Weld and Macrostructure Image Analyzing System

A. Hardware

A.1 Digital Color Camera (5 Mpixel)

Features:

- USB 2.0 interface (up to 480 Mbit/s)
- 8 Mpixels on-board memory for secure image transmission
- Micro-PLC for real-time sequencing (HRTC)
- Digital I/O – 1/1 opto-isolated
- Horizontal and vertical average binning
- Automatic gain control (AGC)
- Automatic exposure control (AEC)

Sr. No.	Description	Technical Specification
1	Image Sensor	1 / 2.5" type CMOS
2	Effective picture elements	2592 x 1944 (H x V)
3	Maximum Frame Rate	5.8 at high resolution
4	Pixel Size	2.2 X 2.2
5	Shutter Type	Rolling / Global reset
6	ADC resolution / output	10 bit → 10 / 8 bit
7	SNR	>38 dB
8	Exposure Time	10 ms – 1 s

A.2 Camera adapter

Specially designed Camera adapter as per microscope photography port

B. Software

B.1   Weld Parameters Analysis

- Leg length, throat, penetration, root penetration, metal thickness, gap etc
- Area and depth of Heat Affected Zone (HAZ)
- Joining Angle measurement
- Color coding for independent measurements
- Option for tagging the readings on image
- Flexible tolerance limit facility with GO/No GO indications for observed readings

B.2   Porosity and other defect Analysis

- Geometrical parameters such as length, width, area, perimeter estimation of porosity
- Crack length and width
- Maximum Lack of fusion penetration depth
- Flexible tolerance limit facility with GO/No GO indications for observed readings

B.3   2D analysis of features of interest as per following

- Object counting
- Distance between any two points
- Angle between any two edges
- Rectangle measurement
- Irregular shape measurement

B.4   Additional features

- All the results can be reported in units like micron, mm, cm, inch etc.
- Quick Calibration attachment system with freedom for adding additional magnifications

B.5   Customized report generation in MS Excel as per OE formats etc. (Please send your current reports to check the feasibility of this facility)

Desktop Computer to be arranged by Customer for the system

Minimum specifications required are :
Processor - Intel® Core™ i3or better , Memory - 4 GB DDR3, Hard-drive - SATA (7200 rpm) 500 GB, USB 2.0 ports , DVD writer, keyboard, mouse, LED monitor 18.5″ or better.