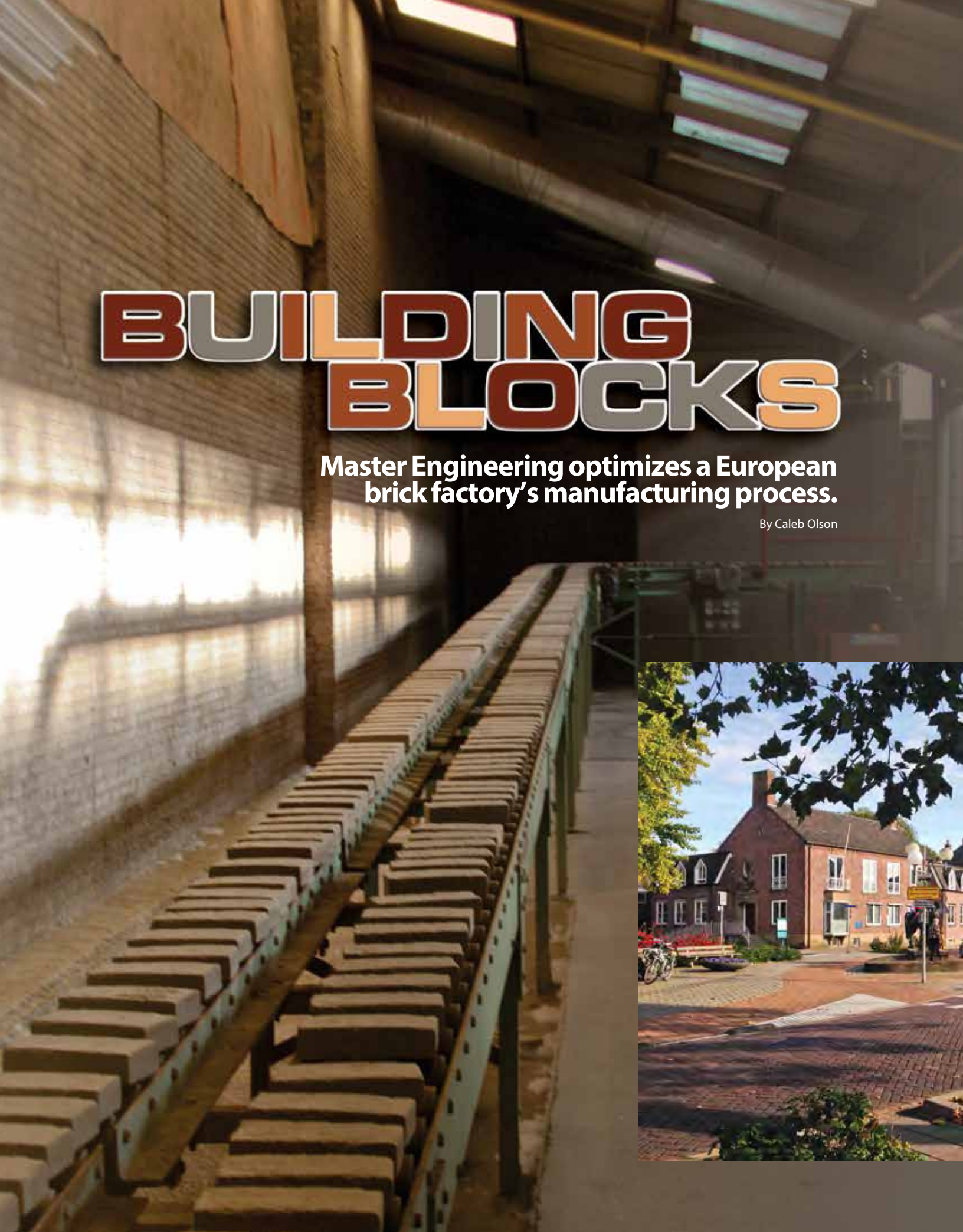


BUILDING BLOCKS

Master Engineering optimizes a European brick factory's manufacturing process.

By Caleb Olson



Master Engineering was acquired by Rice Lake Weighing Systems in May 2013. Its facility also houses Rice Lake's EU offices and the location serves as Rice Lake's European headquarters.

WHEN WALKING THE STREETS OF THE NETHERLANDS, ONE CAN'T HELP BUT BE TAKEN BY ITS BEAUTY. Charming brick homes and businesses complement the lush, green countryside. When scanning the surroundings with an eye for construction, one can't help but notice that just about everything is made of brick. Not only are dwellings comprised of them, but bricks also support man-made landmarks, such as clock towers and the 1,000+ iconic windmills (once necessary to pump water from waterlogged acreage and transform swamps into habitable land). Even the streets and walkways are paved with a seemingly endless supply of intricately woven bricks, flowing like reddish-brown rivers into the horizon of the Maryland-sized country.

From roads to houses and bridges, bricks are the material of choice in the Netherlands.



In the city of Haalderen, the factory Wienerberger has been making bricks for over 150 years. A great deal has changed in the past century and a half, but their formula for making specialty bricks has remained the same, and is a closely guarded secret. Most European bricks hold the traditional red color, and most brick factories can produce only this color or subtle variants. However, Wienerberger has the unique ability to modify color based on specific customer requests. Their most coveted brick is a unique slate-blue color, used for high-end luxury houses and offices. In a sea of red monotony, slate blue stands out

After the first Master Engineering products were installed, Wienerberger estimates they have produced 1.5 million bricks with zero lost batches.

like a prestigious peacock, proclaiming a distinctive message: *I am special*. However, the bricks are difficult to make, and any imperfections can ruin an entire batch. Wienerberger's manufacturing process was exponentially more difficult because no scales were being used. It was more art than science, and as a result, ruined batches were an unfortunately common (and costly) occurrence.

In 2010, Wienerberger had enough. They re-evaluated their processes and determined that scales would be a great benefit to reduce errors and increase batch repeatability. The factory manager, Colin Ferguson, contacted Master Engineering, well-known as batching and in-motion weighing specialists throughout Europe. That year, the first of Wienerberger's two production lines received an upgrade. Jaap Oosterlee, sales manager for Master Engineering, implemented a BS611 belt scale and loss-in-weight system (LiW),



Colin Ferguson (left) and Jaap Oosterlee (right) stand in front of the company's trademark colored bricks.

unique to the industry which is typically dominated by less-precise flow meters.

Regardless of whether flow meters or scales are used, the most important element in creating the perfect brick is using the correct mixture of clay and additives. The clay-to-additive ratio, and which additives are selected, controls the brick's attributes such as strength and color. The exact amounts of manganese, lime, or coal are integral, and if the batch isn't consistently colored it has to be thrown away. However, it wouldn't be very stylish to simply toss them in a dumpster. Instead, Wienerberger decided to construct sculptures out of the discarded bricks and put them on display. A tangible metaphor for the inconsistency of the old system, these sculptures are scattered throughout the facility yard—forming a walking gallery of brick bloopers.

To prevent the sculpture collection from acquiring new members, a BS611 belt scale was installed to transport the river clay to the mixing area. As the clay travels, it passes by a 50-gallon drum containing the appropriate additives for the batch, and the additives are sprayed into the clay based on the weight of the clay and the belt speed.

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In other facilities, flow meters generally monitor the rate at which additives are added. Wienerberger needed higher precision for their special mixtures, so Master Engineering installed a floor scale for the additive drum to rest upon. As its contents are dispersed, the drum's loss in weight is calculated and the rate of flow is dynamically adjusted by Master Engineering's WE303L indicator. This ensures a consistent mixture across the entire batch—something the factory was previously unable to rely upon.

After they are mixed, the bricks are then shaped, dried, and delivered to the factory's specially designed ovens, which have been pre-heating for one week to achieve the required 1800 degrees Fahrenheit. Once they are stacked in the oven, the bricks are baked for one week at the same blistering temperature, and then another week is necessary to complete the cool-down process.

One can imagine the frustration of having to discard a batch after all this effort, but the cost of three weeks of lost time was far more significant. After the first Master Engineering products were

Shaken *and* stirred, ingredients and precise additive levels are mixed to make the perfect brick.



The sculpture garden is made from bricks of lost batches, which hasn't happened since installing Master Engineering equipment.



installed, Wienerberger estimates they have produced 1.5 million bricks with zero lost batches.

The factory management was so satisfied with the improvement that they incorporated an identical system into their second production line in early 2013. While the Haalderen factory is unique for the colored stones it creates, Wienerberger has additional facilities in the Netherlands and surrounding countries which create more standard bricks. Many of those locations have also incorporated Master Engineering's loss-in-weight system to optimize their manufacturing process. The batch consistency achieved at these factories has set the bar for the industry.

The brick sculptures of Wienerberger's gardens have suffered a debilitating setback. No longer expanding, the collection has become a relic—thanks to Master Engineering. The sculptures remain intact, serving as a stagnant reminder of yesterday's struggles. Today, the factory is performing at unprecedented efficiency and, if history is any indication, there will be no decrease in demand—and no time lost. ■

