SYNTEC ∞ LEANTEC

| 15:33:06 | Flow State : Wait Robot done | | Running | Alarm | | |

Monitor

Machine Monitor

NC: O5122   NC: O1122

NC: Load

| Not connect |
| Ready |
| Not Ready |
| Progress |

| Monitor | Setting | Alarm | Adjust | | | | |

SYNTEC ∞ LEANTEC

SynMaster on Cell

ROBOTCELL CENTRAL CONTROL PRODUCTS

Product Structure SynMaster: Committed to smart manufacturing for cost efficiency

Maintenance	Tool	Display Board	Measurement		Diagnostics	Monitoring	Optimization	Backup

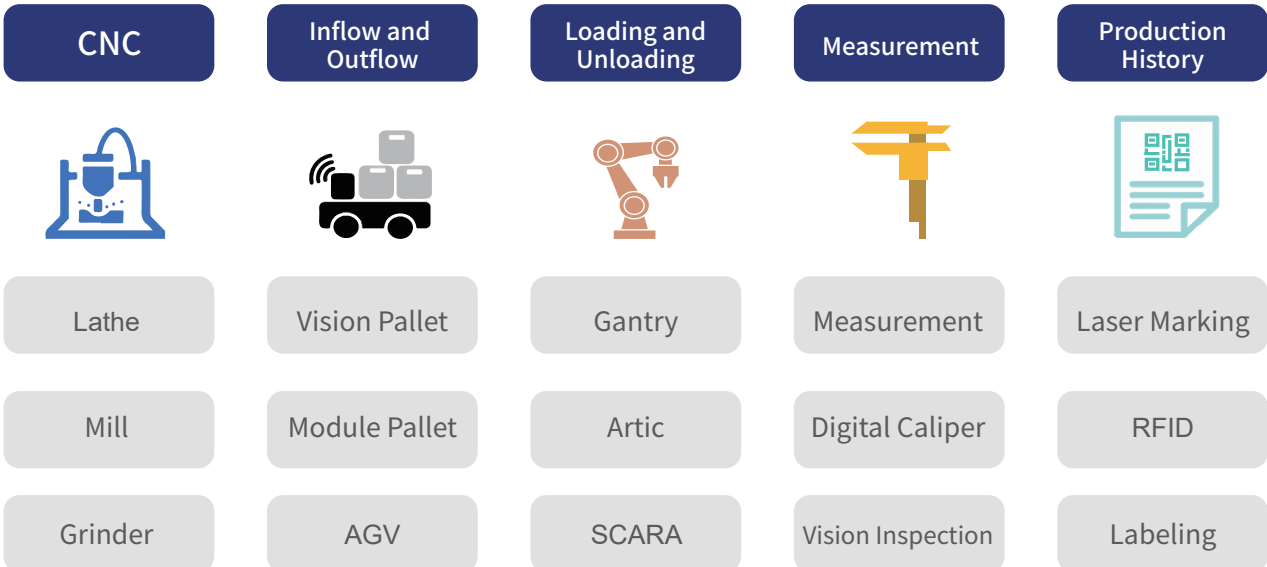## Industrial Computer Solutions

Controller Solutions
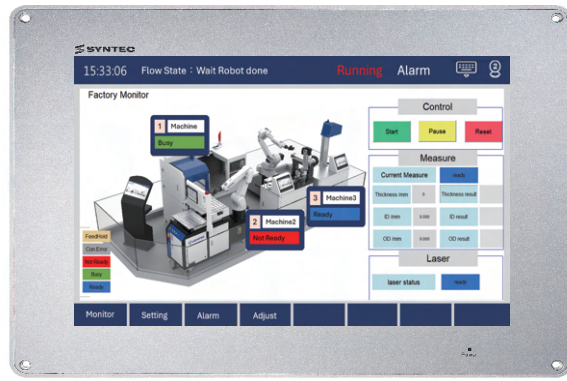
Support:
- ◆ Axial Control
- ◆ I/O (Input/Output)

SynMaster

Automation Challenges: Diverse equipment, inconsistent communication, and lack of integration. SynMaster integrates communication and offers a single monitoring interface with modules for tool compensation and process management, serving as the "**Unit Central Control Software**" to tackle these issues.

CNC	Inflow and Outflow	Loading and Unloading	Measurement	Production History
Lathe	Vision Pallet	Gantry	Measurement	Laser Marking
Mill	Module Pallet	Artic	Digital Caliper	RFID
Grinder	AGV	SCARA	Vision Inspection	Labeling

Function Description

Modular features enable customized solutions, built like building blocks.

Standard version

Scenario：

- In the client's processing scenario, diverse equipment is interconnected. Production management seeks a unified interface for easy remote monitoring and control.

Effect：

- Display equipment info, monitor alarms, remote start/stop, read/write resource values, and transfer processing files.
- Customization options include machine overview, factory renderings, and utilization monitoring.
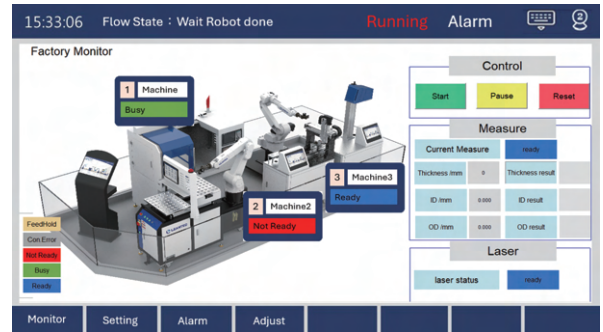
Tool Compensation Module

Scenario：

- Robots are fitted with barriers, preventing operators from accessing CNC controller to operate the tool compensation function.

Effect：

- Remote CNC tool compensation can be done without pausing the robot or opening barriers, which improves utilization.
- Automate measurement and tool compensation by connecting measuring instruments.

SPC Module

Scenario：

- Users want to record measurement data for quality management.

Effect：

- Record tool compensation data to calculate the machine's CPK, helping users manage quality precisely.

Process Module

Scenario：

- Processing of High mix, low volume.
- Different workpieces correspond to different processing files. Manual transmission and switching of programs were required, which did not allow for automation.

Effect：

- Provides settings to associate workpieces with different machine programs and processes.
- Interface with dispatch systems or CAD/CAM to automatically upload files to CNC, providing a fully automated solution.

Function Description
Modular features enable customized solutions, built like building blocks

Tool Life Monitoring (Syntec)

Scenario:
- Tools are prone to damage during processing and require immediate replacement.

Effect:
- Remotely monitor tool life.
- When the lifespan is reached, SynMaster alerts users to replace the tool immediately, reducing the risk of tool damage during processing.

Basic Production Information Dashboard

Scenario:
- Clients with 1-10 machines in processing units seek the benefits of a compact MES dashboard.

Effect:
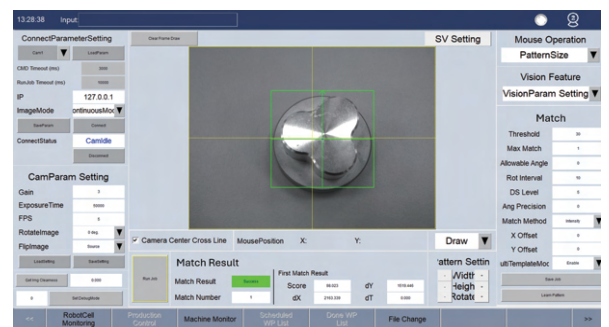- View unit utilization rate, overall output, and production data.

Visual Modules

Scenario:
- In messy material handling situations, the industry uses camera vision for locating workpieces.

Effect:
- Record tool compensation data to calculate the machine's CPK, helping users manage quality precisely.

Production Simulation Module (Digital Twin)

Scenario:
- Clients aim to incorporate intelligent elements to increase equipment value.

Effect:
- For monitoring-inconvenient scenarios, such as large production lines with barriers, real-time observation of the current processing status can be conducted from the side of the production line.

Classic Examples
Deeply rooted in the industry, dedicated to customer transformation.

Modules：

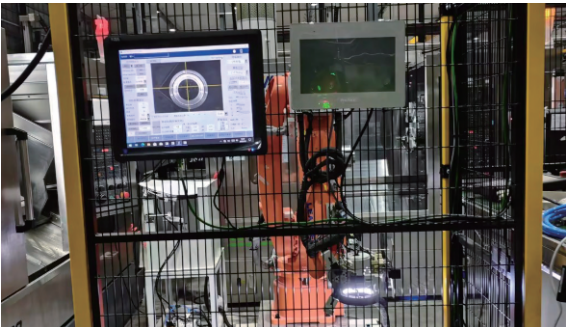• Standard version / Tool compensation module.

Needs and Solutions：

• Remote Manual Tool Compensation for CNC.
• Tool Compensation History Records.

Modules：

• Standard version / Tool compensation module.

Needs and Solutions：

• Connect measurement devices for workpiece inspection.
• Auto-compensate CNC tool wear based on measurements.
• Access wear compensation records for dimension traceability.

Modules：

• Standard version / Visual module

Needs and Solutions：

• Robot pick-and-place with manual loading.
• Manual stacking is uneven and variable.
• A camera checks deviations before the arm compensates the pick position.

Modules：

• Standard version / Tool compensation module / Process module

Needs and Solutions：

• Equipment monitoring and remote control.
• Remote manual tool compensation for CNC.
• Flexible production process control.
• CNC and ROBOT program switching.

Turning Table

Cleaning Station

Engraving Table
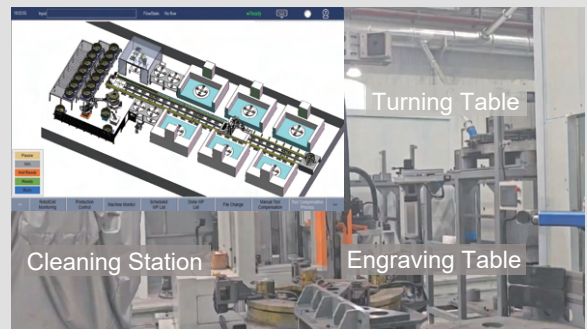
Product Highlights

1. Continuing Syntec's high customization advantage

- Syntec's three development platforms, no need to learn new development tools.
- Call SynMaster G-code, write custom macro procedures.
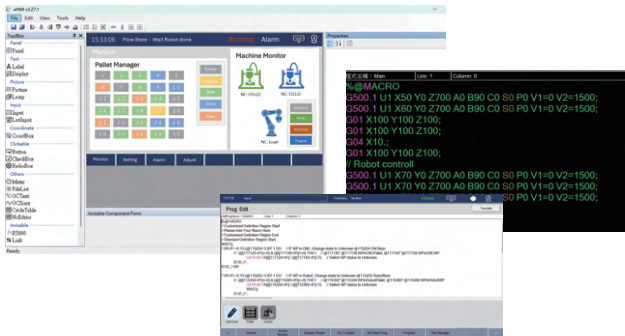
2. Connecting equipment from different manufacturers

- Connecting via Ethernet, achieving communication through IP configuration.
- Integration with major CNC system brands.
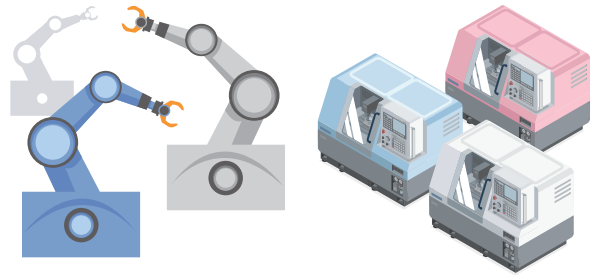
3. Low Cost

- Network communication without I/O .
- Plug-and-play with a single Ethernet cable.

4. Modularization

- Modular functionality, available for individual sale
- Customizable selection, building automation like building blocks

◆ Tool Compensation	◆ Visual Module
◆ Tool Life	◆ Pallet Management
◆ Utilization Rate	◆ Digital Twin
◆ SPC Analysis	◆ Process Module