

# Applied SmartFactory<sup>®</sup> Rx SmartFactory Operations Productivity (SFP)

## Case Study: Sequencing Operations to Optimize Cadence with the Real-Time Dispatcher (RTD)

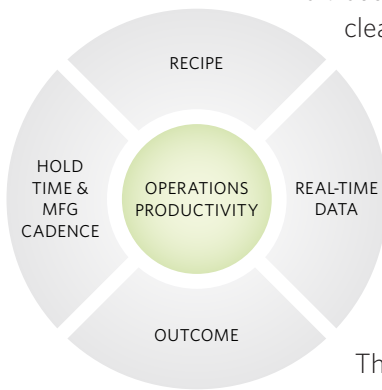
### SCENARIO

**Client:** International semiconductor manufacturer

**Process:** Batch and associated equipment hold time management between cleaning and deposition

### CHALLENGE

This global manufacturer was looking for innovative ways to increase yield while maintaining stringent output quality standards. The batch hold time length and variability at individual equipment steps between cleaning and deposition was identified as a promising area of opportunity. While cleaning takes just five minutes, the current process often left deposition load ports empty for ten minutes or more, wasting cycle time. The current process also left batches waiting longer than established maximum hold times impacting manufacturing cadence and resulting in scrapped batches and rework.



System (MES) of availability through RTD, AM initiates the Dispatcher, eliminating a manual process step, RTD determines which batch to process next, Material handling creates a transport job, reserving a port, and routes the batch, The cleaning of the equipment associated with the batch is complete and the load port is ready to be unloaded, A dispatch rule determines which deposition equipment should process the batch, Material handling initiates a transport job and selects the shortest route to the reserved deposition equipment. The batch is delivered to the deposition equipment – ten minutes earlier than in the previous configuration.

### OUTCOMES

- **Reduced scrap levels to 0%**
- **Increased process output by 10%**
- **Achieved more process consistency and reduced dependency on human intervention**

### SOLUTION

The client implemented Applied's SmartFactory Rx Operations Productivity (SFP) and SmartFactory Rx Analytics & Control (SFA) software modules. This enabled them to develop and implement a control strategy, and communicate that strategy using Applied's integrated Real-Time Dispatcher.

The SFA module predicts equipment availability based on the start time for cleaning of the prior batch. The anticipated SFA event notifies the Manufacturing Execution

Let's talk about how your pharma plant can reduce scrap and increase throughput with better cadence optimization through SmartFactory Rx.

Email us at: [SmartFactory\\_RX@amat.com](mailto:SmartFactory_RX@amat.com) or visit us at: [appliedmaterials.com/smartfactoryrx](http://appliedmaterials.com/smartfactoryrx)

# The future of pharma manufacturing today. From the company whose automation software is installed in 100% of fully automated wafer fabs.



**QUALITY, EFFICIENCY, LOWER COSTS**

<b>OEE 80% - 90% (High)</b>	<b>OEE 10% - 60% (Low)</b>
<b>Process Capability 5<math>\sigma</math> - 6<math>\sigma</math> (High)</b>	<b>Process Capability 2<math>\sigma</math> - 3<math>\sigma</math> (Low)</b>
<b>Production Lead Time 5 - 10 Days</b>	<b>Production Lead Time 120 - 180 Days</b>
<b>FG Inventory 5 - 50 Days</b>	<b>FG Inventory 60 - 90 Days</b>
<b>Direct / Indirect Labor Ratio - (Low)</b>	<b>Direct / Indirect Labor Ratio - (High)</b>

*Applied Materials has helped semi manufacturers optimize quality, efficiency and productivity to drive outstanding business results. Now, SmartFactory Rx is bringing the same advanced manufacturing software to pharma plants.*

## Dramatically optimize reliability, performance, efficiency and one more highly desirable thing: profitability.

The Applied SmartFactory suite of advanced manufacturing software enables pharma companies to achieve unprecedented levels of productivity, quality and compliance through a flexible, intelligent platform comprised of Analytics and Control, Advanced Maintenance and Operations Productivity. These modular components integrate all critical operations in real time to:

- Reduce downtime and changeover time
- Improve asset utilization
- Reduce scrap, including lost batches
- Achieve better productivity while assuring quality and compliance

Advanced process controls and rules-based automation enable pharma systems to communicate and cooperate with each other, and with operators, in real time to make more intelligent decentralized decisions.



The tools work together and with your existing solutions to provide an agile, scalable, data-driven environment. This allows rapid, seamless deployment, improved overall performance and decreased human errors in pharma plants.

### **Applied SmartFactory<sup>®</sup> Rx** *Outperform Expectations*

*Discover how pharma plants can achieve efficiency and productivity at levels that were impossible before.*

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