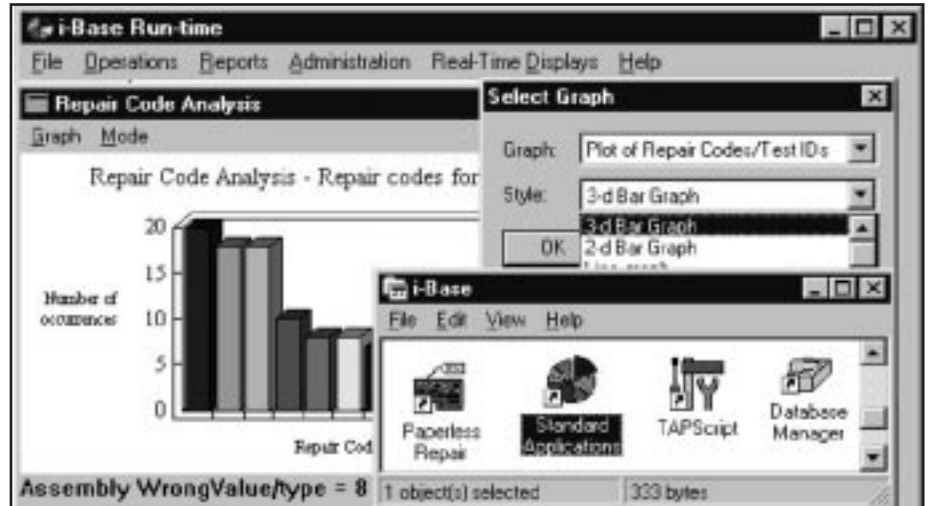




i-Base delivers solutions to meet wide-ranging manufacturing, test or repair requirements

i-Base Information Management System



- Real time information, on-line
- Interactive reporting
- Paperless repair, with repair hints
- Extensive off-the-shelf capability
- Transform data into information
- Process, management intelligence
- Increase rework/repair effectiveness
- Ready to run from day one

Introduction

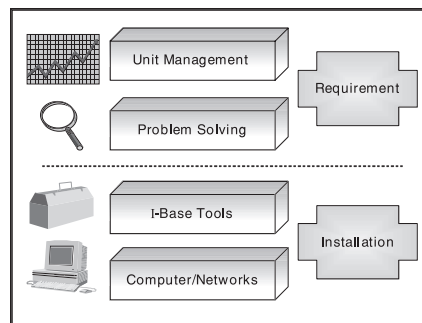
The *i-Base* Information Management System is an environment and tool set for managing process and product data. It releases the appropriate, relevant and timely information vital for competitive advantage in today's marketplace.

For organizations that manufacture, test or repair, *i-Base* delivers a diverse range of solutions: long-term traceability, day to day production and process reporting, line control and assisted repair. A central, flexible database provides real time data collection, reporting and multi-user access. Paperless, Assisted Repair adds value to historic information. Extensive reporting makes appropriate information available on any desktop.

Feature Summary

An *i-Base* tool set is ready to run on day one. It delivers accurate, reliable, real-time management and problem solving information, when and where needed.

Capabilities and off-the-shelf functionality are the result of long experience in industry, listening to customer requirements in test and manufacturing.



The tools for automating data handling and presentation include:

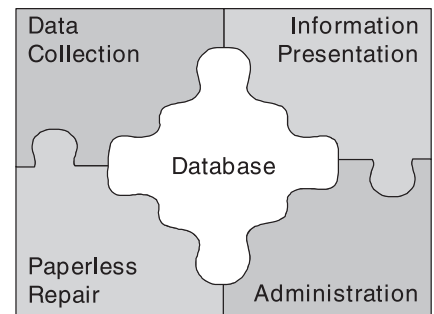
- data collection
- information presentation
- Paperless Repair
- administration

Powerful real-time database technology makes information available on-line, and data is stored without summarization. Units (for example Printed Circuit Boards) are uniquely identified by type and serial numbers, ensuring accuracy.

Paperless Repair shares information and intelligence between users, with full unit histories and repair hints on-line. This reduces both time to repair, and the number of repairs necessary.

The comprehensive report set includes trend, process status, and performance analysis as standard. Flexible options mean that potential problem areas can be identified and targeted at the earliest possibility. ASCII text reports produced on request are ready for printing, or, if preferred, for importing into a presentation package. A full graphical user interface,

with graphical report reframing and data visualization, is available with the PC version running under Windows.



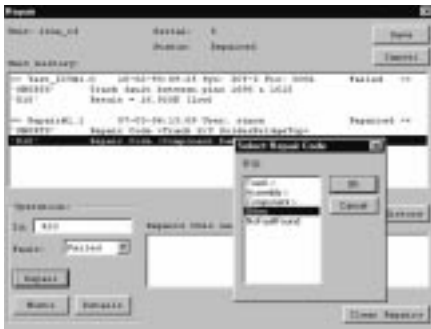
Database management tools include archive and restore. Configuration options include system set-up, repair codes, time windows, and data groups.

In systems that include IFR Automatic Test Equipment (ATE), *i-Base* supports file serving where available. Test programs, controlled and stored on a host, are transferred between tester and host when required.

Data Collection

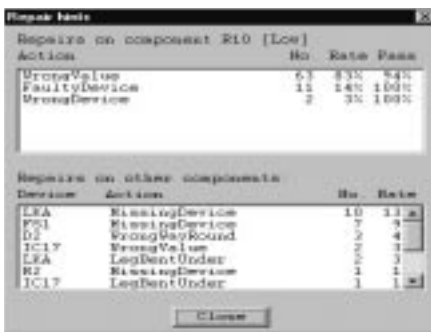
Data relevant to the Units Under Test (UUTs) can be logged automatically (for example from test equipment), or entered at a screen (for example, Paperless Repair). Each unit type has a database containing data on individual units. There are no restrictions on the amount of data that can be stored, nor on the sequence or type of events recorded.

Paperless Repair



This is an interactive environment where operators enter a unit identifier to view and analyze full unit histories on screen. Fault and optional device information (stock codes, nominal values) is displayed. Users may be grouped (for example) as Repairer or Inspector, and allocated Repair Codes or Fault Categories. These codes, used to classify test failures, are entered from bar-code or on-screen lists. Comments can be added per repair session, or (depending on user configuration) per repair.

Assisted Repair

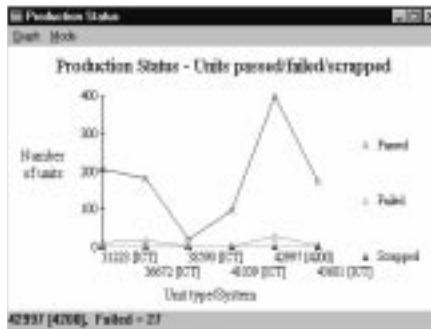


Repair Hints, or Assisted Repair is integral to Paperless Repair. Actions that successfully resolved an identified test failure are displayed in two ordered lists. In above example, R10 on unit Line_IF failed low. The first list shows repairs to R10, the second shows repairs to other components. In each case, the number of attempts and the corresponding success rate are shown in order of success.

Computer Aided Repair

The CAD data for the UUT can be processed for use by the Computer Aided Repair module. This presents the repair technician with a layout of the UUT. Fault information from the Paperless Repair can be used to highlight the location of faulty components, thus improving repair times.

Reporting



Standard Reports provide management and problem-solving information at process and unit levels. ASCII text reports are produced, scrolled to the screen, and saved to a file. Analysis can focus on batches or time windows, and on individual or groups of unit types. Repair analysis focus on individual or groups of Repair Codes. Options are common across all platforms. Graphical report reframing is an additional feature available under Windows.

Production Status

Unit No.	Start	End	Test	Pass	Fail	Scrap	Retest	Pass %	Fail %	Scrap %
43399	01	01	0	0	0	0	0	0	0	0
43399	01	14	14	27	74	0	20	0	0	0
43399	74	74	0	0	0	0	0	0	0	0
43399	01	20	19	20	0	0	10	2	2	2
43399	01	7	11	18	0	0	2	1	3	1

Status information on units repaired or tested within a time window is displayed:

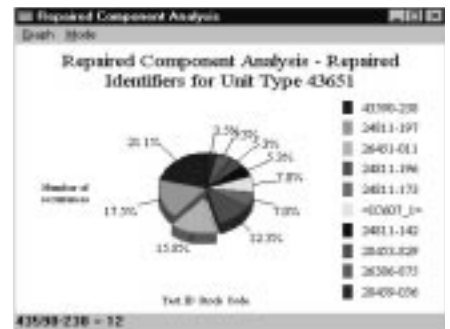
- UUTs outstanding (tested, but not yet passed or scrapped) at the start and end of the time window.
- Units passed/failed (quantity or %)
- Re-tests to pass
- Units scrapped (quantity or %)
- First time passes (quantity or %)

Production Trends

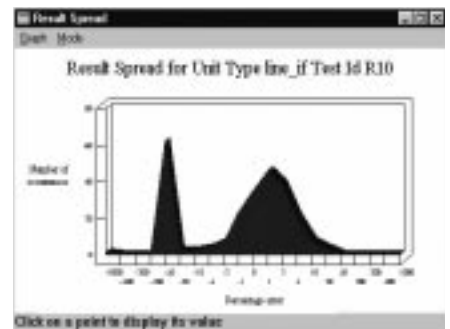


Production status information, for up to twelve equal or arbitrary time periods is presented. The initial report can be reformatted to provide a number of period-based graphs, according to the categories listed above in production status.

Test Failure Analysis

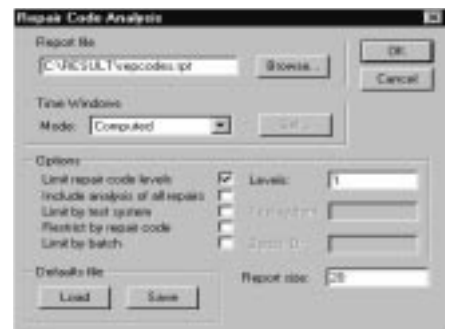


For a number of reports, including test failure analysis, data selection options include test system, batch, stock code (for example 24811/142), and component name (R1, R2).



Test failures are in four ordered lists: analog, digital, opens/shorts, and all failures, each with individual and cumulative percentages. This quickly identifies components (typically four or five out of several hundreds) causing the majority (typically 90%) of failures.

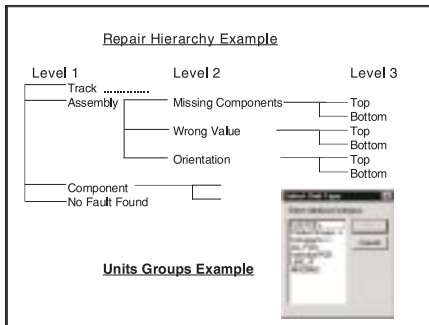
Result Spread



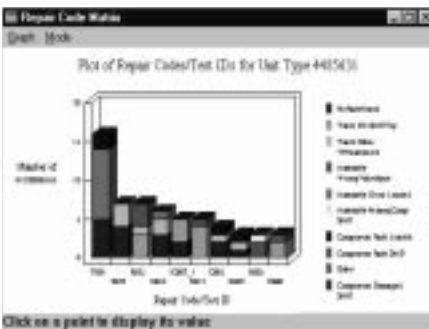
This report shows the spread of values measured during test for a specified analog component and unit type. The histogram auto-scales around the component's nominal value and tolerance.

Repair Code Analysis

Repair Codes and hierarchies, and unit groups and hierarchies are fully user definable. Data options for repair-based analysis include code levels, test system, batch and repair code selection.



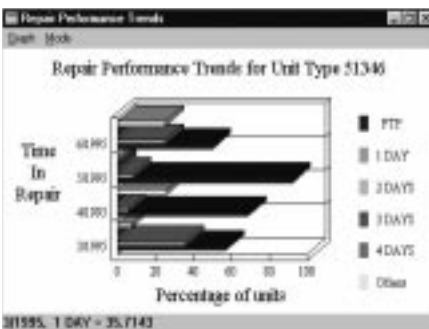
Repair code analysis shows how often Repair Codes or group of codes (for example Assembly/SMD/Top Side) has been used. The ordered list shows individual and cumulative percentages.



Repaired Component Analysis

For a selected unit type or group, this report displays how often components (identifier or stock code) have had repair action. The ordered list shows individual and cumulative percentages.

Repair Code Matrix



The text form of this report correlates Repaired Components and Repair Codes as an ordered two-dimensional matrix. Unit and Repair Code inclusion options are available.

Repair Performance

Performance is defined by first time pass rates and time to repair. Data for each selected unit type is categorized by

the number of time periods in repair. These periods are user configurable, for example minutes, hours, or days.

Repair Performance Trends



Repair performance information, for up to twelve equal or arbitrary time periods is presented.

Repair Time Analysis

This displays both the average and total times taken (by each repairer) to repair a unit type.

Repair Code Text Dump

To provide additional process intelligence, Repair Codes can be configured to make Paperless Repair comments mandatory.

Repair Comment Dump

At the end of a session where a unit has been repaired, a comment can be added at the Paperless Repair screen. These comments provide additional feedback, leading to improved repair performance.

UUT Time in Test

For each individual unit, this shows:

- date and time of first test
- if or when it passed or was scrapped
- elapsed time since first test record

In particular, this report lists and locates units that are stuck in-process. Work in Progress control is improved by identifying units that have not been scrapped or passed, i.e. units that are uncleared.

REPORT REFRAMING

Windows ONLY. ASCII information from reports is automatically passed to the graphical report generator. Charts and graphs are automatically re-sized to fit the Window, can be transferred to other Windows applications, or printed directly to a suitable printer.

Specific styles and reframing options depend on the report, but can include:

- Line, area graphs
- Bar graphs (2-D and 3-D, stacked, vertical or horizontal)
- Pie charts (normal and expanded)
- Grids, patterns, shading
- Legend and label display
- Custom report and axes titles
- Graph size, contents, data groups
- Over-write/create new report Window

REAL TIME INFORMATION

Bar Charts (all platforms): displaying units tested, passed, or scrapped, first time passes, % first time passes, units in a repair loop, and repair codes. Options include update intervals, analysis by test system, and repair code.

UNIX, displaying units tested first time, and first time pass rate. Alarm messages are displayed if user-defined thresholds are breached.

DATABASE MANAGEMENT

The Database Manager provides:

- Data archive by age, status, or selective data, and database restore
- Database export/rebuild, optimization
- Database optimization
- Database creation, deletion
- Selected data record extraction
- Database information listing
- Database option setting

SYSTEM ADMINISTRATION

Administration tools include:

- Overview database contents
- List unit test and repair history
- Configure system and user details
- Learn repair hints
- Configure time windows and defaults
- Manage stock codes
- Change administration password

Critical features are password-protected. System details include printer definition, bar code and test data format set up, and file location specification. For Paperless Repair, passwords, data display options, unit identifier, and repair code input methods can be defined.

Time periods may be configured to suit business periods and weeks, and stored as defaults. Stock code management includes editing or creating stock files, and converting IFR .cb (CAD) data.

Units, batch and Repair Code (or Fault Category) configuration ensures reports provide information relevant to the process and units being monitored.

Repairs can be learned from an entire database, or from a time/date window. Using 'repeat at intervals' keeps intelligence up to date for Repair Hints.

Specification

i-Base running under Windows features a graphical user interface, with report reframing. Windows 3.1, Windows for Workgroups, Windows 95, and Windows NT (Intel) are supported.

PC's running under Windows

An *i*-Base system is typically divided into several main operational functions:

- Database host
- Data collection (datalogging) host
- Paperless Repair workstations
- Reporting and Administration workstations

The database host is a central location for databases and configuration information. Paperless Repair, Administration and Reporting station users log into the database host. A datalogging host collects data from test equipment.

In a small system, all functions may be on a single PC or IFR Tester. In a larger multi-user system, Paperless Repair is often separate from Administration and Reporting. Similarly, data-logging and database hosts may be separate, although a datalogging host will transfer all information to the central database host.

Windows can be used to share data between PCs, as can other standard networking solutions.

IFR supplies *i*-Base software on 3.5 in disks, with a parallel port security dongle for each licence. Other hardware and software is typically supplied by the customer.

REPAIR, REPORTING, AND ADMINISTRATION

Software Licences per PC used

Microsoft Windows (NT, 95, Workgroups, 3.1)
i-Base - specify 59000/288

Option for user application development:

i-Base TAPScript - specify 59000/289

For Ethernet networking support:

Windows sockets interface, for example:
PCTCP (Windows 3.1)
Microsoft TCPIP (Windows 3.11 for Workgroups)

Hardware

Typical PC specification
486/66 or higher
8 MB RAM, 500 MB Hard Disk
Parallel Port
VGA or higher video adapter
Mouse recommended

For handling bar-coded units:

Wedge interface Bar Code Reader

For Ethernet networking support

3-Com 3C509 Combo-card/other network card

DATALOGGING/DATABASE SERVER

Software Licences per PC used

Microsoft Windows (NT, 95, Workgroups, 3.1)

i-Base - specify 59000/288

For Ethernet networking support:

Windows sockets interface, for example:
PCTCP (Windows 3.1)
Microsoft TCPIP (Windows 3.11)

Hardware

A typical PC for up to 6 datalogging processes:

486/66 or higher
8 MB RAM, 500 MB Hard Disk
Parallel Port
VGA or higher video adapter
Mouse recommended

This datalogging PC may also be used as the central database server for lower volume applications, typically up to 6 logging devices.

For up to 25 datalogging processes, including database serving, or for separate database serving:

Pentium/100 MHz or higher
16 MB RAM, 1 GB Hard Disk
Parallel Port
VGA or higher video adapter
Mouse recommended

For Ethernet networking support

3-Com 3C509 Combo-card/other network card

IFR ATE

All IFR automatic test systems and *i*-Base capable, either as a host or through a network connection. Older test systems can also be used with *i*-Base, directly or via a serial connector.

Other Equipment Connection

Other equipment is typically connected to for data collection and analysis via serial lines.