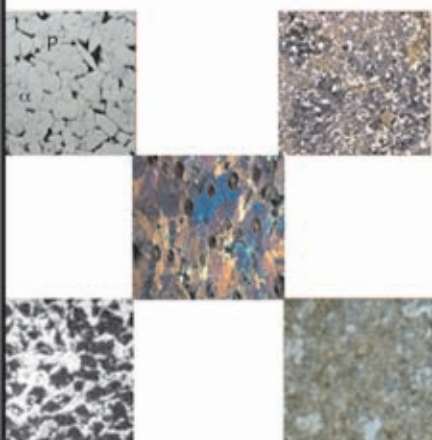


JUST MACHINE TOOLS

Presents

METALLURGICAL SOLUTIONS



Fast Accurate Easy to Use

VISION APPLICATION :

Consider for a moment when visual processes are important in the work for which you are responsible. If your need to count object and particles, compare size and shapes, measure area and boundaries or if you could more easily manipulate data by transfer of images into computer, then a JUSTY Vision System will be a powerful tool for your organization for its image monitoring, processing and analysis needs. Video capture methods can give significant advantages, in particular no direct contact is required with the sample under observation and speed, accuracy and consistency of results are all improved over manual methods.

AREAS OF APPLICATION

JUSTY Vision system can be applied imaginatively and creatively to solve the problems in all these areas and more.

Automotive Parts Inspection	Forensics
Aerial Surveillance	Medical Imaging
Semiconductor Manufacture	Particle sizing and counting
Object recognition	Pharmaceutical research
Morphometry	Quality control & inspection
Satellite picture processing	Petroleum research
Pictorial database	Gems and precious stones
Graphics design	Engraving & Textile & Rayon Industry
Cartography	Endoscopy
Cosmetics	Photogrammetry & 3D reconstruction
Object tracking & control	Nuclear Medicine
Telemedicine	Metallurgy and Materials science

APPLICATION IN RESEARCH LABOURATORY

MICROSCOPES : Biological, Metallurgical, Stereo Zoom, Industrial Tool Makers Microscopes, Video Inspection & Projection Systems, Frame Grabber Cards, CCD Cameras, Image Analysis Work Station, Motorised X-Y stages, High Speed Cameras & Image Analysis Software.

PRODUCTION/ ASSEMBLY/ INSPECTION APPLICATION

PC based Pass/Fail systems, Video Inspection system for quality control in online counting sizing and sorting, Industrial PC's, Data Acquisition systems for production line control.

INDUSTRIAL/DEFENCE/SPECIALISED APPLICATION

PC based Monitoring & Sureillance systems, Digital Video Recorders, Remote Monitoring System, Day & Night Cameras, Infra Red Illuminators, Closed Circuit Television, Zoom Lens, Infra Red/Thermal Imaging, Aerial Imaging, High speed motion detection, Tracking, Image capture and analysis, Laptop based mobile workstation for remote and field applications.

MEDIA CYBERNETICS-IMAGE-PRO PLUS AND MATERIALS-PRO ANALYZER

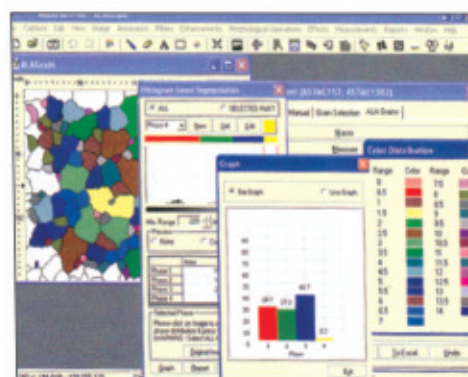
THE COMPLETE IMAGING SOFTWARE SOLUTION FOR MATERIALS ANALYSIS

**MEDIA
CYBERNETICS**

THE IMAGING EXPERTS

Material-Pro Analyzer is designed for industrial materials scientists, metallurgists, laboratory technicians and R & D engineers who need improved solutions for quality control and product development. Working in conjunction with Image Pro Plus, it is the leading image analysis system for the automation of widely used standard materials tests. Unlike manuals or existing systems which are either too expensive or difficult to use, Material-Pro Analyzer is a user friendly product that delivers reliable, repeatable results at a price/performance breakthrough.

Materials-Pro is state-of-art software package for the analysis of metals, ceramics, coating, powders, and other materials. Its Window based software runs on standard Pc's and supports a wide variety of image hardware for easy system Integration.



Section of Steel showing Grain Structure



Inclusion Rating (ASTN/DIN)



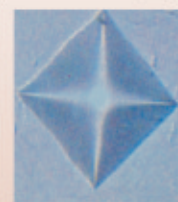
Dendritic Arm Spacing



Sphericity



Grain Size



Knoop & Vickers Hardness



Thickness

SOFTWARE FEATURES :

Measurement tools

- (a) Calibration
- (b) Length
- (c) Angle
- (d) Perimeter
- (e) Width
- (f) Radius
- (g) Area
- (h) Color
- (i) Counting
- (j) Amalgamation

Metallography Tools

- (a) Grain Size
- (b) Phase
- (c) Decarbazation
- (d) Coating Thickness
- (e) Nodularity
- (f) Porosity
- (g) Inclusion
- (h) Particle Measurement
- (i) Density

Image Processing Tools

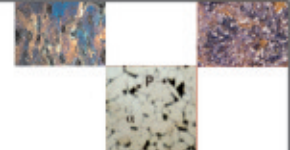
- (a) Filters
- (b) Invert
- (c) Annotation
- (d) BackGround Removal

Also available Capture Kits (Including most advance CCD Camera and Sophisticated Image Capture Cards) to Integrate with any Microscope, PC Compatible and Printers also available.

JUSTY - MATERIALS - PRO ANALYSER

THE IMAGE ANALYSIS SOLUTION FOR METALLOGRAPHIC AND MATERIALS.

An excellent product of great development efforts - This software is very useful for the QC Laboratories of Steel Plants, Metal forging industry, Oil & gas industry, Material Science Research and Studies, Manufacturing and where ever Metallurgical microscope are used in laboratories. For any metallurgist it's a very useful software that shall increase his productivity.



ASTM ANALYSIS FUNCTION CONFORM TO MATERIALS STANDARDS

- | | |
|--|---|
| 1. ASTM E 1382 Semiautomatic & Automatic Image Analysis. | observed in a metallographic section (ALA Grain Size) |
| 2. ASTM E 112 Average Grain Size using Semiautomatic and Automatic Image Analysis. | 4. ASTM E 384 Test method for microhardness. |
| 3. ASTM E 930 Estimating the Largest Grain | 5. ASTM B 276 Apparent Porosity in cemented carbides. |

ADDITIONAL FEATURES :

- | | |
|--|--|
| 1. Measure Dendritic Arm Spacing. | martensite, ferrite, retained austenite, pearlite (upto 8 phases) |
| 2. Measure Graphic Nodules by area and %. | 12. Determine porosity, cellular structure, and hardness rating of metals. |
| 3. Count and size many shapes factors and distribution of particles. Particle size analysis. | 13. Complete and accurate statistical reporting is provided in a variety of industry standard data tables. |
| 4. Easily acquire images from your sample using manual or automated stage with pre-defined stage patterns. | 14. Image, data, and text can be sized and formatted to your specifications. |
| 5. Automatic the analysis of digitized image of specific materials products. | 15. Determine coating thickness, micro-hardness (E-384), decarbazation depth. |
| 6. Expanded algorithms for boundary reconstructions, available for both single & multiple phase materials. | 16. Caliper tools for Measurements of length, area, perimeter, radius, angles. |
| 7. The Measure uniformity function accurately determines relative uniformity of materials samples. | 17. Industrial measurement tool kit for powerful metrology inspection. |
| 8. Measure shape and orientation. | 18. Built in support for INTERNET CHAT, FILE TRANSFER |
| 9. Gauge porosity. | 19. 3D image intensity surface plots feature. |
| 10. Nodularity. | 20. Support for motion capture format. |
| 11. Perform phase analysis percent | 21. Support for 36 and 48 bd color images. |

JUSTY - CO-AXIAL TRINOCULAR RESEARCH METALLURGICAL MICROSCOPE VISION PLUS-5000.

- Viewing Head : Trinocular Observation Head conveniently inclined at 45°
- Focussing : Co-axial focussing module with slides travelling on ball-bearing guideways.
- Mechanical Stage : Large graduated mechanical stage with low drive co-axial controls for X-Y movements on the ball slides.
- Nosepiece : Quadruple revolving nosepiece for quick magnification change with positive click stops for proper centering.
- Objectives : Achromatic Flat-field metallurgical corrected and anti mount fungus M4x, M10x, M40x & M100x (oil).
- Eyepieces : Compensating High Eye point widefield eyepiece 10x & H5x.
- Magnification : 20x to 1000x.
- Illumination : Incident light through Epi-illuminator with field aperture diaphragm and filter slots. Continuously variable luminosity control though built - in - electronic transformer.
- Filters : Green & Blue.
- Optional : Grain size Eye Piece 10x, Measuring Eye Piece 10x, Higher Magnification Eye Piece W.F. 15x & H 20x.



JUSTY - CO-AXIAL INVERTED TRINOCULAR METALLURGICAL MICROSCOPE VISION PLUS-5000



JIMM - 02

- Viewing Head : Trinocular Observation Head conveniently inclined at 45°
- Focussing : Co-axial focussing module with slides travelling on ball-bearing guideways.
- Mechanical Stage : Large graduated mechanical stage with low drive co-axial controls for X-Y movements on the ball slides.
- Objectives : Achromatic Flat-field metallurgical corrected and anti mount fungus M4x, M10x, M20x & M40x.
- Eyepieces : Compensating High Eye point widefield eyepiece 10x & H5x.
- Magnification : 20x to 400x.
- Illumination : Incident light through Epi-illuminator with field aperture diaphragm and filter slots. Continuously variable luminosity control though built - in - electronic transformer.
- Filters : Green & Blue.
- Optional : Grain size Eye Piece 10x, Measuring Eye Piece 10x, Higher Magnification Eye Piece W.F. 15x & H 20x.

JUSTY - CO-AXIAL TRINOCULAR RESEARCH METALLURGICAL MICROSCOPE WITH BRIGHT FIELD & POLARISED LIGHT ILLUMINATION VISION PLUS - 5000

- Viewing Head : Trinocular Observation Head conveniently inclined at 45°
- Focussing : Co-axial focussing module with slides travelling on ball-bearing guideways.
- Mechanical Stage : Large size stage with low drive co-axial for controls for X-Y movements on the ball slides.
- Objectives : Achromatic Flat-field metallurgical corrected and anti mount fungus M4x, M10x, M20x & M40x.
- Eyepieces : Compensating High Eye point widefield eyepiece 10x & H5x.
- Magnification : 20x to 400x.
- Illumination : Incident light through Epi-illuminator with field aperture diaphragm and filter slots. Continuously variable luminosity control though built - in - electronic transformer.
- Polarising Filters : Built in rotatable analyzer & lamp polariser to work in polarized Light.
- Optional : Grain size Eye Piece 10x, Measuring Eye Piece 10x, Higher Magnification Eye Piece W.F. 15x & H 20x.
- Metallographic Equipments : Single Disc Polishing Machine, Double Disc Polishing Machine, Hand Grinder (Polishing Stand), Specimen Leveller, Dry Belt Surfacers, Specimen Mounting Press, Cut Off Wheel Machine.



JIMM - 03

MONOCULAR METALLURGICAL MICROSCOPE



JMM - 01

Magnification :	25x-450x.
Observation :	Monocular inclined 45° and rotatable 360° Inter-changeable with straight tube for Micro-photography / Imaging.
Stand :	Arigid and stable stand.
Stage :	Horizontal Mechanical stage 120x140mm. With fine vernier graduation. Designed with convenient coaxial adjustment for specimen manipulation.
Focussing :	Coarse and fine focussing by conveniently placed separate knobs. 1div. = 0.002 mm.
Illumination :	Incident bright light through Epi-illuminator 6V - 20W Halogen lamp with Iris diaphragm and filter slot. Continously variable Luminasity.
Nose Piece :	Quadruple revolving Nose Piece with Positive click stop.
Objectives :	Achromatic - M5x, M10x & M45x (S.L.).
Eyeieces :	Huygenian 5x & Wide field 10x.

BINOCULAR METALLURGICAL MICROSCOPE

Magnification :	25x-450x.
Observation :	Binocular inclined 45° and rotatable 360°. Inter-changeable with straight tube for Micro-photography / Imaging.
Stand :	Arigid and stable stand.
Stage :	Horizontal Mechanical stage 120x140mm. With fine vernier graduation. Designed with convenient coaxial adjustment for specimen manipulation.
Focussing :	Coarse and fine focussing by conveniently placed separate knobs. 1div. = 0.002 mm.
Illumination :	Incident bright light through Epi-illuminator 6V - 20W Halogen lamp with Iris diaphragm and filter slot. Continously variable Luminasity.
Nose Piece :	Quadruple revolving Nose Piece with Positive click stop.
Objectives :	Achromatic - M5x, M10x & M45x (S.L.).
Eyeieces :	Huygenian 5x & Wide field 10x.



JMM - 02

TRINOCULAR METALLURGICAL MICROSCOPE



JMM - 03

Magnification :	25x-1000x.
Observation :	Binocular-interchangeable with Trinocular head for Micro-photography/Vedio Projection.
Stand :	Arigid and stable stand.
Stage :	Horizontal Mechanical stage 120x140mm. With fine vernier graduation. Designed with convenient coaxial adjustment for specimen manipulation.
Focussing :	Coarse and fine focussing by conveniently placed separate knobs. 1div. = 0.002 mm.
Illumination :	Incident bright light through Epi-illuminator 6V - 20W Halogen lamp with Iris diaphragm and filter slot. Continously variable Luminasity.
Nose Piece :	Quadruple revolving Nose Piece with Positive click stop.
Objectives :	Achromatic M5x, M10x, M45x & M100x oil. (S.L.)
Eyeieces :	Huygenian 5x & Wide field 10x.

INVERTED METALLURGICAL MICROSCOPE

Magnification :	25x-450x.
Observation :	Binocular Observation Head.
Stand :	Extra large size rectangular base heavy and stable with transformer and electrical fitted inside.
Stage :	Fixed large size stage for inspection of large specimen with detachable graduated Mechanical stage for X & Y movement of specimen.
Focussing :	Coarse and fine focussing by conveniently placed separate knobs. 1div. = 0.002 mm.
Illumination :	Incident bright light through Epi-illuminator 12V - 50W Halogen lamp with Iris diaphragm and filter slot. Continuously variable Luminosity.
Nose Piece :	Quadruple revolving Nose Piece with Positive click stop.
Objectives :	Achromatic M5x, M10x, M20x & M45x (S.L.)
Eyepieces :	Huygenian 5x & Wide field 10x.



JIMM - 01

JIMM - 02

Same specification of JIMM - 01 with Trinocular observation Head.

STEREOSCOPIC ZOOM BINOCULAR MICROSCOPE



JSZ - 01

OPTIONAL ACCESSORIES
for higher Magnification upto 180x
Auxiliary objective lens 2x widefield
Eye Piece 15x or 20x (Paired)

Magnification :	10x to 60x (standard).
Observation :	Zoom binocular inclined 450 and rotatable 3600, providing erect unreversed images with inter-pupillary / diopter adjustment.
Stand :	A rigid and well balanced stand to ensure lasting optical alignment.
Focussing :	Highly sensitive focussing arrangement with rack and pinion control by big knobs.
Working Distance :	Standard 86mm. Without auxiliary objective.
Illumination :	Built in base illumination system of incident and transmitted light with variable light control. Built in solid-state transformer 6v-20W.
Objectives :	Parafocal Zoom objective 1x - 6x providing continuous variable magnification.
Eyepieces :	Extra wide-field 10x (paired) eye-piece for large field of view, sharp and strain-free image.

VISION PLUS TOOL MAKER MICROSCOPE

Magnification :	30x (standard).
Objective :	2x.
Eye Piece :	W.F. 15x with cross reticle.
Field of View :	8mm. Diameter.
Working Distance :	60mm. (Approx.)
Image :	Erect Image.
Observation Tube :	Monocular inclined at 30°.
Stand :	Large and Heavy base provide extra overall rigidity to the instrument.
Measuring Stage :	150x150mm. Travel upto 25mm. In each direction having least count 0.01mm.
Eyepiece :	Graduated 0° to 360° with adjustable vernier of least count 6 minutes.
Protector :	
Illumination :	Built in base transmitted from 6v-20W Halogen Lamp and incident from two lamps with variable separate control on front panel.



JTMM - 01

JTMM - 02

Same specification as above model but supplied with higher magnification 30x, 75x & 150x.

VISION PLUS VERTICAL TYPE PROFILE PROJECTOR



JPP - 01

Screen Dia.	:	300mm. Fine ground screen with cross line, Rotatable 0° to 360° vernier reading 3 minutes.
Magnification	:	10x and 20x.
Magnification	:	$\pm 0.1\%$ for contour and $\pm 0.15\%$ for surface.
Accuracy	:	
Work Stage	:	Table 200x200mm. Y-axis Traverse 25mm. X-axis Traverse 25mm. Least Count 0.01mm. Loading Cap. 10Kg.
Contour Illumination	:	24V - 250W Halogen lamp. Telecentric system and sharp twin lens condenser for each magnification Bright adjustment.
Surface Illumination	:	12V - 100W Halogen Lamp.
Cooling System	:	Built in noiseless and vibration free blower for powerful cooling system.
Power Supply	:	220/240V AC., 50/60Hz., Fuse 5A.

JPP - 02 with 450mm. Screen
JPP - 03 with 600mm. Screen

VISION PLUS FLOOR TYPE PROFILE PROJECTOR

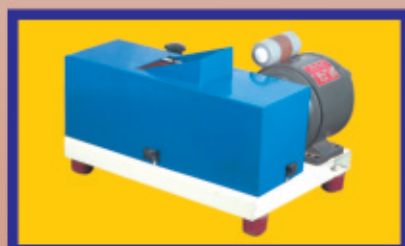
Screen Dia.	:	300mm. Fine ground screen with cross line, Rotatable 0° to 360° vernier reading 3 minutes.
Magnification	:	10x and 20x.
Magnification	:	$\pm 0.1\%$ for contour and $\pm 0.15\%$ for surface.
Accuracy	:	
Work Stage	:	Table 200x200mm. Y-axis Traverse 25mm. X-axis Traverse 25mm. Least Count 0.01mm. Loading Cap. 10Kg.
Contour Illumination	:	24V - 150W Halogen lamp. Telecentric system and sharp twin lens condenser for each magnification Bright adjustment.
Surface Illumination	:	12V - 100W Halogen Lamp.
Power Supply	:	220/240V AC., 50/60Hz., Fuse 5A.



JPP - 06

JPP - 07 with 450mm. Screen
JPP - 08 with 600mm. Screen

BELT GRINDER:



Belt Grinder is a continuous emery belt sander of 100 mm x 915 mm, used for removing sharp edges, pregrinding & rough polishing of samples in dry condition for subsequent final metallographic or petrographic polishing. This is the basic stage of preparing specimen for microscopic, hardness & macro-etching work. Belt Surfacers driven by fractional H.P., is designed for quick changing of worn-out belts by tommy bar provided.

METALLURGICAL MOUNTING PRESS

For permanent mounting off metallorgraphic or rock specimen in thermostatic plastic, we offer bakelite mounting press, the unit is of a rugged construction and is activated by an hydraulic press, capacity 6-8 ton. The press is supplied complete with mould assembly is supplied along with the machine.

Digital temp. indicator and controller are also available
Alarm system with buzzer.



ABRASIVE DISC CUT OFF MACHINE



Working on 220 volts, AC main supply with coolant tank of sufficient capacity. The chop type cut off wheel machine is suitable for quick and clean cutting of metallographic specimen form rods & tubes etc
Cutting Samples upto 0-30mm
Cutting Samples upto 0-80mm

TABLE MOUNTED ABRASIVE DISC CUT OFF MACHINE

Working on 220 volts, AC main supply with coolant tank of sufficient capacity. The chop type cut off wheel machine is suitable for quick and clean cutting of metallographic specimen form rods & tubes etc

Cutting Samples upto 0-30mm
Cutting Samples upto 0-80mm



POLISHING MACHINE

POLISHING MACHINE:

Polishing machines are used for preparing metallographic specimens & petrographic from pregrinding to smooth surface finish, for microstruc- examination. The machine is basically of motor driven disc type to provide basically of motor driven disc type to provide stepless variable speed from 400 to 1100 R.P.M. approx. The drive is provided by suitable H.P. single phase 220v. A.C. motor. The Brass topped steel disc of 8" or 10" dia. (easily replaceable) rotate in Stainless Steel basins. The disc is provided with splash guard while running and protective cover when not in operation. The top of disc is in flush with SUNMICA Laminated board to provide sufficient space for keeping polishing paper, cloth, alumina & samples handy. Nickle Chrome plated top provided, can be supplied as an accessory for easy clamping of polishing paper. The whole unit rests on anti-vibration mounts at 4 pts. Painted in hammertone finish oven dried for durability.

DOUBLE DISC POLISHING MACHINE Standard Model

Both the disc are driven by single motor of suitable H.P.

DOUBLE DISC POLISHING MACHINE Deluxe Model

The two discs are driven by two independent motors of suitable H.P.

TRIPLE DISC POLISHING MACHINE Illustrated on Front Cover

All the three discs are driven by three independent motors of suitable H.P. having independent control.

SAMPLE SPECIMEN HOLDER

Simple but useful device for holding samples during polishing, thereby saving valuable time of metallurgist. Can be raised when not desired. Also can be fitted with 'MPE' Bombay make as well.



OPTIONAL ACCESSORIES

For METALLURGICAL MICROSCOPES

- Vedio Projection System (Coloured)
- Micro-photographic Equipment
- Computer Imaging System
- Image Analysis Software for Metallurgy
- Higher Magnification Objective & Eye
- Measuring/Grain Size Eye Pieces

For PROFILE PROJECTORS

- Rotary Stage
- Center Holding Device
- Collect Holding Device
- Precision vice
- Pair of Vee Blocks with Adjustable Centers
- Vee Support
- Overlay Charts
- Halogen Bulb 12V - 100W (with reflector)
- Halogen Bulb 24V - 250W/ 12V - 150W
- Projection Lens 50x/100x Magnification
- Green Filter

For TOOL MAKER MICROSCOPES

- Depth Measuring Attachment
- Center Holding Device
- Rotary Stage
- V-Block
- Vee Support
- Precision vice
- Measuring Eye Pieces with Reticles

For STEREOSCOPIC ZOOM MICROSCOPE

- Fibre Optice Illuminator
- Micro-photography Equipment.
- Higher Magnification Objective/Eye Pieces.
- Working Stage 150mm x 150 mm with
- Micrometer Heads, Least Count : 0.01mm.

MEASURING OPTIONS

- Digital Micrometer Heads 0.001mm.
- Digital Read Out System 5 micron.

Due to continuous R & D activites manufacturers reserve the right to amend design without notice.

LIST OF SOME OF OUR INDIAN USERS INCLUDES :-

- | | |
|--|--|
| • National Physical Laboratory. | • Gun Carriage Factory (Ministry of Defence) |
| • Indian Space Research Centre. | • Heavy Vehicle (Tanks) Factory, (Ministry of Defence) |
| • Bhabha Atomic Research Centre. | • Various Plants of Bharat Heavy Electricals Ltd. (BHEL) |
| • National Test Houses. | • Artificial Limbs Manufacturing Corporation of India Ltd. |
| • Mechanical Engineering Research/ & Development Organisation. | • Dewrance Macneill & Co. Ltd. |
| • Research Designs & Standards Organisation (Ministry of Rly.) | • Bharat Pumps & Compressors Ltd. |
| • Metallurgical Laboratory (N.E. Rly). | • Kirloskar Electric Co. Ltd. |
| • Solid State Physics Laboratory, (Ministry of Defence). | • International Tractor Co. of India Ltd. |
| • Indian Institute of Technology. | • Various Ordnance Factories (Ministry of Defence) |
| • Defence Electronic Applications Laboratory (Ministry of Defence) | • Banaras Hindu University |
| • Inspectorate of Small Arms (Ministry of Defence) | • Anchor Engg. Inds. Pvt. Ltd. |
| • Oil & Natural Gas Commission. | • Gas Authority of India Ltd. |
| • Various Plants of Steel Authority of India Ltd. | • Clutch Auto Ltd. |
| • Hindustan Aeronautics Ltd. (HAL) | • Uncle Chips |
| • Hindustan Machine Tools Ltd. (HMT). | • Indo Asian Switch Gear Ltd. |
| • Tata Iron & Steel Co. Ltd. | • Pooja Forge Ltd. |
| • Small Arms Factory (Ministry of Defence) | • Ghaziabad Precision Products Pvt. Ltd. |
| | • Atma Steels Ltd. |
| | • Jindal Strips Ltd. |

Manufacturers :

JUST MACHINE TOOLS

(House of Testing Machines)

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