Factory Automation

2019 R1 | Manufacturing Operations Management

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Contents

Overview

Factory automation is an exciting new feature available in SYSPRO Manufacturing Operations Management. Factory Automation extends the existing manual data collection features in SYSPRO, with automated data collection to determine equipment effectiveness (OEE).

Including:

- Up/Downtime (including downtime reason)
- Operational completion (Quantity)
- Operational scrap (including scrap reason)

With over 140 industrial drivers to the most common PLC/IO devices including Allen Bradley, GE, Honeywell, Mitsubishi, Siemens and more. SYSPRO provides the platform to digitalize your factory by connecting machines, measuring equipment and other devices to read data without manual inputs.

SYSPRO's factory automation provides controlled management of machine data including error handling; live or controlled data posting to ERP/PLM systems; data collection from multiple geographical facilities; data historian.

Note: It is important to note that this feature guide does not cover the setup and maintenance requirements for the PLC or IO device and/or the OPC server. Configuration of these hardware and software devices will be completed by a recommended industrial engineer.

Within this feature guide, you will learn:

- System requirements to support factory automation
- How to enable factory automation
- How to create automated devices
- How to configure signals and processors
- How to monitor a live automated environment
- How to resolve data flow errors
- How to setup alerts for monitoring automation errors
- How to troubleshoot failures

System Requirements

Factory automation is entirely dependent on the infrastructure illustrated in the Factory Automation Topology Diagram. You must have SYSPRO MOM implemented to utilize factory automation.

Machines that will be configured as automated devices in SYSPRO MOM must already be connected to a PLC or IO device and communicating with the OPC Server.

Figure 1: Factory Automation Topology Diagram
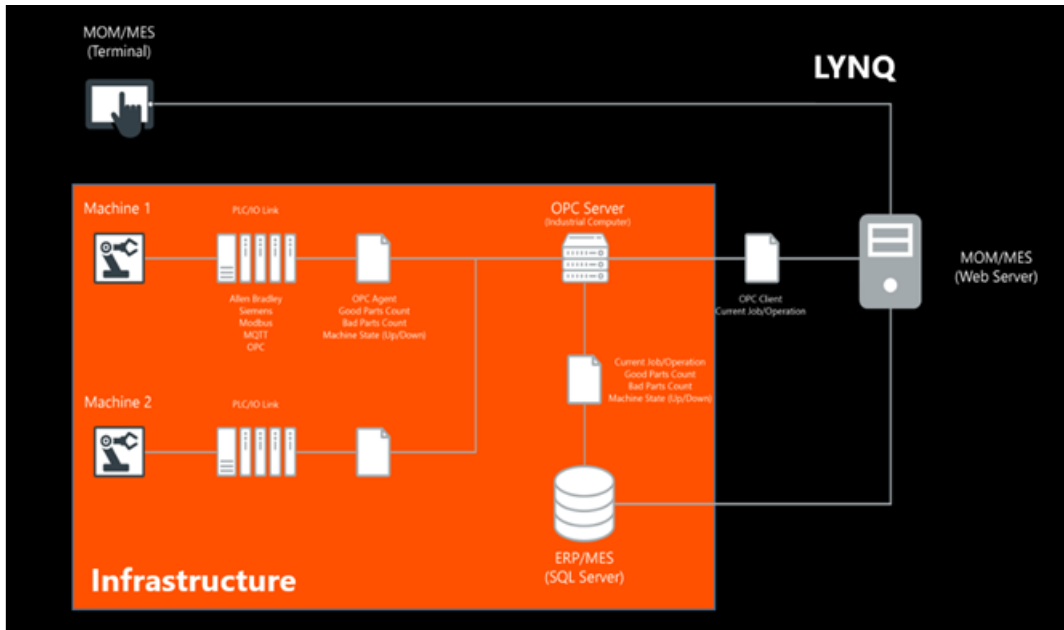
Minimum Hardware and Software Requirements - OPC Server	
Hardware	**Requirements**
Device	Industrial Fanless PC Mounting: VESA or wall brackets
CPU	Intel i3 or equivalent
RAM	4GB and above
Operating System	Windows Server 2008 R2 Windows Server 2012 Windows Server 2012 R2 Windows Server 2016
Ports and Connectivity	2Gb LAN ports 2 COM ports (RS-232/422/485) 4 USB ports
Audio jacks: line-out, mic-in	2 HDMI ports 1 VGA port

The Concept of Automation

Factory automation in SYSPRO MOM has a simple concept. The Data Flow Diagram illustrates the overall factory automation solution. The orange columns (Infrastructure) illustrate the flow of data between the various hardware and software components before reaching SYSPRO MOM. The green columns (SYSPRO MOM) illustrate the flow of data once the data has reached SYSPRO MOM.
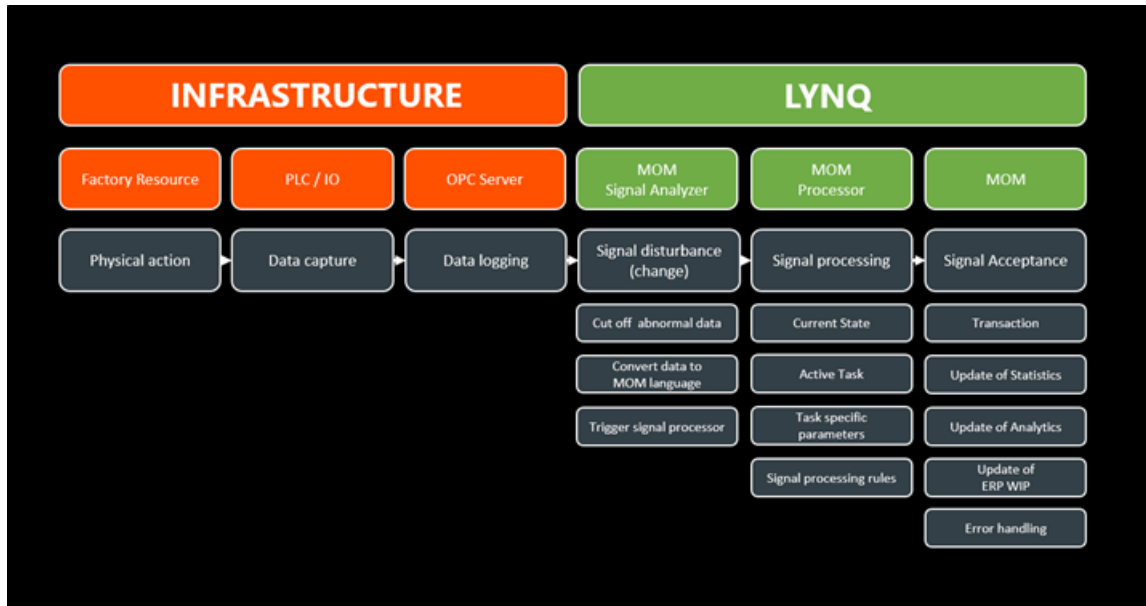

Figure 2: Data Flow Diagram

It is important that all these aspects of the factory automation solution are understood and configured correctly. To successfully adopt automation in your factory, you will require a resource, such as an **Industrial Engineer** that is sufficiently skilled to maintain your factory network including PLC/IO devices and the **OPC Server** hardware and software.

Note: SYSPRO Manufacturing Operations Management can only take responsibility for the support and maintenance of its own software.

Typically automation relies on a user selecting a task in the workbench to indicate which job/product is running when the automated devices are sending good and bad quantity data. This is because the automated device generally does not have any concept of which job/product it is running. Human interaction with the Workbench is not required for status (uptime/downtime) data collection.

Enabling Factory Automation

ℹ️ By default factory automation is disabled. The followings steps explain how to turn on automation within SYSPRO MOM.

SYSPRO MOM must understand which database is configured to store data logged by the OPC Server.

📝 **Note:**

Polling Interval: The polling interval determines how frequently data will be read in the factory automation database to SYSPRO MOM.

Data Buffer Interval: The data buffer interval determines how frequently the processor will translate machine data into SYSPRO MOM transactional data.

Intervals: Interval settings can be adjusted as required to suit the requirements of your factory. However, setting these values to very low numbers may place additional load on your infrastructure in high data volume environments. Fine tune these settings for optimal performance.

Configuring the Factory Automation Database

The following steps describe how to configure the Factory Automation Database

1. Logon to SYSPRO MOM as an administrator.
2. Select **Settings** from the home page.
3. Select **Settings**.
4. Navigate to the **Database Settings** section.
5. Enter the factory automation database name in the **Automation** row.

Enabling Factory Automation

The following steps describe how to enable factory automation.

1. Logon to SYSPRO MOM as an administrator.
2. Select **Settings** from the home page.
3. Select **Advamced Settings**.
4. Select **General**.
5. Check the **Enable automation** option.
6. Set the **Automation polling interval (secs)** as required.
7. Set the **Data buffer interval (secs)** as required.

Data Collection

Employee status (default)	Out/Off
Equipment status (default)	Out/Off
Clock out warning after (hrs)	14.0
Terminal timeout after (secs)	600
Clocked time (default)	Office Time
Data selector (default)	Operation Selection
Report quantity (maximum)	1000000.00
Report scrap (maximum)	1000000.00
Supervisor workbench access	☑
Store data at lowest level?	☑
Enable automation	☑
Automation polling interval (sec)	60
Data buffer interval (sec)	5