PAR Systems
Phone: 1.800.464.1320
Contact: par.com/contact
Address: 3710 Victoria Street North
Shoreview, Minnesota

Medical Device Manufacturer Improves OEE with a Modern SCADA Solution

PAR Systems partnered to create a unified visualization platform that delivered measurable improvements in wearable device production.

Introduction

A leading medical device manufacturer needed a SCADA system for a high-volume wearable device production line. Prior automation lines relied on custom data logging tools that generated .csv files and required manual collection and post-processing. PAR Systems, an Ignition Gold Certified Integrator, leveraged Ignition to develop a SCADA solution from the ground up.

The current data logging process was:

» Time consuming to obtain meaningful statistics about line operations

» Limited in terms of available station-level information, which could guide line improvements and increase OEE

» Unable to support dynamic changes in performance calculation criteria due to the basic PLC-polling architecture.

» Difficult to scale and modify

The manufacturer needed to:

» Replace manual logging and analysis operations with a comprehensive data collection and visualization solution

» Provide comparable charting capabilities in one central location

» Gain actionable data quickly, so teams could identify performance opportunities and improve OEE in their high production environment



System at a Glance

» **Data Ingestion**

- 2000 data fields for each final assembly (consisting of 26 unique physical components)
- 220 station cycle-time fields
- 370 product fail codes
- 150 input material reject codes
- 1000 process data fields
- 2000 downtime reasons
- 4 million tags/hour recorded to MariaDB SQL database

» **Visualization**

- 8 line-level views
- 75 machine-level views
- 7 dedicated plant floor Perspective clients
- 10+ remote Perspective clients
- Python scripting for detailed data filtering and analytics

» **Flexible Schema Pattern**

- Flexible SQL database architecture enabling re-use of Perspective XY chart components regardless of database table contents

SCADA Design and Development

The data logging process needed an entire overhaul with better data collection, intelligent reporting, and faster insights. To meet the manufacturer's needs, PAR developed a SCADA solution built on Ignition® architecture with web-based dashboards supporting users ranging from plant floor technicians to C-suite executives.

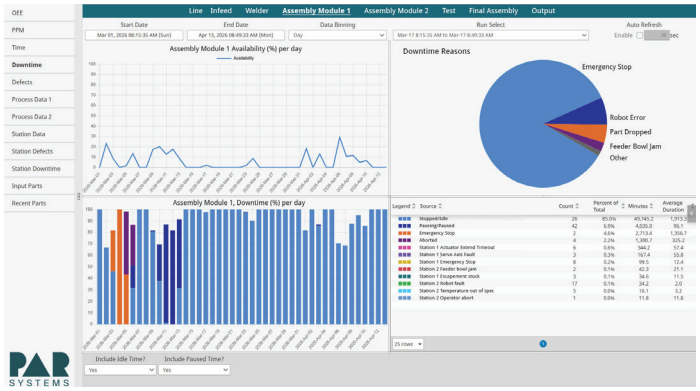
As a full-service systems integrator, PAR offers a unique approach to SCADA design. By applying our three core SCADA methodologies, we were able to create an effective and cohesive visualization solution.

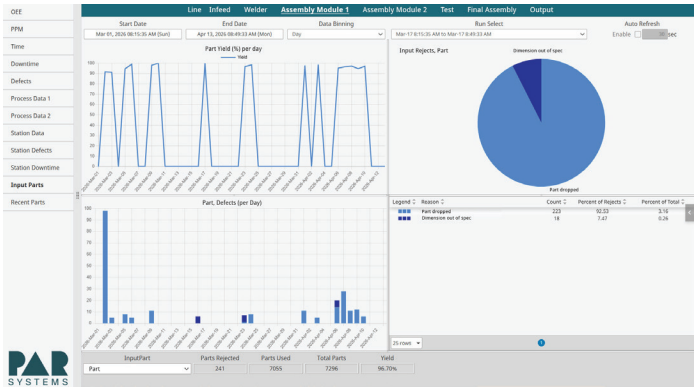
Equipment-First Approach

SCADA systems are often retrofitted to an existing system without full understanding of the equipment operations or data needs.

As a machine builder and full-service integrator, PAR leverages deep understanding of product flow, process data, and machine behavior to embed required logic, state tracking, and data models into the machine control framework, enabling:

- A single source of truth
- Increased reliability
- Accurate, complete event definitions
- Consistent data models across equipment
- Transactions aligned to operational behavior
- Faster time to insights
- A stronger, more scalable system foundation





Web-based dashboards developed for a wide range of users: from plant floor technicians to C-suite executives. Our tiered layout enables users to find the right data for their needs.

Parallel Development

By developing SCADA dashboards and equipment control code in parallel, PAR greatly reduced the overall project schedule. A SCADA project that would typically require 6–8 additional months after equipment delivery was completed in parallel. In addition, software validation activities, often required for medical device applications, were reduced by decoupling equipment performance analytics from machine control code.

The greatest benefit, however, was the early insight the SCADA platform provided. By identifying bottlenecks and performance issues during pre-FAT and early process development, the team was able to optimize the process before equipment acceptance, reducing commissioning time and improving overall system readiness.

Event-Based Architecture



Instead of relying on passive polling, PAR developed a re-usable transaction and event-based logging architecture built on Ignition Transaction Groups and custom Python scripting. This provides records of all parts, associated process data, and critical machine events while enabling calculations at the SCADA layer instead of the PLC layer.

Additional calculations now available include:

- Downtime codes and durations
- Multiple reject codes per part
- Per-station cycle times, yield, and reject codes
- Custom time-binning and aggregations
- Run-specific statistics

Benefits

The solution:

- Eliminates disparate data concerns
- Improves flexibility of data calculations and analysis
- Removes complicated calculations from the PLC
- Substantially decreases manual data collection and post-processing

The manufacturer gained improved visibility into equipment behavior, identified yield-loss stations, detected process drift, and integrated the SCADA platform with its existing manufacturing technology stack. By providing the manufacturing team with better tools to manage production, the client can focus more of their time to developing next generation, life-saving devices.

About PAR Systems

PAR Systems has over 65 years of experience delivering automation solutions for highly regulated industries, including life sciences, aerospace, nuclear, and marine. By combining this domain expertise with Ignition's modern software platform, PAR helps manufacturers adopt digital technologies while meeting the stringent compliance requirements of regulated production.

Contact Us: par.com/contact

PAR Systems
3710 Victoria Street North | Shoreview, Minnesota 55126-7007 USA
Toll Free: 1.800.464.1320 | T: 1.651.484.7261 | F: 1.651.483.2689
© Copyright 2026. PAR Systems, LLC. All rights reserved.

PAR SYSTEMS