

Quantum:

BREATHING NEW LIFE INTO I.S. MACHINES; KEEPING UP WITH MODERN MANUFACTURING TRENDS

A successful I.S. Maintenance project requires a great deal of upfront planning and organization. The factory personnel must rely on careful coordination to take full advantage of the machine downtime to properly maintain all mechanisms on the I.S. machine. If carried out correctly, an I.S. Maintenance project will result in a forming machine that is in like-new condition and ready to operate with minimal stoppages caused by I.S. accessory failure.

Maintenance and upgrades

MAINTENANCE AND UPGRADES

I.S. MAINTENANCE AND THE QUANTUM UPGRADE

Quantum participates in many I.S. Maintenance projects each year. The company works closely with glass container manufacturers from all over the world who want to replace their worn out plunger mechanisms in exchange for a more advanced plunger mechanism. Upgrading to the Quantum Forming System can breathe new life into an I.S. machine, help a factory keep up with modern manufacturing trends, and ensure decades of forming system reliability. When a decision is made to invest into the Quantum Forming System, it will be the last time that a Plunger Mechanism will need to be purchased for that I.S. machine.

Furthermore, that same Quantum equipment will be ready to recycle for an installation on another I.S. machine when the original machine is scrapped or sold. The Quantum Forming System is the longest lasting and most durable forming system on the market.

Ideal timing for upgrades

The ideal time to consider a forming system upgrade on an existing I.S. machine is during a furnace shutdown or scheduled I.S. machine repair project.

The reason is because there will be no additional loss of production since the machine downtime has already been considered. Moreover, during many I.S. repair projects, the OEM forming system (Plunger Mechanism and Process Equipment) are in need of major repair or need to be replaced altogether, so it makes good sense to evaluate the return on investment of upgrading to a more advanced forming system.

When using the Quantum Forming System, glass manufacturers can be confident that

they will meet and exceed the required quality standards of their customers.

EQUIPMENT SPECIFICATION PROCESS

The first step in a forming system upgrade project is equipment specification. Quantum Engineers will work with the customer to specify a Forming System that is tailored to the needs and goals of each individual customer. It is important to specify equipment which will not only satisfy all current production requirements, but will provide the flexibility to meet production needs that will arise in the future. Increasing the flexibility of a forming system is one of the most important benefits of upgrading to Quantum equipment.

An I.S. machine that can quickly adapt to meet the changing demands of the market is a very valuable tool that can provide a manufacturer with a key competitive advantage. During the equipment specification process Quantum supports their customers with decades of experience and will help them choose the best equipment for their production style.

Installation

After the specification process is complete and manufacturing is underway, Quantum will work with the customer to develop a preliminary forming system conversion plan.

It is best to develop this plan a few months ahead of the scheduled shutdown date. The old saying 'if you fail to plan, you plan to fail' makes perfect sense when you are racing to restart production.

The Quantum technical team will offer a detailed plan for the forming system conversion project so that customers feel prepared and comfortable making the





IS Staff Installing QEP



switch to the Quantum Forming System. Machine interface, mould design recommendations, correct installation procedures, and alignment techniques are all taken into account.

As the I.S. machine shutdown date approaches Quantum technicians can arrive a few days in advance to make final preparations and review the conversion plan with the I.S. Maintenance staff. This way when the machine does shut down everyone is aware of what tasks need to be completed and they have a basic understanding of how to install Quantum equipment. During the shutdown, Quantum Technicians work with the customer to install the Quantum Forming System.

In most cases,

Quantum prefers to oversee and allow the customer to perform the installation on their own, so they become comfortable with their new equipment. It is important that new Quantum customers have a thorough understanding of how the equipment is installed and how it operates so they can quickly and confidently use it after the Quantum team has returned home.

Post installation, performance monitoring, and maintenance

After converting a machine to operate the Quantum Forming System, immediate short-term benefits of increased container quality will be



Quantum Building and Flag



Process equipment

noticed. The patented TWT® compressed air delivery system of the Quantum Cylinder does an excellent job of delivering clean compressed air to the forming process.

In Press and Blow, the Quantum Cylinder will maximize plunger cooling and minimize pressure requirements, so opportunities to adjust plunger cooling timing cycles and air pressures can be evaluated.

In the Blow and Blow Process, Quantum's TWT® concept will provide a leak free and dirt free air delivery system that will produce cleaner, higher quality, and stronger containers. Opportunities for speed increases will be revealed and machine timing adjustments can be made to increase the overall speed of production. I.S. operators will notice that their new Forming System will require much less attention and maintenance than the previously installed OEM forming system.

Sectional stoppage caused by Plunger Mechanism or Process Equipment failure will be much less frequent and bring an increase to machine uptime.

REDUCING THE OVERALL COST OF PRODUCTION

In the long-term, the users of Quantum Equipment will also observe many benefits that will reduce the overall cost of production. The Quantum Forming System is designed to operate with no metal to metal contact throughout the entire forming

system. This is important in making sure the equipment lasts very long and performs very well. The increased exhaust capacity of Quantum Cylinder ensures that the exhaust heat is quickly and efficiently

evacuated from the forming process, so the forming equipment operates much cooler. The design, coupled with the quality of materials used in the construction of the equipment, creates the longevity of the Quantum Forming System. There are many Quantum Cylinders in operation all over the world that are ten, twenty, even thirty years old. The long-term cost savings that Quantum equipment can provide is one of the major reasons that many of the world's most esteemed glass container producers have standardized Quantum as their forming system of choice.

ACHIEVING MAXIMUM PERFORMANCE AND OPERATIONAL LIFETIME

To achieve the maximum performance and operational lifetime of the Quantum equipment, a quality Maintenance procedure must be developed. Quantum Engineers and Technicians will work closely with the I.S. Maintenance staff to develop the correct maintenance schedule and make sure the staff is thoroughly trained on all of the

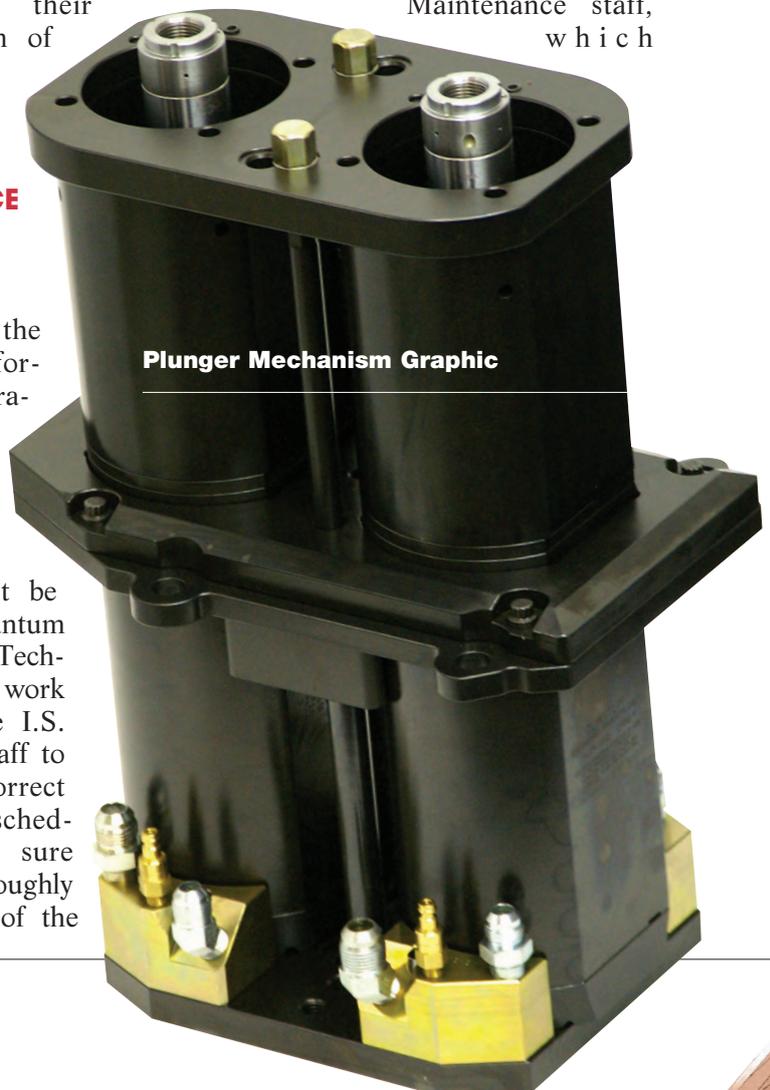
correct maintenance procedures. The Quantum Forming system requires much less maintenance, and the maintenance itself is less costly than OEM forming systems. Quantum Engineers will recommend a proper preventative maintenance schedule, which will depend on the style of production, the speed of production, and other factors.

After a set amount of time, the Quantum Cylinders will need to be removed from the I.S. machine to undergo a thorough cleaning, inspection, and rebuilding process.

The rebuilding process itself consists of replacing inexpensive components such as; bearings, o-ring, and seals.

The main components of the cylinder, which are the most expensive, have an indefinite lifetime if properly cared for. Quantum technicians can provide on-site training to I.S.

Maintenance staff, which



Plunger Mechanism Graphic

is invaluable in helping their customers understand the proper way to maintain Quantum equipment.

It is important to consider that the Maintenance staff has all of the right tools available to perform the Cylinder rebuilding, so Quantum offers a complete Tool Kit for Cylinder Maintenance.

QUANTUM TEST STAND

A Quantum Test Stand is another important tool that the company can supply to their customers. The Test Stand simulates an actual section and is complete with all of the air functions needed to operate the Plunger Mechanism.

After a Cylinder is rebuilt it can be installed on the Quantum Test Stand to make sure it is functioning properly before being installed into the I.S. machine.

A customer can also send its Cylinders to Quantum headquarters where they will be rebuilt by very experienced personnel. Any Cylinder that is rebuilt by Quantum is certified to be in a like new condition and is ready for many more years of trouble-free operation.

CONCLUSION

The Universal design of the Quantum Forming System makes it a perfect choice to upgrade any I.S. machine regardless of OEM. The standard Quantum Cylinders will integrate into any type of I.S. machine and provide immediate increased performance.

The main purpose of any I.S. maintenance project is to assure optimal working condition and conserve the lifespan of the equipment, but when high performance is needed and high quality is demanded, it is time to consider the Quantum upgrade. ■



Quantum

**QUANTUM ENGINEERED
PRODUCTS, INC.**

438 Saxonburg Boulevard
Saxonburg - PA 16056, USA
Tel: +1 - 724 - 3525100
Fax: +1 - 724 - 3524443
E-mail: quantumforming.com
www.quantumforming.com