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RoviSys – Your Digital Transformation Partner

Bryan DeBois

AVEVA

Who am I?

Bryan DeBois

Director, Industrial Artificial Intelligence

RoviSys

- 20 years working in Manufacturing and Industrial
- Implemented projects across MES, Historian, Level 3, and Information Solutions for customers
- Currently consulting on customer's AI, Machine Learning (ML), and advanced analytics strategies
- Microsoft Autonomous Systems Solution Architect
- B.S. in Computer Science from the University of Akron



S-95 Capabilities

4

Business Planning & Logistics



3

Manufacturing Operations & Controls



0,1,2

Controls Equipment & Devices

- Batch
- Continuous
- Discrete

Interface to ERP – Level 4

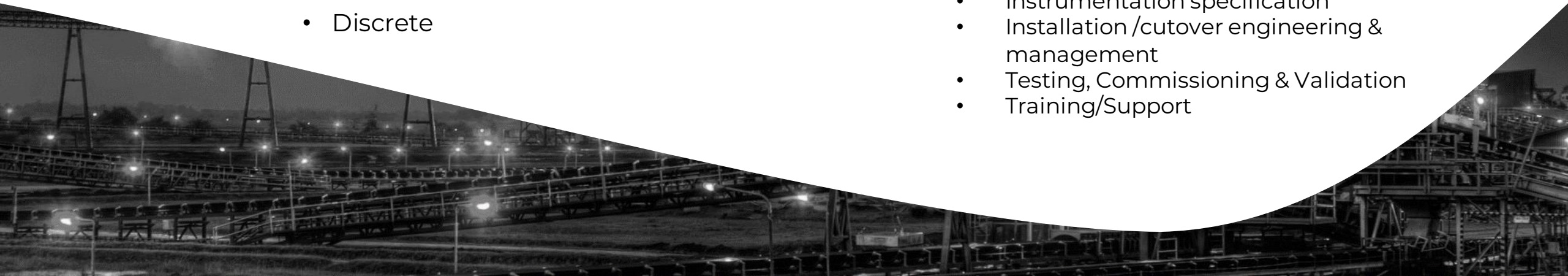
- Production Schedule
- Production from Plan, Inventory update
- Production capability, performance and cost

Information Solutions – Level 3

- Production Management
- Performance Analysis
- Quality Management
- AI/ML, Analytics
- Performance Analysis – OEE, KPIs, Downtime
- Alarm management
- Real-time quality systems SPC/SQC/LIMS
- Document control, Electronic Batch Records

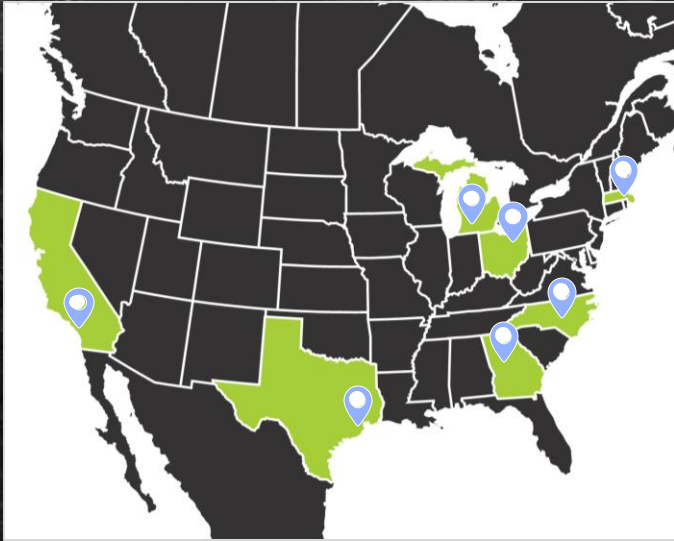
Automation / Process Control – Level 0, 1, 2

- Automation planning and design
- Continuous & S88 batch control integration
- Electrical and Network Design
- Instrumentation specification
- Installation /cutover engineering & management
- Testing, Commissioning & Validation
- Training/Support



Globally Located

North America



- Aurora, OH
- Holly Springs, NC
- Southborough, MA
- Atlanta, GA

- Houston TX
- Thousand Oaks, CA
- Kalamazoo, MI

Europe



Netherlands

Asia Pacific



Singapore | Taiwan | Indonesia | Malaysia



12

Locations



1000+

Employees



\$200MM+

Revenue

2022 Control Engineering SI Giants by FY2021 SI Value Add Revenue

2022 RANK	FIRM NAME	TOTAL SI REVENUE (USD)	TOTAL GROSS REVENUE (USD)
1	Rovisys	\$216,500,000	\$262,000,000
2	Andritz	\$208,509,722	\$7,444,000,000
3	Fori Automation Inc.	\$167,000,000	\$167,000,000
4	Wunderlich-Malec Engineering	\$144,390,000	\$159,112,000
5	Prime Controls	\$112,139,536	\$123,911,089
6	Quad Plus LLC	\$106,000,000	\$106,000,000
7	E Technologies Group Inc.	\$90,000,000	\$90,000,000
8	Thermo Systems LLC	\$80,031,000	\$93,400,000
9	Tesco Controls Inc.	\$71,523,000	\$100,003,000
10	JMP Solutions	\$65,500,000	\$106,200,000

Industries We Serve



Chemicals



Consumer Goods



Data Centers



District Energy



Glass



Life Sciences



Metals & Mining



Utilities



Oil & Gas



Water & Wastewater



Paper & Wood



Discrete Manufacturing

Capabilities



Industrial Artificial Intelligence (AI)



Manufacturing Execution Systems (MES)



Systems Integration



Industrial Networking

OSIsoft Experience



LONG HISTORY

First integration firm to install OSIsoft PI v3.0 in 1990



EXTENSIVE PROJECT EXPERIENCE

More than 850 projects executed over last 5 years



OSIsoft ACCREDITED ENGINEERS ON STAFF

90+ Engineers training on PI Platform, 25+ have completed OSIsoft's rigorous certification process



SELECT PARTNER STATUS

First partner recognized with Select status. SI & OEM designations.



CONFIGURATION TO CUSTOM

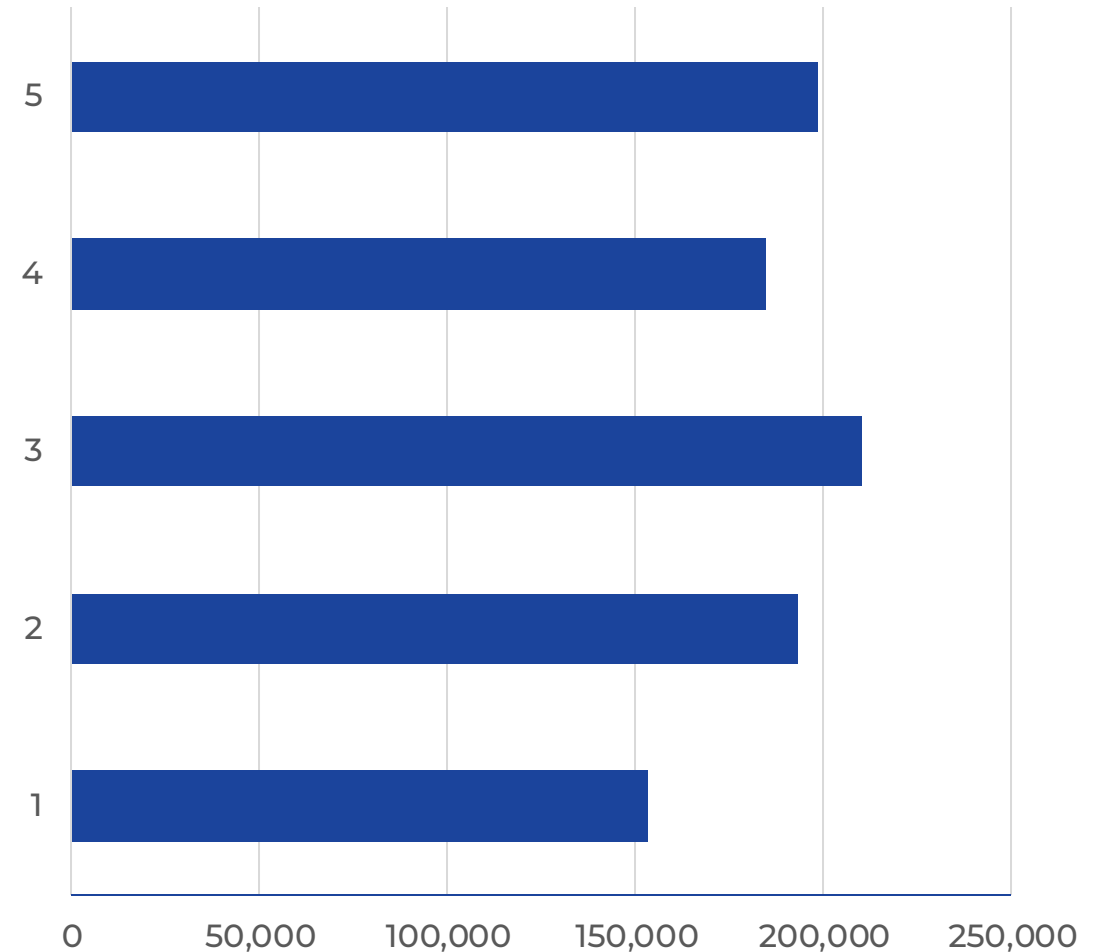
Design and deploy systems from Hundreds to Millions of tags; capable of extending functionality via Data Access tools.



OSIsoft
Select Partner



Project Hours



AVEVA

Aveva Experience



ENDORSED DISTINCTION

One of only nine CSIA Certified, Endorsed Partners in the US



CERTIFIED STAFF

AVEVA System Platform, Historian, Application Server, InTouch



DIVERSE APPLICATIONS

Batch Control, Continuous Control, Instrumentation, Process Visualization, SCADA, and Legacy Migration



EXTENSIVE PROJECT EXPERIENCE

More than 150 projects executed over last 5 years



BROAD PLATFORM KNOWLEDGE

Implemented Wonderware solutions ranging from standalone InTouch to 60k+ tag System Platform Architectures

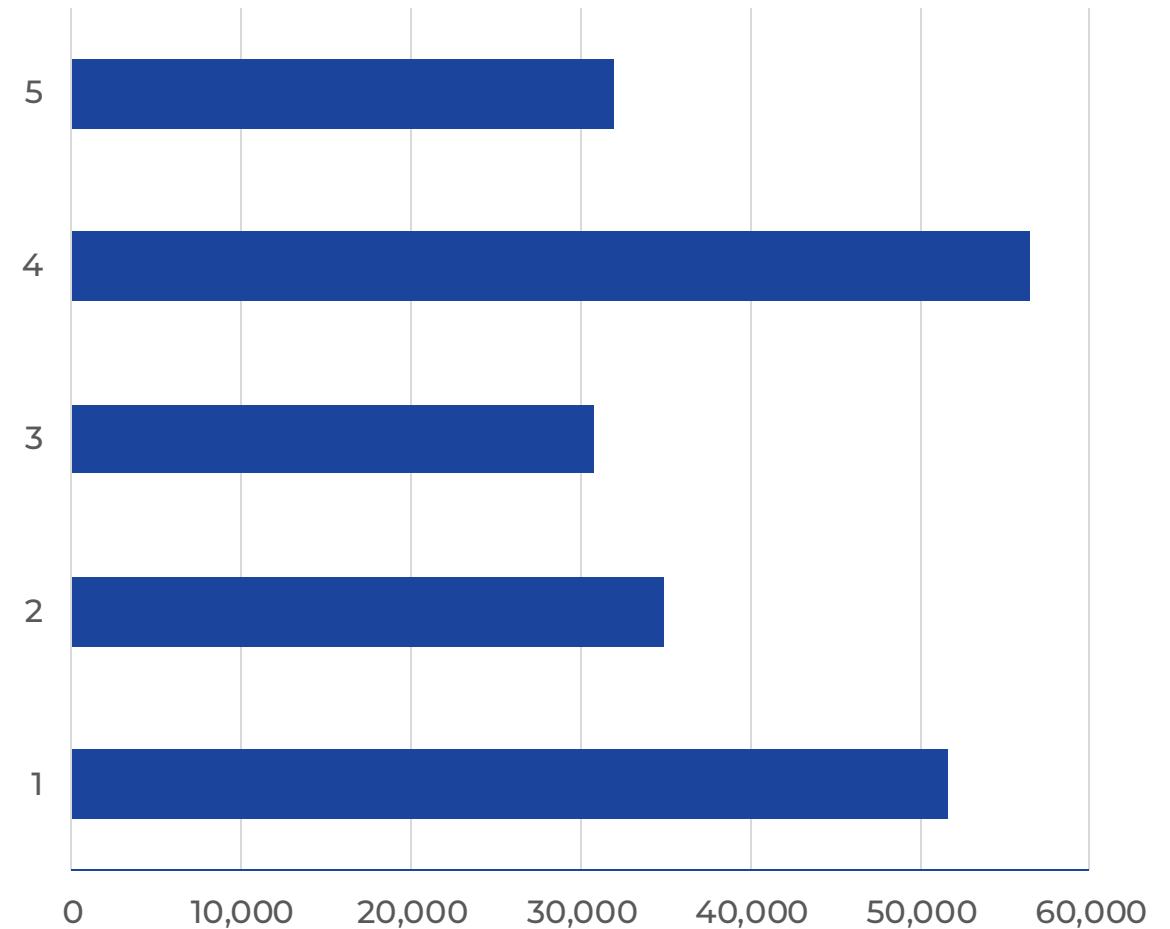


AVEVA

ENDORSED
System
Integrator

Endorsed Operate

Project Hours



	How Can Digital Transformation Help Us?	Ready For Assessment	Execute Assessment	Ready To Start Phase One	Executing Phase One
Criteria	Desire to learn how Digital Transformation (DT) can improve your business	Do you have: <ul style="list-style-type: none"> • Data collection • Historian • OEE • Controls • MES 	Purchased Digital Transformation Project Assessment	Proposal for Digital Transformation Project	Purchased Proposal for Digital Transformation Project
What Can RoviSys Do for You?	Digital Transformation Workshop	<ul style="list-style-type: none"> • Prepare you for the Assessment • Propose DT Project Assessment 	Create DT Project assessment: <ul style="list-style-type: none"> • Requirements • Data Sources • Define processes • Improvements/KPIs • Identify ROI • Evaluate vendors 	<ul style="list-style-type: none"> • Review Digital Transformation Project Proposal • Identify key workstreams and personnel for implementation 	<ul style="list-style-type: none"> • Kickoff with project team • Execute project based on battle tested methodology
Your Next Steps	<ul style="list-style-type: none"> • Identify key projects • Identify key stakeholders 	<ul style="list-style-type: none"> • Determine goals for DT Project • Purchase the DT Project Assessment 	<ul style="list-style-type: none"> • Review the DT Project assessment with RoviSys • Establish your priorities for implementation 	<ul style="list-style-type: none"> • Purchase proposed Digital Transformation Project from RoviSys 	<ul style="list-style-type: none"> • Prioritize list of expansions and ongoing phases

Enterprise-Wide Digital Transformation

- Challenge
 - How to stay competitive in a commodity market
- Solution
 - Implement an enterprise-wide data historian with heavy use of dashboards
 - Leverage a cloud-based predictive analytics service for rotating equipment to anticipate failures
 - Built a real-time command center for enterprise-wide collaboration
- Benefits
 - First year savings over \$25 million (EBITDA)
 - One year payback on their \$20-25 million investment
 - Improved asset reliability, gas plant operation, & division coordination

The Integrated Collaboration Center (ICC)

Business Transformation In Action: Operations of the Future - Now



Use case presented at OSIsoft PI World

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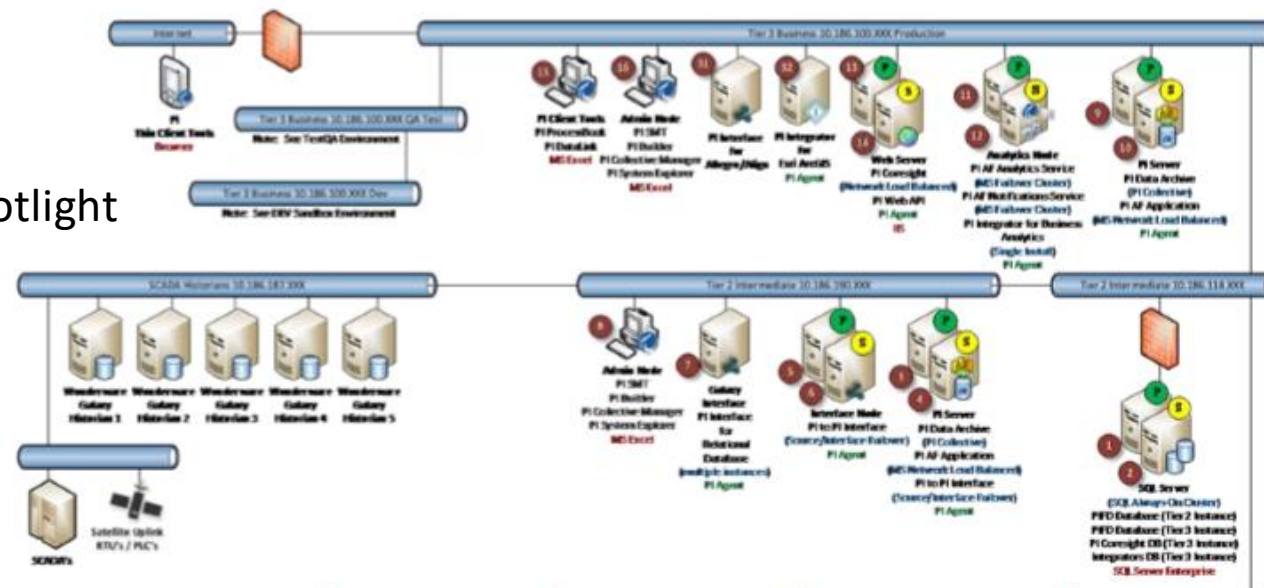
Enterprise Data Platform



PI System Infrastructure:

- 4 PI Data Archives +580,000 tags
- +100 Interface Instances
- PI AF +8,200 elements
- PI Vision:
 - Plant Overview/KPI Screens
 - Compression Health Monitoring Screens
 - System Overview/KPI Screens

WindRock Spotlight

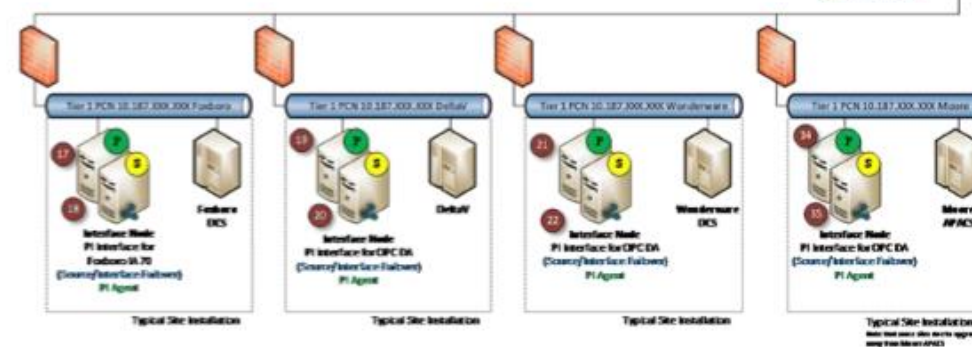


Templates:

- +325 PI AF Templates
- +55 Event Frames
- +90 Notifications
- +900 Analytic Templates
 - +103,000 analyses running

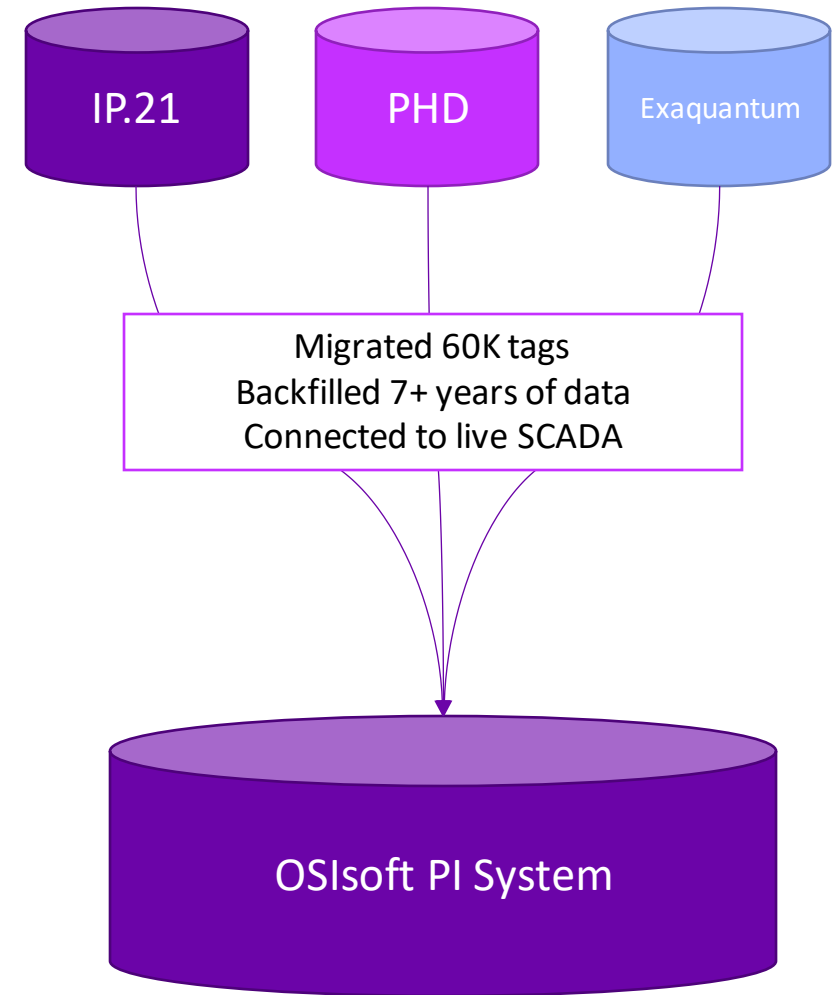
System Integration:

- SCADA
- WinFlow
- Maximo
- Azure & PI Cloud Connect



Historian Migration

- Challenge
 - Major refining company had multiple historians and needed to standardize on one platform
 - Each historian had 7+ years of data, and 20K+ tags
- Solution
 - RoviSys migrated all historical data from AspenTech IP.21, Honeywell PHD, and Yokogawa Exaquantum
 - Created 60K+ tags in OSIsoft PI, backfilled all data, and wired up to SCADA system for live data
 - Built asset hierarchy in PI AF to represent hundreds of refining assets
- Benefits
 - Standardized on a single historian platform across the entire enterprise
 - Created a common OT data infrastructure, organized by asset, for accessing process data anywhere in the organization
 - Eliminated ongoing licensing costs for other historian platforms



Food Packaging Company

- **Challenge**
 - Increase first-pass yield on plastic cups in a sold-out industry
- **Solution**
 - Implement a comprehensive data historian
 - Connect historian to analytics platform
 - Leveraged OEE to increase transparency
- **Benefits**
 - Overall gains of \$10M incremental revenue annually
 - Shipments per shift increased
 - Adjusted to optimal line speeds, which improved Availability and Quality



Food Packaging Company

Learning with Analytics

- Logs showed the operators were consistently reducing line speed
 - Management: “Why are they are slowing it down?!”
- Data Scientist Analysis
 - Production volume is higher when line faster
 - *But* rework/scrap also higher
 - Net shippable product optimal at slower rates
 - And, **DOWNTIME WAS SIGNIFICANTLY REDUCED**



Food Packaging Company

Learning with Analytics

- Use of regrind
 - You need some regrind in the mix, but too much significantly impacts quality
 - Percent regrind operators were using in batch blend changed based on 'availability' of regrind
 - Worse production → more rework → more regrind available → more regrind used → even more rework
 - All of this was there, in Batch Logs, but had not been analyzed
- Tightening the range of regrind used increased on-spec production
 - Analytics identified acceptable range
- OEE better first pass now, with less rework/regrind



Major Aluminum Wheel Company

- Challenge

- Lots of ideas for improvement, but no way to justify the cost, or anticipate the ROI
- Needed OEE to show where improvement dollars should be spent

- Solution

- Implement OSIsoft PI System with a custom web portal
- Integrate multiple sources of data into a single pane of glass

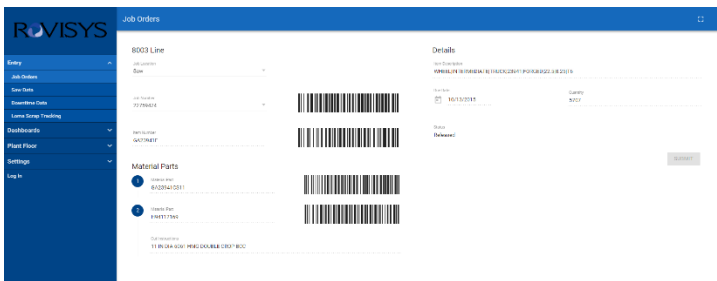
- Benefits

- Increased efficiency and effectiveness of continuous improvement efforts
- Enabled a transition to data-driven culture
- Reduced scrap rate by 2%
- 1 Year Actual ROI (2 Year Planned)
- Millions in ongoing savings

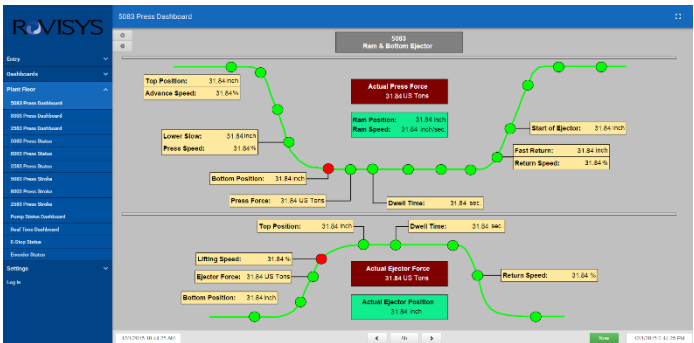


Major Aluminum Wheel Company

Job is downloaded from ERP system



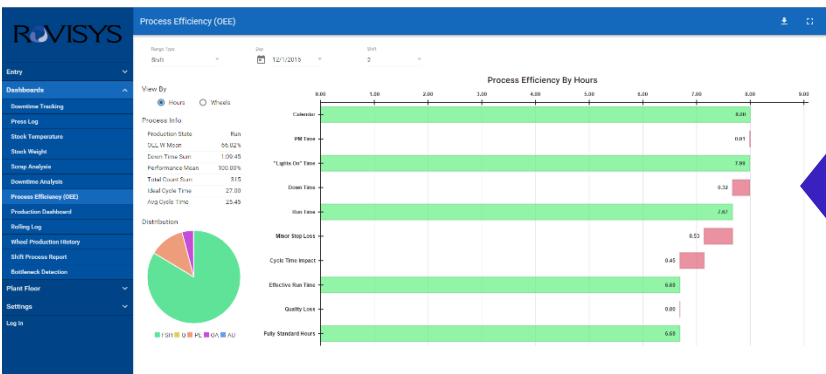
Press is operated, process data is captured



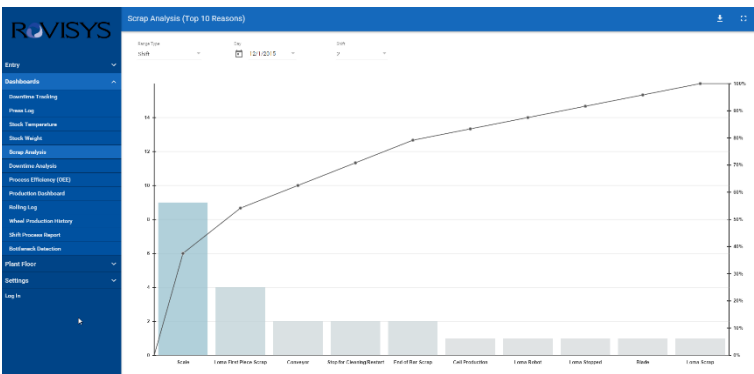
Downtime is automatically identified by the system



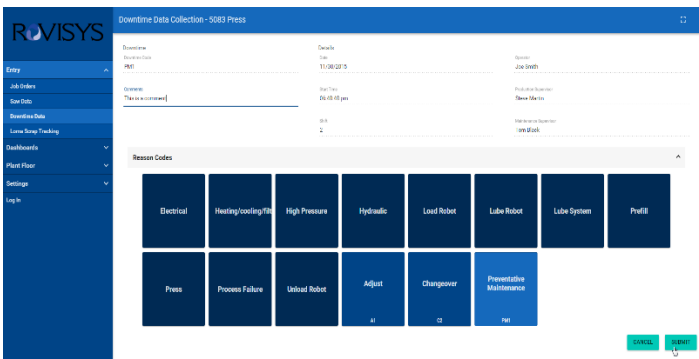
Dashboard reveals lost production time and OEE metrics



Pareto shows most frequent causes of downtime



Operators classify downtime reasons



Major Natural Gas Pipeline Company

- Challenge

- Major asset failures caused two system outages with severe liability consequences

- Solution

- Implement a data historian with an asset web portal
- All critical assets are available to view at a site and equipment level, including real-time statistics and predictive analytics
- Deployed executive dashboards

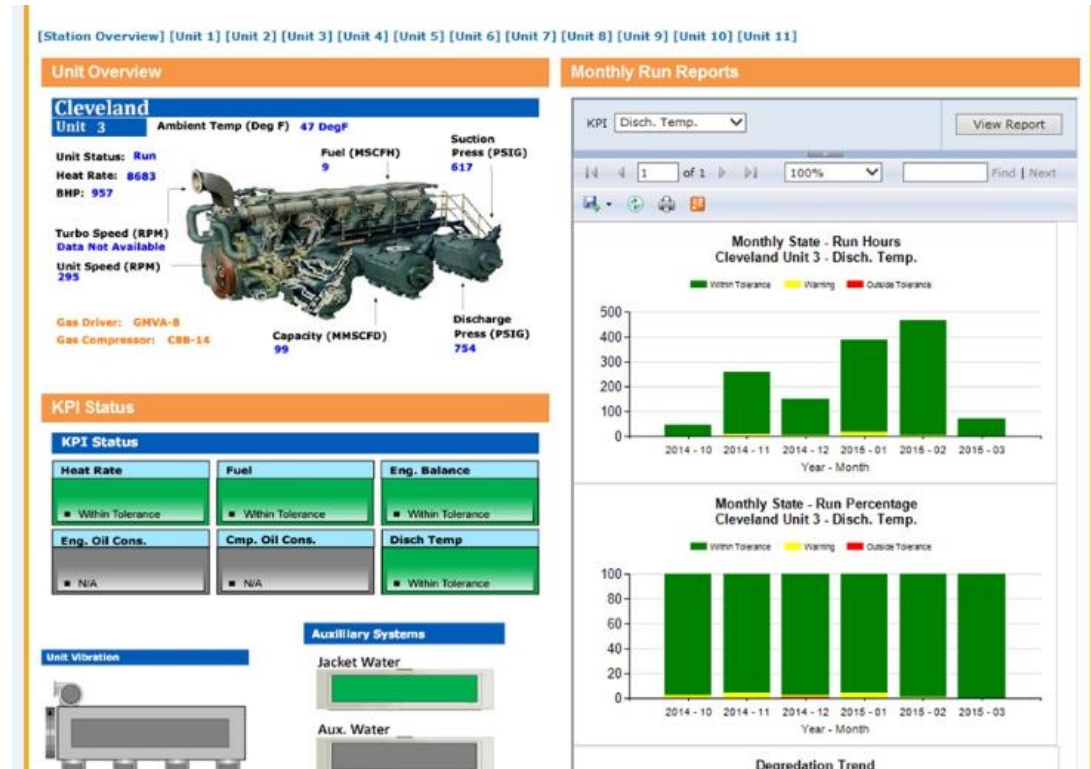
- Benefits

- Went from 80% uptime to **99.5%** uptime
- Reduced annual maintenance costs by \$2.3 million
- When 2019 Polar Vortex hit, no major downtime events occurred
- Increased customer confidence



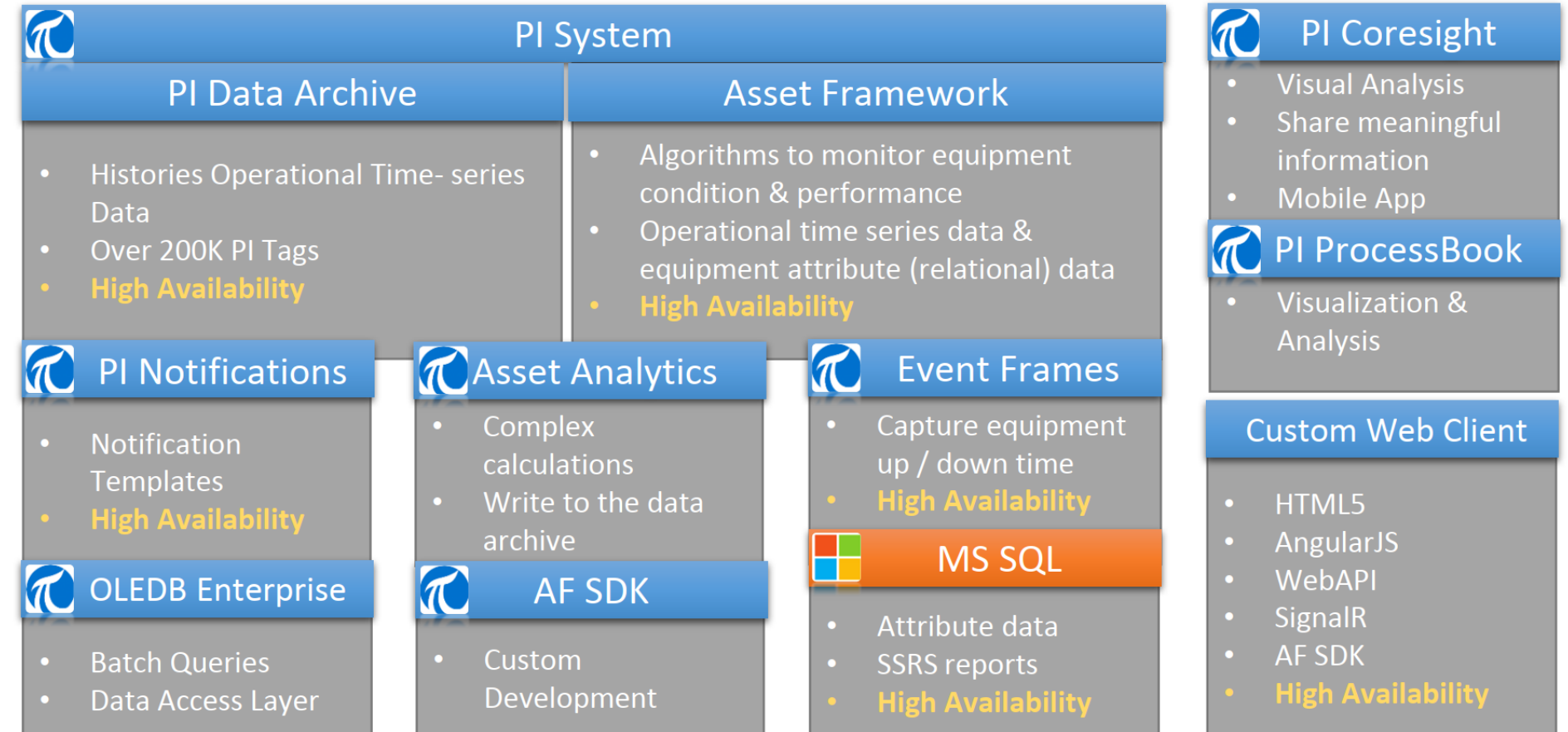
Asset Web Portal

- 15k miles of pipeline, 16 states, over 400 units
- Compressor Station availability and downtime
- Enterprise wide information system
- Developed real-time analytics
- Extended to Measurement and Metering
- Measurement Reliability, Tariff Compliance, Lost and Unaccounted Gas



Asset Web Portal

Suite of Tools



Multinational Methanol Catalyst Company

- Challenge

- Availability of assets significantly affected by downtime
- Could not connect downtime to asset responsible

- Solution

- Created an AF hierarchy to mirror the SAP PM asset hierarchy
- Implemented downtime monitoring in OSIsoft PI System to capture line downtime
- Trained operators to associate responsible unit to downtime, as well as choose the correct reason code

- Benefits

- Standardized the process of downtime tracking
- Eliminated manual data recording
- Allowed pareto reporting on assets with biggest impact on downtime



Multinational Methanol Catalyst Company

- Leveraged out of the box PI System
 - Used PI System Explorer to prompt operators for detailed information on the downtime
 - Used PI Event Frames for Downtime, and PI Asset Framework (AF) for Asset Hierarchy and Reason Code Tree
- Replaced several manual paper processes
 - Previously, results were inconsistent
 - Downtime was not being associated with responsible asset
- Planned global rollout
 - Currently getting buy-in from other plants to roll this solution out globally

TK Downtime Ex 05/08/2020 08:24:00

General Child Event Frames Referenced Elements Attributes

Filter

Name	Value
00. Downtime Reason Code	0003 - Break down - equipment
01. Equipment	L201, Drying Furnace
02. Component	Cooling Air Blower L201 L201-3
03. Description	Motor Failure
04. Other Description	N/A



Specialty Polymer Company

- Challenge

- Scale out a home-grown OEE and Data Acquisition (DAQ) system
- Create Power BI visualization incorporating data from OEE/DAQ system, PI System, as well as Dynamics AX (ERP) data

- Solution

- Managed the build-out of four PLC panels to scale out the existing OEE/DAQ system
- Re-implemented the OEE/DAQ system on the Wonderware platform
- Provided Power BI consulting and implementation services

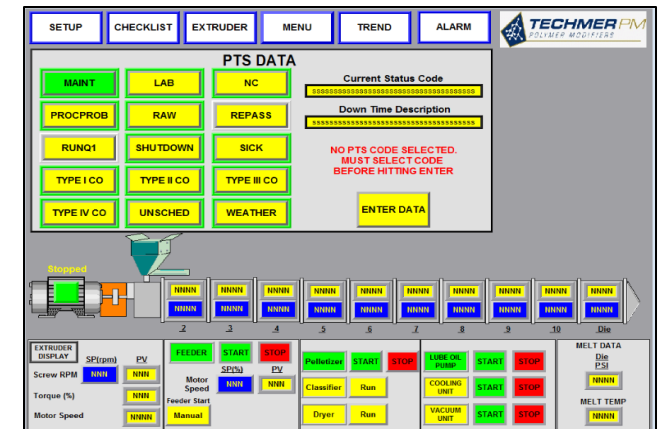
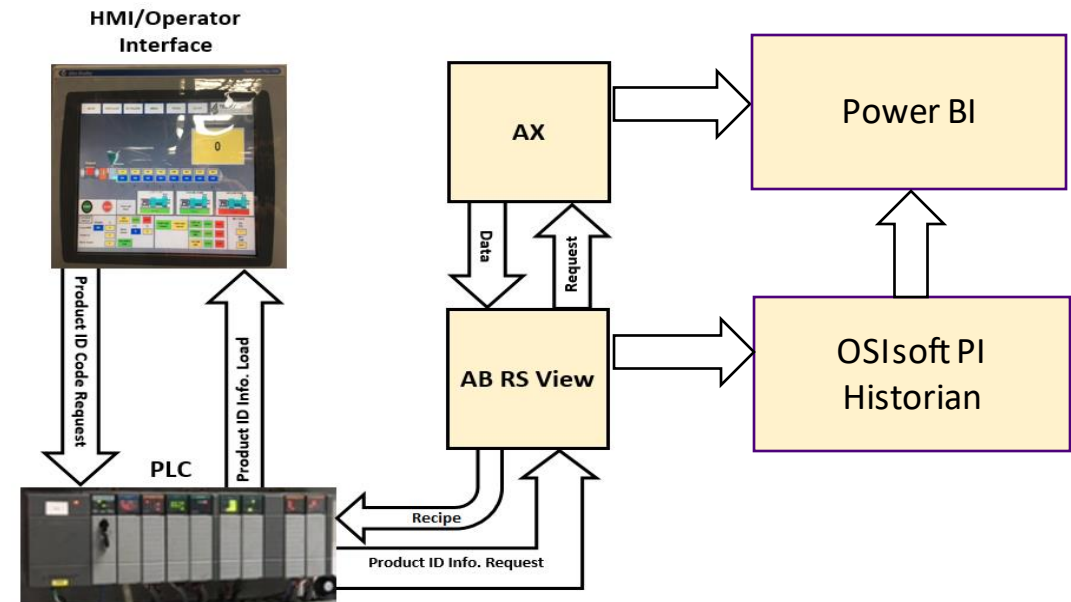
- Benefits

- Scaled out line visibility to four additional lines
- Comprehensive Power BI reports, covering line operations as well as raw material costs

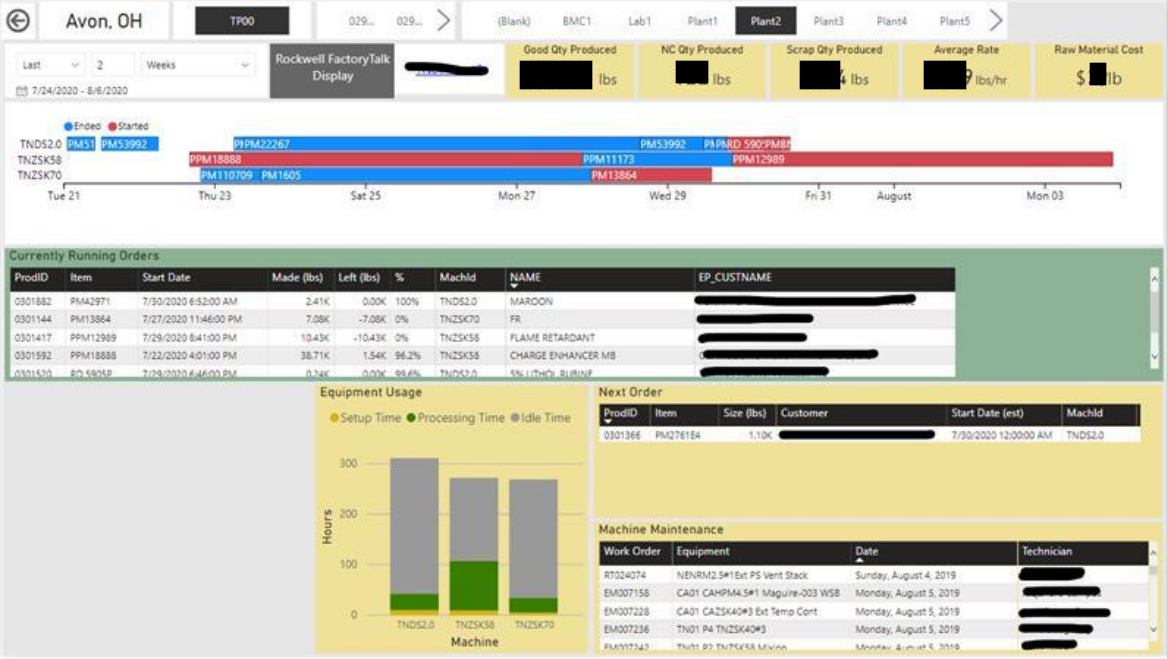
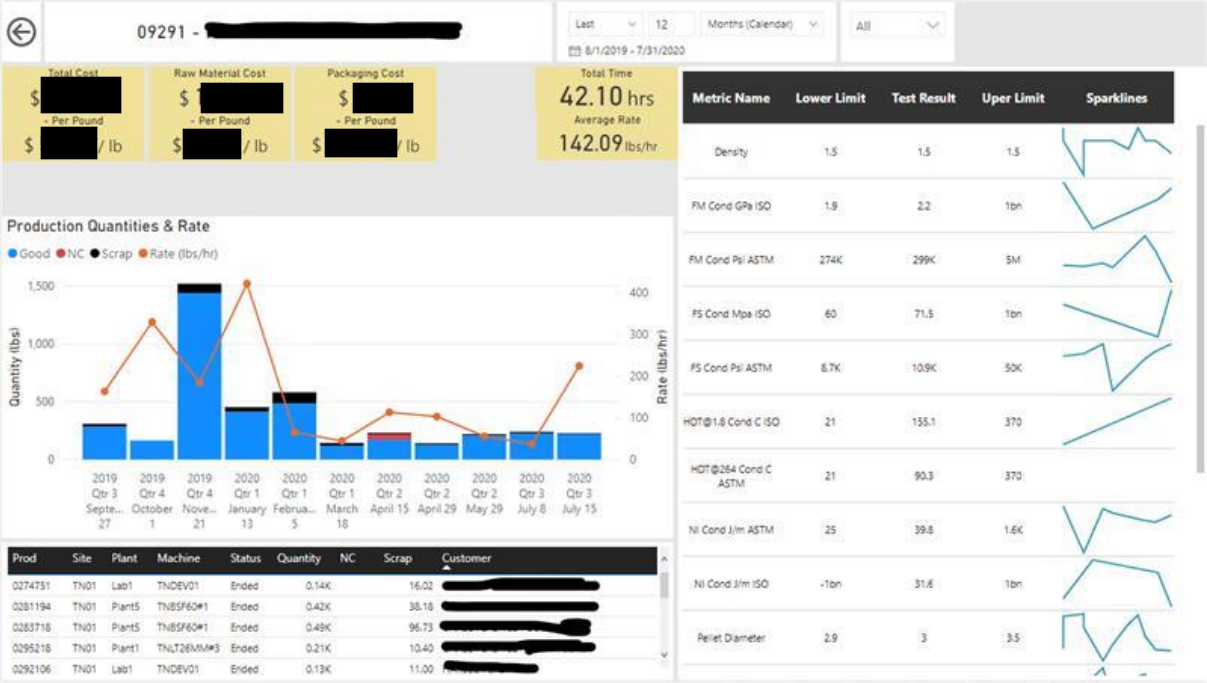


Specialty Polymer Company

- Unique architecture
 - Built on top of standard control system and HMI
 - Long-term data stored in OSIsoft PI System
- ERP Integration
 - Pulled Recipe data from Microsoft Dynamics AX
 - Used for loading in batch parameters to dynamically assess OEE based on the product being run
- Power BI Reporting
 - All reporting done with Power BI
 - Combines ERP, OEE, Recipe, and Production data in its reports
 - Provides a complete picture of costs associated with a batch



Specialty Polymer Company



What questions do you have?



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