**ANALYTICS**

# Billion data points optimize uptime

Electronics production specialist deploys Qlik
to increase efficiency, quality and uptime

Qlik Q

Arch Systems

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## Domain specific solutions for manufacturers

The proliferation of computers, smartphones and similar electronic devices is a defining trend of recent decades and the industry-responsible manufacturing of these ubiquitous and constantly evolving devices is highly competitive. Margins tend to be low but volumes are high and even small improvements to minor processes can multiply into valuable financial results. The factories are also typically complex environments, where isolating issues with specific machines or processes can be a slow and difficult task.

Although only active for a few years, Arch Systems has built a formidable reputation for its ability to work with electronics manufacturers. Its mission is to optimize factory-floor manufacturing processes by combining experience acquired over several decades with levels of analysis that have only been realistically available in recent years.

"We are not just a generic analytics team or AI company," Tim Burke, Co-Founder and CTO at Arch Systems explains. "We deeply understand the problems that go on in factories, so we provide tailored domain-specific apps and solutions that solve the deepest-felt needs of our manufacturing customers."

## Seeking a more dynamic solution

Process optimization is a long-established discipline, but it has been transformed by the capabilities offered by cloud computing and new volumes of data produced by production-line equipment. This is the space in which Arch Systems specializes. Clients install its SaaS product in their manufacturing locations, which then connects to a range of different data sources.

### Solution Overview

**Customer Name**
Arch Systems

**Industry**
Manufacturing

**Geography**
Palo Alto, California

**Function**
IT, Supply Chain Management

**Business Value Driver**
Reimagined Processes

**Challenges**
- Increase efficiency and uptime at electronics factories
- Acquire data from various types of factory floor equipment
- Enable dynamic presentation of high volumes of complex analysis

**Solution**
Arch Systems incorporated Qlik Sense® into its specialist applications to handle granular analysis and data exploration for electronics factories.

**Results**
- Improved fault diagnosis generates increased uptime from high-value machinery
- Optimized processes reduce defects and raise production quality and output
- High-level analysis informs critical strategic decisions on capital investment

"It can be advanced inspection and assembly equipment or million-dollar pieces of robotic technology," says Burke. "We pull in all the information, so we're getting this giant flood of data, like a plane's black box sitting in factories that records everything that's happening. That data is then copied and sent securely to our secure cloud-based tool."

Arch Systems now works with around 60 different factories and connects to around 10,000 pieces of equipment worldwide. Gaining this level of penetration would once have involved an in-person presence at each location and limits to the volumes of data being processed, but Burke realized that using cloud-based platforms would solve both these problems.

Increased access to high-volume datasets, however, created another issue. When Arch Systems began operations, it generated and presented reports using HTML, spreadsheets and PDF files. This worked well for a while, but Burke saw that it wasn't sustainable.

"As our models became more complicated, the results couldn't fit into a report. There was too much advice; we needed it to be more dynamic," he recalls. "Other tools we were using for live dashboards didn't have the ability to use a derived data set. As we started building more analytical models, we needed a partner to provide the vehicle for us to build and deliver those. That's how we found Qlik."

## A secure route to the cloud

Arch Systems places high demands on its apps and processes, including the elements supplied by Qlik Sense. The business ingests around a billion data points each day from a mix of legacy and modern factory equipment which feed into its analysis apps. Dealing with high volumes is just the start.

"We were looking for a system that would allow an expert user who knew what problem they were trying to solve – not an IT person – to very quickly explore these tailored data sets that our models produce," says Burke. "We wanted them to be able to discover relationships and add in their own expertise."

Other key aspects of Qlik that initially attracted Burke included its high-speed in-app filtering capabilities and that each Qlik app stands as its own separate application with an embedded database.

"Each of our models needs its own data schema." Burke adds. "Qlik's embedded database fits very well with what we do there. We just create the loading script, write the environment, create the computation model, modularize them and have a bunch of apps running in parallel without a lot of infrastructure needs on our side."

With client data security a critical requirement for Arch Systems, Qlik's security and tenant capabilities were another important consideration.

"For many clients, they're going to a cloud-based environment for the first time with us, and especially with some of their manufacturing data, so everything we do is supported by Qlik's isolated tenant deployment approach," says Burke. "Each customer has their own Qlik tenant environment so everything is kept fully separate. Everyone can feel confident about going to the cloud securely."

## Smooth, uninterrupted production

With Qlik acting as a key component, the apps and insights that Arch Systems provides now give factories around the world a granular view of their operations – and these are essential insights that maximize uptime. Understanding why machines break down means they can be fixed and brought back online more quickly, while the ability to identify potential issues is essential in keeping production flows smooth and uninterrupted.

"This became particularly important in the supply chain crunch during the pandemic," notes Burke. "Running out of even a low-cost component means you can't run your line. Everything stops. Our analytics turned out to be particularly good at identifying those hotspots and bottlenecks."

Another area is production quality. In complex factory environments with 30 or more steps in a single assembly line, identifying the cause of a production defect can be complicated, time-consuming and costly.

"A lot of the ROI our customers get from us is using data to more efficiently track down root causes of issues," Burke adds. "Insights into uptime, attrition, material management and quality deliver real-time, tangible improvements to day-by-day factory operations. That's what success looks like for both us and the customer."

## Strategic benefits of data insights

There are higher-level deliverables too. Arch Systems can also inform decisions about purchases of new production machinery or how machines can be redistributed to handle increased capacity.

"Customers get a ton of value from our tools and Qlik at a more strategic level," Burke says. "They may have multiple billions of dollars' worth of capital assets in their factories, so it's vital that decisions are based on data as opposed to just gut feel or experiential or anecdotal processes."

It's this breadth of support that ensures high levels of customer loyalty for Arch Systems. There are clear short-term financial benefits from an operational perspective, but the ability of Arch Systems to continue to add value ensures longer-term advantages.

"Once a company starts working with us, they tend to stay for a long time because they see there's a roadmap," says Burke. "They could be getting more value from analytics and data that they're not currently ready for yet and we have the ability to impact a wide range of business decisions."

They're also the types of decisions that aren't limited to electronics factories. Burke sees Arch Systems expanding into similar factories with similar machinery but with a broader range of outputs.

"We've found that the same problems we're solving in the electronics industry are broadly held across all of discrete manufacturing," Burke says. "It'll be the same application, data collection and infrastructure, but with very different factories. And with Qlik, our platform is particularly suited to all of them."

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### The keys to success

**>1** billion data points handled daily

**10k** pieces of equipment connected worldwide

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## Qlik Q

### About Qlik

Qlik's vision is a data-literate world, where everyone can use data and analytics to improve decision-making and solve their most challenging problems. A private company, Qlik offers real-time data integration and analytics solutions, powered by Qlik Cloud, to close the gaps between data, insights and action. By transforming data into Active Intelligence, businesses can drive better decisions, improve revenue and profitability, and optimize customer relationships. Qlik serves more than 38,000 active customers in over 100 countries.

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