

Larry Trojak

## Holding Rising Construction Costs at Bay

**B**y his own admission, Roger Croft is not easily impressed with most of the new machine-control products that come out for today's construction professional. The veteran sales technician from equipment supplier Lengemann of Florida says he has seen products come and go, and often the end result falls far short of the promises made by the manufacturers. In recent years, however, he has seen such products become increasingly sophisticated—better able to cope with and adapt to changing site conditions. As a result, he knew the day was coming when the machine operator's demand for control at high speeds could finally meet the surveyor's demands for onsite accuracy. On a highway project headed up by Ocala, FL-based Steven Counts Inc. (SCI), Croft says he's seen the future of machine control and believes its name is Topcon's 3D-MC<sup>2</sup>.

### The Need for Speed

As one of the largest heavy highway contractors in all of central Florida, SCI maintains an impressive equipment fleet and works hard to maintain its competitive edge. According to Chuck Counts, SCI's survey department head, it does so by, among other things, staying abreast of new equipment changes and improvements that it feels can help save time, improve

performance, and raise efficiency.

"Machine control has been an accepted part of our operation since 2002, and

3D machine control on many of our dozers, graders, and paddle pans."

That addition alone, says Counts—by nature of not overdigging or undercutting, and eliminating the need for staking the site—has afforded the company an increase in production of anywhere from 25% to 50%, depending on the project. Despite these gains, he says, his operators could often still be heard complaining that they could not work at the speeds to which they'd become accustomed.

"So, when we were told by Roger Croft at Lengemann that Topcon was testing a new machine control—one that would allow us to double the speed at which we can grade—we wanted to be a part of those tests. The highway 484 project, specifically construction of a series of retention ponds adjacent to that highway, was an ideal proving ground for us."

### This is Ground Control . . .

At the heart of the new 3D-MC<sup>2</sup> system is an inertial sensor that overcomes many of the shortcomings commonly associated with machine control, says

Brian Lingobardo, Topcon's Product Manager for its 3D Machine Control Products.

"Previous-generation machine-control systems rely upon a slope sensor that gets its readings from a level vial. This vial had to be dampened to prevent it from being over-reactive and cause instabil-



A single John Deere 650 was able to handle the work of three dozers.

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its purchase was driven by our belief that this was where construction was headed. We were confident that this new technology could get us ahead in production and make us a company that customers would want to rely upon. That's proved to be true, and, as a result, we now have

ity in the machine. While effective, this technology hindered the overall speed capability of previous 3D machine systems. Because of these limitations, a new advanced system was needed to allow grading at most any speed."

Topcon's answer to that demand was the 3D-MC<sup>2</sup> system. The system's MC<sup>2</sup> sensor updates the previous technology and instead relies upon accelerometers and gyroscopes to measure blade position. Because all measurements are being taken electronically, the system presents a far more accurate indication.

"In addition to that," says Lingobardo, "the controller, in this case, Topcon's MC-R3, is receiving information from the MC<sup>2</sup> sensor, which is updating at a rate of 100 times per second. This allows it to constantly know both the blade position and how to correct accordingly, allowing the operator to make corrections on the fly."

### Proven at Work

What all this means in real-time output is a dramatic uptick in both productivity and quality. At SCI's Highway 484 widening project, a single dozer has been working alongside a pair of 40-ton articulated dumps and, despite being outsized and outnumbered, has been holding its own nicely, according to Counts.

"This is one of the larger of nine retention ponds we built alongside the 484 project," he says. "In fact, in an earlier phase of the job, we actually excavated more than 37,000 cubic yards of sand from that pond to use it for subgrade on the road. Because of the porous lime rock under the sand, however, heavy rains have a tendency to create cavities or sinkholes. So, to alleviate that, and assist with percolation, the engineers had us overexcavate, lay down a filter fabric, then place a sand layer over it."

It was during the replacement of the sand layer that Counts says they truly

saw the strengths of the new MC<sup>2</sup> control system at work.

"With today's economy as tight as it is, being able to get things done with fewer personnel and pieces of equipment is a huge plus. If we weren't running the new machine control system, we would probably have had three dozers working with those trucks to spread this dirt. Instead, we had a single John Deere 650—a smaller dozer than would typically be used on a job like this—and he was easily keeping up with them. Our operator, Scott Parrish, says that for most of the project, he's had the throttle of the hydrostatic drive set at between 2.5 and 3.0; to me, that's outstanding. Since we've been testing the 3D-MC<sup>2</sup> we've pretty much doubled the production from that one dozer. Couple that with the fact that we are also seeing a savings by having a 'stakeless' job and the benefits are pretty impressive."

### Smooth Operator

While time is, as they say, of the essence, Parrish, SCI's operator, is equally quick to say he's been impressed with the level of control he's gotten with the new system.

"On a job in which we are working over a fabric barrier, there are always concerns about accidentally digging down too deep and catching and tearing that fabric. Here, we were able to set our grade in automatic and not have to worry about that at all; that's how smooth and steady the system is. As I make each pass, there are virtually no windrows to speak of and, even when encountering a huge pile, I can plow through it without any feeling that it's getting drawn down into the pile. The reaction times are so outstanding that this could be, at times, a hands-free operation."

That ability to free the operator's hands from the tedium of constantly adjusting blade height and pitch, can enhance onsite safety as well, says Lengenmann's Croft.


"On a job site like this, there are a lot of things going on at all times. When an operator's attention is focused on the blade, there's a risk that he or she is less aware of other facets of the job. Now, because they don't have to be fixated on what that cutting edge is doing, that operator can be far more aware of the surroundings."

### Coming Back for More

The true test of any consumer's level of satisfaction is in the repeat purchase, and users of construction-related products are no exception. Counts says he is definitely sold on the 3D-MC<sup>2</sup>.

"There's no doubt in my mind that this is a time and money saver for us," he says. "Because of the current nature of the economy, we will probably not be making any additional purchases right now. But, should we land a sizeable contract which warrants it, we'd definitely be adding the 3D-MC<sup>2</sup> to more machines."

By project's end, Counts says they will have moved better than 546,000 cubic yards of sand in that one retention pond alone. The Highway 484 project is on track to be wrapped up in late April of this year.

"The actual scheduled completion date is well beyond that, but we've been offered a very nice incentive for completing the job 100 days ahead of schedule. Based on some hard work by our people—and the performance we've gotten out of the new machine control system—I think it's safe to say we will be collecting that incentive." 

*Larry Trojak is president of Trojak Communications in Coon Rapids, MN.*

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