

Case Study Harrison Offers Lean Machine

Harrison Machine Co. LLC, Erie, Pa., has developed new technology to make molds and cores simultaneously on the same machine with one operator, one sand and one binder.

The DMC machine series (Dual Mold/Core) is based on Harrison's tried and proven technology. Dual station core machines have been a staple of the company's product offering since the 1960s, and it has produced flaskless matchplate greensand mold machines since the 1980s. Vertically-split molds also have been an accepted industry standard for many years. In this new product, Harrison has combined the best in each of these technologies for most small and medium size job shops, providing them with an additional competitive advantage.

The DMC system is a modified Harrison Dual Station Cold Box core machine using the same high degree of process and cost control, operational efficiency, application flexibility, quick changeover, and low operator involvement. The system's high level of process control and repeatability allows close tolerance molds and cores to be made, providing Harrison's customers with an increased ability to make near net castings. A recent customer, Littlestown Foundry, Littlestown, Pa., replaced seven older shell core machines with just three Harrisons and now routinely holds cores to around a 0.007-in. tolerance.

DMC coremaking is virtually the same as on all other Harrison core machines. To make molds, the machine uses a unique flask system mounted similarly to a corebox with a pattern plate inserted in the bottom of each half. Using the new Harrison Smart Blow system with a vacuum, higher density cores and molds are made requiring less binder.

Unlike most automatic green sand mold machines, the DMC machines can accommodate various flask sizes as easily as it can various corebox sizes, providing customers with the ability to minimize sand and binder usage and maximize yield. Another unique feature of the system is that it can make either vertically or horizontally split molds. With horizontally split molds the casting size capacity is increased almost 50%. The system can make a vertical mold section and a core, two vertical mold sections, two cores, or both halves of a horizontal mold at the same time.

Existing matchplates can be transferred with a widely-used urethane transfer system, which also allows putting in additional characters, improved gating, and new risering. DMC patterns are separate cope and drag insert plates, which can be wood. No bushings and pins are needed, precise location is maintained by small pins in the bottom of the flasks. Vertical molds are produced with a cope impression on one side and a drag on the other, which are then clamped together in a series to form a number of molds. Molds are assembled

with cores and then placed on long bottom boards on a pour line that can be a simple roller conveyor, gravity or motorized. Larger models require a Lift Assist Manipulator (developed in conjunction with Dalmech Manipulators) for mold handling, as mold section weight can go up to 450 lbs. Standard batch or continuous mixers can be used, Harrison offers the ability to machine mount the mixer and integrate the controls into the machine systems.

To address environmental pressures, the new Harrison equipment uses silicate binders as its primary sand/binder system (though all other cold process binders also can be used). Working with the Letcast Consortium, Harrison has incorporated low-emissions technologies, such as the Smart Cure system, in collaboration with technology partners Furness-Newburge to ensure thorough mold and core curing, further reducing gassing possibilities. Further work with Furness-Newburge has resulted in a non-thermal sand reclamation system that combines sand, core and binder removal with high efficiency sand reclamation in one compact package. **MC**
Visit www.harrisoncore.com for more information.



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