EMBRACING THE CHANGES CREATED BY TECHNOLOGY

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Article Takeaways:

1. Think of technology as a skill to be learned
2. Many benefits to multifunction equipment

Technology is defined as a collection of skills, methods and processes used in production or services to accomplish objectives. This technology can also be embedded in machines, computers, devices and production / manufacturing facilities which can be operated without a complete knowledge of the internal workings of such things.

We often think of technology as the latest and greatest device, machine, gadget or program however, technology is also defined as skills, methods and processes used in production. In our industry the culmination of technology leans heavily on the methods and processes which have been developed through decades of overcoming the inherent challenges of the foundry environment.

One of the challenges that comes with technology is change and as we know some of us embrace change and some of us want nothing to do with change. If it still works why fix it? Another challenge with technology is the typical upfront cost to implement the change. As a machine manufacture some of the challenges we place on ourselves in the development of products include; decreasing cycle times, reliability and longevity, provide a definitive ROI, reduce down time for tooling transition, offer operators a safe ergonomic work station, capitalize on lessons learned and utilize the shared knowledge form foundries worldwide.

In this manufacturing review we take a closer look at the core making process and how having more processes completed by one core machine can assist you with your lean manufacturing process.

Core-blowing technology starts with an analysis of core-blowing cycle times and how to cure a core efficiently. We know that the cost of manufacturing core machines is directly proportional to the cycle-time or throughput requirements specific to individual core manufacturers. Not only is dry cycle time important, but the process times related to exhaust times and gas and purge times also directly affect the final throughput of the core system.

As foundries consolidate core families into single designs, this requires larger core machines capacities to meet larger single-piece cores to be blown. This is also the case with newer casting processes gravitating to larger, more integrated, blown-sand packages, such as the precision sand process. These high core machine costs, taken into account with the sheer floor space, higher utility

requirements, and maintenance costs, put the return-on-investment (ROI) for these types of core machine solutions out of the reach of most competi¬tive foundries.

3-in-1 technology centers on a simpler design that can be easily transferred to existing core machines and tooling packages. The centers around a common method of blowing, tamping, and gassing in a simplified manner. In¬cluding tamping to eliminate any post-blowing core processes, such as the sanding or filling of these areas.

The concept of a sliding blow tube inside of a sealing tube, with a non-transferring gas¬sing manifold was the solution to solving post-blowing core processes. This new process allows the core (or mold) to be blown, after which the continuously clamped drag-and-cope as¬sembly are able to move approximately a half an inch to tamp and then cure. The inner tube allows the passing of the sand from the sand magazine to the core box. At the tip of this inner blow tube is a vent that allows the catalyst to pass through during cure. The outer tube, which is mounted in the cope, allows for sealed interfaces between the inner and outer tube, where the blown sand in the tube is isolated from the catalyst.

The gassing manifold is decoupled from the typical trans¬fer mechanism and is integrated onto the perimeter of the blow plate. With no gas shuttle re¬quired, this eliminated the lowering of the core box, the transferring of the gassing manifold, and the raising of the box back up to gas. In fact, the clamp table stroke is reduced and the only stroke required is to extract the core from between the cope and drag (or clear for drag out) plus half an inch. This results in a compact machine with minimal dry cycle times and core box motions.

The benefits of 3-in-1 technology are easy to understand:

1. The sealed interface keeps sand out, thereby reducing the time for cleaning, maintenance, and of course downtime.
2. The Sand and Gas cycles do not require swing in-swing out or shuttling heads providing less wear and quicker cycle times.
3. Critical alignments are made through the tooling.
4. Higher quality core that no longer needs post-processing work.
5. Reduced footprint from all processes being managed from one machine.
6. 28%-36% reduction in cycle times.

The 3-in-1 utilizes new blow tube technology to enhance the cold box core making processes. By definition, this new method of processes imbedded into a machine is going to result in change. Will you embrace the change and decrease cycle times, improve quality and lean your manufacturing or will you stay the course with machine processes developed decades ago?

New technology is going to drive changes into our industry which will allow us the benefits of lean manufacturing, stronger ROI's, safer cleaner work environments, reduced scrap and ultimately increased profitability.

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Foundry Equipment ... By Design

EMI's QC 3-in-1 Core Machine

Blow. Tamp. Gas.

Simply a Better Way to Make Cores

EMI's patented 3-in-1 core machine does all three: blow, tamp, and gas.

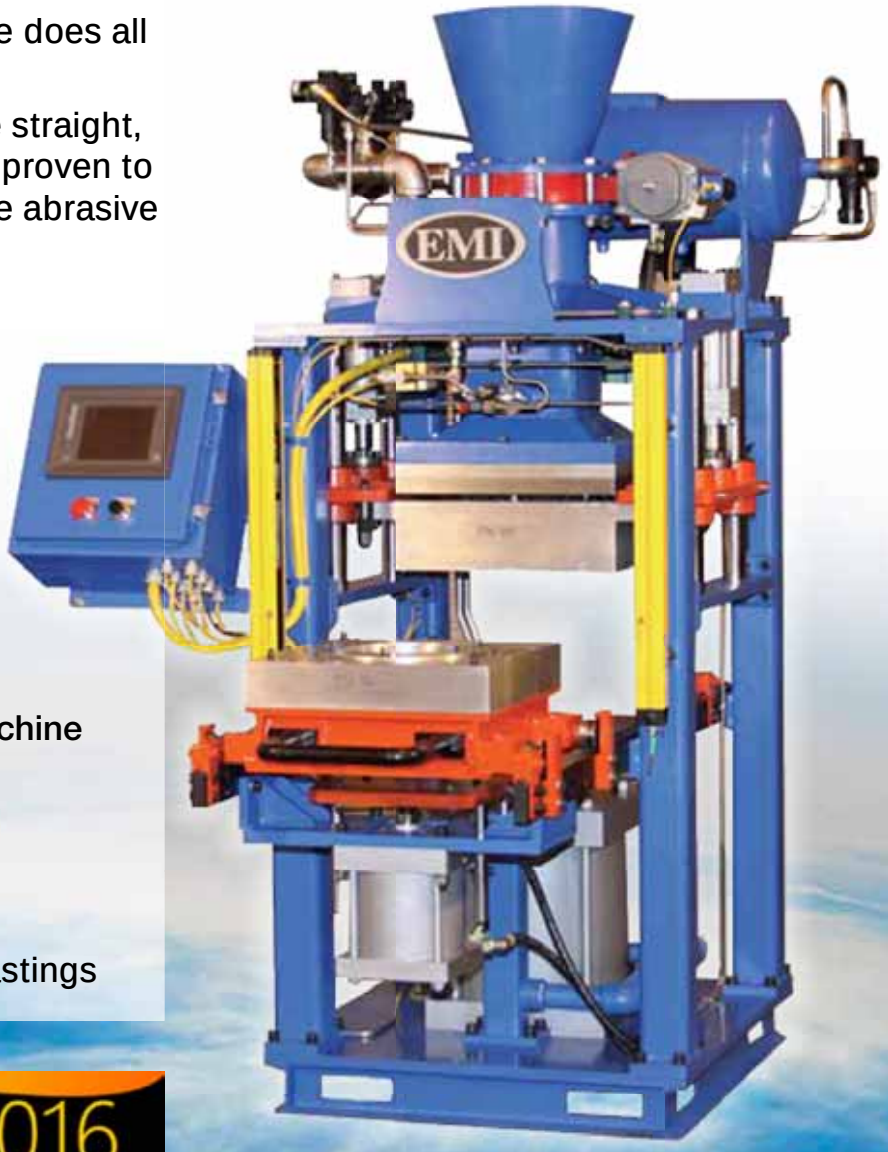
Our technology centers on a single straight, inner tube and a solid outer tube – proven to be durable enough to withstand the abrasive effects of blowing sand.

Benefits

- Faster Cycle Times
- **Eliminates Gassing Manifold Transfer**
- Eliminates Exhaust Time
- Minimum Table Stroke Required
- Smaller Core Machine Footprint
- Increases Production Capability
- Lowers Energy Consumption
- **Lowers Initial Capital Cost of Machine**
- Uses Existing Cold Box Tooling
- System Compatible with All Cold Box Processes

Results

- Lowers Net Costs to Produce Castings



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US Patent No. 8,353,328 B2
Mexican Patent No. 313347

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