

address:
Contact:

Jacobs

Challenging today.
Reinventing tomorrow.



Intelligent O&M

Introducing Intelligent O&M, a powerful blending of Jacobs' water subject matter expertise in operations, design and data science, with Palantir's Foundry platform and user interface, to provide direct and predictive guidance to frontline O&M staff.

When site staff operators in the field are bombarded with noisy Supervisory Control and Data Acquisition (SCADA) systems and information overload, it's incredibly difficult to distil actionable insights, forcing operators to rely on gut-based, qualitative decision-making. Operators need innovative digital tools that make their lives simpler, not more complex. They need IT that's customized to their day-to-day workflow and actually works in the field.

With the Palantir Foundry platform and Jacobs' smart algorithms and wastewater process optimization tools such as Replica™, plant management and site staff are armed with the practical data science tools needed to conduct proactive, data-driven operations, maximizing performance and cost savings plant-wide.

Key benefits

- **Moves process control from reactive to proactive**
Predictive tools and algorithms that capture best practices to empower field staff to act ahead of the need.
- **Tremendous efficiency and cost savings**
As an example, we are anticipating an average savings of 10-20% on blower power from our existing case studies.
- **Broad acceptance by O&M staff**
Technology adoption can be challenging, but the user interface makes it simple. This

is NOT another dashboard at a computer screen, but a direct recommendation to field staff to their smart phones or tablets providing actionable insights and specific instructions throughout their shift.

- **Cyber secure**
Data ingestion, monitoring and user interfaces are all secured through Palantir's industry-leading United States Department of Defense Level 6 security features and connector protocols, and "air gapped" at the user level.

Sophisticated Analysis Made Simple

Palantir takes data from all our different sources and translates it into easy-to-understand recommendations for process improvements. Specifically, the software follows the steps on a side:

- **Data Integration** – Integration via data connectors from sensors, SCADA, maintenance, lab and ERP Data.
- **Ontology** – The DataStream is cleaned and transformed into standardized easily interpretable data models called an ontology.
- **Jacobs Smart Algorithms** – Data Streams then run through process model to make real time predictions.
- **Emails / SMS** – Predictions compared against compliance levels and converted to easy-to-understand emails or texts.
- **Real World Performance Data** – Operator able to reject recommendation and provide feedback for process engineer to review.

Single Control Layer to Improve Operations

- Oracle Financials
- Maintenance Data from CMMS
- Lab Data
- SCADA Information

What is the benefit for Plant Staff?

Palantir Gives the Opportunity to alleviate several Pinch Points in the Industry

Power Consumption, Chemical Consumption, and Maintenance Management are water/wastewater O&M pinch points that are a focus of Palantir optimization.

Power / Chemical Use Case

- Historical SCADA data with a lot of valuable data without a use. Palantir takes historical and real time data to analyze and portray in a useful matter for process optimization.

- Push notifications to field staff via a mobile / tablet view with real-time updates in the field.
 - Our case study site has resulted in savings of approximately \$300k/year in power
- ### Maintenance Planner/Scheduler Use Case
- Palantir takes what was a lengthy and time consuming 150 – 200 pages of workflow mapping and uses an algorithm to turn it into a best practice planner and scheduler model.

- This takes a variety of factors into account including employee availability, parts availability, budget information etc. to efficiently plan maintenance activities that maximize our employees and asset capabilities and time.
- Better scheduling allows for improvements in KPIs which reduce costs. The graph below shows our current maintenance performance in the red line with Palantir optimized maintenance performance in blue resulting in essentially doubling the performance of our KPIs.

Water O&M Pinch Points

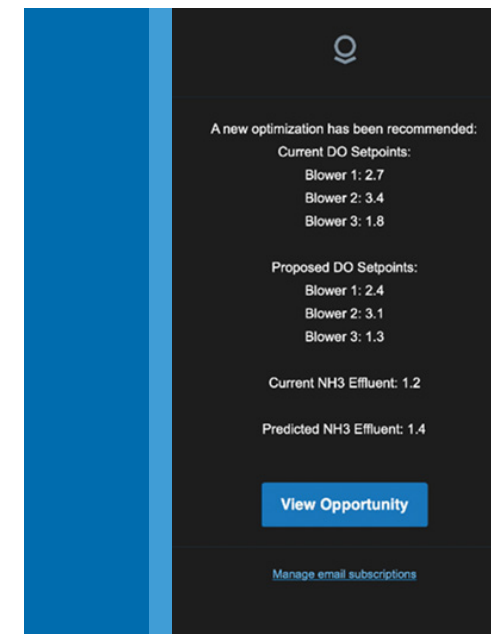
- Power Consumption
- Carbon Footprint
- Chemical Consumption
- Maintenance Management
- Labor Availability
- Regulatory Compliance
- Cyber Security

Case Study – Agua Nueva

Recommendations can be customized to be most effective and convenient for specific site operators. For example, recommendations at Agua Nueva were specifically set notifications during their two daily meetings so they could review and then make the suggested recommendations soon after. Blowers are biggest energy users at Agua Nueva as with most sites and Palantir was able to find ability to reduce DO. By being able to lower the

DO, they're able to reduce electricity which resulted in 20% plantwide power savings. This was possible by analyzing the data housed in Foundry which does complex analysis on large amounts of data and displays recommendations in an easy-to-understand format. Operations Manager are also able to communicate with Palantir Data Analysts to discuss when something doesn't look right and have it properly adjusted.

- 20% Plant-Wide Power Savings
- Eliminated Operational Fines
- Reduced Greenhouse Gas Emissions



Black = Official Start Date of Roll Out 5/13/2022
Purple = Start Date of Email Notifications 6/21/2022

