**syncoperations™**
Powered by Savigent

## 1. Why does my organization need SyncOperations™ software?

SyncOperations™ software, *powered by Savigent,* gives manufacturers the ability to connect and synchronize data from all equipment and processes in real-time.  Connecting resources, equipment, systems and processes builds a dynamic network from which manufacturers can drive demand-driven operations and data-based actions.  SyncOperations™ software is based on a powerful workflow engine that enables standard operating procedures by triggering events from manufacturing activities.  The software drives flow and enforces repeatable and consistent performance between resources, equipment, systems, and processes through data collected and synchronized from both machine-level and enterprise systems.  Additionally, data stored in the SyncOperations™ Historian becomes a powerful tool for assessing the state of all variables, conditions, and machine sensors during production to diagnose issues quickly and improve processes.

## 2. What are the benefits of SyncOperations™ software?

SyncOperations™ software transforms your manufacturing operations into a modern enterprise by connecting resources and systems – enabling the "Internet of Things" concept in your manufacturing environment.  From this connectivity comes never before seen information to enable continuous improvement, plus automatic execution of standard processes.  SyncOperations™ software allows your organization to:

- Aggregate data from any source – shop floor data or enterprise systems.
- Support continuous improvement and overall equipment effectiveness (OEE) by tracking performance, availability and quality in real-time.
- Quickly drill into historized data to find the root cause of a production disruption.
- Collect insightful quality data by synchronizing all enterprise data from machines, materials, products, and processes.
- Identify machine parameters trending out of tolerance overtime to proactively repair and address maintenance issues.
- Compare machine tags to production events to diagnose trends and performance issues.
- Digitize work instructions into automatic processes via workflows.
- Replace paper-based systems with automatic processes that are tracked and performed in real-time.

Composite application development capabilities enable flexible workflow design so that production professionals can:

- Generate custom, contextualized time-based charts and tables.
- Step beyond using reporting to make decisions and move to preventive, procedural based logic to execute decisions in real-time.
- Create automated communications triggered by events.
- Gain visibility for both engineering and product level diagnostics.
- Ensure workflow and alert ticket responses are in compliance with Standard Operating Procedures.
- Provide unparalleled levels of traceability and process accuracy.

See the SyncOperations™ software overview for more information.

## 3. Who uses SyncOperations™ software?

SyncOperations™ software is an integral tool for a manufacturing environment – putting data and production visualization tools into the hands of users like:

- *Quality professionals*: Quickly pinpoint quality problems based on impacted variables to diagnose root causes in production disruptions.
- *Process engineers*: Monitor the entire machine-level landscape to identify process improvement opportunities by analyzing the discrete cycles running during an event, and view machine logs for granular detail.
- *Continuous improvement teams*: Drill down into event-based data easily for instant, actionable insight to eliminate waste – then enforce new processes via workflow.
- *IT professionals*: Manage manufacturing applications and assets in a central environment.
- *Manufacturing leaders*: Benefit from an easily configured, graphical environment where:
  - Real-time machine performance metrics are easily made visible to drive operational excellence
  - An intuitive interface design enables team collaboration to meet business goals.

Users benefit from the flexible workflow design tools, plus the SyncOperations™ Data Historian, which stores both event and process data to provide context for smart monitoring of machines and equipment. The Data Historian not only helps to quickly assess event-based data, but provides information to drive continuous improvement initiatives over time.

## 4. How does SyncOperations™ software work?

SyncOperations™ software is the sum of two key components: A Workflow design engine and a Data Historian. These components are enabled by a software architecture that creates a common framework for accessing, analyzing, and distributing data to and from multiple sources. Through SyncOperations™, data from disparate systems is pulled out of the shadows and stored in the Historian to be analyzed in aggregate with other operations or machine-level information.  The Workflow component gives users

the opportunity to synchronize standard procedures and initiate automatic, event-driven manufacturing actions.

SyncOperations™ software collects and analyzes data in a common environment from multiple machines and systems. It not only offers a breadth and depth of actionable information to improve flow, but provides an easier path for distributing execution capabilities across other enterprise systems. Manufacturers use SyncOperations™ to quickly scale networked manufacturing environments by connecting new machines, systems, and facilities.

Events and actions are orchestrated as a Workflow within an intuitive graphical environment using drag-and-drop technology. In the Data Historian, SyncOperations™ uses a resource-tree structure to help navigate complex facility layouts and visualize the machines and systems connected through each layer of manufacturing.

## 5. What does the Workflow component of SyncOperations™ software do and how does it work?

The Workflow element of SyncOperations™ software transforms manufacturing environments into efficient operations with event-triggered processes that are executed automatically. SyncOperations™ Workflow removes manual intervention in the process, which can lead to latency, incorrect sequences, and missed data collection requirements. By connecting equipment, people, and actions, a Workflow adds speed and context to standard operating procedures, ensuring correct execution every time. Workflow actions may be completed by a combination of operators, systems, or machines, with each component tracking data or enabling subsequent actions.  This digitized Workflow creates data from which to base other actions – or to use in process analysis.

Through integrations with other manufacturing operations systems, Workflow can initiate tickets and system requests based off of your connected operation systems and applications.  This could include interactions with machine sensors, quality software, or other order information.

## 6.  How does the Data Historian work within SyncOperations™ software and how does it add value to manufacturing operations?

The Data Historian is the part of SyncOperations™ software that empowers engineering and operations team members to get into all of the real-time production details in a manufacturing environment.  All data within the Historian is contextualized by relating data values to marker variables. (Contexts may be items such as shift, operator, recipe ID, etc.).  Beyond these contexts, the data is stored with a timestamp, which can be recorded down to the millisecond level.  When a series of values is mapped over a given time range, users can see trends and changes as they happened against manufacturing events.  Suddenly engineers can diagnose performance or quality issues by evaluating machine tags (from a library of up to thousands) collected from a given machine.

Resources and equipment are organized in a straightforward tree structure, organized by cell so that information can be accessed easily by all users.  Data within the Historian is what is selected when building dynamic table and graph models of time series data in Information Model Explorer.

Information Model Explorer is a drag-and-drop tool where datasets are pulled in to show production activities from connected data sources, like PLCs or HMIs.

## 7. What is Information Model Explorer within SyncOperations™ software and what are its data analysis capabilities?

From the vast and data-rich content collected within SyncOperations™, users can access Information Model Explorer, a module of the software that provides dynamic and on-demand table and graphing capabilities. The contextualized, time-based data can be modeled within a chosen time range, providing the ability to see visually how certain conditions or machine tags behaved during a production event. Information from integrated systems can be included in the same models, bringing together an accurate picture of the order and machine information to diagnose any process or production issues. Tables and graphs can be organized and stored into separate address spaces, allowing pre-generated views based upon a role or function, such as separating Quality Reports from Operation Reports.

Information Model Explorer is a powerful toolset for engineering and operations staff performing continuous improvement and production analysis work. Diagnosing equipment issues or disruptions becomes clearer when all facets of a manufacturing event can be rewound and analyzed for situational insight.

## 8. How is machine data pulled and collected within SyncOperations™ software?

The implementation phase includes comprehensive mapping and integration work between SyncOperations™ software, individual machine software interfaces (OPC, Modbus, MSMQ, etc.) and non-machine related sources, such as databases storing quality or maintenance data. The integration design ensures that all available machine-level tags are assessed for relevancy and included in the Historian structure to give your organization information that matters.

When this process is applied to all machines within the operations, a powerful network of connected assets comes to life and exposes machine-level data like never before.

## 9. Can SyncOperations™ software use external system data?

SyncOperations™ software has the capability to import external data, both through standard integrations to system data or manually. Data can also be accessed by initiating a real-time query from Information Model Explorer. In any case, SyncOperations™ delivers an unparalleled benefit by being the common platform to seamlessly collect, analyze and synchronize data from a variety of systems.

## 10. How does SyncOperations™ software work in complex, multisite environments?

No matter how complex your environment, the Workflow and Data Historian capabilities in SyncOperations™ software will result in an enhanced ability to instantly track and improve performance, machine events, and quality. A drag-and-drop graphical interface provides the ability to easily create custom production workflows that can be fully automated or manually executed at each location. You can also share and re-use workflows and applications across multiple sites to create consistency and/or as an effective way to rollout continuous improvement initiatives enterprise-wide.

At each location, or through a centrally-managed infrastructure across multiple nodes and machines, you can quickly design workflows that support disparate business processes and tailor events and actions and that are in full compliance with your standard operating procedures.

SyncOperations™ software provides the ability to more visibly manage the flow of materials in extremely complex, engineer-to-order, configure-to-order and make-to-order environments.

## 11. What types of industries are well-suited to benefit from SyncOperations™ software?

SyncOperations™ software is well-suited for manufacturing environments across all industries.  The product works in both automated and manual processing environments and is especially beneficial for organizations that are highly regulated since it enforces repeated, automated execution of standard operating procedures and event tracing.  It is also powerful for companies that are asset intensive and seek to connect resources in an organized and data-rich manner.

## 12. What are the integration capabilities of SyncOperations™ software?

One of the prime benefits of SyncOperations™ software is the ability to go beyond separate applications or traditional point-to-point system integrations and unify execution and data actions through a single system. Value is driven from the ability to integrate data from separate systems - including the software components of the Synchrono® Demand-Driven Manufacturing Platform - and synchronize data and actions from those systems.  Benefits of integrating system information through SyncOperations™ software, include the ability to:

- Minimize the number of interfaces and setups of multiple protocols which would be required for less sophisticated, point-to-point integrations.
- Superimpose information from multiple systems into Information Model Explorer.
- Execute actions in Workflow automatically through enabled real-time data integration from individual manufacturing and machine applications.

## 13. Which type of operations and enterprise systems, including ERP, can integrate with SyncOperations™ software?

SyncOperations™ software can integrate with any enterprise or operations-related system, including all components of the Synchrono® Demand-Driven Manufacturing Platform. SyncOperations™ has been successfully implemented and has provided value in a wide variety of customer enterprise application landscapes. The software has already been integrated with most major ERP systems in all types of IT environments and industries.

SyncOperations™ software provides an easier path for distributing execution capabilities across other enterprise systems. Examples of manufacturing and operations software systems with which SyncOperations™ integrates include:

- Product Lifecycle Management (PLM)

- Enterprise Resource Planning (ERP)
- Manufacturing Execution System (MES)
- Quality Management System (QMS)
- Shop floor systems (PLCs/HMIs)
- Warehouse Management System (WMS)
- Maintenance Management Systems

## 14. What enhanced features do I gain by integrating SyncOperations™ software within the Synchrono® Demand-Driven Manufacturing Platform?

SyncOperations™ software is installed on-premise to connect to your machines using a traditional, site-license model. When installed as a standalone product, SyncOperations™ provides incredible business value. And when implemented as part of the Synchrono® Demand-Driven Manufacturing Platform, it provides an even greater return where it:

- Clearly communicates operational performance and status via **SyncView™**.
- Adjusts the production plan as needed based on escalation and action plans communicated from **SyncAlert™.**
- Incorporates the status of kanbans and supermarket health from **SyncKanban™** into integrated manufacturing plans and execution.
- Synchronizes with **SyncManufacturing™** to pull real-time completion and consumption data from machines and to notify scheduling and execution when a machine has a disruption.

Learn more about the Synchrono Demand-Driven Manufacturing Platform here.

## 15. What are the requirements for implementing SyncOperations™ software (e.g. what data do I need to have in terms of infrastructure or other platform components)?

Infrastructure requirements vary from site to site. We have implemented SyncOperations™ software within complex, multisite environments with very limited interruption to production schedules. We have also implemented SyncOperations™ into manual environments, or those with limited infrastructure. Based on our years of experience in implementations, we are confident that nearly any environment can use SyncOperations™ software to gather machine level data and gain increased production effectiveness and visibility.

## 16. When I am buying SyncOperations™ software, what kind of implementation support can I expect? Training?

The Synchrono® implementation methodology and InSync post go-live services ensure a successful adoption and a meaningful return on your investment in the software. Using a collaborative approach with your team, we model a system for your environment, implement the solution, and transform your business processes and results. Following deployment, Synchrono® offers continued support and ongoing services to ensure complete transformation.

Role-based training and user-friendly screens ensure your team will become high performing users quickly and effectively.

## 17. How long does it take to implement SyncOperations™ software?

Every implementation varies based on environment, and the number of machines and systems from which SyncOperations will be pulling data.  Contact Synchrono to assess an implementation timeframe for your environment.

## 18. Do you have any current client feedback that details the value of their SyncOperations™ software implementation over time? Do you have client references that I can contact?

Yes; please contact us to arrange for a client reference that is similar in scope and requirements to your environment. Or contact us to request a private demo.