



BANBROS ENGINEERING PVT. LTD.
The Precision Measurement

PORTABLE ELECTROLYTIC POLISHER/ETCHER

- **VALUE**
- **VERSATILITY**
- **PERFORMANCE**



INSIPOL-2000



DESCRIPTION:

In-situ metallographic has become one of the important **NDT** tools for industrial inspection system. Over the years demand is observed in the developing countries like India. In current scenario, in-situ metallographic is widely accepted in many areas of industries from quality control to life prediction of operating plant structures. In-situ metallographic is useful where microstructures are prepared to minimize the damage to the material being analysed and at the same time derive metallurgical information.

IMPORTANT AREAS OF IN-SITU METALLOGRAPHIC:

- Quality control checks for metallurgical industries.
- Life assessment of process plant components, subjected to high temperature damages.
- Reconditioning of the component.
- Risk based assessment of process plant.
- Damage identification & audit.
- Weld quality evaluation for critical application.

To meet these demands, we are delighted to introduce **INSIPOL-2000**. A unique portable electrolytic polisher/etcher with advanced control system and ease of operation. The INSIPOL-2000 is designed to help practicing metallurgist to overcome practical difficulties.

PRINCIPLE OF ELECTROLYTIC POLISHING/ETCHING:

Electrolytic polishing produces a highly polished distortion free surface that is ideal for microscopic examination. The main advantage is that there are no deformation layers to observe the microstructure-view as no abrasives are used. When an electrolyte is flown between anode (a metal to be polished) and cathode, the micro protruding metal will dissolve to get uniform polished surface at particular current. The flow of electrolyte ensures the removal of metal products accumulated due to dissolution. The quantity of polishing also depends on lamella flow, which removes uniform metal. Etching generally occurs at the lower current than polishing, when only grain boundary is attacked preferentially. INSIPOL-2000 is designed to get single stage polishing/etching on variety of metals. Single-phase alloy/metals are easy to polish with electrolytic polishing whereas multiphase alloys/metals it poses certain difficulties.

TECHNICAL SPECIFICATION:

Model No.	INSIPOL – 2000
Supply Voltage	230V AC, 50 HZ
Power Consumption	280W maximum while operating
Polishing Voltage	0 - 60V
Polishing Current	0 - 3 Amp
Polishing Timer	0 - 90 Sec.
Etching Voltage	0 - 18V (To be set with sample)
Etching Current H Range	0 - 750 milliamps
Etching Current L Range	5 - 30 milliamps.
Etching Timer	0 - 90 Sec. Pump
Speed Control	Electronic
Dimensions	430mm X 330mm X 235mm(LHW)
Weight	11 kg. (Approx.) Without electrolyte



HIGH RESOLUTION USB CAMERA:

This camera can be easily inserted into eyepiece tube of microscope. The Digital Micro-Image Displays Immediately on computer or notebook PC. This camera ranges is an ultra-high performance CMOS camera and it adopts ultra-high performance CMOS sensor as the image-picking device. USB2.0 is used as the data transfer interface. The camera hardware resolutions range from 2M.P, 5M.P, 12M.P and comes with the Integrated zinc aluminium alloy compact housing. It comes with advanced video & image processing application ultracam; providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API. It can be widely used in bright-field light environment and microscope image capture and with moderate frame rate.



It can provide support for detail image demonstration and analysis/application, including following function:

- Take Photo and Save Picture into Computer.
- Take Video and Save Video into Computer.

PORTABLE METALLURGICAL MICROSCOPE with Chargeable Battery Pack (Model No: PMM)

It is compact in size, light in weight & easy to carry around. This microscope permits examination on the desk & also on the post examination of an object in original size & shape in factories, laboratories & pipelines. The microscope unit is fitted with an incident and light through epi-illuminator, slot for dropping filter supplied with the variable light control, facility for Chargeable Battery Pack. Two filters in mount (Green & Blue), & following optical combination in wooden box.



- Eyepieces: 10x
- Objectives: 5x ,10x, 20 X & 40x
- Magnification: Up to 400X

TECHNICAL SPECIFICATION:

- Scan Mode: Progressive
- Image Sensor: 1.3 mega Pixel CMOS Chips
- Sensor Size: 1/3 (4.60mm(H) x 3.70mm(V), Diagonal 5.9mm)
- Max Resolution: 1280 X 1024
- Pixel Size: 3.6µm x 3.6µm
- Responsivity: 1.0v/lux-sec (550nm)
- Dynamic Range: 71dB



- A/D Converter: 10-bit, 8-Bit
- R.G.B to PCSN Ratio: 44dB
- Spectral Range: 400-650nm (with IR-filter)
- Color Rendering Technique: Ultra Fine™ Color Engine
- White Balance: One Push ROI White Balance/ Manual Temp-TintAdjustment
- Saved Picture File format: BMP & JPG
- Operating System: Microsoft® Windows® XP / Vista / 7 (32 & 64 bit) / MAX (OS) / Linux.

*** Due to continuous product development, Image & specification can be upgrade.**