



-Connect **Production Quality Control System**



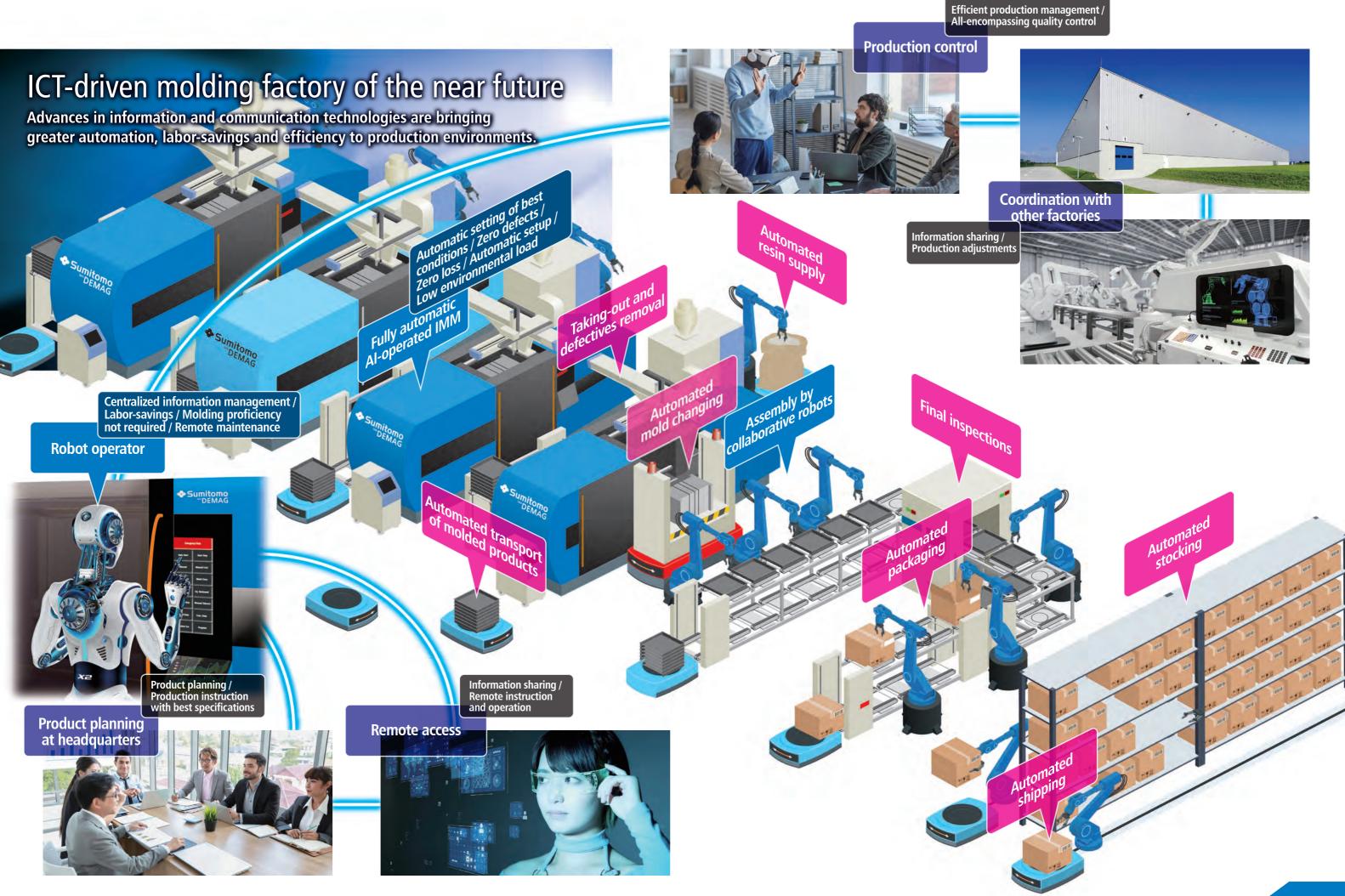
www.shi.co.jp/plastics/





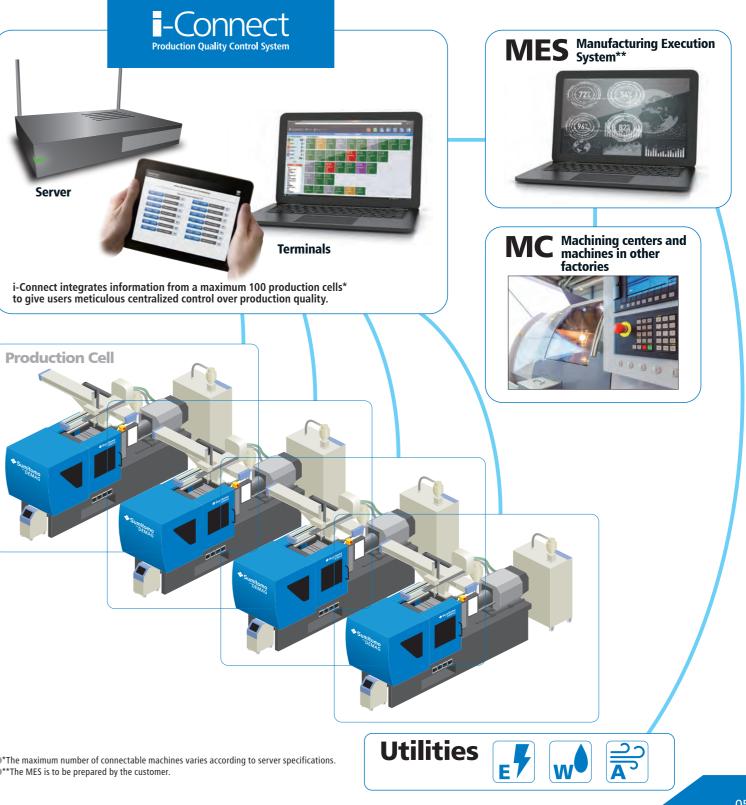
 Photographs of application images may differ from actual products.
 Specifications subject to change without notice for performance improvement. ©2019 - 2023 Sumitomo Heavy Industries, Ltd. All rights reserved.





Broader, deeper and easier grasp of production information[®] 11101 All kinds of data vital to product quality are collected, integrated, then analyzed and logged with simple operations. :0111010 00110 -Connect 101001 00111010101010 0100101 **Production Quality Control System h161** / **Production Cell** A production unit with a molding machine as the core Takeout robot Mold **Resin dryer** Various sensors Mold temperature controller The information from peripheral equipment and sensors is sent to the molding machine by M2M communications.

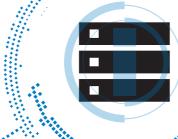
i-Connect is a core application of ICT for production environment which integrates information from each production cell consisting of a molding machine, peripheral equipment and sensors. It improves monitoring and control of all production cells in leaps and bounds to enable sophisticated, borderless and effective quality control over both processes and products. Moreover, by connecting to upper control systems such as MES (Manufacturing Execution System), it can bring greater automation, labor-savings and efficiency to production environments. i-Connect is a core system to accomplish an automated and labor-saving near-future factory.





Build a smart information network

Networks with i-Connect as a core dramatically improve the efficiency of quality control operations.



•For server recommendations, see pg. 17. •The customer is responsible for preparing the environment for external connections.

-Connect

Production Quality Control System

Molding "visualized"

Various information on molding is processed centrally. Up to 100 molding machines can be managed on a single network. The maximum number of connectable machines varies according to server specifications.

> Speedy, precise on-site instructions Prompt and accurate response from the work floor reduces production losses.

Information sharing with business partners

By sharing molding information in real-time, users can eliminate lost time and enhance reliability.



Telework options

i-Connect allows for new work styles in quality control.



Remote verification Production quality can be understood in every detail without being physically present at the plant.



Direct access to information anywhere Real-time information can be incorporated into meeting agendas.

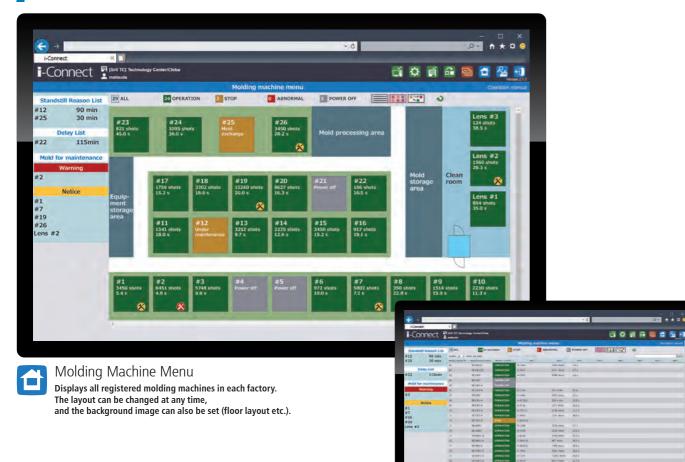
Production control from remote location The necessary information can be promptly communicated to operators from offices.

Broader grasp of information

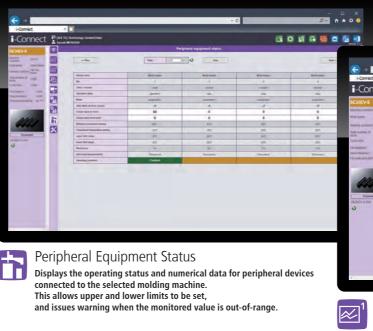
i-Connect centralizes quality control information from your factories around the world and displays it through the intuitive visual that make production planning swift, efficient and effective.

Intuitive control on the entire factory with an overview list

Icon placement that matches the factory layout allows understanding of the operational status of each machine in an instant. It is also possible to display a list of operation transition or production progress graph for each machine.

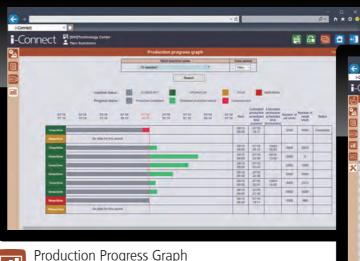


Acquires data such as temperature, operating status, etc. of peripheral devices, and displays them in a list. Separate molding machine option(s) might be required for connection with peripheral devices and sensors.



Examples of Utilization Production planning

Production can be appropriately planned because users get a quick look at the production progress and maintenance information.



Status and progress of each molding machine is centrally managed.

Users can spot under- or over-production at a glance.



3450 shots 15.2 s



Molding Machine Menu (Listing mode) It can also be displayed in list format.

Real-time understanding of the entire production cell

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Quality Control Chart

Understanding of the relationship between the actual temperature of the mold temperature controller and the filling peak pressure of the molding machine is also possible by comparing graphs.

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Maintenance Management

By setting maintenance intervals for molds and equipment parts, trouble can be predicted, and maintenance performed properly.



Maintenance Alerts

Alert icons are displayed over machine icons on the Molding Machine Menu screen (left page) when the maintenance period is approaching.

Deeper grasp of information The ability to track production down to the behavior of a single shot on a single machine enables reliable traceability.

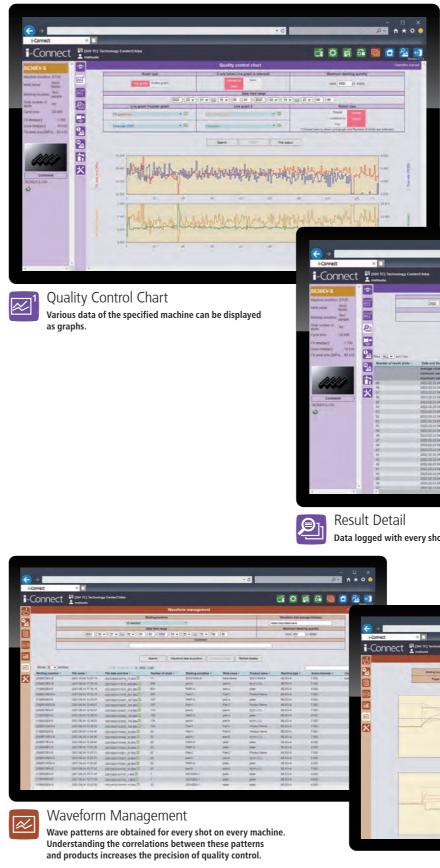
Examples of Utilization Time-based data management 14 History information of each lot can be collectively managed. Machine running status or conditions that were logged during a certain period of time can be easily verified, which facilitates product tracing. - fin 1 -Connect ci 🗘 🖬 🙃 🔯 🗖 🚰 🚮 1000 1 -100 a Promier Pressos Bre Pa Calling and verification of molding condition are possible. Image is blurred on purpose. - - × \swarrow^2 Event Analysis Molding machine status, items, and condition alterations are displayed on a graph, and events searching is possible. Dryer:No... Mold Cleaning Robot:Ab. History of Stop Temperat. Others Stoppage and alarm histories can be scrupulously

managed for the specified machine

Examples of Utilization

Thorough data management down to each shot

Managing data by individual shots allows users to check back and verify whether products were being stably molded at any point in time, giving them a useful tool for building traceability systems and practices.



Allows input and analysis of the causes of stoppage

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Data logged with every shot is aggregated to manage in bulk.

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Easier grasp of information

i-Connect makes information sharing and internal/external collaboration smooth and speedy.

Human error can be eliminated by automating and going paperless.

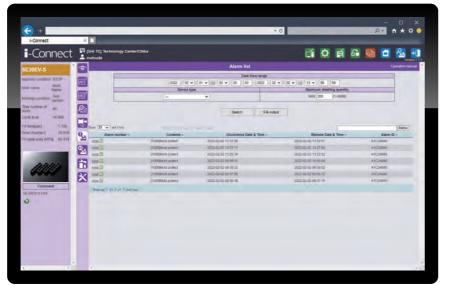


Speedy error handling

Troubleshooting guide is available corresponding to the alarm number, leading to rapid error handling and reduction of downtime.



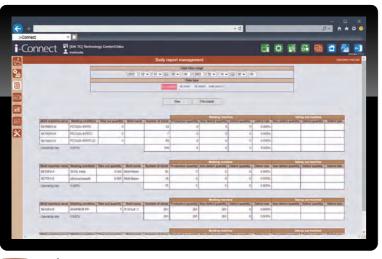
This feature applies only to SE-EV, SE-EV-A, SE-EV-S, SE-EV-A-HD and SE-EV-S-HD series.



Automatic daily report generation

Daily data can be automatically compiled into a report and exported to a CSV file. This paperless operation enables a smooth handoff of work.

Alarm List Displays the alarm history of the specified machine



Daily Report Management Displays daily reports based upon operating data of molding machines.

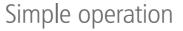
Examples of Utilization Trouble alerts in real-time

Users can stay abreast of operating status, trouble and other events via real-time alerts sent to smartphones, tablets or other devices even if being away from the line or factory.



Molding Machine Menu

Ô If trouble occurs, an alarm is sounded and a pop-up message noting the effected machine and error code appears.

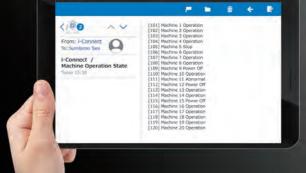


Browser-based application means that there is no installation required. The graphical screen design supports intuitive, speedy operation.





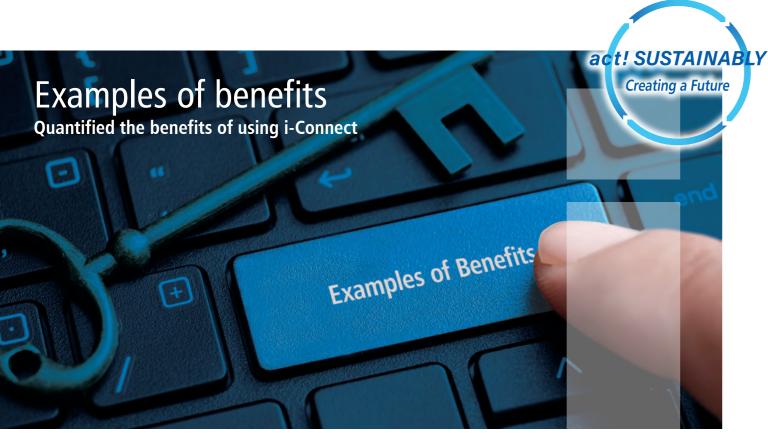




Running status and trouble alerts are sent to user-set email addresses.



Dashboard



The function suggested by the photo is not a feature of i-Connect.

Identify causes of defects

Users can save a great deal of time when defects occur by eliminating the need to report to a supervisor, visit the site and make verifications in person.

This not only improves yield and decreases defects but also reduces wasted resin, which contributes to SDGs.





Reduced man-hours Manager utilizes Problem is identified **Operator reports** When operators use i-Connect, there is an additional reduction in man-hours defect to manager. Event Analysis. and operator fixes it. ≧-50% -Connect Process when using i-Connect -1 Production Quality Control System **Operator identifies Operator utilizes** Event Analysis. and fixes the problem - Process when using i-Connect -2 Improve production yield Reduce resin waste Lower environmental load

Early discovery and recovery from short time breakdown

Trouble is immediately reported to the manager. Rapid recovery is possible by accessing Tomenai.net (our production technology information website) to verify and respond to measures, resulting in improved operating rate and productivity.









High-performance edge server

Our recommended server offers large storage capacity needed to handle the high-load data analysis at the edge of the user's network. It can retain as much data as a data center, which can be used as big data.

Easy setup and complete security

Setup is quicker than usual because there are no applications to install. Moreover, the server comes loaded with preinstalled security software to protect against data leaks and unauthorized access.

Robust design for factory environment

Durability-enhanced design supports a wide temperature range and guarantees stable operation even under harsh environmental conditions.

Support fast cycle molding and connection of multiple machines

A single server can manage a maximum of 100 machines and offers more than enough capacity to process the high-density data streams from fast cycle molding at 3-second turnout rates. The maximum number of connectable machines varies according to server specifications

Global maintenance

These servers come with 5 years of free maintenance and a replacement of all parts except consumables is free of charge.

Not applicable in some countries and regions.

Maintenance requests are handled through our sales offices.
 Maintenance services are provided by technical staff from HPE (Hewlett Packard Enterprise).

Build the best operating environment

To use i-Connect in the best operating environment, we recommend introducing a high-performance edge server from HPE (Hewlett Packard Enterprise).

Server specification

| Item | Standard | High-performance spec |
|------------------------|------------------------------|-------------------------------|
| Processor | 2.6 GHz x 2 cores | 2.0 GHz x 8 cores |
| Memory | 8 GB | 32 GB |
| Storage | SSD 960 GB | SSD 1920 GB, HDD 1 TB |
| Operating system | CentOS | CentOS |
| Data retention period | 2 months | 3 months |
| Backup capacity | Approx. 10 years' worth | Approx. 10 years' worth |
| Guaranteed performance | Max. 50 machines connectable | Max. 100 machines connectable |

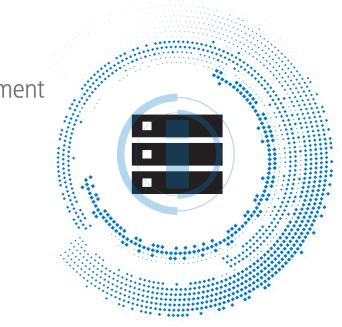
The above server specifications are subject to change without notice.

Verify performance yourself

We have posted a detailed movie about the i-Connect on YouTube. You can access it from the QR Code and verify performance yourself.

• QR Code is a registered trademark of DENSO WAVE INCORPORATED.









Main specifications

| Molding | machine menu | |
|----------------|--------------------------------|---|
| Icon | Name | Functions |
| | Molding Machine Menu | Showing all molding machines by factory / Trouble pop-up messages and alarms\ |
| 2 | Factory List | Displaying the number of active molding machines by factory / Displaying the corresponding molding machine menu of the selected factory |
| € | Logout | Logging out of i-Connect and quitting the application |
| Molding | machine informa | ition |
| Icon | Name | Functions |
| 0 | Dashboard | Displaying molding machine status and operating ratio |
| | Quality Control Chart | Projecting and displaying molding machine data as graphs |
| ≥ ² | Event Analysis | Projecting and displaying molding machine status, control items or conditions as graphs / Searching for events |
| Ð | Result Detail | Displaying actual values of user-selected control items (selectable up to 10 items) |
| | Molding Condition History | Displaying a history of changes to molding conditions |
| • | Alarm List | Displaying a history of alarms |
| 0 | History of Stop | Displaying a history of molding machine stoppages |
| 67 | Peripheral Equipment Status | Displaying the status, set actual values of peripheral equipment |
| X | Maintenance Management | Displaying a history of periodic maintenance performed on molding machines, molds and peripheral equipment |
| Analysis | | |
| Icon | Name | Functions |
| | Restore Backup Data | Reading automatic backup data |
| 2 | Operation Trend | Displaying the operating status of the selected molding machine as a bar graph |
| | Daily Report Management | Viewing daily reports based on performance data from molding machines |
| | Overall Comparison | Displaying the status and progress of the selected machine as a graph |
| | Production Progress Graph | Displaying the yield for the set number of shots of each machine |
| | Waveform Management | Acquiring real-time wave patterns shown on molding machines |
| X | Maintenance Management | Setting and displaying collective maintenance schedule for molding machines (max. 10), molds and peripheral equipment |

| Setting | | |
|-----------|-----------------------------|--|
| lcon | Name | Functions |
| | User Management | Adding/Removing users, setting passwords and selecting languages |
| ľ | Molding Machine Settings | Displaying a list of registered machines / Adding/Updating/Removing machines |
| P | IP Address Diagnosis | Checking the network connection and IP address of machines included in connection settings |
| \bowtie | Email Settings | Setting email function for status reports, trouble notices, etc. |
| Ĭ | Molding Conditions | Displaying a list of current molding conditions (names) by machine |
| | Upload by Factory | Registering/Updating background image files by factory |
| 0 | Server Machine Status | Displaying the time, available storage space, usage rate, memory usage and CPU usage of the server |
| Ľ | Client Status | Viewing client information of molding machines (Machine name, IP address, remaining drive capacity, communication status, etc.) |
| ↓ | Data Management | Backing up and restoring databases |
| | Privilege Management | Adding/Removing accessible functions, information displayed on molding machine menus and operating authorizations |
| К | Factory List | Viewing/Adding/Updating/Removing factory information |
| 0 | Token Settings | Converting/Adding/Updating/Removing tokens |
| | Access Log Confirm | Viewing screen operating logs by user |
| X | Status Settings | Setting/Editing names and background colors of machine status indications |
| | Master Registration | Registering conversion tables (masters) / Converting machine alarms and system ID codes |
| | Channel Settings | Setting displayed information items for each machine |
| | Task Reservation | Resetting the displayed total downtime / Exporting the collected data to CSV files / Setting the time interval for automatic data backup |
| | Task List | Viewing/Searching/Deleting tasks / Canceling scheduled tasks / Viewing logs |

Compatible molding machines

| Molding machine model | Basic connect (30 logging channels, moldir |
|---|---|
| SE-D, SE-DU (Not connected to iii-System) | Communication softwar |
| SE-D, SE-DU (Connected to iii-System) | Installed |
| SE-DUZ | Installed |
| SE-EV (Not connected to iii-System) | Communication softwar |
| SE-EV (Connected to iii-System) | Installed |
| SE-EV-A, SE-EV-S, SE-EV-A-HD, SE-EV-S-HD | Installed |

Molding machines require a LAN interface in all cases.

• The Advanced connection offers a higher level of sophistication. Molding machines require additional communication software to enable all connections.



System configuration and requirements

 Tested browsers and versions: Internet Explorer 11.0/Firefox 61.0.1/Chrome 68.0
 Communications environment: A wired connection is required between the main hardware (computer) and molding machines, to ensure stable connection. Reference devices such as laptop computers and tablets may use wireless connections.
 Internet Explorer is a registered trademark of Microsoft. Firefox is a registered trademark of Mozilla. Chrome is a registered trademark of Google.

Supported languages

i-Connect supports the languages below. • English • Japanese • Simplified Chinese • Traditional Chinese • Korean

To change the display language, users need to set language on the User Management screen, then logout and log back into the application.

IMPORTANT!

Users must build and prepare the network environment for using this application. Sumitomo Heavy Industries, Ltd. bears no responsibility whatsoever for compensation and the like for damages caused to users or third parties, if the aforementioned system requirements recommended for this application are not built, the application is used improperly, or any part of this application has been modified, added to, deleted or duplicated upon using.

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| tion ng conditions, etc.) | Advanced connection (100 logging channels, peripheral equipment and sensor communications) |
|------------------------------|--|
| re to be added | |
| | |
| | Communication software to be added |
| re to be added | Communication software to be added |
| | |
| | |