advanced version specifications

Sensor	AR0134
Shutter	Global Shutter
Max. Image Circle	1/3"
Sensor Type	CMOS
Sensor Size	4.8mm x 3.6mm
Resolution (HxV)	1280px x 960px
Resolution	1.2MP
Pixel Size(HxV)	3.75µm x 3.75µm
Frame Rate	54 fps
Mono/Color	Mono

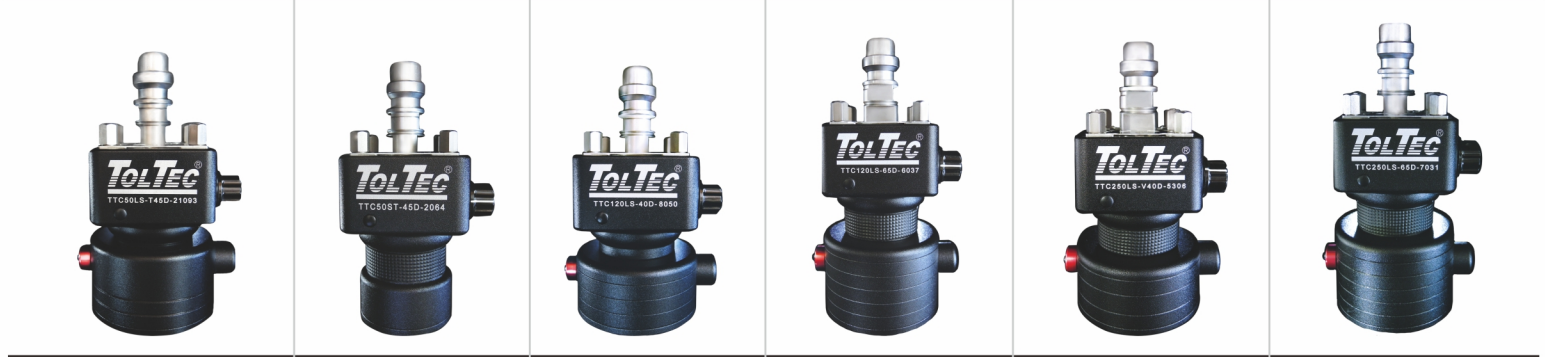
Camare Date

Interface	USB 3.0
Pixel Bit Depth	8, 12 bits
Synchronization	<ul style="list-style-type: none"> ▪ hardware trigger ▪ free-run ▪ software trigger
Exposure Control	▪ programmable via the camera API
Digital Input	1
Digital Output	2
General Purpose I/O	3
Power Requirements	▪ Via USB 3.0 interface
Power Consumption (typical)	1.2W
Operating	0~50°C

LIST OF TTC CAMERA

	TTC30LS	TTC30ST
EROWA		
Weight (g)	800	800
3R		
Weight (g)	1000	1000
HIRSHMANN		
Weight (g)	1200	1100
UNIVERSAL		
Weight (g)	1600	1500
Dimension ^① mm	60*60*102	60*60*102
WD ^② mm	90±2	83±2
Magnification ^③	35 ±3	44 ±3
Coaxial light	●	X
Perimeter light	●	●
Power supply		

TTC50LS	TTC50ST	TTC120LS-40D	TTC120LS-65D	TTC250LS-40D	TTC250LS-65D
---------	---------	--------------	--------------	--------------	--------------



800	800	850	850	850	850
-----	-----	-----	-----	-----	-----



1000	1000	1000	1000	1000	1000
------	------	------	------	------	------



1200	1100	1200	1200	1200	1200
------	------	------	------	------	------



1600	1500	1600	1600	1600	1600
------	------	------	------	------	------

60*60*88	60*60*88	60*60*86	60*60*110	60*60*94	60*60*113
----------	----------	----------	-----------	----------	-----------

46 ±2	39 ±2	38 ±2	62 ±2	38 ±2	62 ±2
-------	-------	-------	-------	-------	-------


53 ±3	60 ±3	136 ±5	136 ±5	295 ±10	295 ±10
-------	-------	--------	--------	---------	---------

●	X	●	●	●	●
---	---	---	---	---	---

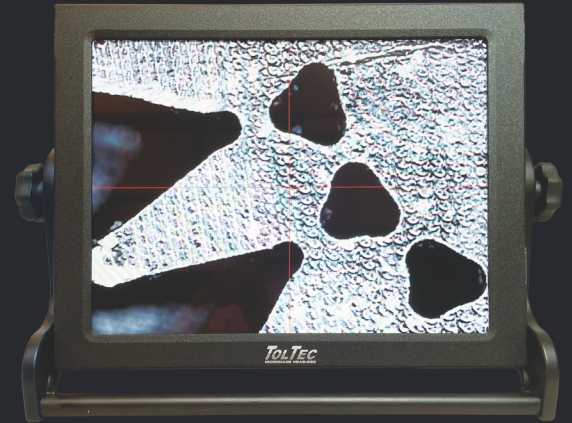
●	●	●	●	●	●
---	---	---	---	---	---

+ 5V 12V					
----------	--	--	--	--	--

TTC LCD 15 MONITOR

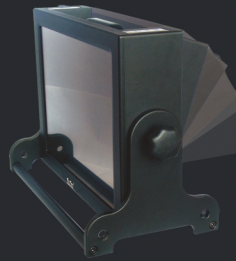
TTC Monitor is designed for optical inspection collaborated with TTC Camera. Built-in crosshairs have 6 types including fine, dotted, thousand island, circle, square and protractor crosshair and 7 colours for different environments 

Monitor	Display	15" Colour TFT LCD
	Resolution	1024*768
	Contrast Ratio	500:1(Typ)
	Power Supply	AC100-240V 50/60Hz
	Colour	Black



Portable Handle

Allows you to move the monitor freely



Strong Stand with Turning Knobs

The foundation steadily supports the monitor and easily adjust the viewing angle



Light Knobs

For adjust the auxiliary lights



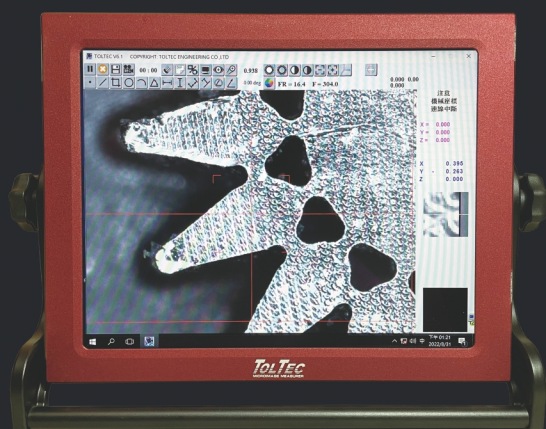
Connector ports

Signals import and export, and power supply

TOLTEC
MICROIMAGE MEASURER

TOLTEC IPC

TOLTEC IPC is an all-in-one industrial computer and especially designed for Toltec Measurement system. It maintains portable convenience from TTC Monitor and stability of industrial computer.



IPC	CPU	Core i3-2330E 2.2GHz FCPGA988
	RAM memory	4GB
	HDD	2.5 in 500 GB
	Display	15"Colour TFT LCD
	Screen Resolution	1024*768
	Contrast Ratio	500:1(Typ)
	Power Supply	AC100-240V 50/60Hz
	Colour	Red+Black



RJ45 Ports



Light Knobs

For adjust the auxiliary lights



Connector ports

Signals import and export, and power supply



Portable Handle

Allows you to move the monitor freely



Strong Stand with Turning Knobs

The foundation steadily supports the monitor and easily adjust the viewing angle



AUXILIARY LIGHTS

COAXIAL LIGHT

Red light, positioned in the centre of the Camera. It simplifies target searching by indicating the position of the target.

PERIMETER LIGHT

White light, located around the lens, it provides sufficient light for measuring the target.

TTC POSITION READER captures the position data from machine control and transfers to Toltec Measuring Software where the data can be converted for position sync. The applications are as follows



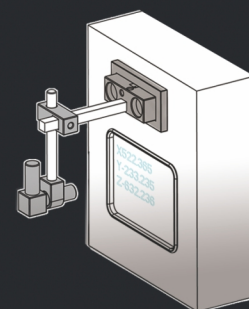
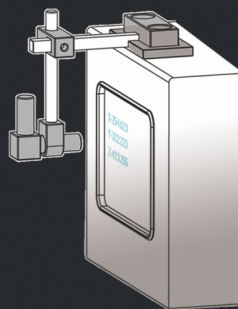
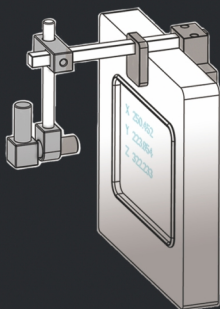
CLAMPING
For Flat Panel Display

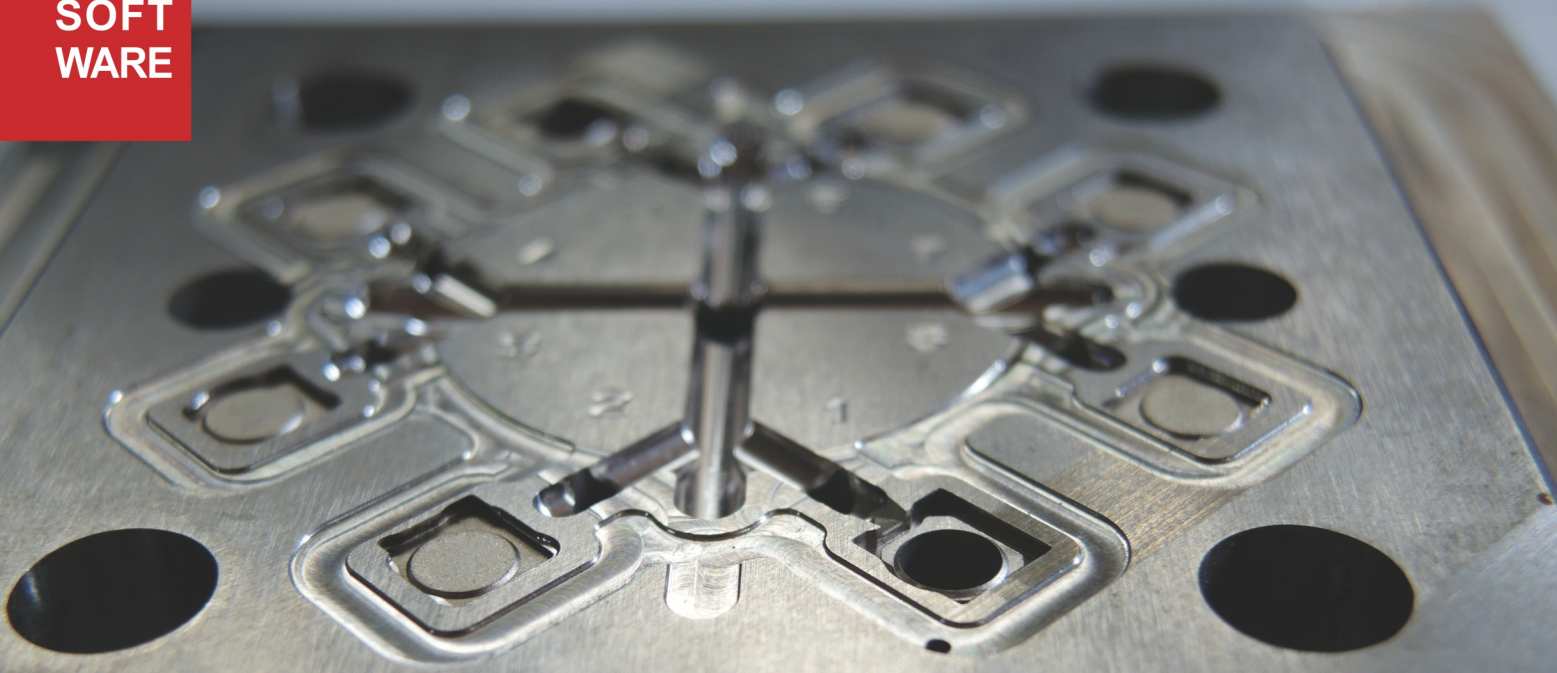


ON TOP
Place on the top of control



ON FRONT
Place on the front of control





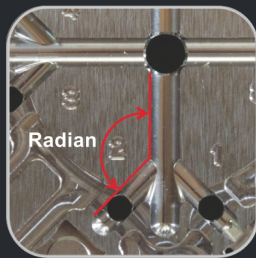
TOLTEC Measuring Software allows you to inspect a workpiece and check the measuring data with the specific requirement of the workpiece. Furthermore the feature of CAD overlay is to compare CAD drawing with the workpiece image, if find difference, you can correct the work instantly; it is very convenient and practical especially for complex workpiece

Can easily measure micro and macro scale workpiece, as well as for the workpiece which can not be positioned perfectly on machine. Moreover the software can obtain a 2D drawing of workpiece by using reverse engineering

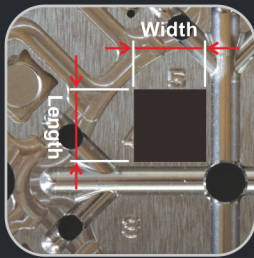
MEASUREMENTS



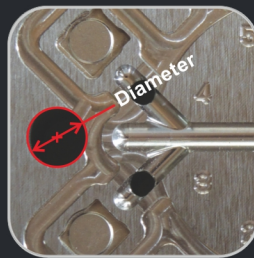
POINT



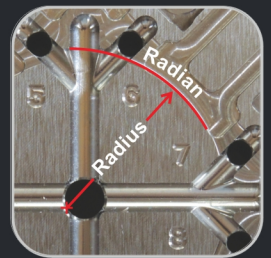
ANGLE



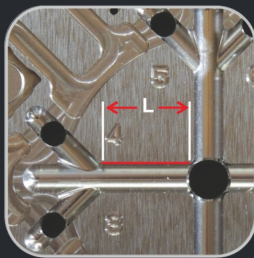
SQUARE



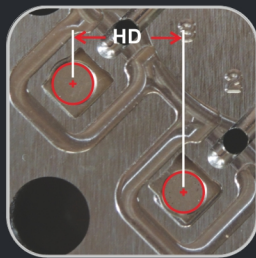
CIRCLE



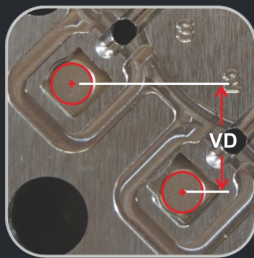
ARC



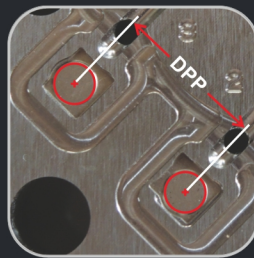
LINE



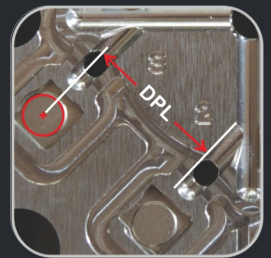
HORIZONTAL
DISTANCE



VERTICAL
DISTANCE



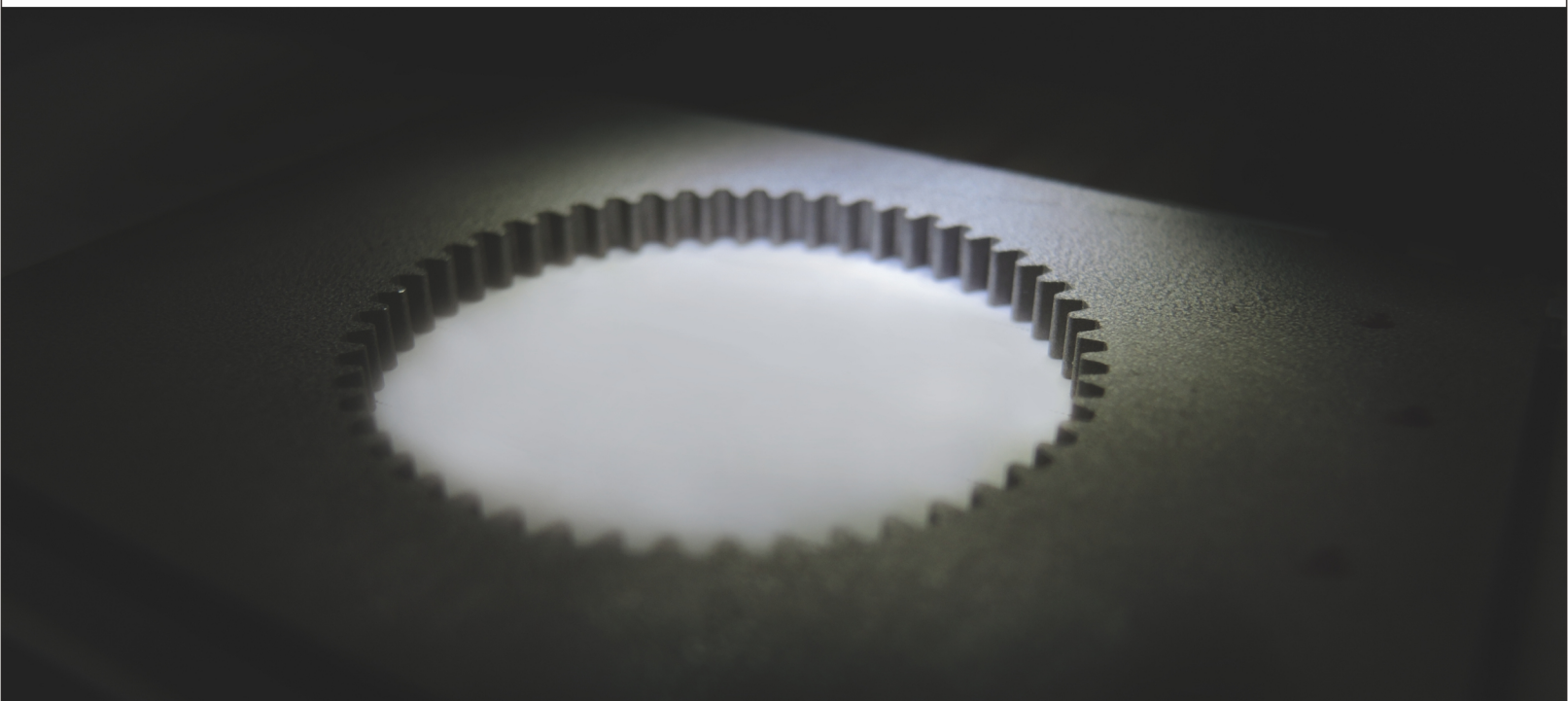
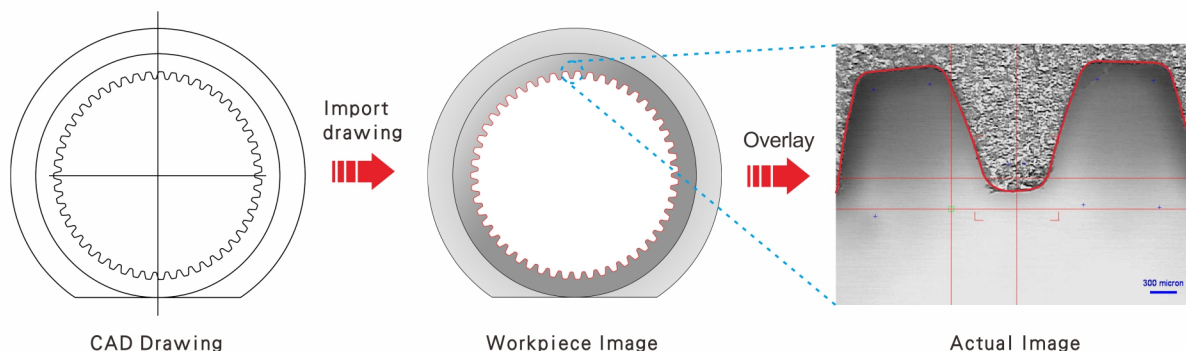
DISTANCE
BETWEEN TWO
POINTS



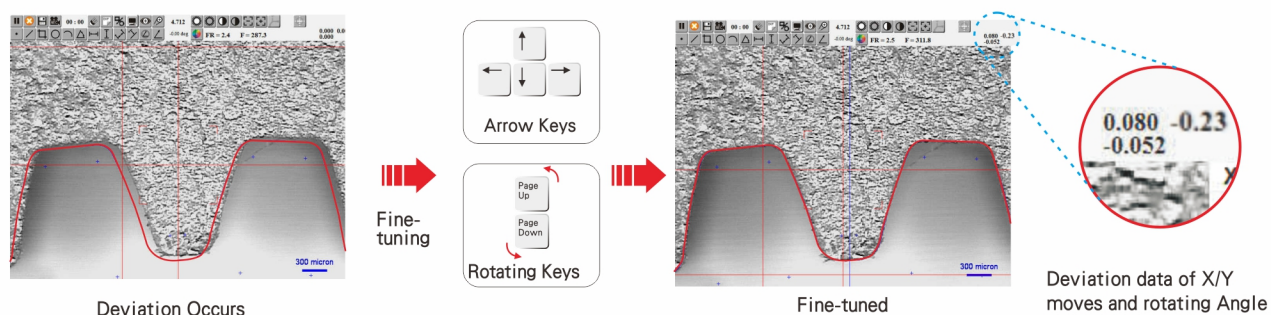
DISTANCE
BETWEEN A POINT
AND A LINE

CAD OVERLAY

Complex workpiece can be easily measured by comparing it to the CAD drawing on the screen, especially for the workpiece with irregular shapes and curves

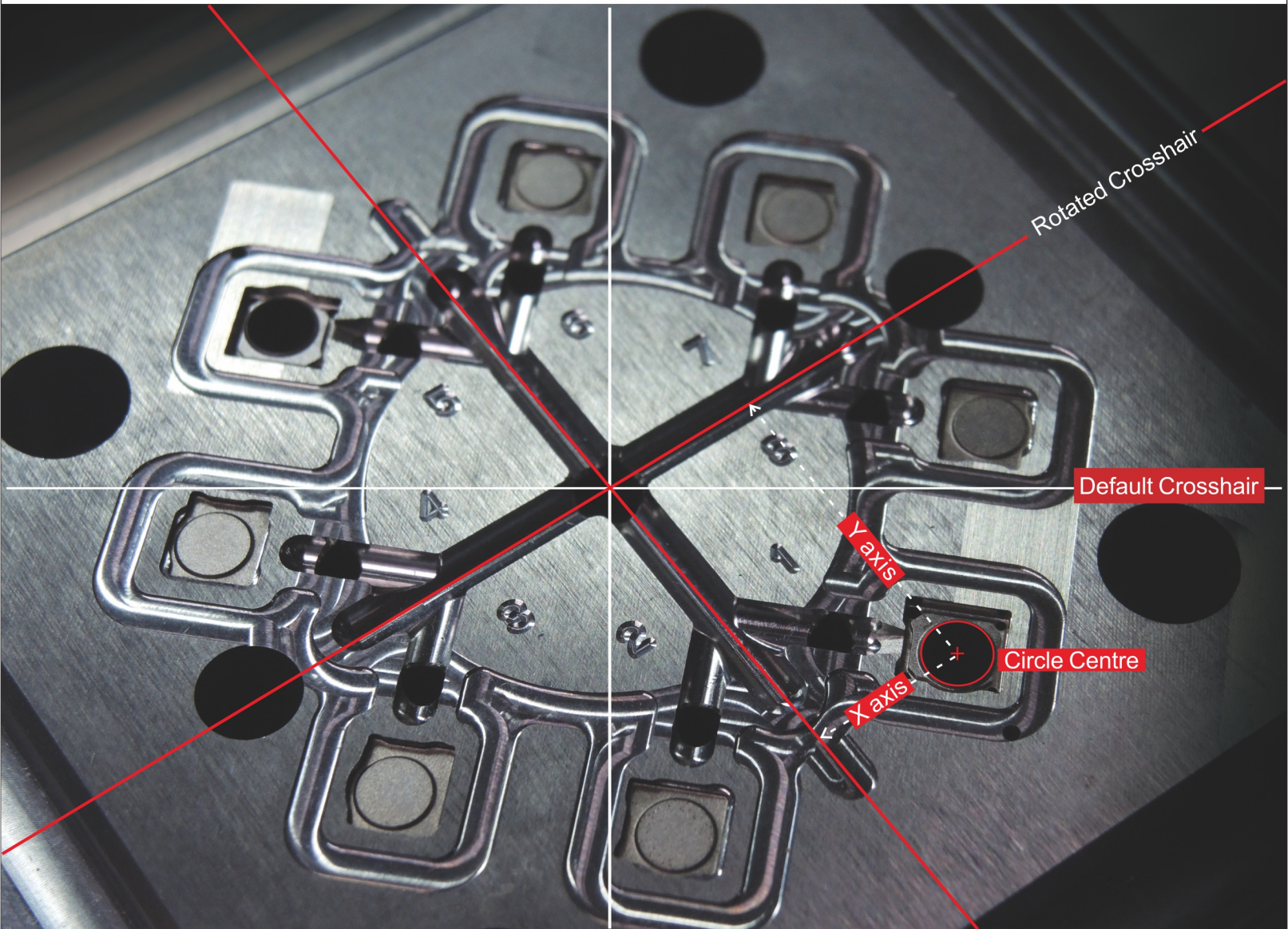


If observe any deviation of the CAD drawing to the workpiece image, fine-tune the drawing and overlay it to the corresponding workpiece profile by using a keyboard for X/Y axis moves and rotation

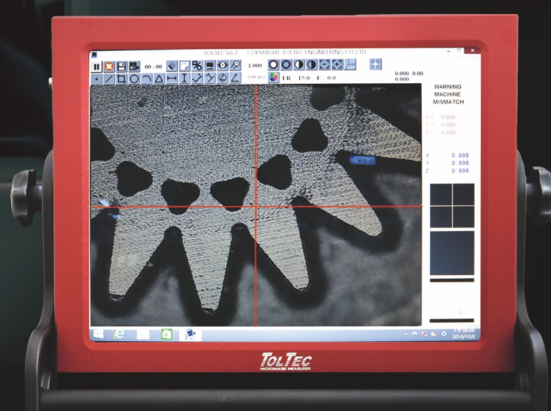


CROSSHAIR ROTATION

Rotating the crosshairs to parallel with a workpiece when it cannot be positioned perfectly on machine



After the rotation, all measurements will be measured according to the rotated crosshair



**DATA SAVE
AND EXPORT**

The measuring data can be saved as .dxf (CAD), .jpg (image) and .xls (Excel)

**CENTRAL
POINT
MEASURE**

Lock the crosshairs on the centre of measuring canvas, and select the target point of workpiece by moving it to the centre of camera to operate measurement

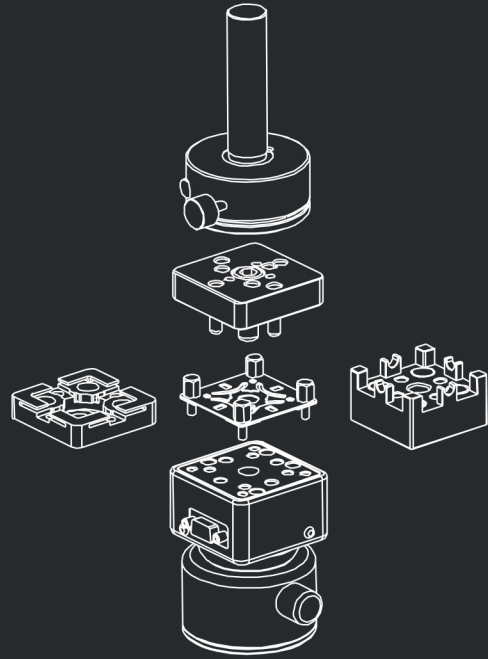
**POSITION
SYNC**

Activate Position Sync function, the program will be able to read the position data from machine control

**MEASURING
RANGE**

As the applied machine's full travel range

**TTC NB
ADAPTER**



**NB Fixture Adapter
+ TTC Camera**

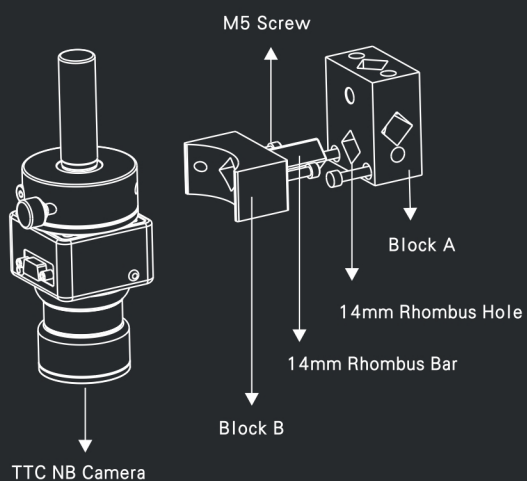


TTC NB FIXTURE ADAPTER

Can easily transform Erowa, 3R or Hirschmann clamping fixtures to Universal fixtures which then can be used with MB 80 Magnetic fixtures

MB 80

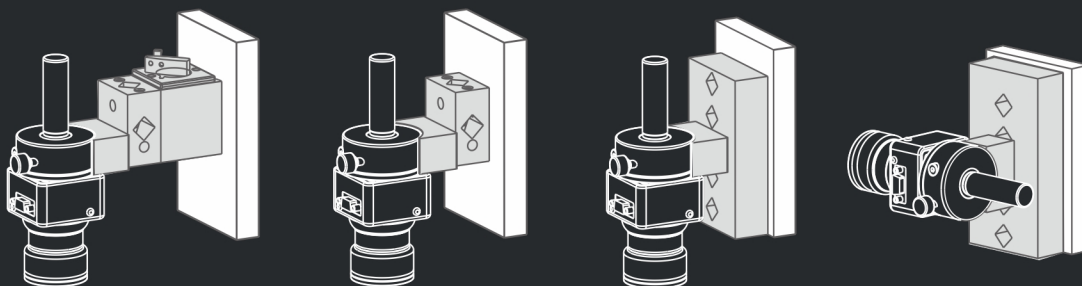
Can be applied to machines with no clamping fixture receiver when it is best to not remove the tools from machine



**NB Camera
+ MB 80**



**Applications of
MB 80 fixtures**



APPLICATION

To minimize the defects of workpiece in precision process, avoid removing workpiece from machine. Precision machine tools equipped with precision clamping fixtures and TTC ON-MACHINE Optical Measurement System can reach maximum efficiency and precision due to instant on-line measurement and correction. It fits for the tolerance requirement of a workpiece between 0.002 and 0.01mm

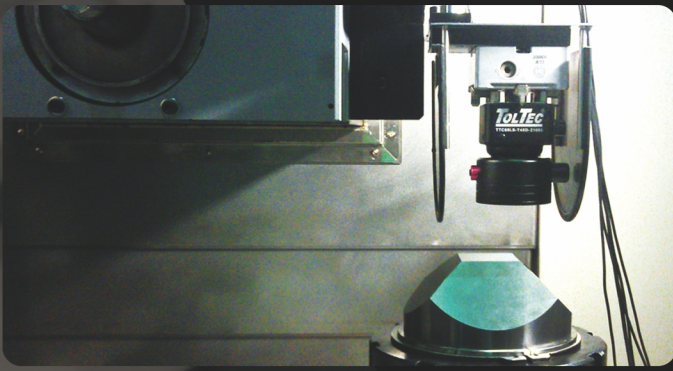
High Speed
Machining Centre

EDM Application



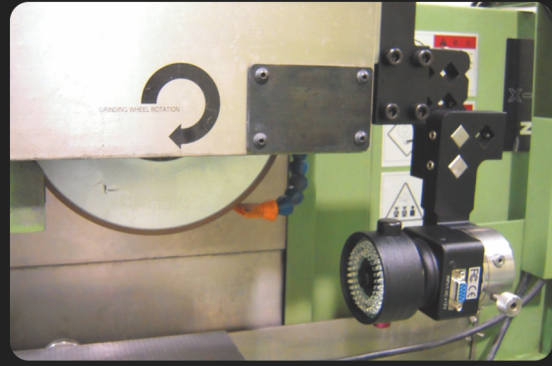
Can be applied to (CNC) Electric Discharge Machine, (CNC) High-Speed Machining Centre, Wire Cutting Machine, (CNC) Lathe and Grinding Machine. Applied machines must be equipped sealed linear encoders

Lathe and Wire Cut Machine
Application

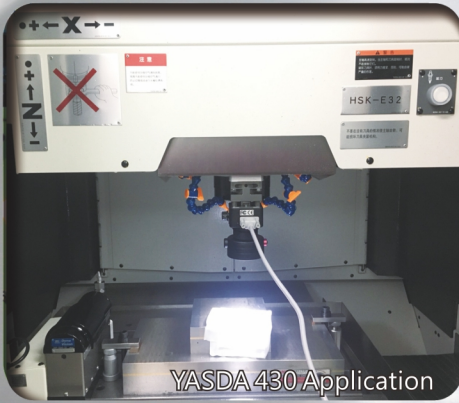


Customized Application

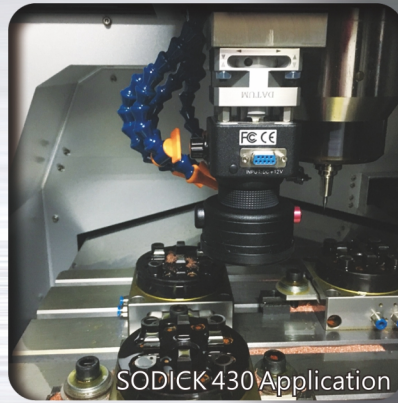
TTC Camera installed on the 5 axis grinding machine.
Descending the Camera when measuring and
retracting when measurement is done



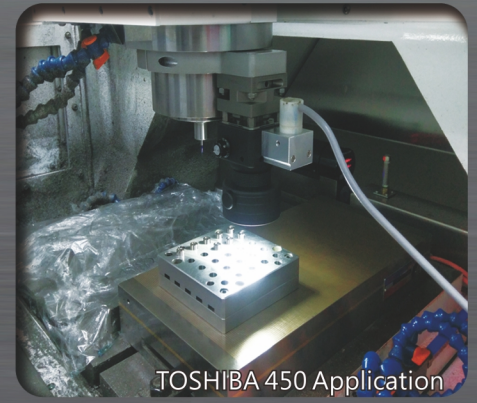
Grinding Machine Application



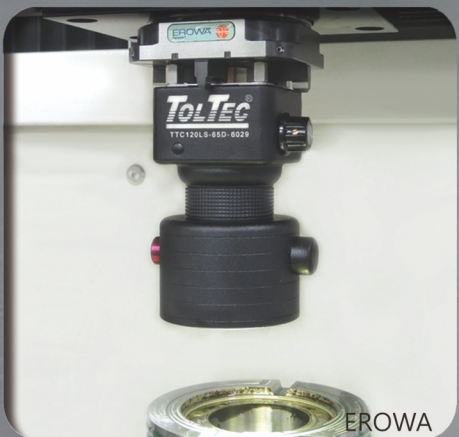
YASDA 430 Application



SODICK 430 Application



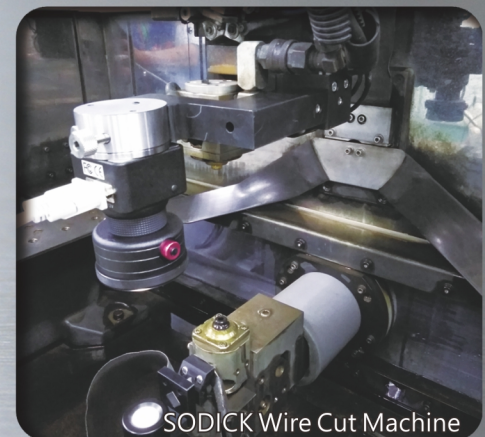
TOSHIBA 450 Application



EROWA



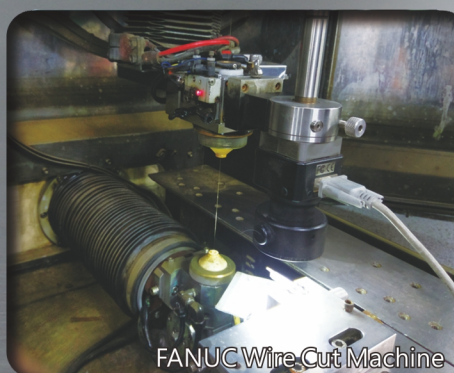
3R



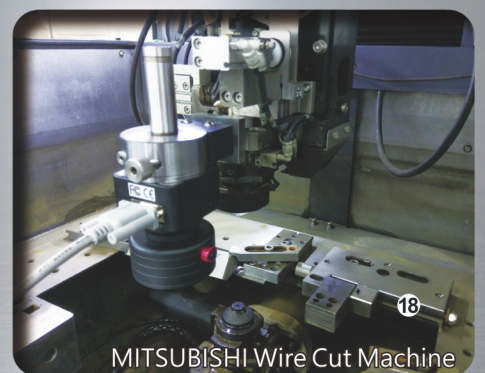
SODICK Wire Cut Machine



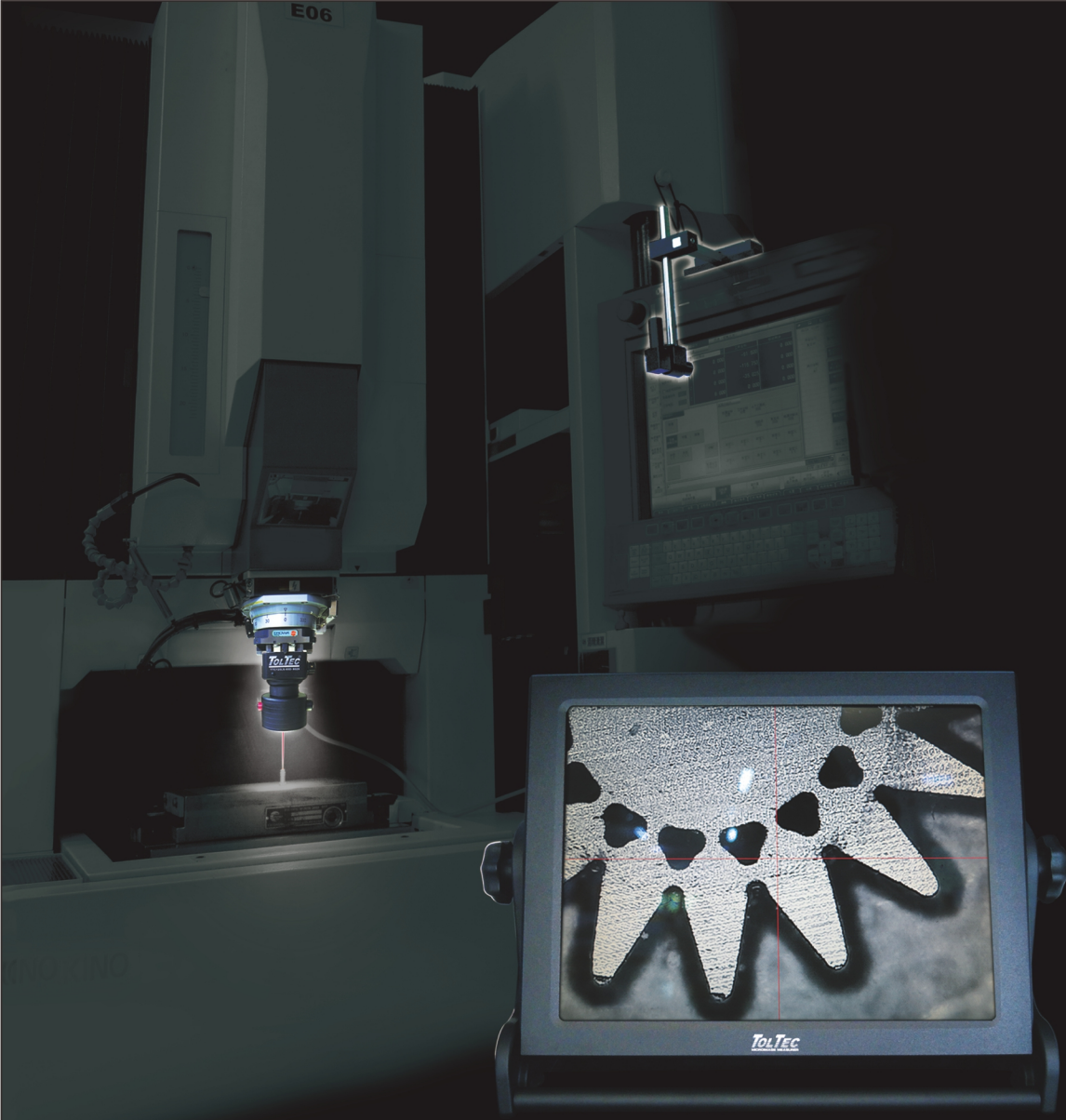
MAKINO V33 Application



FANUC Wire Cut Machine



MITSUBISHI Wire Cut Machine



TOLTEC[®]
TOLTEC ENGINEERING CO., LTD.

TOLTEC PRODUCTS ARE ONLY SUITABLE FOR MACHINE TOOLS
EQUIPPED WITH OPTICAL LINER ENCODERS
www.toltec.com.tw

Copyright © 2022 All Rights Reserved.