Computerized batching and dispatching speeds work on the job, at the office

The concrete industry has come a long way from the days of "busting" sacks of cement and adding a bucket or so of sand and another couple of buckets of rock in the hopper of a transit mixer. Modern automation systems can store our mix designs, compensate for moisture, crush and screen aggregates, load the truck, dispatch the order, track the truck around town and back, bill the customer, pay our employees, and finally, update our bank balance.

Batching simplified

Concrete has developed into a very specialized product. It consists of mostly bulk materials that have to be weighed or metered—yet the end result is sold by how much space it occupies, strength it attains, and various other characteristics. High-specification concrete has made the batchman's life complicated. He almost needs to be a chemist, a weatherman, and an expert in the other sciences to be able to batch concrete consistently. The one demand that is placed on the batchman from the start is more volume in less time. A good operator, who knows the plant he is working, can usually batch an 8- to 10-cubic-yard load of concrete in 3 to 5 minutes. He will usually be within 3% to 7% of the target values. Consider compensation for excess moisture in the sand, perhaps an absorption in the rock, the need to control the flow rate into the truck or mixer to keep from spilling over onto the ground, and things change. Batch time takes longer; accuracy goes out the window. The batchman never wants to be short, so when in doubt, he "bumps" a little more cement into the mix.

Now it's all in the truck, and the load is out for delivery. It's hot; it's cold; it's raining; or the wind is blowing 30 mph. The slab cracks, the excavation of the forms digs a little deeper in the middle than measured on the edge and now you have a complaint. The batchman remembers that, "Yeah, I batched a couple loads for Jones the other day—everything was fine. Nothing out of the ordinary, it was their usual mix. I don't remember." Horror stories can happen to anyone.

The dispatching computer can act as a central clearinghouse for data and integrate all these systems into a cohesive whole.

Plant automation can do wonders for peace of mind and accuracy. A well-designed plant control system can protect your mix designs and prevent unauthorized access or use. A control should be able to look at and respond to plant scales, either load cells or dial head, many times a second for accuracy. If your plant is automatically weighing an aggregate, cement, water, and admixture all at the same time, there easily could be 1,000 pounds of combined materials in the air at any given second. If your batchman responds as fast as once a second, he could be off by 1,000 pounds, costing upwards of $6.75 per load of concrete. If he's "short," you are going to get short-load complaints. More than likely he is over, and the material he overweighed is paid for out of your company's net profits.

Hard copy helps bookkeeping

Plant automation that prints a "hard copy" of all the materials batched is becoming almost a necessity. State highway departments are requiring this for assurance that you batched what they are paying for. When comparing batch-weight printing from one automation system to another, look for a system that prints manually batched weights, too, in plain, concise language.

Dispatching gets into the act

The computerization of dispatching has lagged behind automation of batching and accounting. In the absence of dispatching schools and math formulas, the only way one learned to dispatch was on the job.

Studies have shown that dispatchers spend the majority of their day doing clerical work, not dispatching. Orders require dispatchers to check credit, calculate c.o.d. amounts, look up bid information, verify that the mix called for was the one designed for the job, and then write the information on the dispatch

sheet. Ticketing was the process of rewriting the order information on the ticket each time, changing only the ticket number.

Few attempts were made to capture information for billing and accounting. "Get the concrete out, let accounting sort it out tomorrow" was the battle cry of the dispatcher. Scheduling was a skill picked up by experience and most experience was gained by mistakes—poor service resulting in being "chewed out" by the customer. Over-trucking was a common defense against unhappy customers.

Systems as problem-solvers

Computerized dispatch systems should solve seven problems:

- Reduce dispatcher's work load
- Verify that the data on the order is correct
- Capture data for invoicing and transfer it to accounting
- Improve service by automatic scheduling
- Provide reports automatically for management
- Reduce delivery costs by truck tracking
- Interface to other systems such as batching computers, signal systems, vehicle location systems, and scales

The dispatcher's work load is reduced by having the computer do the look-ups, thus eliminating files. The system prints tickets on demand, with only a few keystrokes, in less than 7 seconds. Instructions are printed on the ticket, eliminating lost drivers and reducing the time the dispatcher spends on the radio giving directions.

All data entered is verified immediately, alerting the dispatcher of credit problems. Project lists and approved mixes are displayed for the dispatcher, so mistakes are greatly reduced.

Data shared by all

The same data used for dispatching is also used for billing because it is already in the computer. The information is sent directly to the accounts receivable system, whether that package is on the dispatching computer or another one, even of a different manufacturer, at a remote location.

Scheduling shows the dispatcher when he can accept new business, taking into account maximum quantities and a truck's round trip. Although a little overbooking increases a fleet's efficiency, overbooking beyond 20% only makes enemies and does not improve efficiency. Delivery costs are reduced dramatically by monitoring truck movements and reacting to job slowdowns, speed-ups, interruptions, and idle time. Immediate orders can be accepted if trucks are available in the yard. Since each phase of the delivery is monitored and timed, drivers can be supervised throughout their entire day, not just when in the yard.

Because the computer stores the information, it is an easy task to reorganize the data any way the dispatcher, manager, sales department, or administration requires. Reports on delivery histories, materials sales, mix designs, inventory, driver performance, and customer profits can be provided immediately.

Computers have brought sophistication, reliability, accuracy, and increased production to our industry. Systems for batching, dispatching, and accounting are available from many sources. Computer systems that enable complete communication between systems are even more complicated and expensive, but they increase operational security. ■

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