

STVision

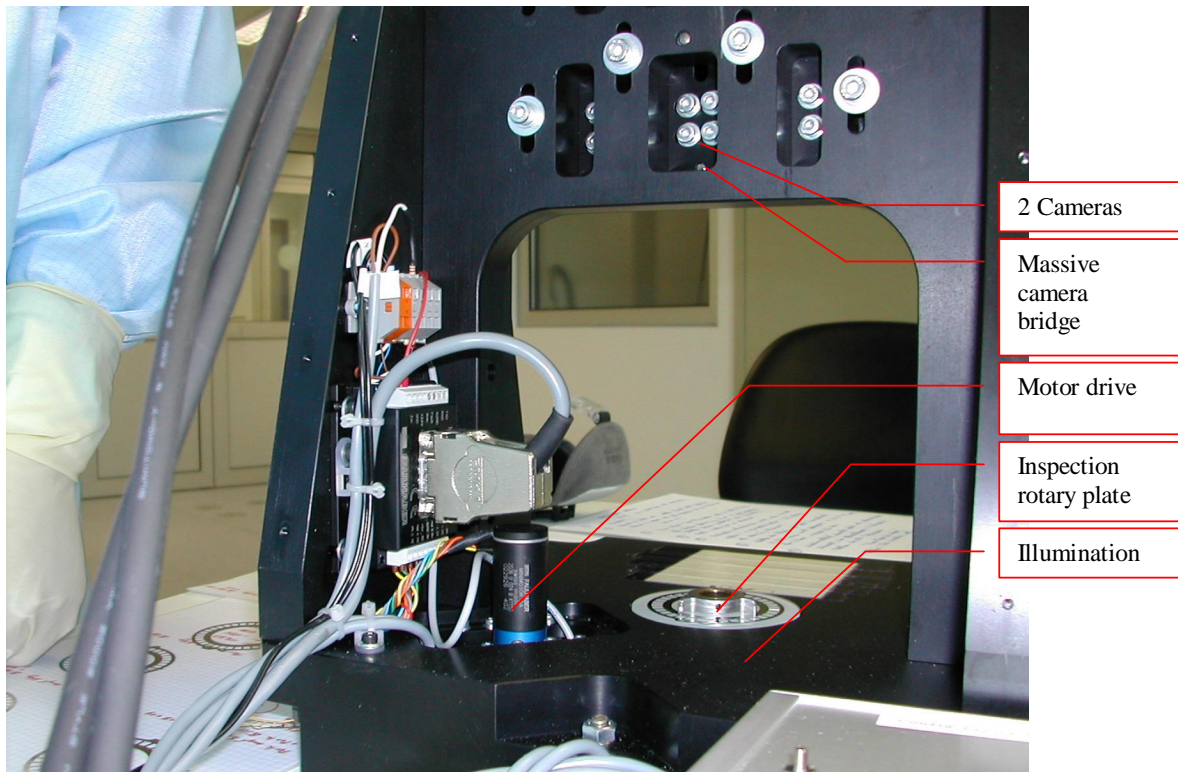
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Encoder Disc Inspection System (ENC) Jan 2005 STVision



2 Cameras

Massive
camera
bridge

Motor drive

Inspection
rotary plate

Illumination

- 100% Inspection of encoders
- electroformed or etched
- glass based encoders
- Outside diameter ≤ 60 mm
- Inner diameter ≥ 10 mm
- Inspection on over/under etching
- Mean bar width
- Min/max bar width
- Pearl detection
- General shape analysis
- Pilot hole distance measurement
- Metallization centering to contour
- Metal defects
- Excess sputter metal, bridges
- Missing metal, voids, pits
- Glass defects
- Contamination
- Automatic contour learning from golden unit
- Option: Contour definition from CAD model
- Automatic volume verification after dispensing
- Automatic remote controlled illumination
- 4 bins for defect classification
- Massive construction, free of vibrations
- Indirect backlight illumination for perfect measurement
- Prepared for automatic load / unload handler
- Detection of repeated defects
- Pearl shape analysis

Operation Mode

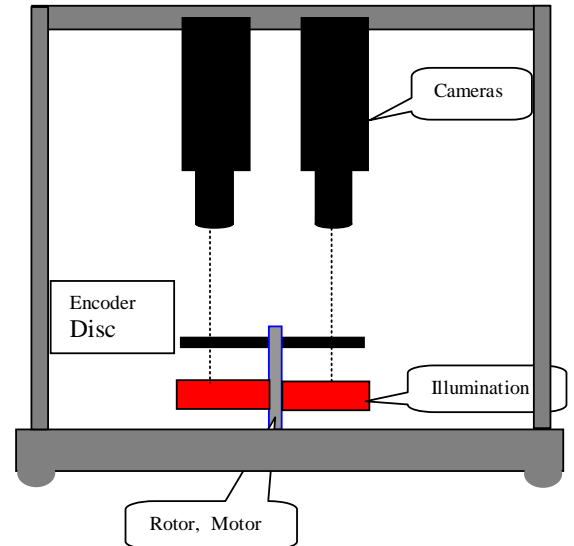
The encoder disc is placed on the rotary glass table. Centering can be done by pyramids on the glass plate, or by universal centering device after placement.

Two high-res cameras digitize pairs of images simultaneously.

This allows very precise distance measurements across the disc, e.g. pilot hole distance measurements.

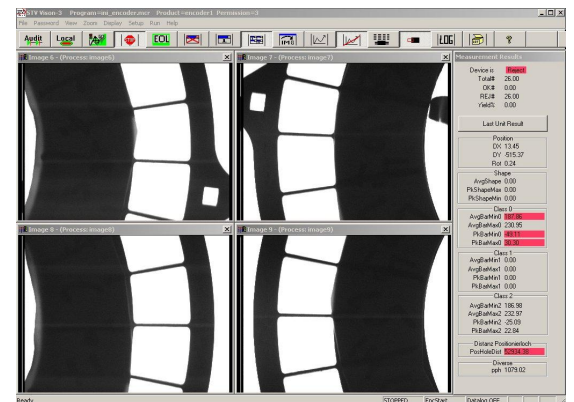
Strobe light assures sharp images while rotation. External image trigger at certain rotary positions assures extremely repeatable image sequence.

Discs out of center measurement is possible



Technical Data

Camera		
Resolution	1300 x 1040	Pixel
Image	13 x 10	Mm
Pixel size	10	Micron
Bar width accuracy	+/- 1	Micron
General shape accuracy	+/- 5	Micron
Pearls accuracy	10	micron
Pilot hole distance accuracy	+/- 1	micron
Glass defect	>= 20	micron
Missing metal on glass	15	micron
Excess metal on glass	15	micron
Contamination	20	micron
Min contrast of defect	20	Grey levels
Image grabbing speed	15	Images/sec
Measurement handler	1.5	Sec
handler	1.5	Sec
Total throughput with handling	3	Sec
Processor	Pentium-4	
Speed	2.5	GHz
Memory	256	Mbyte
Operating system	Win2K or XP	
Illumination	Remote controlled	
Strobe pulse length	<= 0.03	msec
Interface to handler	24V parallel I/O	
# of reject bins	4	



This system has proven reliability and precision in measurement. It is basically free of maintenance. Only the rotary glass table requires cleaning in regular intervals. The whole system is robust, and is the standard tool for all types of encodes quality control.