



# WAYS TO BOOST BATCH PLANT EFFICIENCY

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# FIVE WAYS TO BOOST BATCH PLANT EFFICIENCY

by Jay Robinson, President  
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The job of specifying, installing, troubleshooting, repairing and upgrading concrete batch plants provides a unique opportunity to see what works and what doesn't when it comes to batch plant efficiency. I'd like to share five principles I have observed that always seem to lead to more efficient, and therefore more profitable, operation.

A simple definition of batch plant efficiency is that it's ***the ratio of (a): the cost of inputs (employee hours, materials, energy, equipment, etc.) to (b): the revenue generated by sales.*** In other words, ***the lower your costs and the higher your revenue, the greater your efficiency.***

The most efficient batch plants produce more concrete with less wasted material, lower repair costs, less downtime, and fewer disruptions in employee productivity. How to achieve this efficiency is the topic of this white paper. The five areas I'll discuss are preventive maintenance, cleanliness, batch control, driver staging, and safety.

## 1 Preventive Maintenance

At plants where some kind of formalized inspection and maintenance schedule is in place, there tend to be fewer breakdowns. If the plant manager recognizes the importance of regular PM and communicates that to employees, chances are good that noisy bearings, worn belts, leaky air systems, clogged filter bags, etc., will be detected and repaired before breakdowns interrupt the batching process.

**Also...** Stock critical plant parts such as solenoid valves, air cylinders, bearings, and various repair kits. If you aren't sure what spares are on hand, sit with your maintenance person and put together a list. If you need help compiling a list, contact Mid Atlantic Concrete Equipment and we'll be glad to suggest one based on your plant and equipment. Keep your parts area neat and put labels on shelves. Have v-belts organized for easy access. *One tip:* an air dryer will increase your filter bag change interval.

Finally, consider PM software, either stand-alone or offered as part of your batching software. It provides a great way to track parts and equipment, and can help with spotting failure trends and recovering warranty reimbursements to which you are entitled.

## 2 Cleanliness

Keeping a plant clean is a constant battle, but one well worth winning. Abrasive dust is especially hard on solenoid valves and cylinders. Add to that a little moisture, which mixes with the dust to form a crust that's hard to remove, and you have a mess that hinders maintenance and inspection activities.

The obvious solution is a truck loading dust collector. Not only does it keep the plant cleaner, but truck drivers need to spend less time washing down the truck after loading.

Another thing that can save time is a drive-through truck wash system. Whether you purchase one from an established truck-wash vendor or build your own, these systems can boost plant efficiency. One operator in Maryland built an automated system equipped with an electric eye that starts a pump when the beam is broken, pushing water through plastic pipe drilled with strategically-placed holes.

### 3 Batch Control

Out of all the processes in a concrete batch plant, the one most critical to overall speed is control of the batching process as it affects the speed of the ribbon discharge into the truck.

There are many different ways to sequence the materials—water, aggregate, cement, sand—but the crucial issue is to find the optimal discharge speed, somewhere below the point where the truck chokes up.

In addition to the obvious benefits of avoiding stoppage of the batch process, proper ribboning of the materials into the mixer will shorten the driver's time to assure that the batch is properly mixed and adjusted for slump.

Of course, the plant has choke points as well, such as the hopper at the end of a conveyor. Monitoring choke points with a video camera has become standard practice at many plants, due to falling system prices, the ease of wiring Cat 5 cable and the high resolution of the latest cameras.

There is another way, probably more important, in which your drivers impact plant efficiency. That and related issues are discussed next.

### 4 Driver Staging

A frequent complaint of plant operators is, "We could get more trucks through here if we knew where our drivers were." Truck drivers naturally like to take a break from the confines of a cab, but wasting time tracking them down wreaks havoc on plant efficiency.

Multiply five minutes by 20 drivers, and you can easily lose over an hour a day this way.

Driver education and rules enforcement are central to minimizing these losses. In addition, many plant operators have installed pneumatic ticket delivery systems or paperless ticket systems that send ticket information via wi-fi to the truck cab as part of an overall solution.

Remote ticketing systems have the added benefit of helping to keep drivers out of the control room, something that is among the fondest wishes of many batch plant operators. Additionally, when designing a new plant consider including a driver lounge area located remotely from the control room.

### 5 Safety

Batch plant designers must make cost-effective equipment selections, but when specifying safety features, keep the big picture in mind. Employees working around conveyors, agg gates and electrical panels are exposed to potential injury, which translates to exposure for the plant operator—to downtime as well as legal liability.

Safety features that should be in every plant include emergency pull-cord shutoffs and safety disconnects on conveyor and turn head motors, and confined entry access manholes in aggregate and cement bin compartments. Where possible, stairs with handrails are preferred over ladders.

Going one step further, certain kinds of automation can keep workers out of harm's way. One example is a central grease manifold, which reduces employee exposure to dangerous areas by eliminating the need to apply grease at the bearing.

Video observation systems provide a similar safety benefit by letting employees monitor choke points from the control room.

Plant operators wanting to take further steps toward safety should review OSHA's Lockout/Tagout standard, which protect employees from injury due to unexpected startup while cleaning or maintaining equipment. Go to [www.osha.gov](http://www.osha.gov) and search on LOTO. You'll find a great deal of information, including a tutorial and case studies that provide specific examples. ■

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