



Four decades of advancement for forming equipment specialist

After 40 years in business, Quantum can reflect on a time of growth and how it has helped the glass container industry to move forward. Today, nearly 600 production lines in virtually every corner of the world have been upgraded with the Quantum Forming System, as Adam Neupert explains.

Quantum Engineered Products has endured the seemingly endless shakeups and corporate restructurings of the glass container industry throughout its history. This family-owned business has prospered through a downturn in the US market, which currently has only a fraction of the production facilities it once had. The company has prospered because it possesses a few key attributes. Firstly, it has a great product, secondly the company quickly reacts to the ever-changing demands of the industry and last but perhaps most importantly, Quantum selflessly serves its customers. For these reasons, Quantum is celebrating 40 years of forming excellence in 2016.

HISTORICAL PERSPECTIVE

Quantum was founded in 1976 by Joseph W Kozora, an inventor and entrepreneur ahead of his time. Having started Quantum from the basement of his home, he repaired and improved existing glass forming equipment using his own designs, advanced knowledge of metals and engineering skills.

While rebuilding plunger mechanisms for local hollow glass manufacturers, Mr Kozora discovered many design features that he felt could be improved upon. He then began to sketch and create his own designs. A few years later in 1982, Quantum Engineered Products was incorporated and two years after that, Joseph Kozora secured the first of Quantum's many worldwide patents, setting the foundation for the technology-driven company. As the business quickly grew, the company moved to its current location in Saxonburg, Pennsylvania.

Back in the 1980s, the majority of Quantum's business addressed the domestic US market. At that time, the local hollow glass industry was very strong but as the decade progressed and the

1990s approached, the industry fell into decline. Quantum's continued growth became increasingly reliant on foreign markets. The forming products that first gained notoriety in the USA began to make more of an impression globally.

Today, Quantum has built a strong international reputation and is the preferred supplier to some of the world's most reputable glass manufacturers in Europe, India, Mexico and the Middle East. A global presence has helped the company to grow and maintain profitability throughout challenging economic downturns. Continuing to diversify its business via new markets remains a top priority for the management team. Currently, the company partners with numerous international sales agents who help to open doors to new relationships.

FOUNDATIONS OF SUCCESS

The core of the company's success has been its pneumatic plunger mechanisms and the improvements they brought to the forming processes. The Universal Individual Cylinder Concept with Tube-Within-a-Tube (TWT) has allowed glassmakers to benefit from increased inlet airflow for plunger cooling and counterblow, increased exhaust capacities to expel the heated process air and a dirt-



Adam Neupert, Michael Albert, Joseph Kozora and Steven Kozora at the 2014 Pittsburgh Business Times Manufacturer of the Year Award ceremony.

free air delivery system that can increase the quality and strength of the containers produced.

Patented innovations, such as the movable port block system, have provided the industry with a forming system that can cost-effectively adapt to the frequent job changes that many production departments demand. Quantum's forming system has been pivotal in delivering flexibility to the industry and providing customers with a competitive edge in their respective markets.

OBJECTIVES AND PRINCIPLES

One of Quantum's main objectives is to help its customers reduce machine downtime. The company focuses on supplying a forming system that is mechanically sound and dependable. This is achieved through the innovative design of the equipment and the quality of materials used.

In the Quantum Forming System, there is no metal-to-metal contact and because of this, frictional forces within the moving components are reduced. Also, the system's >



The company is located in Saxonburg, Pennsylvania.



lubrication channels precisely deliver lubricant to strategic locations throughout the cylinder, press and blow positioners and blow-blow cartridges. Moreover, each moving component in the Quantum cylinder is designed to reduce the impact and the forces applied during production. Combined, these design features allow the Quantum Forming System to continually operate with minimal section stoppages.

A principle of Quantum and a keystone of its equipment is the high quality material used in the manufacturing process. Quantum manufactures its glass forming equipment from hardened steel alloys, which last much longer than softer, more fragile materials used in other systems. The company does not take shortcuts in its manufacturing process. Additionally, the use of thin and thick film coating technologies helps to improve the overall life of working components. Through the use of innovative manufacturing techniques, the company has been able to use the highest quality materials and remain cost-competitive.

TOWARDS INTELLIGENT AUTOMATION

Along with high performing mechanical systems used in the process of blankside forming, Quantum also provides a process control system and automatic gob weight controller called Total Forming Analysis (TFA). The Quantum TWT and Cylinder Performance Monitoring System (CPMS) collects data and graphically displays the forming process that occurs inside the

The Quantum plunger mechanism.



A specialist team has been assembled by Quantum Engineered Products.

blank moulds while each container is formed. This data is instantly analysed by the TFA and is shown (in real time) on the IS machine operator's monitor. To maintain high quality NNPB production, gob weights must be controlled accurately and consistently and the Total Forming Analysis addresses this requirement.

In the future, refining and improving the TFA will be important to the growth of Quantum. Founder and owner, Joe Kozora contends that in the future, the industry will require suppliers that continue to advance towards the goal of intelligent automation. "No machine can make all decisions by itself" he says. "Decisions need to be made by intelligent operators and the tools that Quantum and other suppliers provide are only useful when we empower the users." Customers report that the same standards of stability and quality that the company's plunger mechanisms provide are also present with the TFA system. The future of TFA is bright and according to Joe Kozora, will be dependent on Quantum's ability to learn more about the rest of the steps in the manufacturing processes. "Each step influences so much of what we do within the forming process" he adds.

CONTINUED COMMITMENT AND SUPPORT

Of course, it is important to understand what Quantum has done for the industry over the last four decades but even more importantly, to understand why. The company

has a specialised focus when compared to other suppliers associated with the glass container industry.

Quantum focuses strictly on the blankside forming process, which allows it to have advanced knowledge of a critical step in producing a quality container. The IS machine is truly a perfectly timed orchestra of mechanisms, working in complete synchronisation and the plunger mechanism is at the heart of this operation. Quantum aims to help its customers and the industry, not only by supplying parts and assemblies made from quality metals but also by supplying reassurance, reliability and the peace of mind that quality equipment provides.

The process of making a perfect bottle or container is quite complex from start to finish. Quantum's goal is to allow production teams to turn their attention towards improving the efficiency of other processes, knowing their forming equipment will be the reliable backbone of the manufacturing system.

MOVING FORWARD

While 2016 brings an opportunity to celebrate four decades of memories and accomplishments, the focus should not be on what was achieved in the past but instead, what is on the horizon. It is a time to look ahead and consider how the company will uphold its service to the glass container industry in the years to come.

Quantum is now a second generation family-owned business and President Steven Kozora will guide the company towards the mission of understanding and addressing the forming problems of the industry. ■

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