



NATIONAL ENGINEERS WEEK



Today's special edition commemorates National Engineers Week (Feb. 22-28), which:

- Celebrates how engineers make a difference in the world.
- Increases public dialogue about the need for engineers.
- Brings engineering to life for children, educators and parents.

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ROLES FOR ALL REASONS

Engineers have all-embracing responsibilities in ensuring that manufacturing is safe, productive and high quality.

By **BRIAN PEDERSEN**
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They prevent structures from collapsing and explosions from occurring.

They keep employees safe and can streamline and improve a small, local company's production processes to help them compete on a global scale.

They prove to be pivotal partners in the success of manufacturers of all types and sizes.

They are engineers – and as National Engineers Week begins, it's the perfect opportunity to reflect on the role of the engineer in keeping America's manufacturers moving.

After all, they play a vital role in most every manufacturing plant in the nation.

"As engineers, we provide that service to help them so they are doing it right, so they meet codes and so they can get competitive pricing from contractors to do the improvements," said Jeffrey Euclide, president of Entech Engineering of Reading.

While many manufacturing plants employ their own engineers, often outside help is required for larger projects. In fact, the role of the engineer changes according to the needs of the manufacturer, the scope of the project and the type of industry.

Indeed, plants today often use a fraction of

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PHOTO COURTESY OF RETTEW

Kristen Morgret, Rettew safety consulting group manager, works with air monitoring equipment used in manufacturing settings.

75 years and counting for engineering firm

By **BRIAN PEDERSEN**
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Few businesses last 75 years. Of those, few become global entities. One of those few is Michael Baker International. The Pennsylvania-based engineering firm turns 75 this year by making a significant investment in the Greater Lehigh Valley – and in downtown Allentown's renaissance, in particular.

A presence in the region since the 1990s, last August the company opened an office in Two

City Center on Hamilton Street in Allentown – in the heart of what has been \$1 billion in new development and investment.

A provider of engineering and consulting services around the world, Michael Baker International is looking to leverage its knowledge and experience both in the epicenter of Allentown's explosive growth and beyond.

"Transportation is our core, but one of

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MICHAEL BAKER INTERNATIONAL

- **What:** Pennsylvania-based global provider of engineering and consulting services celebrating its 75th year.
- **Annual revenue:** More than \$1 billion.
- **No. of employees:** More than 5,000, including 900 in Pennsylvania.
- **No. of offices:** More than 90 offices across the United States and internationally.
- **Ranking:** 26th-largest design firm in the U.S. (Engineering-News Record).

SOURCE: MICHAEL BAKER INTERNATIONAL



INSIDE TODAY MILESTONES

Our 28-page special supplement salutes the businesses and organizations that are celebrating well-deserved anniversaries in 2015. Through hard work and dedication, these companies and their employees have shown that they can adapt and flourish in a constantly changing economic environment.

ROLES

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the workers they required in the past, and that heightens their reliance on engineers. Engineers who drive efficiencies as processes become more streamlined and technology ramps up production.

And engineers who take on many roles on the manufacturing floor.

“It’s a profession that lends itself to a lot of different jobs,” said David Marks of DME Alliance Engineering Consultants in Upper Macungie Township.

SAFETY INITIATIVES

DME Alliance uses a multifaceted approach that includes a process design department and subject matter experts to help with production.



Euclide

‘Companies are putting in highly efficient systems now so they can be competitive with overseas countries.’

— Jeffrey Euclide, Entech Engineering

The company teams with an architect to perform several functions, including mechanical, plumbing, heating, ventilation and air conditioning, said Marks, principal of DME Alliance.

“It’s very critical for manufacturers to have a very robust system,” he said.

Engineers also help increase employee safety overall and increase safety for a specific project, working with the client and contractor staff on-site, said Kristen Morgret, group manager for Rettew safety consulting group. Rettew, head-

quartered in Lancaster, has an office in Hanover Township, Lehigh County.

Morgret has worked with industrial engineers in this capacity and helps with incorporating safe procedures for the installation of new equipment and installing additional safety equipment for production employees.

EFFICIENCY

Entech often is involved with projects that include performing large plant expansions and re-arranging equipment and processing lines in the plant.

Sometimes, Entech designs the equipment and how it gets connected or helps the company expand its electrical system.

Entech has a project for a Schuylkill County manufacturer that is expanding operations.

“Companies are putting in highly efficient

systems now so they can be competitive with overseas countries,” Euclide said.

WORKING TOGETHER

Every discipline of engineering is critical in its own way in manufacturing, Marks said.

Structural engineers ensure buildings do not collapse, while other types of engineers are charged with preventing explosions.

When building a new manufacturing facility, all disciplines need to work together, Marks said.

DME engineers also work with companies



This 3D computer-aided design rendering was produced by DME Alliance Engineering Consultants for a project with Daiichi-Sankyo, a manufacturer in Bethlehem Township.

IMAGE COURTESY OF DME ALLIANCE ENGINEERING CONSULTANTS

looking to turn space into a manufacturing operation or change their product or bring in new equipment, he said.

Many engineers are using computer-aided design technology and Revit, a proprietary software program that allows clients to see a 3-D model of a building before it is constructed.

PROBLEM SOLVERS

Sometimes DME engineers help a manufacturer facing a facility problem, those with unreliable equipment or would like production to increase.

“We do optimization and de-bottlenecking of processes,” Marks said.

For this, engineers determine what is pacing the rate and what can be done to improve the process or make it safer. This will ensure more product is manufactured; however, quality is also paramount.

The engineers address quality deviations and provide an analysis of what can be fixed.

BOOSTING PRODUCTION

Streamlining processes and increasing capacity are top of mind among manufacturers looking to grow and expand in the clean, automated facilities found in today’s industries.

“The projects I see are often to increase

capacity, such as adding a production line or something similar,” Morgret said. “They examine processes and make updates to streamline operations.”

Sometimes this involves a new way of doing things.

Other times, it’s trying to polish a technique that’s been around for a long time, she said. Engineers also work for the manufacturer and develop the process or product from scratch, Marks said.

CONSTANT STATE OF CHANGE

Industrial engineers are dedicated to keeping operations running smoothly, improving processes for the employees around them on a daily basis and improving the bottom line for their businesses, Morgret said.

The role of the engineer also varies according to industry.

In some industries, such as food manufacturing, a facility may be constantly in a state of change because regulations, customer demands and processes are always in motion, Morgret said.

In other industries, many of the processes and practices may not have deviated for several years or even decades, so these engineers might not be as actively involved in a changing landscape.

75 YEARS

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our growth strategies is to enter new markets in eastern Pennsylvania,” Michael Baker International vice president Eric Frary said.



Frary

The company has invested heavily in technology and plans to hire staff in the region. And it all comes as it marks its 75th anniversary on May 1 with a host of events and celebrations.

“We see growth in the Lehigh Valley as one of our biggest opportunities to add staff,” Frary said.

TRANSPORTATION

Aviation, transit and urban planning are just a few of the industries that have proven to be strong growth areas for the company.

The firm has worked on a number of projects in the Greater Lehigh Valley over the years, including the Route 222 Bypass in Berks County, the 15th Street Bridge that’s under construction in Allentown and the Route 33/512 interchange upgrade in Wind Gap, which includes new ramps, bridges and pavement, to be completed this year, said Ralph Eberhardt, Lehigh Valley office manager.

“A lot of our growth is tied to transportation,” Frary said.

A lot of old bridges throughout the state are starting to fall apart. He said Act 89, the state’s new transportation funding plan, will support the growth of the engineering industry.

Michael Baker International also did engineering for the Route 222 Bypass in Upper and Lower Macungie townships and finished the Interstate 176 and Route 422 project near Reading.

The company has provided construction management services to all of the state Department of Transportation District 5 projects, Eberhardt said. Furthermore, it has served as the general engineering consultant for the Pennsylvania Turnpike for 50 years, Frary said.

LOCAL SERVICES, GLOBAL EXPERTISE

Another key to the company’s success, according to Frary, is that it can provide local services, but as part of a larger organization.

“We design/build something that affects everyone, something tangible that we can all be



Eberhardt

‘We design/build something that affects everyone, something tangible that we can all be proud of.’

— Ralph Eberhardt, Lehigh Valley office manager at Michael Baker International

proud of,” Eberhardt said.

The company also has made strides in investing in technology.

It uses Lidar, a remote sensing technology that can be used for land mapping.

“We have aerial capability,” Eberhardt said. “We have one drone that we can hook a sensor to, so we are heavily invested in that technology.”

The company has written programs to facilitate

bridge design and has done work for surveying, design, permitting and a host of other services. With the ability to draw representatives from all over the region for everything from traffic facilities to environmental planning and aviation projects, the company sees itself as one that provides services beyond a typical engineering firm.

Owner’s representative services are another key area of growth for the company, since owners can have the firm oversee a project and its budget.

In Allentown, Michael Baker International provided owner’s rep services for Lehigh Valley Health Network’s One City Center project, as well as for the Dime Bank Building and Two City Center, Eberhardt said.

The company’s wastewater, flood control and water quality services are also a large market seg-

ment, particularly for California, where water is in high demand.

TAPPING INTO THE LABOR POOL

In Pennsylvania, Michael Baker International has about 900 employees, with half of that number at its global headquarters in Moon Township, near Pittsburgh. (DC Capital Partners, headquartered in Alexandria, Va., acquired the firm and created Michael Baker Holding Co. a little over a year ago.)



PHOTO COURTESY OF MICHAEL BAKER INTERNATIONAL

Michael Baker International was the design consultant for the Eighth Street Bridge rehabilitation project, which is underway in Allentown.

Michael Baker International opened its Horsham office in 1997 and has been in Allentown since 2011, moving last year to Two City Center from the nearby Wells Fargo building.

“We see the Lehigh Valley as a way to tap into the labor pool to support the company on a larger scale,” Frary said. “We will use our presence in the Lehigh Valley to see what resources are available.”

Over the last decade or so, the company has seen a growing interest in people wanting to work and live in urban locations.

With its new space in downtown Allentown, the company is prepared to hire more employees and possibly enter new markets, including architecture and structural engineering.

In its Horsham office, Michael Baker International has the skill sets for land development but it’s a market that the company has not dabbled in yet, Eberhardt said.

“But we are different by our scale and our diversity,” he said. “But I like to look at us as a portal.”