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Next-level wetcast automation platform



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Afinitas, Clayton, MO 63105 USA

Next-level wetcast automation platform

Afinitas, a leading global infrastructure equipment and services company headquartered in St. Louis, MO., USA, has launched a platform of wetcast automation systems aimed at helping precast concrete producers enhance productivity, reduce labor issues and increase throughput to get products to market faster. The platform, named Prima 360, leverages a wide range of technologies developed in-house by Afinitas. The systems are backed by the strength of Afinitas' global technical team and service support.

Combating the Labor Shortage with Automation

The numbers can be jarring:

- Global construction spending could exceed \$20 trillion annually by 2040, nearly doubling the current figure.
- Yet, some estimates suggest a projected global shortage of 75 million workers by the year 2030.
- Approximately 80% of construction firms report difficulty finding skilled labor.
- In the U.S. alone, the U.S. Bureau of Labor Statistics reports that the construction sector will need to add 700,000 new jobs by 2031 to keep up with demand.

As the construction industry is set for remarkable growth in the coming decades, the impending retirement of our aging workforce - nearly 40% of construction workers globally are over age 45 - highlights a critical skills gap. This gap often leads to project delays and increased costs.

"Every day I witness precast manufacturers battling the effects of labor shortages," remarked Derek Von Cannon, Afinitas Vice President of Sales. "One of their top concerns is how an unreliable labor market will impact their ability to manufacture quality products to meet customer demand."

According to Von Cannon, this concern along with others faced by producers, including maintaining profitability, increasing market share and fending off competing products, led to the formation of Afinitas' Prima 360 wetcast automation platform.

"A typical wetcast plant setup makes it nearly impossible to drive productivity," said Von Cannon, who has spent nearly 20 years in the industry. "There are just too many variables and no linear process flow that can be measured, analyzed and optimized." Von Cannon points out that one of the top principles of lean manufacturing is creating a flow and that's exactly what Prima 360 automation does for nearly every aspect of wetcast production.

The automated process flow of the Prima 360 system offerings allows precast producers to save on labor - sometimes up to 50% - increase throughput, simplify production planning, and provide the operations team with all the metrics they need to optimize their production processes at every level. It goes without saying that a 50% labor reduction over traditional wetcast operations can drive a rapid ROI and give producers a decisive advantage over the competition!

In Von Cannon's eyes, the power of Prima 360 helps alleviate the major pain points producers are experiencing, especially when it comes to finding labor. He emphasized it is not about replacing jobs: The issue is attracting and retaining talent.

"Today's workforce is more comfortable in front of a screen operating a controller, and Prima automation allows them to engage with production in an exciting new way," said Von Cannon. "Plus, rather than eliminating jobs, it empowers companies to use team members in new ways that increase their skills." This, says Von Cannon, will bolster the workforce and help precast concrete remain relevant, noting that the competition, like plastic producers, have very automated processes.

"Not only will producers be better off from a labor market standpoint, but they will also get more products to market better and faster," said Von Cannon.

The Afinitas Prima 360 platform, which launched in August 2024, leverages a wide range of technologies developed in-house by Afinitas. The overarching goal is to provide wetcast automation that works for all types of factory layouts, product requirements, including polymer products, and budgets.

The Components of Prima 360

The Prima 360 platform is comprised of 4 systems: Prima (Afinitas' signature wetcast system for high-volume production), Prima Fit, Prima Base and Prima Scape.

Prima, first developed nearly two decades ago by Afinitas' HawkeyePedershaab brand, is a cutting-edge wetcast automation system designed to drive productivity by simplifying wetcast production. Prima uses a state-of-the-art production loop to produce nearly any type of infrastructural product. The Prima system ensures there are no wasted motions or time spent waiting. Each task is broken down into manageable bites at specialized workstations, resulting in maximum efficiency.



The AFINITAS Prima System with assembly-line efficiency.

“With Prima, you’re not bringing the tools and material to each mold. You’re bringing the mold to the worker. It drastically reduces the labor input per piece, because of that assembly line efficiency,” said Jason Banwart, Director of Technical Sales at AFINITAS. “Each worker is doing a certain task at a certain station all day long, and that system is hitting cycle time all day long, so it really drives efficiency and drives down the labor content in every piece.”

In 2021, Tindall Infrastructure built its Spartanburg, South Carolina plant around the Prima system and was impressed by the way it allowed its team members to become experts at what they do rather than having a roaming crew move from form to form. They liked the fact that the materials required for the job were always at hand and there was no time wasted looking around for tools - a benefit to plant operations and the employee.

In addition, Prima didn’t limit them to one type of product. Any form that fits on a tray can fit the system. The system is unique in that it can in many instances use existing form equipment. “We can mix old forms and new forms into one system, and with our new AFINITAS forms we can design in a lot of great time-saving features to make it very quick and efficient to open the forms and get the products out,” said Banwart.

Another benefit of Prima is its robust data collection capabilities. The cycle time for every task is logged whenever the button is pressed at each station. That data goes into a CSV file and is used to generate reports and dashboards to measure productivity.

In addition to labor savings, Von Cannon also pointed out that with Prima you’ll have a cleaner and more comfortable factory. This, he says, results in a better work environment for your team which will help attract and retain employees. “Happier employees are typically more productive - but in addition to that they’ll be safer too,” he emphasized.

Prima Fit for Purpose

For producers who are not quite ready to invest in a full-scale Prima System, the team at AFINITAS has introduced Prima Fit. This system, as the name suggests, is wetcast automation that scales to fit producer requirements. It’s a powerful, yet economical option that utilizes vertical product stacking to maximize floor space. In addition, Prima Fit can be easily configured to produce specialty precast structures that would require extra space and set-up time on other systems.

The Prima Fit technology was created by AFINITAS’ BFS brand and has been used for decades to produce a variety of architectural products. Over the years the technology has evolved to create an extremely efficient and effective system to streamline wetcast production. Prima Fit is ideally suited to produce products like median barriers, retaining walls, man-



Specialized workstations on the Prima at Tindall Infrastructure in Spartanburg, SC.



Prima Fit is an economical way to automate.



Intuitive configurator allows limitless channel flow designs.

hole products, road and railway products and many other specialty products.

Prima Base Fixes Manhole Base Configuration Challenges

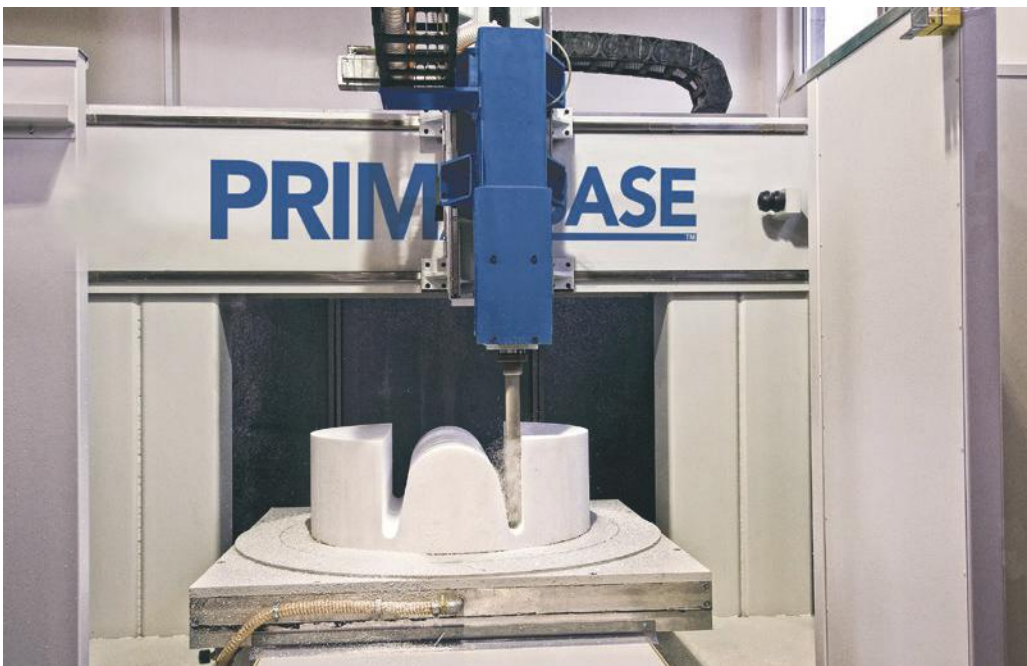
Prima 360 leverages a wide range of innovative technologies, both inside and outside of the production loop of its flagship Prima system. One example is the Prima Base system, a cutting-edge foam milling machine that enables producers to create customized monolithic manhole bases. With this machine, producers can create specially designed negative molds out of polystyrene blocks that ensure precise, defect free products in record time.

For producers, manufacturing to the proper specifications for a wide range of utility projects can be a serious challenge.

As the bottommost portion of an inspection chamber, manhole bases are designed to make it easy to inspect and maintain sanitary and stormwater management pipelines.

Unfortunately, manhole bases are typically required in areas where multiple pipelines converge. They're often connecting pipes of different sizes, materials, gradients, and invert levels, and that means finding a one-size-fits-all solution is next to impossible.

Even if a base could accommodate the various connection types, channels must be formed between each pipe to minimize the risk of buildup and ensure pipelines remain unobstructed. Traditionally, these channels have been created manually through on-site benching – but this process is incredibly time consuming, labor intensive, and imprecise.



Prima Base precision CNC milling capabilities.



Prima Base's one-piece design simplifies the labor-intensive assembly process of monolithic manhole bases.

That's where Prima Base comes in. Prima Base's intuitive design software and milling process creates channel-forming molds out of a single piece of industry-standard EPS (expanded polystyrene) foam. Connection pieces, or side cores, are simply fixed to the main core top using self-locking principles.

This process for creating the entire flow-channel portion of the EPS core top in one continuous piece is special. Other systems require hot-wire cutting machines, careful gluing process, screws, tape, or proprietary-shaped foam pieces to create the channel negatives. With Prima Base, each channel configuration is milled to precise specifications based on engineer-approved drawings, ensuring a consistently Perfect fit and long-lasting performance.

Prima Base enables producers to manufacture fully customizable high-precision precast concrete bases designed to help their customers simplify installation, accelerate project timelines, and meet the unique needs of any project.

Prima Scape Offers Beauty and Precision in Wetcast Production

Rounding out the 360 offering is Afinitas' Prima Scape (formerly BFS Slabflex) system. Prima Scape draws upon decades of vibration technology to help producers create visually appealing and mechanically precise slabs, pavers, veneers and more. With one automated system, Prima Scape makes reproductions of natural stones, slate, granite, wood or terracotta in exact laying units for flooring, pool and fountain slabs, patios, deck slabs and other residential and commercial applications.

According to Afinitas Sales Manager Volker Nusser, customers were looking for a good technical solution that has the advantage of automating the production of products with many different surfaces and various dimensions. "With our Prima



Prima Scape System for concrete slabs and veneers.

Scape technology, we have the ideal solution for commercial and landscaping products as well as guide system pavers for the blind - a growing demand in many parts of the world."

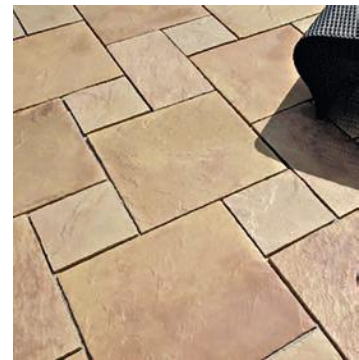
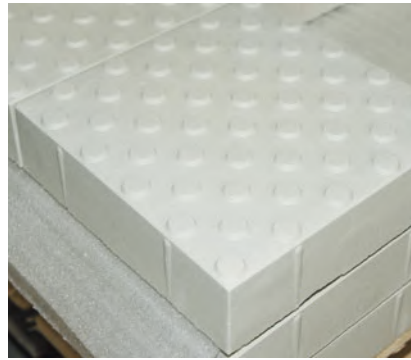
Prima Scape offers a high degree of flexibility and can produce sizes ranging from 20 x 20 cm up to 100 x 100 cm with a maximum height of 25 cm. The heart of the system is its volumetric concrete feeder with automatic volume adjustment which allows for the very accurate filling of the molds. The slabs are compacted at the vibrating station according to precisely controlled, product-related vibration curves.

"Prima Scape is very modular and can grow with customer needs," said Nusser. Modules can include an automated demolding system, surface coating systems, a slab turner, mold cleaning station, packing station, and robotic stacking unit. There is also an option for a separate wet and drycast line.

"Our Prima Scape system is easy to clean," said Nusser. "But there is hardly any spillage during the feeding process since the molds are filled with such great precision." A special feature of the cleaning cycle is that the molds can be sprayed with release agent so that they can be easily demolded. To meet all needs, there is a variable adjustment on the spraying jets."

With Prima Scape, product color options are limitless whether it be two-tone, marbling or other effects.

According to Nusser, the system can be easily operated by three employees and is equipped with a state-of-the-art controller with convenient remote maintenance unit. He describes Prima Scape as the Perfect combination of beautiful visual effect, user-friendly equipment and strength. In fact, the polyurethane molds Afinitas makes for the system help ensure tear-resistance, dimensional accuracy and product durability.



A wide variety of effects can be achieved with Prima Scape technology.

Curing and Technical Know-How Too

Two more advantages Afinitas offers are its curing systems and its deep bench of global technical expertise. The Afinitas CurePak system is a direct-fired steam generator that can be used to cure any type of precast product. The CurePak is designed to ensure proper hydration of the cement resulting in the strongest concrete possible. It also uses up to 50% less fuel and water, offering cost savings as well.

Von Cannon also touts the advantage of working with a team of experts. "There are a lot of considerations that go into the planning of an automated system and determining the right system for your needs. You have to consider budget, plant footprint, product mix and a whole host of other factors," said Von Cannon. "Afinitas has a global team of engineers that love to dive into discussions about Prima products and how they can make your production more efficient."



Afinitas CurePak Curing System.

Automation is the Future

With offerings like Prima 360, Afinitas is betting that automation will propel its organization and the industry forward to solve workforce challenges and meet customer demand. Equally important is providing responsive service to support the market toward this end.

"Not only will the labor situation improve, but producers will be able to operate at a lower cost basis and maintain higher and more consistent quality," said Von Cannon. ■

FURTHER INFORMATION



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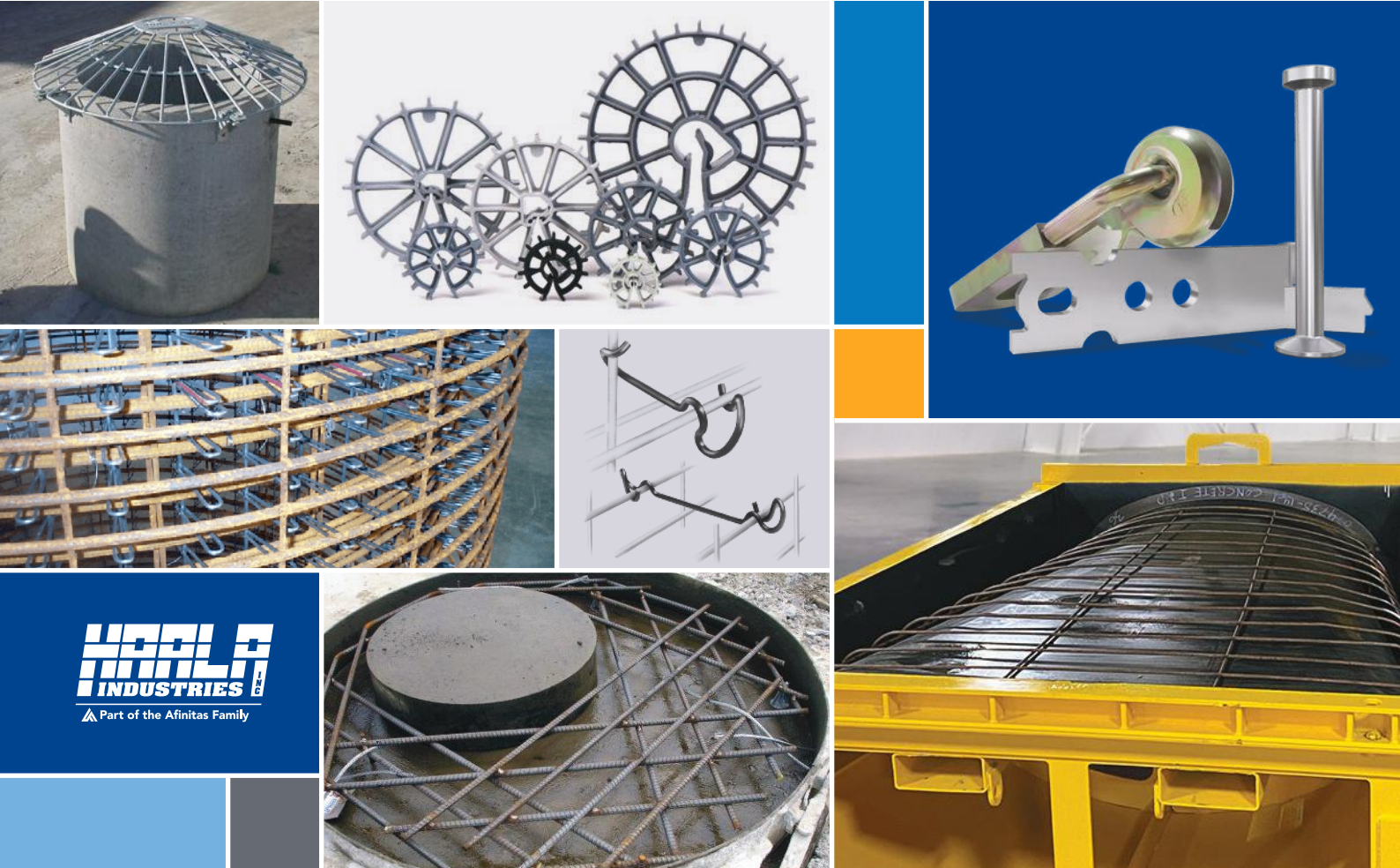
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