

CONNECTION

COMPRESSION

COMPRESSION SYSTEMS' CUSTOMER INFORMATION NEWSLETTER

NOVEMBER, 2008

WWW.C-A-M.COM/CS



Celebrating 175 Years of Business

2008 marks a monumental milestone for Cameron. We're celebrating 175 years in business. That's right, nearly two centuries! To put this in perspective, our roots stretch back over 25 years before Abraham Lincoln was the President of the United States.

Cameron's legacy started in 1833 when two entrepreneurs, Charles and Elias Cooper, established a foundry in Mount Vernon, Ohio, USA. Through the mid and late 1800s, the Cooper foundry was the licensed producer of the famous Corliss steam engines and, at the turn of the century, ventured into the production of natural gas internal combustion engines. Cooper-Bessemer®, one of Cameron's oldest and most recognized product brands, was the result of a merger between the Cooper foundry and the Bessemer Gas Engine Company in 1929.

In the 1940's, Cooper ramped up its production to support the war effort and produced diesel engines for military vessels of all kinds and also increased production of locomotive engines. At the peak of its wartime production, Cooper-Bessemer had 4,337 employees working in round-the-clock shifts. In 1944, Cooper was listed for the first time on the New York Stock Exchange and opened its first international offices

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Who We Are

Cameron's Compression Systems group, formerly Cooper Energy Services and Cooper Turbocompressor, is a global leader in the design and manufacture of reciprocating and centrifugal compression equipment and aftermarket services. We are the OEM for well known compressor brands including AJAX®, Cooper-Bessemer®, Joy™, MSG®, SUPERIOR®, Turbo Air® and Cooper Turbocompressor™.



RESPONDING TO
GLOBAL DEMAND

New Centrifugal Compressor Manufacturing & Repair Facility

In order to better serve our customers, Cameron has expanded its manufacturing and repair capacity by opening a new facility in northwest Houston which is dedicated to centrifugal compressor repair and some new compressor assembly. The Thomas Rd. facility contains over 30,000 square feet including approximately 20,000 square feet of shop area.



6039-F Thomas Rd. Houston, TX

With assistance from our Lean6Sigma group, the facilities management team designed the layout of the shop to optimize material flow. This will allow us to execute repairs in the most efficient manner possible, which means shorter lead times for our customers.

The facility is fully equipped with machines and staff to provide a complete range of services from simple inspections to complete overhauls and upgrades for Cameron (formerly Joy™/Cooper Turbocompressor™), and non-Cameron centrifugal compressors such as Ingersoll Rand™, FS Elliot™, Clark Isopac™ and Atlas Copco™. In addition, this facility will also be used

to assemble new TA-2020 and TA-2000 compressors. The remaining 10,000 square feet is office space that will house our Houston-based centrifugal aftermarket team. With its central location, this facility will serve as our North American center-of-excellence for centrifugal compressor repair.

For more information on our new Thomas Rd. facility, contact us at 281.809.1300.



TRAINING
PROGRAMS

OEM Training Courses From Cameron: Critical to the Operation and Maintenance of your Equipment

A well-trained staff, educated in the fundamental operation and maintenance of your company's reciprocating compression equipment and turbochargers, is one of the best tools for improving performance, minimizing downtime, reducing operating costs and creating safer operations. Cameron's Learning Center exists to assist with training needs and to make certain our customers take full advantage of our training's benefits.

Based out of Houston, Texas, Cameron's Learning Center is charged with keeping customers informed about the operation, maintenance and product development of Cameron's reciprocating compression equipment. These challenges are enthusiastically met by the Cameron training team, which brings decades of training and service experience to the Learning Center.

Cameron's Learning Center offers a variety of open enrollment workshops on Cameron OEM equipment



that include AJAX® integral gas engine compressors, SUPERIOR® legacy engines, SUPERIOR® compressors, turbochargers and Cooper-Bessemer® integral gas engine compressors. All of these workshops are offered at our factory locations and are free of charge. In addition, Cameron offers custom workshops that are held at customer specified locations and tailored to meet customer needs.

Rick Ykema, who leads the training team, stated, "We recognize that in today's business environment we are all under tight time and budget constraints; by offering classes at customer sites, we are able to lessen some of those concerns that are usually associated with off-site training."

Cameron's open enrollment workshops, that last between two to four days, provide a foundation of knowledge for virtually all of Cameron's reciprocating compressor product lines and are recommended for anyone desiring a thorough understanding of gas engine and compressor theory or technology not easily attained in the field.

In addition to open enrollment workshops, Cameron conducts advanced factory training for maintenance teams involved in the startup and commissioning of Cameron's AJAX® and SUPERIOR® new units. With a diverse range of courses, the Cameron Learning Center is able to educate new personnel as well as update the experienced.

If you have questions regarding one of our workshops or would like to register, please contact Rick Ykema (713-354-4062), John Haney (281-809-1678) or Kay Crawford (713-354-1296) or send us an email at TLC@c-a-m.com. You can also find information on our web site: www.C-A-M.com/CS.



Celebrating 175 years

(Continued from pg. 1)

in Venezuela and the Soviet Union. The famous GMV engine would be developed and sold before the turn of the decade.

Throughout the 20th century, several acquisitions were made by Cooper that expanded the company's reciprocating compressor scope. Cooper purchased three companies between 1960 and 1976, including the AJAX Engine Company, Pennsylvania Process Compressor and White Superior. Stemming from the success of this growth, additional acquisitions were made between 1987 to 2001 including the Enterprise Power Engine aftermarket business, Nickles Industrial Manufacturing and Turbine Specialties.

In 1955, the Joy Manufacturing Company was formed in Buffalo, NY and quickly grew into a complete manufacturing company, producing integrally geared, oil-free centrifugal air compressors. The 1970s saw Joy™ grow world wide with much focus on engineered custom compressors for refineries and air separation applications. In 1987, Cooper acquired the Joy™ product line in an effort to expand its product focus from primarily reciprocating gas compressors to include industrial centrifugal compressors.

With a product lineup inclusive of integrally geared centrifugal air and process gas compressors, reciprocating gas compressors, integral gas engine compressors, turbochargers and a host of aftermarket parts and services to support our equipment, Cameron is looking forward to the next 175 years of success.

New LNG Terminal Employs Cameron Compressors

Exxon Mobil Corporation reported recently that the world's first offshore liquefied natural gas (LNG) terminal arrived at its final location off the Italian coast, where it will be capable of supplying about 10 percent of Italy's natural gas requirements.

The Adriatic LNG terminal left its construction site in Algeciras, Spain on August 30, 2008 for the 1,700-mile trip to its final destination, where it arrived September 15, 2008. The terminal is positioned about 10 miles offshore in approximately 95 feet of water and will feed gas through a pipeline to the Italian gas distribution network. The Adriatic LNG terminal is owned by Exxon Mobil Italiana Gas, Qatar Terminal Limited and Edison and will be part of the world's rapidly expanding natural gas supply network.



The Adriatic LNG terminal under construction

The terminal is equipped with two Cameron API 672 integrally geared centrifugal compressors. With the compressor core supplied by our center-of-excellence in Buffalo, New York, the complete compressor package was assembled and tested with Cameron's local packager, F.B. ITMI, Italy. The compressors will be employed to inject air in the natural gas stream to improve the wobbe index (calorific value) of the gas distributed to the city.

For more information, contact our centrifugal compressor products group at 716-891-3709.

SAVING CUSTOMERS
MONEY

TAC2000®: Market's Only Air Cooled Centrifugal Compressor

The Cameron Turbo Air Cooled® 2000 centrifugal compressor is a state-of-the-art source of oil-free air designed for applications where there is a limited supply or no water available for cooling. It features innovative air-to-air cooling technology in a reliable centrifugal design. This 100% oil-free compressor includes specially designed high efficiency air-cooled intercoolers and aftercooler, inlet filter/silencer and optional packaged check valve.

This proven, pre-engineered design reduces initial investments for our customers. Durable construction with ease of installation, simple maintenance and an energy conserving microprocessor control, makes the TAC2000® economical to both install and operate. Additionally, the air cooled system offers savings through a variety of means, including:

- the cost of water usage,
- the cost of pumping water,
- the cost of treating water,
- the cost of maintaining a water system,
- the cost of installing a cooling system,
- the cost of a closed-loop cooling system.

This self-contained system can deliver horsepower per CFM ratios that no other oil-free compressor in this range has been able to match. Cameron's labyrinth seals, when compared with tight fitting carbon rings, are non-contacting, non-wearing and do not require periodic replacement, providing additional savings on maintenance. The microprocessor tailors compressor output to plant demand while providing the most efficient operation of the compressor and the greatest throttle range without over pressuriza-

tion of the system. Hydrostatic squeeze film bearings provide superior stability with regard to load and rotor mass providing high mechanical efficiency with which conventional bearings cannot compete. Mechanical losses are minimized through the use of tapered thrust collars. These thrust collars transfer loads to a low speed bullgear thrust bearing at near zero relative velocity via an oil wedge. The thrust loads are then absorbed at the low speed thrust bearing.

Installation is simplified because the compact system is packaged in a single unit that includes the compressor, intercoolers, aftercooler, lube system and motor starter. The control panel with pump starter and control transformer is mounted, completely wired and tested. Furthermore, no special foundation is required for installation, and a sound enclosure is included in the standard design, allowing simple installation even where low noise levels are required.

Motor sizes range from 150-300 HP (110-260 kW) with discharge pressure ranging from 50-150 psig (3.5-10 BARG) and flow range of 550-1700 CFM (930-2890 m³/HR).

For more information, contact our centrifugal compressor products group at 877.805.7911.



Suppliers Participate in Cameron Lean6Sigma Program

Cameron hosted their first Supplier Green Belt Training at our Houston headquarters in October. The goal of the five-day session was to bring Lean6Sigma knowledge to our top suppliers in an informal, small group atmosphere meant to connect the concepts of Six Sigma with real world applications. Fifteen suppliers supporting both our reciprocating and centrifugal compressors were in attendance, traveling from Canada, Italy, and various parts of the United States. These suppliers represented a diverse business base, including foundries, gasket manufacturing, controls and machine shops.

Prior to attending the training, each supplier was required to develop a Green Belt project that would benefit both Cameron and the supplier's operations. They worked with Dina El-Deeb, one of Cameron's Lean6Sigma Black Belts, to develop the scope of their project charters and their presentations.

During the training, each supplier presented his or her project to the sourcing team, the Lean6Sigma group, and the other suppliers for comments, questions and feedback. Although there were diverse project types, the prevalent theme was increasing on-time delivery to Cameron. For example, one gear manufacturer is developing process improvements to reduce lead times and increase capacity. Another supplier in our consignment program is developing mechanisms to improve their notification system and to improve their packing for ease of use.

All of the suppliers' projects were well thought out and have strong potential to achieve the mutual



goals of cost savings to Cameron, increased throughput, and reduced lead times.

The feedback from the suppliers was very positive. Going forward, Cameron Black Belts will continue to work with these suppliers to provide support in completing their projects with a timeline set for project completion by the end of the year.

Cameron is also developing a plan to bring the lessons of this supplier training and the benefits of Lean6Sigma directly to the suppliers' facilities to ensure that each supplier has the support they need to effectuate these process improvements. This will be accomplished through brief presentations by the attendees, with Cameron support, at each of their respective facilities. These presentations will showcase the supplier's Green Belt project and demonstrate its mutual benefits to the supplier and Cameron.

This first Supplier Green Belt training proved to be a strong success. Cameron plans to continue inviting our top suppliers, both domestic and international, to these collaborative Lean6Sigma training sessions.

For more information on our Lean6Sigma program, contact Kate Clark at kate.clark@c-a-m.com or 713.354.4076.

SERVICE THAT MAKES
A DIFFERENCE

Cameron Expands Service Plan with Performance Analyzer

Cameron believes not only in exceptional products, but also first-class customer service and support for those products. Cameron's goal is to assist our customers in gaining value and savings in the safe operation of their compression and power generation equipment.

In collaboration with these expectations, we are proud to announce that we have significantly upgraded our electronic reciprocating engine and compressor analysis program, as well as various custom inspection services.

Electronic engine and compressor analysis is a vital part of preventative and predictive maintenance programs. After acquiring the latest technology on the market, Cameron can now evaluate the health and operational readiness of existing equipment on site as accurately and efficiently as possible. Our existing Performance Analyzer offers 4-channel, concurrent data acquisition, plus a separate channel for cable or wireless encoder speed/phase input signal, providing a virtual "real-time" presentation.

Using this, we are able to measure the internal pressures, vibration and ultrasonic patterns within the equipment. The large dimension storage capacity of our analyzer allows comprehensive recall of historical data and all engine/compressor performance calculations can be processed and exhibited as it is collected. This allows the analyst to adjust operating conditions and immediately view the results in the performance characteristics.

Our Performance Analyzer also performs as a spectrum analyzer, non-encoder peak pressure balancer,

ultrasonic leak detector, digital oscilloscope and infrared temperature monitor. In addition to these various capabilities, we are also able to use this as a combustion analyzer, which allows the user to balance the cylinder's combustion pressures and analyze the secondary ignition system, assisting in the detection of faulty plugs, wires and coils.

This provides combustion stability and enhances the overall performance of the equipment. In addition, we can provide real-time emissions analysis to complete our diagnostic effectiveness. Combined with sound maintenance practices and regular oil analysis, our reciprocating compressors will meet and/or exceed anticipated equipment life. Our analysts who perform this service are also senior level mechanical representatives who can either provide assistance or technical advice to your maintenance team.

New Senior Specialist Bolsters Cameron Analyzer Capabilities



Mitch Fuller recently accepted a position as Senior Field Service Specialist with Cameron. With over 25 years experience in the predictive maintenance industry, his new responsibilities will include working directly with customers to provide engine and compressor analysis, consulting and training on all engine-compressor makes and models. He is excited about this new opportunity and looks forward to continued support in the industry.

Mitch can be reached at mitch.fuller@c-a-m.com or 504.444.1788.

Cameron Compressor & Service Brands:
Reciprocating

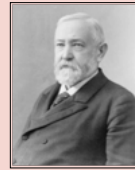
AJAX®
 AXIS™
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 PENN® PROCESS
 SUPERIOR®
 TSI®
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Centrifugal

MAESTRO™
 MSG ALPHA®
 MSG®
 TURBO AIR®
 C8 TURBO AIR®
 JOY™
 Canopy™
 TurboBlend™
 TURBOCOMPRESSOR™

Biz Quiz

What do Cameron and Benjamin Harrison have in common?

Answer


Both were born in Ohio in 1833. Benjamin Harrison, who would become the 23rd president of the United States, was born August 20, 1833 in North Bend, Ohio. Cameron founders and brothers, Charles and Elias Cooper, built a foundry in their hometown of Mount Vernon, Ohio and called it Mount Vernon Iron Works. The firm's first products were plows, maple syrup kettles, hog troughs, sorghum grinders, and wagon boxes.

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Turbine Specialties (TSI)

Turbocharger Products Group
 1648 West Magnolia Road
 Salina, KS 67401
 Tel 1.800.972.7612

Compression Specialties

Non-OEM Product Specialists
 600 South First Street
 Ponca City, OK 74601
 Tel 1.800.654.6419

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www.c-a-m.com/cs
 Parts • Service • New Compressors

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