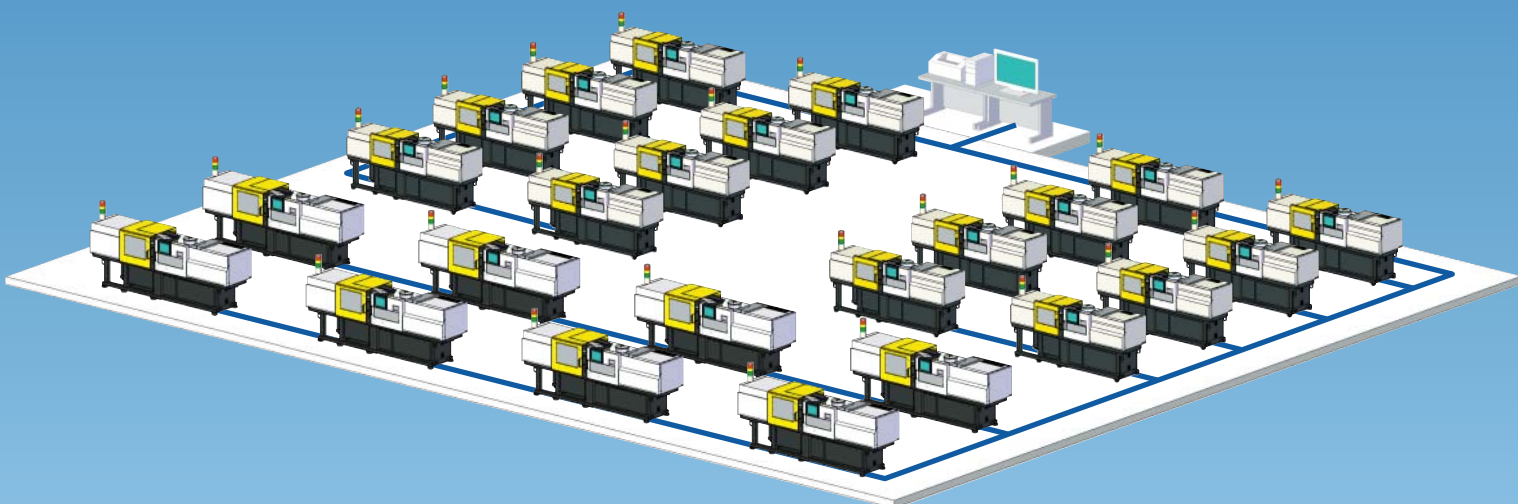
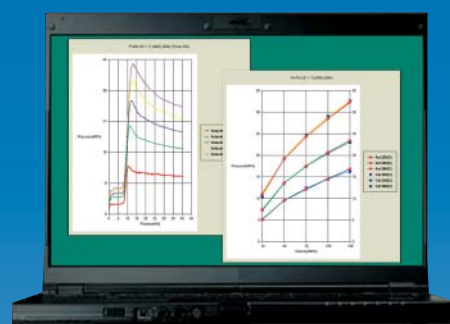
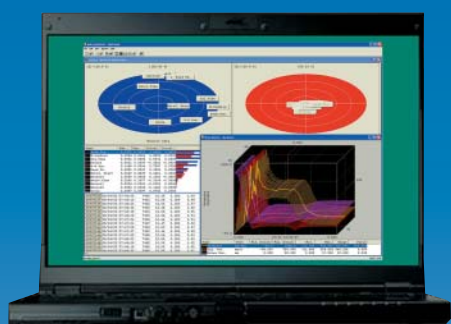


Molding Plant Quality Information Management System

FANUC MOLD 24*i*



Molding Plant Quality Information Management System

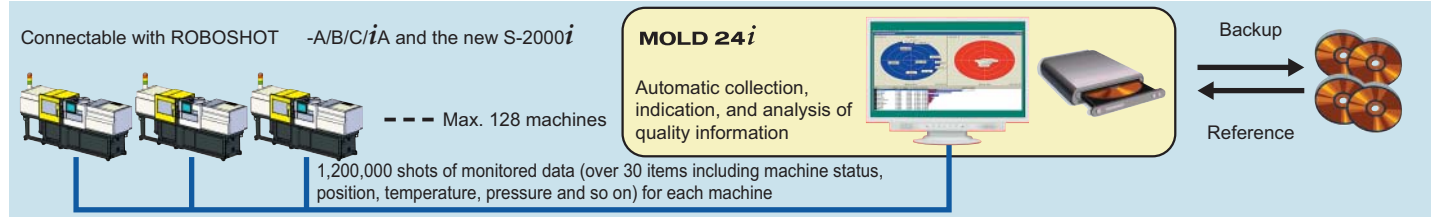
FANUC MOLD 24i

Advanced quality control function

Automatic collection and backup of quality information

Traceability at a molding plant

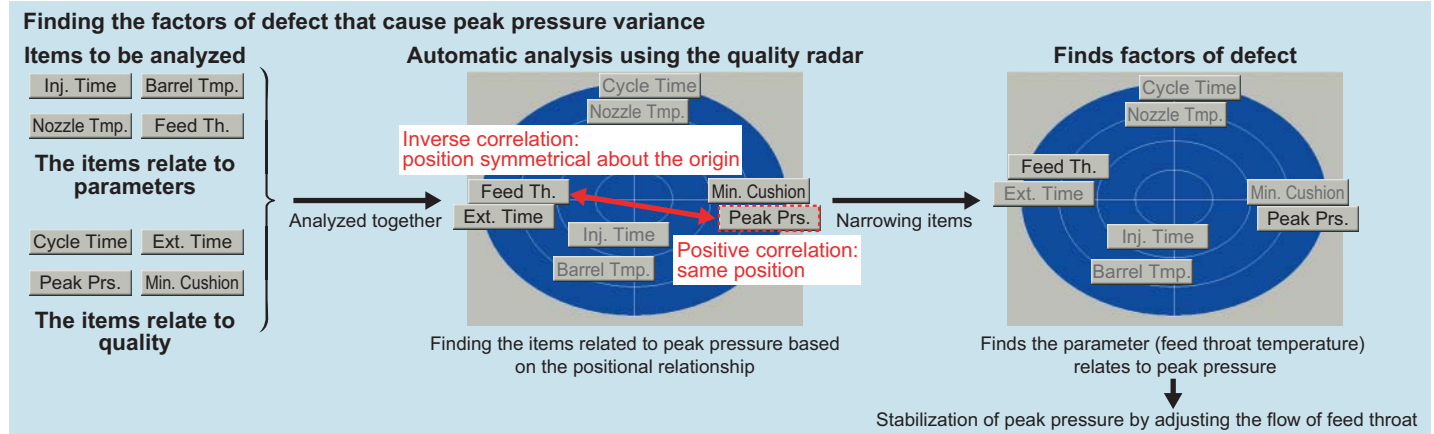
Up to 128 units of ROBOSHOT are connected via a network to automatically collect quality information such as monitored data and molding parameters. A maximum of 1,200,000 shots of monitored data (data for four months in 10 second cycle) can be stored for each machine. Traceability over an extended period of time (molding parameters, alarms, and stability of monitored data after the molding time can be traced and checked) can be strongly supported through periodic backup.



Quality radar

Finds factors of defect and their measures

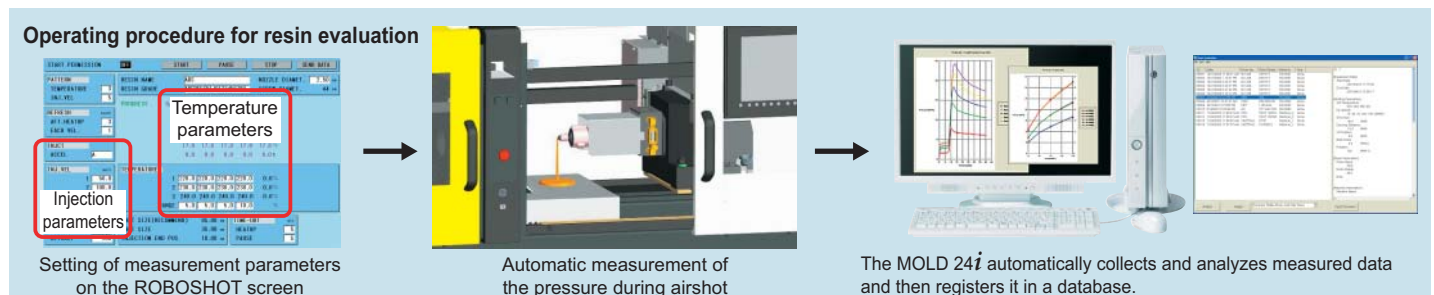
The quality radar quickly classifies the trends of items with different unit systems such as peak pressure and metering time and indicates them in an easy-to-understand way. The positional relationship on the quality radar indicates the strength of the trend and the correlation between items, having a great effect on factors of defect finding and their measures.



Resin characteristic evaluation system (Option)

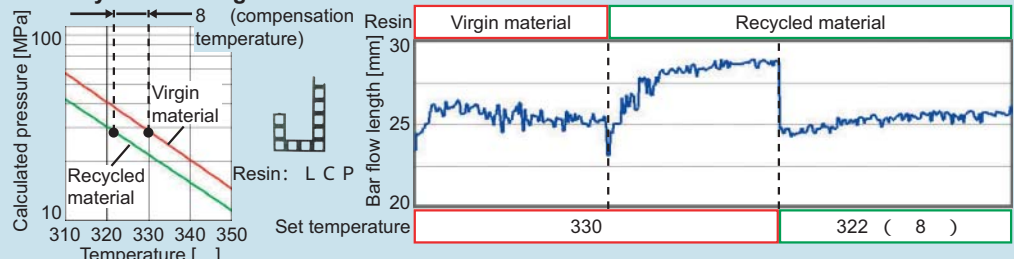
Analyzing resin-caused troubles

The characteristics of resin are evaluated by using the ROBOSHOT as a measuring instrument and the MOLD 24i as a data analysis unit. This system can be used to analyze resin-caused molding troubles such as variations between resin lots, influence of the color pellets, effects of drying time, and differences between recycled and virgin materials. Information required for the quality control of resin, such as the resin viscosity coefficient and molding temperature, will be stored in the database, so the customer can store the know-how.



Evaluation of the resin characteristics of recycled and virgin materials

Analyze the resin characteristics and obtain the compensation temperature.
Mold the virgin material at 330
Mold the recycled material under the same condition.
Apply the obtained compensation temperature (8) and adjust the bar flow length.



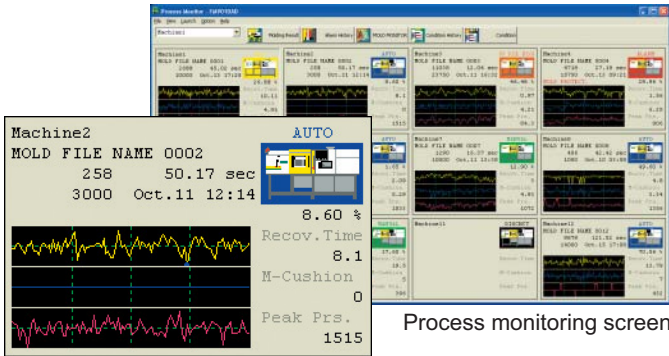
This is an actual example in which the difference between the recycled and virgin materials is analyzed by resin characteristic evaluation system and the temperature is compensated so that their filling lengths are identical.

The advanced quality control function and the enriched operating status monitoring function achieve a high-quality and high-productivity molding plant.

Enriched operating status monitoring function

Process monitor

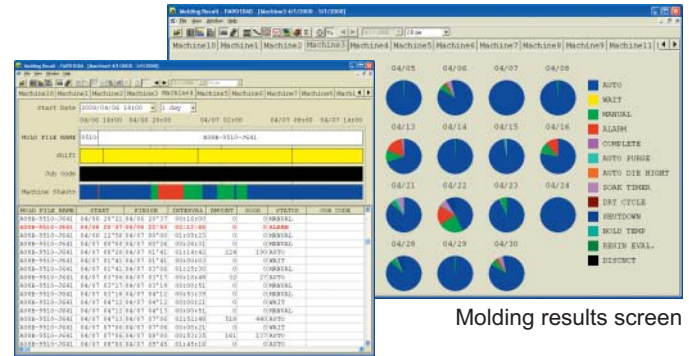
In process monitor, color-coded icons show you the operating status of the whole plant at glance. The operating states such as the shot count and cycle time, and trend charts are indicated in real time.



Process monitoring screen

Molding results

Molding results are collected to improve the efficiency of operations for making daily, weekly, and other reports. Detailed display indicates the machine state on a time series. The operating ratio of the whole plant can be grasped, so the productivity is improved.

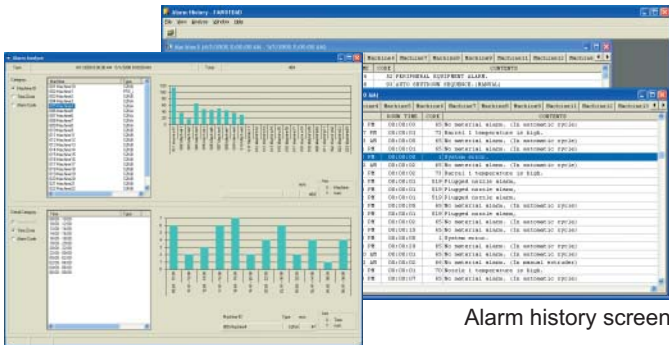


Molding results screen

Detailed display screen

Alarm analysis

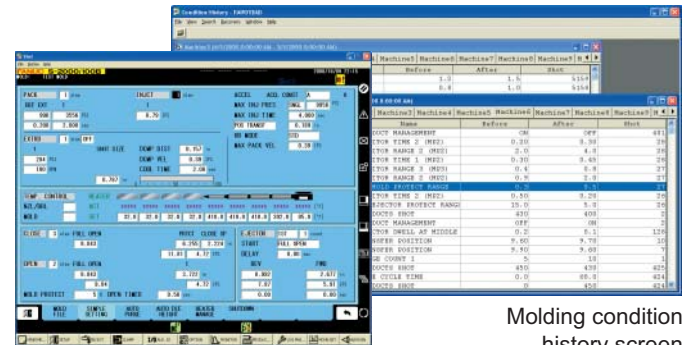
Alarms occurred in the whole plant are displayed to analyze the frequency of occurrence through classification by the machine, occurrence time, and alarm type. Alarm analysis can be used to take measures against brief stops.



Alarm analysis screen

Molding parameter change log

The molding parameter change logs are automatically recorded. The molding parameters at a specified time can be reproduced and displayed on the molding parameter screen. This function can be used to manage change logs during mass production or help molding parameters adjustment during mold start-up.

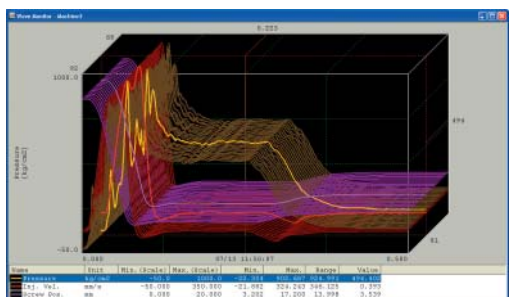


Molding condition history screen

Molding condition screen

3D waveform display

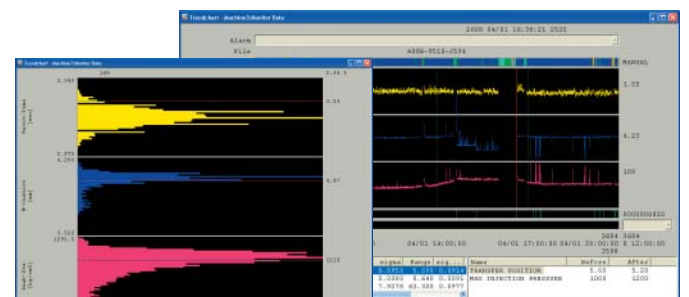
A waveform during injection and holding process is displayed three-dimensionally. This function allows you to check the molding state in one cycle and compare the molding states in multiple shots at the same time, thereby enabling the detailed analysis of the factor of defect.



3D waveform display screen

Trend chart

This function displays monitored data and related information such as changed molding parameters at the same time. On the histogram screen, the monitoring width for a pass/fail judgment can be considered quantitatively from the data distribution of such as peak pressure or minimum cushion.



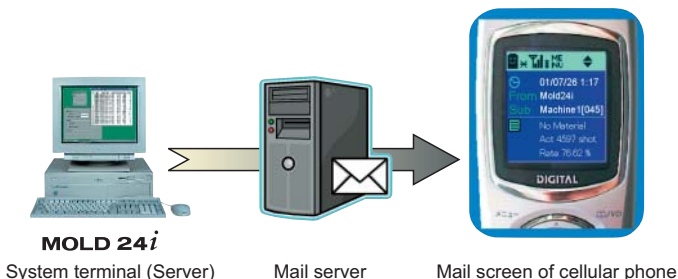
Trend chart screen

Histogram screen

Remote monitor (optional)

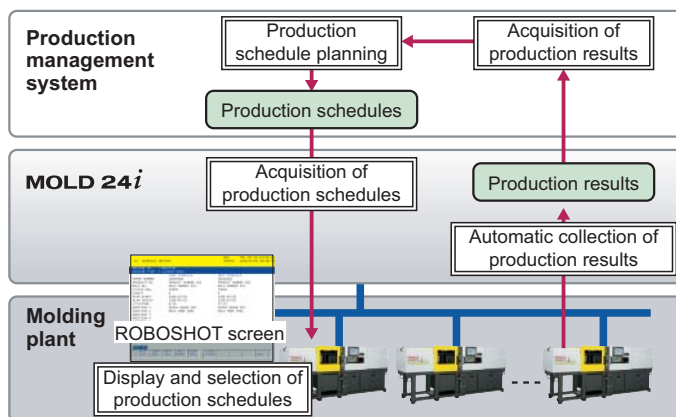
The failure occurred and operating state of the ROBOSHOT can be reported to a remote site via e-mail.

- Stop by an alarm or production completion
- Periodic report of molding results



Production management system link interface (optional)

A link to an upper production management system is established to input or output production schedules and production results.



Main specifications

Item	Main functions	Contents
Platform configuration	OS* LAN	<ul style="list-style-type: none"> • Windows® 2000 / XP / Vista (Required to apply the latest service pack) • Required (Recommend to prepare independent LAN for this system) • PC and network equipment is needed to prepare by the customers. • The RS-232C/Ethernet convert is needed to connect ROBOSHOT -C series or later machine to this system.
System configuration	Number of connection machine Number of terminals Monitored data numbers / items	<ul style="list-style-type: none"> • Maximum 128 units (Default number of connection machine is 24 units / Need enough capacity of HDD and certain condition to expansion) • System terminal (Server) 1 unit / User terminal (Client) Maximum 3 units • Maximum 1,200,000 shots/machine 30 items or more
Quality monitor	Quality monitor	<ul style="list-style-type: none"> • Display style Numeric display (Table format) / Trend chart (Line graph) (Horizontal axis : Time / shot) • Display data Monitored data / Machine status / Mold file name / Alarm / Pass/fail judgment result / Changed molding parameters • Data analysis Standardization graph / Histogram display / Quality radar / Comparison radar / External data loading function • Waveform display*3 Overwrite / 3D display*3 (Injection pressure / Screw position / Screw velocity) • Molding parameters Display / Printing
	Molding parameter change log*1	<ul style="list-style-type: none"> • Display data Time / Parameter name / New and old setting value / Number of shots • Reproducing Reproduces past molding parameters and display all molding parameters
Production monitor	Process monitor	<ul style="list-style-type: none"> • Display data Current overview of plant (Machine name / Machine status / Cycle time / Number of shots / Estimated time of production end / Alarm message / Mold file name*1 / Monitored data) / Editing of the machine layout
	Alarm log	<ul style="list-style-type: none"> • Display data Time of alarm occurrence / Release time / Stop time / Alarm number / Alarm message • Analysis Classifies data according to machine, time band, and alarm type / Graphically represents the frequency of occurrence.
	Molding results*3	<ul style="list-style-type: none"> • Display data Machine number / Mold file name*1 / Production shots / Good shots / Cavity*1 / Start time / End time / JOB code/ Operating time (Automatic · Standby · Manual · Alarm · Production completion · Auto purge · Auto die height · Dry cycle · Resin evaluation · Shutdown · Soak timer · Hold temperature) • Display style Numeric display (Table format) / Graphical display (Circle graph · Bar graph) / Detailed display • Correction mode Shift / Daily / Weekly / Monthly / Mold file name
Data master	Machine data Database utility	<ul style="list-style-type: none"> • Maximum 128 units • Backup function Backup the alarm log / parameter change log / monitored data / machine data and molding parameters in a specific period.
Package function*1	ISO9000 compliant*3 Remote mold file*3 Manual display Production information Molding test report JOB code	<ul style="list-style-type: none"> • Processes ISO9000 operations online and stores monitored data and molding parameters together with lot information. • Allows you to store and read molding parameters including reference pressure waveform to and from system terminal. • Displays manuals on the ROBOSHOT screen. Alarm release manual / Molding parameter setup manual of FANUC ROBOSHOT school • Mold file name and number of cavity for the Process monitor and Molding results function are able to set from the ROBOSHOT screen. • Create the molding test report • Sets JOB code on the ROBOSHOT screen JOB code is set and display in the Molding result function
Communication software	Data control	<ul style="list-style-type: none"> • The communication function between ROBOSHOT and system terminal (Server).
Remote monitor*2	E-mail transmit	<ul style="list-style-type: none"> • Reports the machine stop caused by an alarm or production completion and periodical operational status. (Available E-mail server is required for this function)
Resin evaluation*2,*3	Resin evaluation system	<ul style="list-style-type: none"> • Resin characteristic analysis function /
System link interface*2,*3	Production schedule viewer Molding parameter selection Production results output	<ul style="list-style-type: none"> • The production schedule of the external system is displayed on the ROBOSHOT screen. • The suitable molding parameters of the schedule are enable to be selected by the ROBOSHOT screen. • The production results output is available. (The output items are expanded with this option)
CIMPLICITY®*2,*3	Customization	<ul style="list-style-type: none"> • CIMPLICITY® is the production system monitoring software for the PC. • CIMPLICITY® enables to customize the monitoring screen.
Data output function	Data output	<ul style="list-style-type: none"> • Molding (Production) results / Monitored data / Alarm log / Molding parameter change log / Molding parameter*3

* Windows® is registered trademarks of Microsoft corporation of the US.

* 1: Available on the ROBOSHOT -C and newer * 2: Optional function

* 3: Some restrictions are imposed depending on the model or installed software

FANUC CORPORATION

Oshino-mura, Yamanashi 401-0597, Japan Phone:81-555-84-5555 Fax:81-555-84-5512
http://www.fanuc.co.jp

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