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Stonemaker's DM-185 is the world's first and only mobile concrete and stone producing factory

User www.stonemaker.com Integrators www.internationalhydraulics.com www.hilco-inc.com

Building for the Future

Fieldbus and connection technology from Turck supports Stonemaker machines for mobile stone production

They say that confidence is the key to successfully implementing any plan. This key element is not something that can be faked or falsely believed in. You either have confidence in your product or you don't. The concept of confidence in your ideas is some-

thing that Stonemaker inventor Gary Troke is familiar with. What started as a personal project has now turned into a revolutionary concept that could change how things are built around the world. This ground breaking new technology, which acts basically as a por-



table stone making factory, has the ability to single handedly build a city; from the foundation building blocks all the way to the roof tiles.

A novel concept

Stonemaker is founded upon a simple yet incomplete idea. What if you built a machine that could be used to create concrete blocks using your surrounding materials, cement powder, and diesel fuel for the machine, anywhere in the world? With that idea, Troke went to work on building the first Stonemaker machine. The first machine he built worked just fine, but didn't have

nearly enough versatility to be used the way he envisioned in the field. The machine used manual switches, relays, and push buttons to operate which really hindered its potential uses in the real world.

Stonemaker can produce up to 240 sq/ft of stones per hour or 5 cu/yd per hour using wet mix

Quick Read

Stonemaker is a machine that has the ability to act as a fully functional yet portable stone making factory. Incorporating Turck products, especially plug and play connectivity, into this machine allows it to operate more flexible and be assembled on site anywhere in the world.

The Stonemaker Team: (Left to Right) Stonemakers' Gary Troke, Hilco Inc. Scott Price, International Hydraulics' Terry Kelly, and Turcks' Anthony Molnar



Call for help

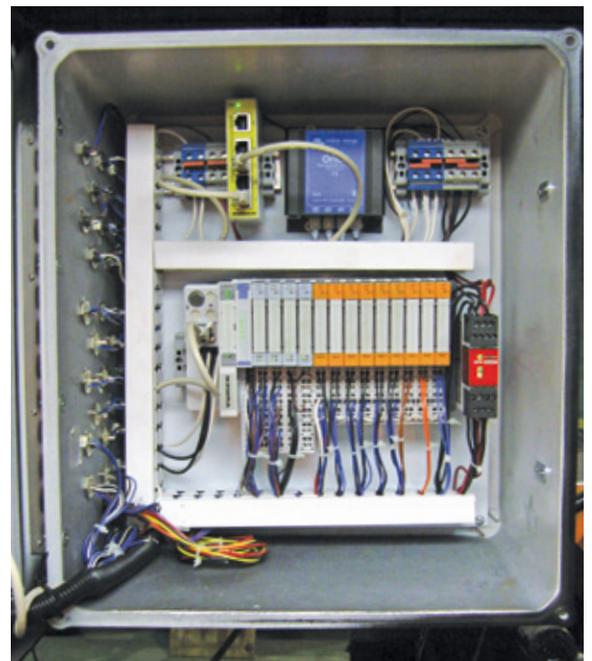
After struggling with the time consuming manual nature of the machine, Troke received a suggestion from someone he was working extensively with for the electrical part of the machine, Terry Kelly of International Hydraulics. Troke was working exclusively with Terry and he suggested and brought in Scott Price, from Turck representative Hilco Inc., to see what potential improvements Turck could make to his invention. Scott Price, along with fellow Hilco application

engineer Bob Dodrill and Turcks network application expert Anthony Molnar, devised a plan to fully automate the processes. Working with International Hydraulics, and in turn, Turck, the machine has evolved into a mobile and versatile machine that can make concrete aggregate literally anywhere in the world, utilizing its ability to use almost anything and turn it into a sturdy, robust building block.

Once involved in the project, the trio saw a variety of ways Turck products could be used to improve and streamline the operation of the machine above and



The new control panel allows centralized operating of the machine



Turck's BL20 I/O system with Ethernet switch simplifies assembly and startup on site



beyond just automating the processes. The machine now uses the modular BL20 programmable gateway programmed with CoDeSys, which offers the versatility that optimally suited the machine. It also uses mobile equipment sensors along with a transducer, which is connected to a compression head, to monitor the amount of pressure exerted on the material as it is molded into its intended form ensuring it meets local building standards.

Plug and play

Perhaps the biggest advantage found throughout this process was that Turck was able to provide an entirely "plug and play" connectivity solution creating modularity for the entire machine. As owner Gary Troke explains, "Connectivity turned out to be the key to the application; without the connectivity solution from Turck it would not be possible to send these machines all over the world with confidence they would work as intended after they got to their destination." Stonemaker machines are built at their production facility in Canada, disassembled and sent around the world, and then reassembled.

Thanks to a custom panel located on the machine where all of the connections are made, this reassembly is a quick and easy process that does not require an electrician for wiring the devices. Overall, this digitized Turck solution allowed for the machine to be more productive and more reliable. The sophistication of the programming done by Turck's Anthony Molnar allowed the machine to use a single mold instead of cycling through hundreds of molds as the electrical configuration eliminated stops in the process which required multiple molds to be used. The programming also allows the end product to be produced

with more consistency and cut down cycle times from 15 seconds per cycle to just 11 seconds.

Upcoming opportunities

Potential uses for Stonemaker include opportunities in Africa and even Haiti, "One really exciting potential application is in Haiti; where you could potentially use existing materials and rubble from the earthquake and in effect recycle and re-use those materials back into aggregate block to rebuild with." Stonemaker is just now entering its introductory phases, and already has orders in North America and Africa. In addition, Stonemaker is gearing up to introduce their machines into South America and Central America soon where a great deal of interest has already been shown. Stonemaker has already been approached by the military about a contract for the machines. To keep up with the interest already shown in Stonemaker they are already in works to open a manufacturing facility located in Roanoke, Virginia.

Conclusion

As Stonemaker machines are introduced and sent out worldwide, they will be sent out with the requirement that they can only use Turck parts where applicable to ensure their reliability. Troke describes, "The integrity of the machines and the components in the machine become more important than ever in remote areas. If something were to break in a remote area there would be no way to fix it so products that are proven to survive and last in harsh environments are of the utmost importance. Really it comes down to the confidence knowing when you hit a button you know exactly what is going to happen every time." ■



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Gary Troke,
Stonemaker