



Retrofit Case Study 08/2012

Company: Electron Beam Processes

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Based close to the M3 and M25 in Woking, Surrey, [Electron Beam Processes Ltd \(EBP\)](#) is Europe's most experienced Electron Beam Welding (EBW) specialist. The company's years of experience and expertise within the application of EBW enables it to solve many of the production problems of its burgeoning customer base.

Raf Engley, EBP (Chief Inspector) explained, "Although a relatively mature technology, many people do not appreciate the technique's potential. In essence EBW is a pure fusion welding process that uses a focused beam of high-velocity electrons that is directed at the materials to be joined. Upon impact, the kinetic energy of the electrons is transformed into heat and the joining surfaces melt to form a weld. To prevent dissipation of the electron beam the process is carried out within vacuum conditions.

"The advantages of the process include the ability to Weld machined parts with minimum distortion. Even at High Speeds, the process delivers exceptional quality and repeatability. EBW is able to accommodate difficult and dissimilar materials, resulting in deep narrow welds that are close to Parent Metal strength. The efficiency of the EBW process results in reduced lead times, lower component weight and substantial cost savings."

Prompted by customer demand for total manufacturing solutions, over several years, EBP has considerably expanded its range of services and now provides a comprehensive design input and manufacturing service. The all-inclusive nature of EBP now includes the manufacturing and quality control of the whole production cycle from the development stage, through prototyping, and on to production.

The popularity of EBP's all-embracing services resulted in a 25% growth in turnover in 2011, with similar results anticipated this year. To help keep-pace with growing demand the company made a recent large investment in additional Multi-axis CNC machining centres and mindful of the company's quality ethos – an advanced [Axiom CMM from Aberlink Innovative Metrology](#).

Raf Engley continued "As the quality of our output is of paramount importance to us, we make regular investments in the best available material testing and quality control equipment. A couple of years ago, in an effort to improve the efficiency of our DEA Swift CMM, we had demonstrations of retrofittable CMM software from several providers. Eventually we purchased [Aberlink's easy to use 3D software](#), as it gave us all of the enhanced features that we required. Not only did Aberlink's software improve our measuring capability, its ease of use enabled our skilled machine operators to check their own work.

"So impressed where we by the CMM software and the excellent service provided by Aberlink, when the need recently arose for an additional CMM, our decision were a very easy one. We purchased the CNC version of Aberlink's popular Axiom too CMM. "Now in regular use, the speed and accuracy of the Axiom too is enabling us to keep pace with our growing levels of production. In addition to measuring one-off parts, the machine's CNC capability enables us to recall a part programme and measure multiple components with minimum intervention."

The cost effective Axiom too is the best selling CMM from Aberlink Innovative Metrology and is available in both [manual](#) and [CNC](#) variants. The popular CMM can truly be described as the complete Inspection Centre; high measuring accuracies are achieved through the use of the latest metrology techniques and advanced in-house manufacturing methods. The Axiom too boasts an all aluminium bridge resulting in a very low thermal mass, rendering the machine ideal for use either in controlled environments or within less than perfect shop-floor conditions. Thanks to the Axiom too's use of advanced materials, the machine's reduced inertia results in class leading speed of operation. For increased accuracy air bearings of optimised stiffness are employed on all axes, whilst a granite Y Beam allows preloading of bridge bearings in both directions. Borrowed from the Aerospace industry, the CMM's sturdy component support consists of an advanced granite/aluminium honeycomb construction, this technology, provides natural damping and further improves the machine's thermal properties. Despite the Axiom too's generous measuring volume 640x600x500 or 640x900x500, the machine's compact design occupies a relatively small footprint.

Equally rewarding when used by the novice or an experienced CMM operator, the Axiom too utilises Aberlink's famous, intuitive 3D software, ensuring greater user productivity and profitability. A welcome bi-product of any Aberlink CMM inspection routine is that a simultaneous picture of the measured component is created on the computer screen. Dimensions between the measured features, mirroring those that appear on the component drawing, are then picked off as required. In essence this 'smart' software represents an intelligent measuring system that is able to automatically recognise and define the various features being measured.

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