

B&B Airparts, Wichita, KS

Focused Competency Teams and Universal Quality Delivers Consistent Growth



Dan Barnard, Owner, B&B Airparts.

“We continue to grow by giving our customers more of what they are looking for, without compromising quality.”

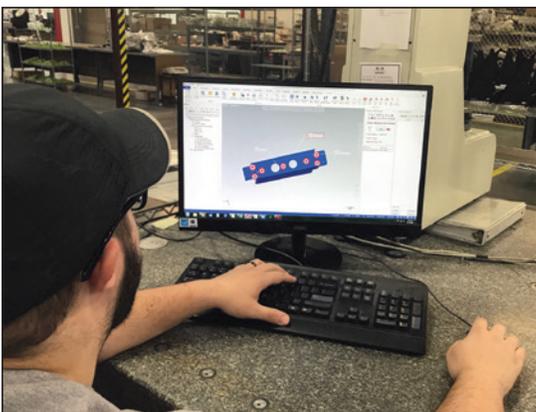
--Dan Barnard, Owner

Quality is a non-negotiable point in manufacturing, especially when it comes to aerospace and defense parts. Pretty much everything else is open for discussion, including price, delivery time, feature-set, additional processes, sub-assembly, final-assembly and overall completeness of the component in question. B&B Airparts has experienced 35% annual growth for the last four years by giving their customers more of what they are looking for, the whole part, without compromise. Universal quality is more than a goal at B&B Airparts, it is rooted in the fiber of the company and influences virtually every decision made. “Our philosophy is, competency breeds quality and verification of quality is the holy grail,” said Barnard.



B&B Airparts facility, Wichita, KS.

B & B Airparts has been in business for more than twenty years offering customers machining, sheet metal fabrication and assembly capabilities. “This broad approach served the company well for many years allowing us to quote on a diverse range of projects, but it wasn’t until three years ago that we truly recognized what we had and how we could use it to our advantage, and to the advantage of our customers,” said Barnard. What happened next positioned B&B Airparts for the future and has fueled the company’s growth to date.



Inspector reviews first article inspection plan for machined part.

In 2015 B&B Airparts had an all-hands strategy meeting. The purpose of the meeting was to help chart a course for the future of the company and to make sure there was overall agreement from the team. Some may say the resulting strategy was obvious, but the process raised important success factors, reinforced a sense of planning, and gained company-wide commitment; the results have been remarkable.

COMPETENCY CENTERS

B&B Airparts looked at their business through the eyes of the customer and quickly concluded that they reflect the service offerings of multiple businesses. The challenge became, how to develop each of these service areas into ‘best-in-class’ departments, capable of competing head-to-head with vertical focused companies that only provide that one service, exclusively? B&B Airparts arrived at four distinct service areas, including



28 Haas 3 and 5-axis milling and turning machines complement the B&B Airparts machining department.



Highspeed routing.



Mike Terrell, Quality Manager, B&B Airparts.

Blue Streak, which has realized the greatest percentage growth over the last three years. Blue Streak is a rapid development department that until defined was simply the company rallying its capabilities to do what the customer requested. Now Blue Streak has dedicated staff, it's own P&L and the resources to meet the customer's needs in rapid development, without taxing the workflow of other departments.

- **Machining** – 3,4, and 5-axis milling of simple to complex parts out of aluminum, and other alloys
- **Fabrication** – of sheet metal details to customer specifications and to support complex assemblies manufactured
- **Assembly** – from simple nut plate on a clip to an entire cockpit instrument panel with over 180 detail components or a machined pressure bulkhead assembly
- **Blue Streak** – comprehensive support for prototype development and rapid manufacturing needs

UNIVERSAL QUALITY

The resulting B&B Airparts business model follows a classic stovepipe strategy, where each competency area operates as a silo. This allows each service area to focused on being great at what they do. Under this model, shared company resource such as sales, marketing, administration and shipping/receiving help economize overhead, as do certain equipment assets. This is all well and good, but in manufacturing, nothing will get you fired by a customer quicker than poor quality. B&B Airparts made quality inspection and reporting an over-arching department, one that requires 100% inspection of all parts that go out the door. This was a positive move considering the importance of quality, but also presented the likelihood of the quality lab becoming a bottleneck.

Mike Terrell joined B&B Airparts as the Quality Manager in 2016 and was tasked with upgrading the quality department to 'keep up.' His priority was to assess the needs of each production competency center his department needed to support and ascertain what types of inspection workflow and equipment was needed. "The result of our initial assessment pointed to several inefficiencies in our quality workflow and utilization of measurement and inspection assets. For example, all inspection was being done strictly in the quality lab, which had already become a bottleneck, and the existing software was not able to support future functionality requirements, such as reverse engineering, assembly guidance, and best fit analysis. Adding additional software to get what we needed would require additional licensing, training, annual support and maintenance agreements, which would increase costs and further reduce efficiency," said Terrell.

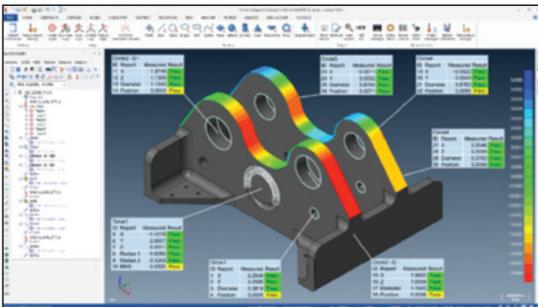
With more than twenty years of experience in quality management, Mike was able to quickly address his assessment with a list of requirements which were



Water jet cutting.



Hydro presses and break machines.



Verisurf inspection software reads in intelligent GD&T data, which can be edited, including adding additional annotations. Any deviation from nominal is presented in real-time during inspection using color mapping.



An inspector verifies quality of a part using Verisurf Software and a Romer portable CMM.

mostly software based. The reason being, measurement hardware is highly accurate and built to last, plus there are a lot of legacy device already in use; such was the case with B&B Airparts. “I wanted to implement an inspection and reporting strategy that was backwards compatible, but one that also supported future growth, enabling us to expand as needed,” said Terrell. B&B Airparts inspection and reporting requirements called for:

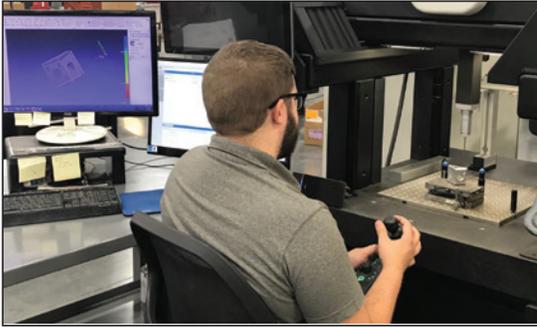
- A single measurement application software to drive all metrology processes for the company, including quality inspection and reporting, reverse engineering, and assembly guidance
- The solution must be capable of interfacing with and controlling all existing and future measurement hardware devices
- The software must be model-based on a CAD platform to allow flexibility in managing files, creating and executing model-based inspection
- The software must be able to import and allow annotation of intelligent GD&T data to aid the quality team in creating inspection routines
- Software must have the flexibility and embedded tools to handle a range of inspection data, from manual contact probing to non-contact point clouds
- Measurement hardware devices must include programmable CNC CMMs for automatic inspection, portable CMMs (contact probing and non-contact scanning capability) for first article and in-process inspection and reporting, and laser trackers for large part inspection and assembly guidance

VERISURF SOFTWARE WITH MODEL-BASED INSPECTION AND REPORTING

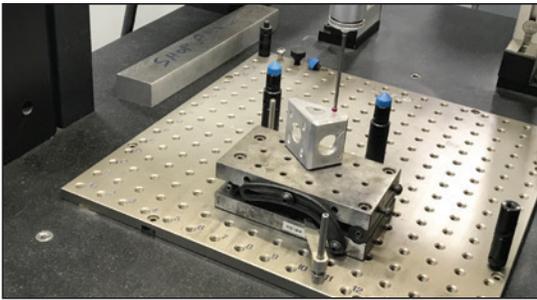
Verisurf Software was selected to support B&B Airparts quality inspection, reporting and overall metrology strategy due to its open CAD-based architecture and model-based capabilities. “Verisurf software serves as a common platform and communicates openly with any CAD file our customers send us, it also supports and drives all our measurement devices, in the quality lab or on the shop floor. This includes portable and fixed measuring devices as well as new and legacy equipment,” said Terrell.

VERISURF UNIVERSAL CMM

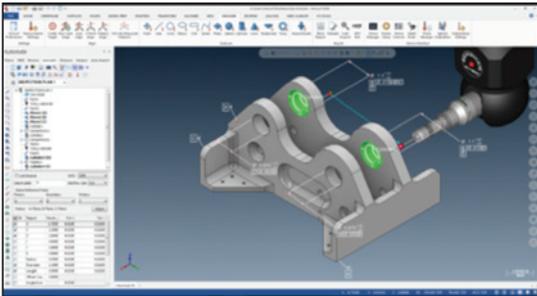
In order to truly provide a common platform, especially when it comes to non-compatible legacy hardware, the software must be able to provide a communications bridge. Universal CMM is a software-only solution that enables seamless communication between Verisurf AUTOMATE and popular CMMs and head controllers. This allows Verisurf Software to support and drive otherwise non-compatible legacy CMMs while adding additional productivity features found in AUTOMATE, such as quickly creating automatic inspection routines simply by clicking on the CAD features to be included in the inspection plan. Case in point, B&B Airparts



Verisurf Software running a Hexagon CMM through Verisurf Universal CMM.



Verisurf Universal CMM drives the CMM and head controllers, while utilizing the machine's original error mapping data. No software or hardware upgrades are necessary.



Universal CMM is part of the Verisurf AUTOMATE solution, which provides fast and easy, feature-based CMM programming. Note, the animated probe head view can be selected to show the movements of the CMM during inspection, in real-time.

utilizes a Hexagon CNC CMM for automatic inspection; Verisurf Universal CMM software provides an open standard communication protocol, allowing the continued use this legacy CMM while gaining the consistency of interface, operation and reporting with Verisurf.

Since implementing its common platform inspection, reporting and measurement strategy, B&B Airparts has doubled in size, adding people and equipment. The quality department now consists of ten quality inspectors, all trained on Verisurf Software, running a variety of fixed and portable measurement devices from Hexagon, Romer and Faro. "One of the main reasons we selected Verisurf was its ability to support all measurement devices and all CAD file formats. Our team now has the ability to select the right measuring device for each job, while realizing increased efficiency and reduced training, data management and support costs. Over the past three years, despite impressive company growth, the quality department has been able to keep up with production output, while maintaining 100% inspection. We have also seen a 30% increase in departmental efficiency through improved part movement, ease of use and consistency of platform."

ABOUT VERISURF

Verisurf Software, Inc. is a measurement solutions company, committed to delivering advanced reverse engineering, surface analysis, quality inspection and assembly guidance. Verisurf products and processes are vital to maintaining a digital thread between design, engineering, manufacturing, and finished part validation. Based on a powerful CAD platform, Verisurf is committed to digital Model-Based Definition (MBD), open standards, and interoperability with all coordinate measuring machines and CAD software. Verisurf solutions help manufacturers produce higher quality products in less time. You can learn more about Verisurf at www.verisurf.com.

ABOUT B&B AIRPARTS

B & B Airparts, Inc., is a privately-owned manufacturing company providing full machine, sheet metal and complex major assembly capabilities. B&B Airparts is ITAR Compliant, AS9100, and ISO Rev D certified. You can learn more about B&B Airparts at www.bbairparts.com.