



IMM

INSTANT MEASUREMENT MACHINE

One Touch Inspection System

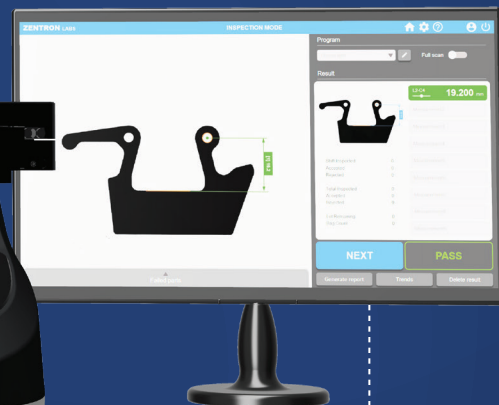
Why iMM?

- ◆ 100 % reliable inspection
- ◆ Zero defect dispatch
- ◆ Complete data of all the inspected parts
- ◆ Real-time report generation
- ◆ Ease of use
- ◆ Reduced human resource
- ◆ Payback period of less than 2 years



Auto Focus

The system uses advanced algorithms to automatically focus on the required measurement plane at the click of a button. This helps in capturing a sharp image independent of the operator's eyesight and this brings consistency and repeatability in the measurement.



Intuitive UI

Inspection result, part configuration, parts reports, batch reports and data analytics can be easily accessed and read by the user at the click of a button.

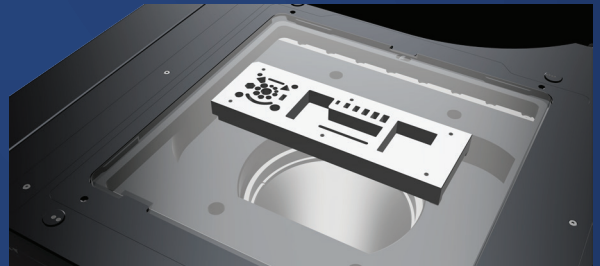
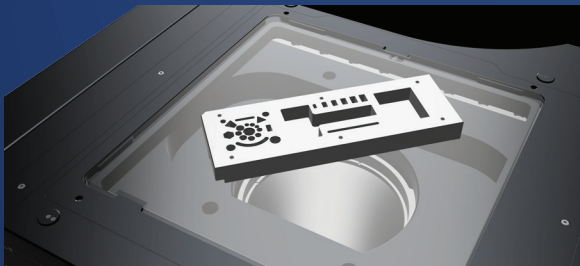
One Touch, Instant Inspection

Just place the part on the table
and press a button.

The inspection result is obtained in
less than 2 seconds.



**Orientation detection in conjunction with autofocus
makes the system completely user-independent
and user-friendly.**



Orientation Detection

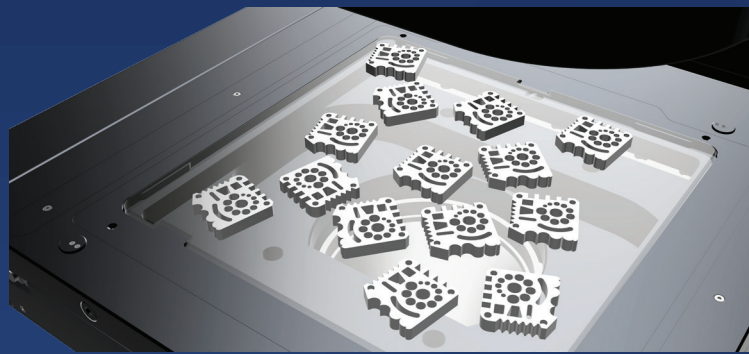
The system uses advanced pattern
matching algorithm to identify the
position and orientation of the part by
automatically creating a reference system.

As a result, the part can be placed
in any orientation and on any part of
the table.



Multipart Inspection

Multiple parts placed inside the Field of Vision (FOV) can be inspected simultaneously. This greatly improves productivity and facilitates 100% inspection of critical parts.



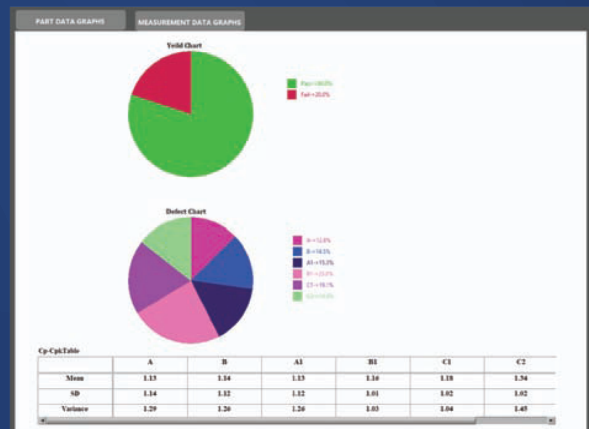
Multiview Inspection

Multiple views of a part can be inspected in a single inspection cycle. This enables 3 dimensional inspection of a part. The final inspection result is based on the measurements in all the views. Up to 5 views can be inspected in a single inspection in a single inspection cycle.

Data Analytics

The system compiles measurement values and part images to generate real time part & batch reports. Inspection history can be retrieved from the system for a required time period.

The system computes Cp / Cpk, averages & trends with graphical representation that helps in tracking the production process and detect issues, variances & defects in real time.

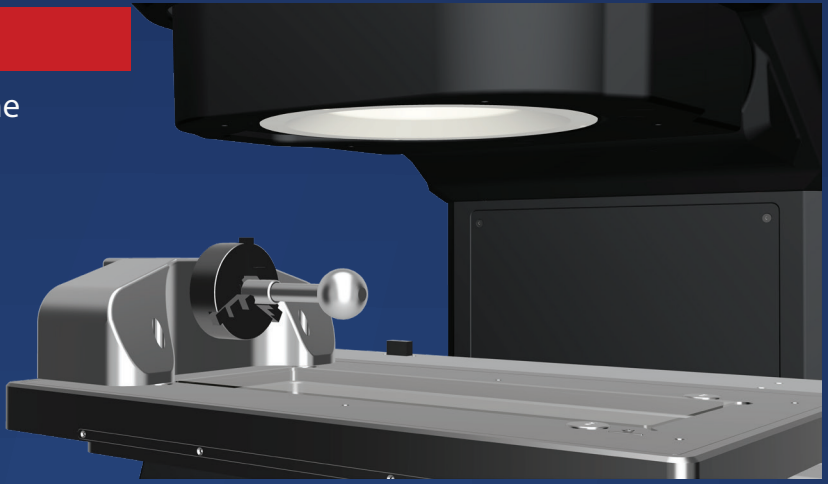


Rotary Fixture

Rotary fixture can be mounted on the table to inspect all possible measurements of a turned part.

Measurements included are:

1. Total run-out
2. Circular run-out
3. Circularity
4. Cylindricity
5. Average diameter



Profile Inspection

The system inspects the deviation of part's profile from true profile.

The inspection can be done w.r.t:

1. DXF
2. Golden image sample
3. Ideal feature

Lights-Out Operation

The IMM system can be integrated with automation modules to automate the inspection process. It can communicate with pick-and-place arms to sort defective parts. A robust communication protocol ensures a seamless inspection process in a lights-out environment.



Unifont 90 AI Cast Body

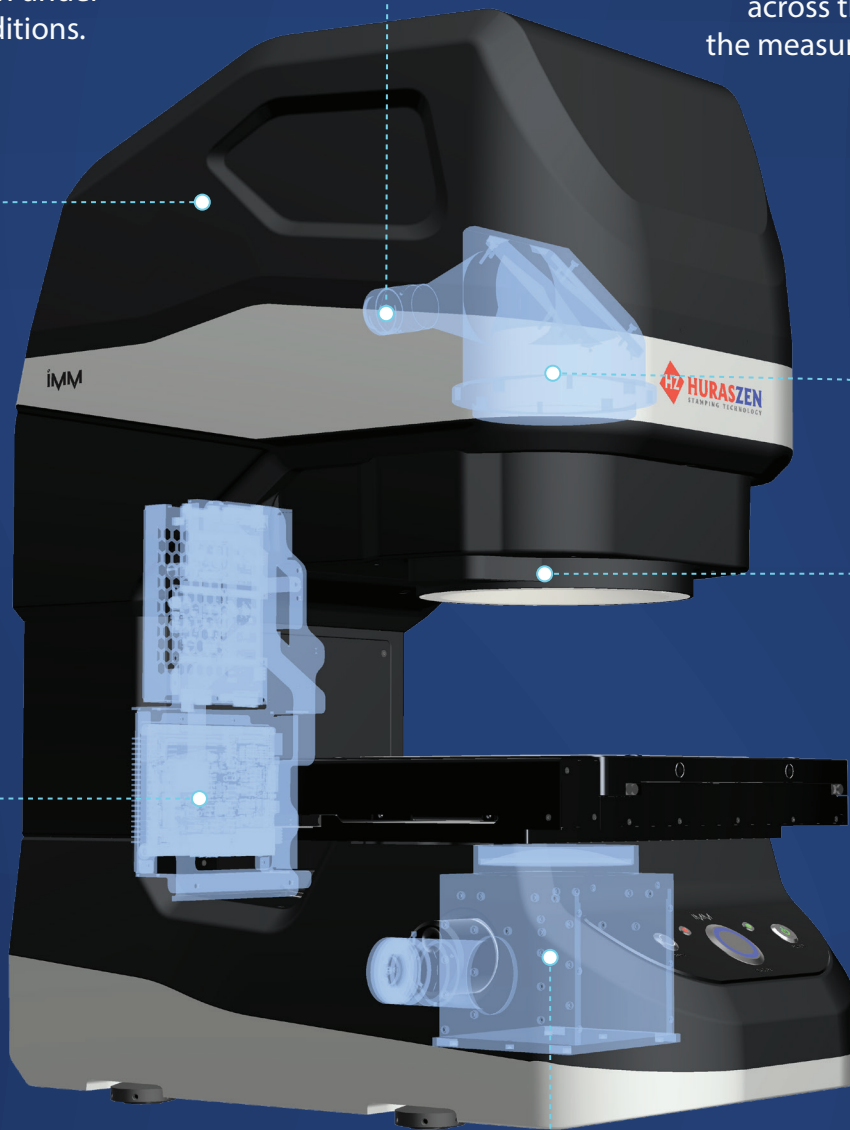
Unifont 90 AI Cast Body makes the structure thermally stable and free from internal stress. The strength and rigidity of Unifont 90 protect sensitive optical and sensor components, ensuring reliable operation under shop-floor conditions.

20 MP Camera

Captures a high resolution image for detecting edges with sub-pixel level accuracy.

Bi-telecentric lens

Enhances the depth of focus and maintains a constant magnification across multiple measurement planes. It also maintains uniform illuminations across the field of view (FOV) including the boundary. This helps in achieving the required accuracy across the FOV and the measurement planes.



In-built electronics

Reduces the footprint of the system. The CPU is designed to work under shop floor conditions.

Collimated back light

Maintains uniform illumination across the FOV and enhances contrast along curved edges of the part.

3 Rows, 8 Segments moving top light

Moving top light helps in detecting features across multiple measurement heights and segmented light enhances the contrast by selectively illuminating the edges.

MEASUREMENT ALGORITHMS

GD&T: True position, Symmetry, Straightness, Parallelism, Circularity, Concentricity & Perpendicularity.

Gear Measurements: PCD, Root circle, Outer circle, Circle fit over pin, Circle fit under pin, Span over teeth, Crest point of teeth, Root point of teeth & Mid point of teeth.

Thread Measurements: Pitch, Angle, Inner diameter & Outer diameter.

Linear Measurements: Line - line, Point - point, Point - line, Vertical/Horizontal point/Line to point/Line, Circle to circle, Circle to point, Circle to line, Average clamp, Max clamp, Min clamp & Circular clamp.

Standard Measurements: Angle between 3 points, Angle between 2 lines, Radius & Diameter.

Detection: O-Ring, Groove & Spoke.

CUSTOMER SUPPORT

- Development of measurement algorithms based on the requirements
- Design and manufacture of fixtures based on the part
- Intergration of automation modules
- Online technical support

TECHNICAL SPECIFICATION

Measurement Area

Model Name	Wide Inspection	Precision Inspection
9010	100 mm dia	56 mm dia
9020	300 x 80 mm	270 x 54 mm
9030	200 x 200 mm	175 x 175 mm
9040	300 x 200 mm	-

Data Sheet

	Image	Wide Inspection*	Precision Inspection**
Accuracy	One shot	$\pm 3 \mu\text{m}$	$\pm 1.5 \mu\text{m}$
	Stitched	$\pm (6+0.02L) \mu\text{m}$	$\pm (4+0.02L) \mu\text{m}$
Repeatability	One shot	$\pm 1.5 \mu\text{m}$	$\pm 1 \mu\text{m}$

Machine dimension	446 x 608 x 778 mm
Machine weight	56 kg
Working temperature	10°C to 50° C

Controller

System type	Intergrated
Available ports	2 USB 2.0
	1 USB 3.0
	2 HDMI
Power	230V AC input

Note: Quoted accuracy and repeatability values are from measurements made on NABL certified slip gauge using backlight, under ambient operating temperature of 21° ($\pm 1^\circ \text{C}$)

* Specified within Ø80 mm about centre of FOV

** Specified within Ø35 mm about centre of FOV



One Vision • One Mission • One Platform for Stamping Excellence

In the world of high-performance manufacturing, the collaboration between Zentron and Huras Stanzautomation brings together the best of automation, machine vision, and process engineering to offer an unparalleled value proposition: A one-stop solution for the entire stamping industry.



Founded in 1998, Huras is a family-owned European leader in stamping automation, hybrid part production, and process optimization. Its portfolio includes Servo Presses with precise, reproducible, energy-efficient control, Winding & De-coiler Machines, Laser-cutting and welding accessories, and advanced tool technologies - enabling customers to achieve best-in-class stamping performance.



Zentron, an innovation-driven Indian company, brings deep expertise in Machine Vision and embedded AI, transforming inspection and measurement with solutions like GTron for high-speed inline gauging, iMM for instant measurement, and Hortisort for vision-based fruit sorting.

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