

# Intelligent mechanical equipment options

# Hartford

Hartrol · Smartcenter · Robocell

## Standard accessories

|   |   |   |  |   |  |
|---|---|---|--|---|--|
| <br>set and inspect               | <br>ZDT          | <br>Machining Programming Analysis | <br>Machining Time Estimation | <br>Machining Path Simulation | <br>Utilization Statics                   |
| <br>Machining Condition Computing | <br>User connect | <br>Remote Desk Connection         | <br>Spindle Loading Monitor   | <br>AFC                       | <br>Message Board                         |
| <br>Tool Magazine                 | <br>Calculator   | <br>Online E-books                 | <br>File Transfer             | <br>Account Management        | <br>Integrated Information Monitor Screen |

## Optional accessories

|  |  |   |   |   |   |
|--|--|---|---|---|---|
| <br>Spindle Bearing Diagnosis         | <br>HartCAM                                | <br>CCD                 | <br>Automatic Door  | <br>Broken Tool Detection System | <br>Idling Stop |
| <br>Z-direction Thermal Compensation | <br>Spindle Collision Protection G Sensor | <br>CTS Leakage Detect | <br>i-Factory 管理系統 |   |   |

The functions mentioned above will need to option the Hartrol plus controller or Dual screen with Fanuc controller.

Website



Facebook



Hartford has sold more than 50,000 machines to all over the world, accumulated more than 37,000 customers, who absolutely affirm Hartford's manufacturing experience and ingenious machine manufacture technology. We insist on providing customers with the best quality machining centers. We will devote more carefully, in order to continuously enhance the technical level of manufacture and applications.

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# Hartford

Hartrol · Smartcenter · Robocell

We manufacture intelligent machines only

# Smartcenter



# What is *Smartcenter*?

Smartcenter is Smart machine center, an intelligent machine if put it in a simple way.

A Hartford Smartcenter has to include ——

- 1.Intelligent operating interface
- 2.Intelligent machining: Machining accuracy/ surface accuracy/ self learning / self optimizing
- 3.Intelligent quality control: Auto compensation for machining accuracy
- 4.Intelligent maintenance program : Active notification/ Active machine down time schedule also include other intelligent functions, help user reaching the target of Zero Down Time.

## Hartford Smartcenter will help you become an intelligent manager

The main technologies of Hartford smartcenter include intelligent managing system, status monitoring, alarm predicting, machine status diagnosis, crash preventing, 3D program simulation, machining efficiency improving...etc.

All the intelligent functions help you control the machine status and assure the job quality.

### The benefits of Hartford smartcenter

- + Intelligent management : Fully aware of the machining status
- + Fully aware of the status of the machine key components.
- + Improving of the machine efficiency
- + Crash protection – Stop the machine immediately to prevent the further damage when alarm occurred .



# Application of five major functions



|   |  |   |
|---|--|---|
| Intelligent management                              | i-Factory managing system  | Application<br>Work orders are dispatched by central control system.  |
| Intelligent operation                               | HartCAM  | Application<br>Customers who need to convert the NC code from drawing and edit the 2D code                                |
|   | Automatic door   | Application<br>1. Controlled by single pedal<br>2. Door open when cycle time completed automatically<br>3 Save labor cost |
| Intelligent monitor<br>Intelligent protection       | Collision protection G-SENER                                       | Application<br>Machine stop machining instantly when spindle crash to protect the spindle.                                |
|   | CTS leakage detection  | Application<br>Machine stop machining instantly when CTS leaking to protect the spindle.                                  |
|   | Spindle bearing diagnosis  | Application<br>Instant spindle bearing status monitoring.   |
| Intelligent measurement<br>Intelligent compensation | Automatic tool measurement (TS27R/LTS+ humanized guided interface) | Application<br>With Hartrol plus humanized guided interface, measurement is easy.   |
|   | Z-direction thermal compensation                                   | Application<br>Z-direction thermal compensation for thermal extension.  |
| Intelligent real-time monitor                       | Hartnet Alarm message notification Machining completed report      | Application<br>Boss can receive machine alarm message instantly.  |

## Intelligent management

Easy operation-increase your efficiency up to 20%

### i-Factory managing system

Increase your efficiency with MES.

You can manage your machine utilization, personnel management with MES on PC.

#### Intelligent management

#### Intelligent production management

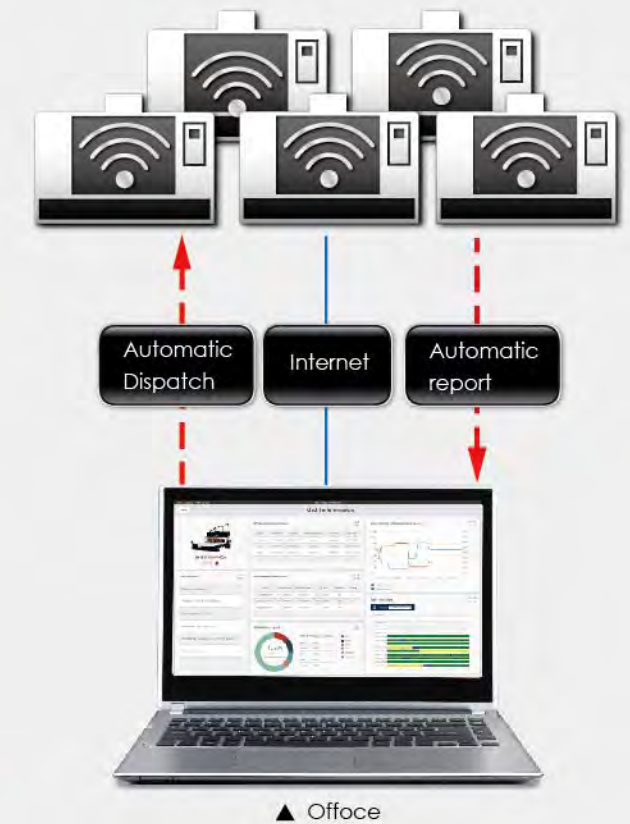
Lower 50% manual work, increase 100% machine availability

- Manage your work order instantly.
- Production report generated in 1 sec.

#### Intelligent utilization management

Improve your performance by 20% more

- No human error
- Increase management efficiency up to 20%



## Remote management

High efficiency operation via mobile device, make you full aware of the current machine status.

CCD monitoring system, not just the plant status but also the individual machining status is within your hand.



# Intelligent operation

Increases your productivity up to **23%**

## HartCAM

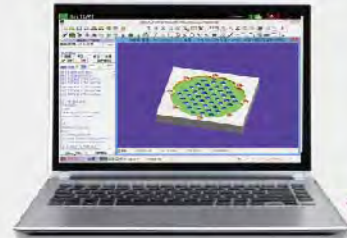
Use HartCAM, Save **80%** of your time

With HartCAM, you can easily operate by graphic index without G-coding knowledge.

- DXF convert to NC code
- CAD function & 3D simulation

**Smart Machining** – Only **4 min** to generate machining program

**Smart Inputing** – Smart covert function, increase work efficiency



# Intelligent monitor / Intelligent protection

Smart Sensor added safety system to **4-5 min** to protecting your machine

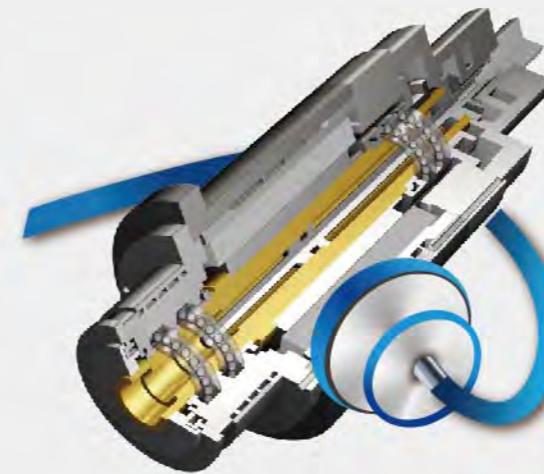
## Anti-Collision Protection G-Sensor

**Cutting volume abnormal.**  
**Machine stop automatically .**

The G-sensor provides the attention to the problem and locks the machine at the accident for investigation before further operation.

**Automatically stop**  
**machines when alert is provided**

Using G-sensor to monitor spindle.  
System will decided automatically.



## Coolant through spindle leakage detect

**Instant detection on rotary joint**

Alarm when leakage happens : Avoid damage on key components in advance

**Reduce maintenance cost and downtime**

Once the leakage is detected, NO. 4005 alarm will appears, prevent the water inflow into spindle.

## Bearing Diagnosis(opt.)

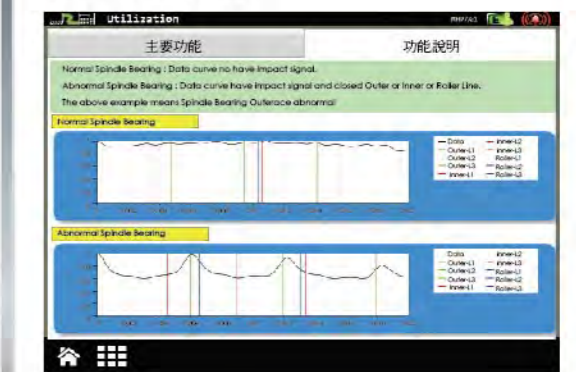
**Instant monitor of bearing status**

**Data interface**

The user can keep track on the bearing status by accelerometer.

Conducting bearing diagnosis to know the status of spindle, in case to arrange maintenance beforehand.

### Bearing Diagnosis



## Automatic door

**Automatic door is the first step to enter automation !**

**Convenience, Efficiency increases !**

Increase Efficiency: Speed up loading and unloading workpiece, operators do not need to stand and wait a long time.



# Intelligent measurement / Intelligent compensation

Economization on manpower **67%**

## Automatic tool measurement (TS27R/LTS+ humanized guided interface)

### Intelligent interactive and guided measurement system

Humanized guided measurement interface makes inexperienced operators can start directly.

### Intelligent Measurement interface

By APP guided interface, operators can make measurement smoothly and quickly.

- Operator no need to memorize the measuring codes.
- Start the measuring process by entering the values through the guiding system.



## Z Axis Thermal Compensation

Adjusting the spindle precision through both spindle thermometer and room temperature.

Z Axis Thermal Compensation prevents more than **50%** inaccurate cases

### Smart Thermal sensor –

No warming-up needed, the machine can function directly and spindle will adjust by the temperature changes through thermometer.

### SMARTAuto compensation –

Controller could adjust the compensation by the difference between spindle temperature and room temperature automatically.



## Canned Cycle

Operators can use conversational functions to do facing, pocketing, contouring as modularization. It can speed up the programming process.

It can save 90% programming time on pocketing, facing, contouring, Engraving. Also, user can reduce typo.



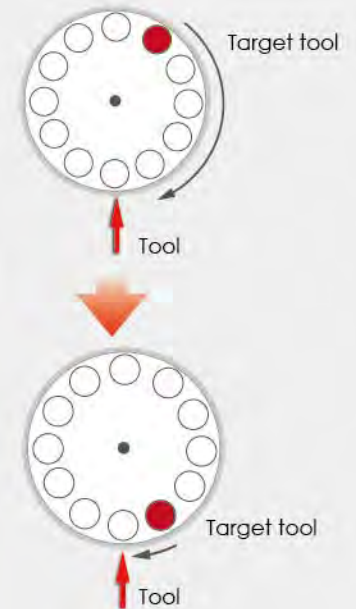
## Tool Sort

Finding tool time is decreased by **68%**

Tool exchange frequently

Cycle time of each tool too short

|         | Cycle time | Tool exchange time | Tool change time with the tool magazine seeking the correct tool |
|---------|------------|--------------------|--|
| Without | 9'09"      | 71"                | 47"  |
| With    | 8'36"      | 38"                | 15"  |



## Intelligent real-time monitor

Production report is generated in **1 second**.

## Alarm & Completion Reporting System

Instant notification to multiple objects, manager / director / technician could take actions with no time wasting.

- Intelligent & convenient management.
- Improve the machine efficiency by 24 / 7 surveillance .



# i-Factory Intelligent management is that simple !

The factory management starts from connecting every detail link. Hartford Superbox is a platform to manage the factory with solutions. Except the production process and the quality control, it is also crucial to have immediate monitoring and response from the production line. The key to factory management is about "anytime and anywhere".



▲ office



Hartford Superbox is a revolution integrated platform, connecting of machines and devices to allow customers to monitoring and analyze your plant floor which provides customers a complete solution on management. The connectivity of plant floor and equipment(machines, software and other)makes your management smarter.)



▲ The factory