

## The Nicolet NXR 1400.

Increase your yields  
through  
x-ray imaging.

It's one thing to manufacture top quality multilayer boards, semi-conductors or surface mount electronic assemblies. Quite another to do it consistently.

That's why we developed the Nicolet NXR 1400 Real Time X-Ray Imaging System. Non-destructively, the NXR 1400 lets you zoom in on microscopic details and spot problems long before products ever leave the plant. It gives you the highest production control you've ever experienced, monitoring early in the process so there's less need for inspection later. It uncovers production flaws, errors or oversights, and gives you a video or optional hardcopy record.

In short, the 1400 helps you spot production problems early, while you still have time to do something about them.

## Flexibility when you need it.

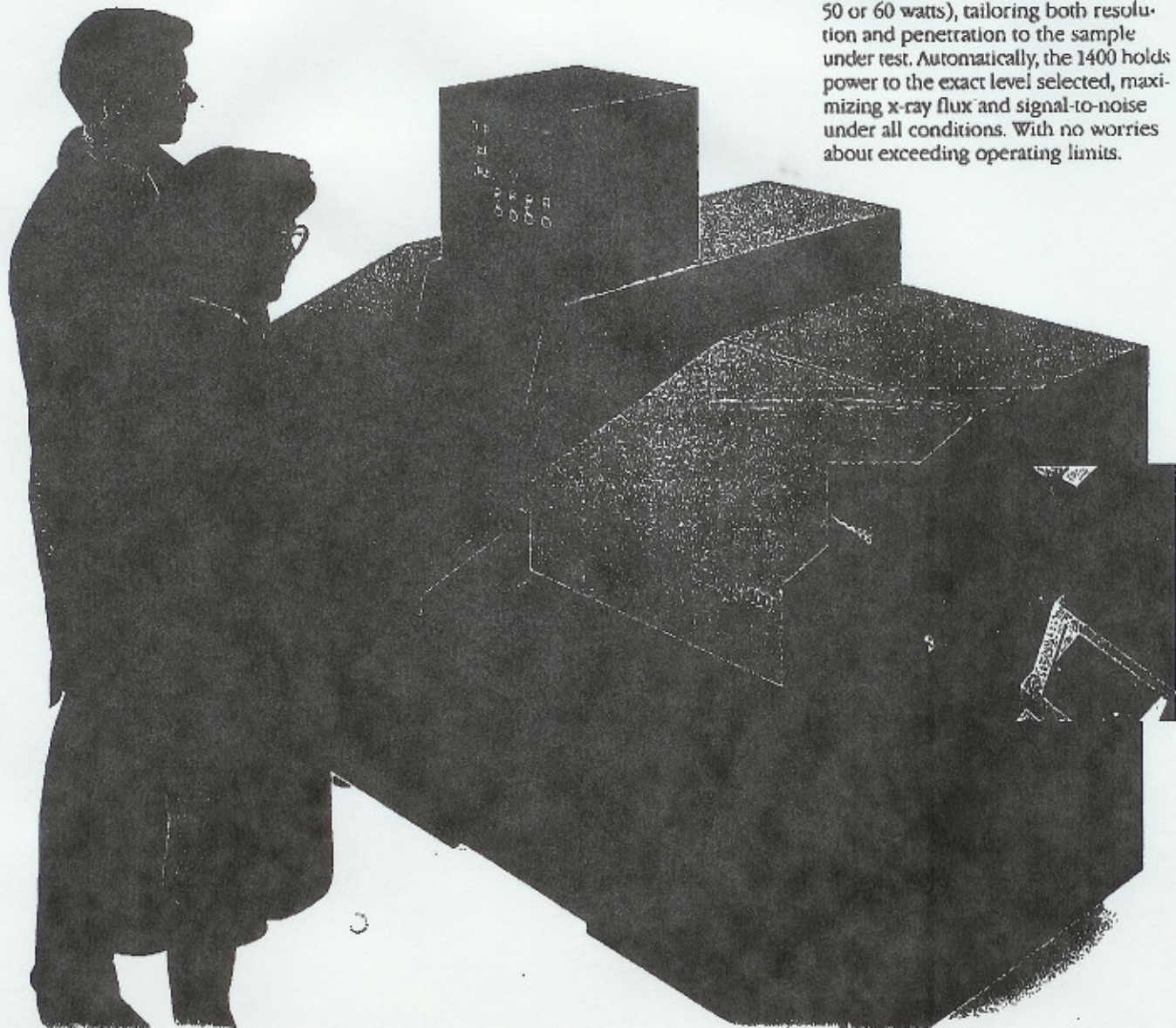
Built upon the pioneering technology of previous NXR models, the 1400 is our most advanced, most adaptable imaging system ever.

It puts the advantages of real time x-ray imaging to work throughout your production process:

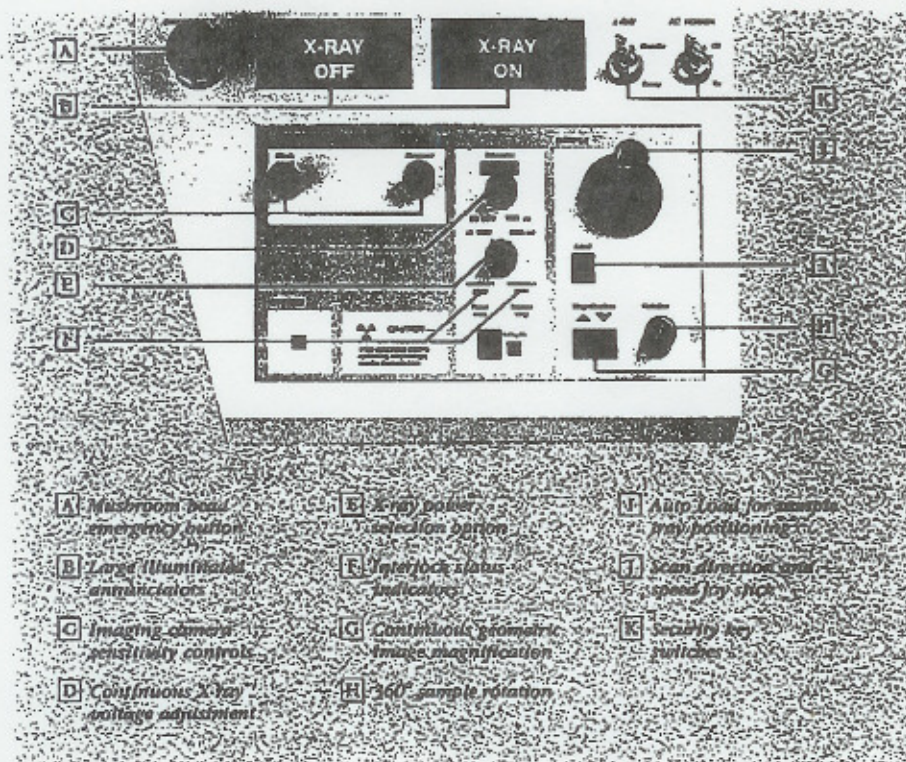
- Research and Development
- Incoming Materials Inspection
- Process Development
- Process Monitoring
- Quality Screening
- Failure Analysis

The 1400's compact, mobile design makes it easy to roll the unit to any part of the production line, scan as necessary, then move on to another workstation.

It's operationally flexible, too. With selectable power levels, for example, you can choose any of four operating power levels (10, 20, 35 and 50 or 60 watts), tailoring both resolution and penetration to the sample under test. Automatically, the 1400 holds power to the exact level selected, maximizing x-ray flux and signal-to-noise under all conditions. With no worries about exceeding operating limits.







- A Mushroom head emergency button
- B Large illuminated annunciator
- C Imaging camera sensitivity controls
- D Continuous X-ray voltage adjustment
- E X-ray power selection button
- F Interface status indicators
- G Continuous geometry image magnification
- H 360° sample rotation
- I Auto Load for sample tray positioning
- J Scan direction and speed key switch
- K Security key switches

## Applications

### Multi-Layer Board Fabrication

- Inner layer misregistration
- Drill breakout
- Internal shorts and opens

### Semiconductor Packaging

- Die-attach voids
- Wire sweep inspection
- Missing wires
- Broken or shorted wires
- Wire bond irregularities
- TAB outer lead bond quality
- Molding compound voids
- Hermetic lid seal integrity

### Surface Mount Assembly

- Component registration
- Solder balls and bridges
- Solder voids
- Excess/lack of solder
- Fillet quality
- Solder paste irregularities

### Sealed Components

- Cable assemblies
- Hybrid modules

## Efficient, ergonomic design.

Operator ease and convenience is integral to the 1400 design. The ergonomic control panel is strategically located at just the right height, accommodating operators of all sizes, and minimizing fatigue. The video screen is always in sight, a quick glance away.

For inside views of the sample tray, the large, unobstructed window makes it easy to position the sample under the camera.

Loading samples is easy, too. The handy auto load feature positions the sample tray itself for convenient,

efficient operation. View large boards or individual components in the spacious 18" x 24" scan area, or zoom in for a closer look. Scan quickly, or take your time. When something catches your attention, record it for later review and documentation.

## The one system for all your needs.

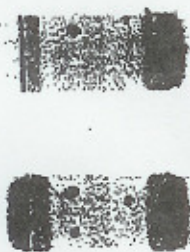
It's all here. The basic system includes the x-ray sensitive camera, sample stage, control electronics, and the special lead-lined cabinet which meets all federal regulations.

All that, plus microlocus x-ray source with KV options to meet any application needs, continuous magnification range, fine line resolution, line conditioner, and numerous options make this the ideal imaging solution to a wide host of manufacturing problems.

## Higher yields. Higher profits.

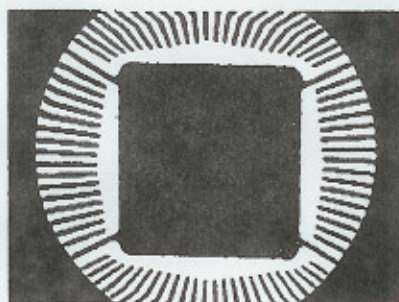
That's really what the Nicolet 1400 is all about. It helps you cut down on production losses, identify manufacturing problems at the source, and increase yield.

For more information, contact your Nicolet representative.



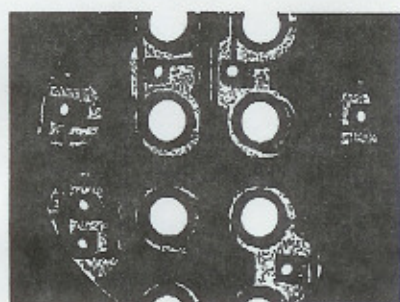
### Surface Mount Assembly

Process control problems often create visually hidden defects that result in weak assembly interconnects. Shown here are conditions of insufficient paste, solder voids and solder balls. These common defects are easily detected with the NXR 1400 enabling quick corrective action to be implemented.



### Semiconductor Packaging

Reliability is reduced when components are produced with latent defects such as this example of die attach voids and swept wires. Process monitoring with the NXR 1400 screens out defective components that pass through visual and electrical inspections unnoticed.



### Printed Circuit Board Fabrication

Quality of multi-layer boards is assessed and controlled through measurements of interlayer registration and drill hole annular ring. The NXR 1400 reveals this drill hole breakout condition before it becomes the customer's quality problem.



# Product details

## Mechanical/Environmental

<b>Foot Print Area:</b>	21 sq.ft./1.95m <sup>2</sup> . Single unit construction on easy move casters.
<b>Dimensions:</b>	61.5"W x 50"D x 50"H (or 63" incl. monitor); 156cmW x 127cmD x 127cmH (160cmH incl. monitor)
<b>Table Height:</b>	43" (109cm)
<b>Weight:</b>	1300 lbs (590Kg)
<b>Power Consumption:</b>	<650 Watts
<b>Sample Fixture:</b>	18" (46cm) x 31" (79cm); 18" (46cm) x 24" (61cm) scan area
<b>Display Monitor:</b>	Black & white 12" diagonal screen
<b>Radiation Protection:</b>	Lead-lined enclosure with safety interlocks at all access points. Certified to meet Federal Performance Standards for Cabinet X-ray Systems, Title 21, Subchapter J of Code of Federal Regulations, Section 1020.40, and equivalent international standards.

## System Options

<b>X-ray Source:</b>	• 80KV • 100KV • 120KV
<b>Line Voltage:</b>	• 120/240VAC; 50Hz • 120/240VAC; 60Hz
<b>Monitor:</b>	• 13" Color

## Performance Options

- Selectable Power (Four Levels)
- Enhanced Sensitivity
- Extended Magnification

## Accessories

- Sample Rotation
- Thermal Hard Copy Printer
- Color Hard Copy Printer
- Video Micrometer
- Video Image Processor

Specifications subject to change without notice.

## Rely on Nicolet.

At Nicolet, our commitment to you doesn't end when you purchase one of our instruments. That's just the beginning.

We've developed one of the strongest support organizations in the industry to help you get the very most out of your instrument. For everything from installation and repair to support and service, we're set up to serve your every need. And in most cases, all it takes is a quick phone call.

In order to make that commitment a reality we have many sales and service offices all over the world. When you need us, we're convenient and accessible, no matter where you are.

As thousands of companies have already discovered, when it comes to support and service, you can rely on Nicolet.