

Advanced Mobile Solutions

“We save valuable time with QI Analyst DB. Now, it’s easier for shop-floor operators – as well as supervisors and engineers – to analyze the process and report results. Today, we’re more productive and have cut our costs dramatically.”

– **Jaime Garate**
senior quality assurance manager
AMS

Situation

Calif.-based electronics manufacturer Advanced Mobile Systems (AMS) designs and creates equipment used in industrial, medical, hardware and telecommunications markets.

Critical issue

To increase production yield and improve communication throughout its international manufacturing operation, AMS needed to:

- Use historical data to assess process capability
- Identify the cause of scrap and reduce it
- Increase customer satisfaction levels
- Reduce staff time spent on ineffective spreadsheet analysis

Solution

With QI Analyst DB, AMS used real-time monitoring to identify and reduce variation within its production processes. In addition to increasing yield, AMS now deploys information to multiple departments in various locations – increasing internal communications and improving employee morale.

Results

- Saved \$1.2 million in five months by increasing production yield
- Reduced rework to under 2 percent from 8 percent
- Cut training time by two-thirds
- Increased communications between international locations

Good is never good enough for AMS. The electronics manufacturer’s quality assurance team works hard to exceed expectations. And its formula for success includes QI Analyst DB.

Within months of implementing it, Senior Quality Assurance manager Jaime Garate reported industry-leading clients such as Motorola and Ericsson were receiving products with the lowest rework percentage and the highest production yield in AMS’ history.

Recognized internationally, AMS designs and manufactures electronic power supplies for industrial controls, medical equipment, computers and telecommunications equipment, such as cigarette lighter adapters for cellular telephones. With an administration, design and research facility in Moraga, Calif., and a manufacturing plant in Tijuana, Mexico, AMS needed a system to establish real-time communication between locations while simultaneously improving quality. In turn, AMS chose to implement QI Analyst DB.

Saved \$1.2 million in five months by increasing production yield

To increase production yield, one of AMS’ challenges was improving constant voltage levels for a cigarette lighter adapter charger. First, Garate’s team used QI Analyst DB’s File Setup Wizard to organize files for analysis. Then, they entered historical data about the voltage specifications for the charger. Running SPC charts on that data, team members verified engineers had designed the constant voltage levels to be well-centered tightly around a target tolerance. But real-time process monitoring on the Tijuana shop floor revealed a variation with the voltage shifting below levels determined by design engineers. While within the customer’s parameters, these lower levels were not acceptable to AMS. Garate and his team set out return the charger to its specified level.

“We collected data for three months in a row,” Garate explained. “Then, we presented the information using charts and datasets from QI Analyst DB to

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the design engineers so they could troubleshoot.”

Engineers discovered a supplier had changed an SMD resistor, a tiny part soldered onto the PC board. The part had originally been developed to perform within +/-1 percent of their specified voltage tolerance. To cut costs, the supplier delivered a part that performed with +/-5 percent tolerance, but did not notify AMS. After pinpointing this variation with the help of QI Analyst DB, AMS acquired a resistor with the preferred +/-1 percent levels. This adjustment raised the production yield dramatically from 60 percent to 95 percent, saving the company nearly \$1.2 million in less than five months.

Reduced rework to under 2 percent

Another AMS goal was to reduce PC board defects. Typically, 8 percent of the boards produced were reworked. Using QI Analyst DB, the team set up a c chart in the wave soldering operation to monitor the defect rate per board.

By looking at assignable causes, engineers redesigned and tested the PC board layout until defects were reduced to fewer than 2 percent. The defect rate is now so infrequent customers receive top quality products – and none are returned.

Improved staff communications between departments also helped AMS integrate data to identify problems, such as the defect rate, and implement meaningful solutions. Using ODBC (open database connectivity), QI Analyst DB can read and write data from a central database. From Mexico, Garate shared data and analysis on the PC boards effortlessly with other departments. “I was very excited to implement this feature because before it was a pain in the neck to show this information.”

Previously, engineers, quality managers and others used various spreadsheet programs and other methods to build formulas. They might spend hours explaining how each person built a formula or came up with a calculation. Not the case with QI Analyst DB. “QI Analyst DB helps remove barriers between departments,” Garate said, adding that it gave AMS a common language for discussing formulas.

Today, engineers and quality managers alike use QI Analyst DB to look at the same SPC charts on their own desktops. As a result, they reach agreements more quickly and implement faster solutions. This has increased morale, and spread to the Tijuana shop floor, where Garate believes “AMS is giving responsibility and ownership to every member of the staff when – at any time – they can pop up the screen and look at the process.”

Cut training time by two-thirds

AMS believes in empowering employees with skills and information. This is easy with QI Analyst DB, since its ease of use reduced training time at AMS by more than 65 percent. The operations training program includes how to interpret the control chart and build it – not just enter data. If the supervisor has little time to train a new production operator, he can easily show how charts work with QI Analyst DB’s intuitive user interface.

Garate described one scenario: “I set the alarms feature to let the operator know when the process was four points out of control in a row. He loved being able to observe the process so easily on screen.” Even a novice operator could respond immediately to the alarms and make adjustments to the equipment. “Everybody feels more responsible for monitoring activities on the production floor and they have ownership for the quality output.”

Increased communications between international locations

AMS opened its Tijuana factory in 1997 and has operations in or planned for China, Korea and Brazil. With streamlined communication, QI Analyst DB links AMS quality teams worldwide.

“We can monitor our processes from multiple workstations in real time, which increases the communication between departments and locations at different levels, from top to bottom,” Garate said.

It’s this streamlined communication that supports AMS’ commitment to global quality – and its ongoing goal of exceeding customer expectations.

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