

All Images: CD Construction and Design Solutions

String lines have been replaced with digital models.

Disrupting an Industry

The benefits of adopting GPS machine control for small and mid-sized contractors

BY CHRIS DRENNER

There are more excavators in earthwork and paving than any other piece of equipment, yet they represent the smallest number of GPS utilization. With potential applications to any number of tasks, machine control is revolutionizing the construction industry and can improve project production on average by 30 to 50%.

Disrupting an Industry

Small and medium-sized contractors often have the most to gain from investing in the latest currently existing technology. GPS machine control is already a proven workhorse, in military use, commercial, and private sectors. First introduced to the construction industry by surveyors, guided machine controls were eagerly adapted for use with bulldozers

and motor graders in the late 1990s.

Advanced technology comes with a cost. One of the largest hurdles for smaller operations is the upfront cost. For people that have been doing the job with the same equipment for years, adapting can be intimidating. Having old machines rigged up with new components and buying bases and rovers can add up to \$50,000–\$100,000. Most new machinery is coming factory equipped to utilize machine control with an added cost.

The leap in performance is certain, but the jump in cost will for the time being remain a barrier to some.

Worth the Cost of Entry?

Most heavy highway and road construction contractors have adopted GPS machine control seamlessly. Commercial and private contractors have also found

the technology beneficial for strip malls, box stores, and similar commercial developments.

Technology innovations have been chipping away at the limitations of machine control. Commercial site work contractors in the past could only use machine control in open areas with unobstructed views of the sky—where optimal satellite GPS signal could be achieved.

Working under high voltage power used to disrupt systems, and indoor work could not be performed without separate laser control systems. Now hybrid or robotic total stations have eliminated those limitations.

Additionally, Russian GLONASS satellites have been added to the network that GPS systems referenced for increased accuracy and redundancy. The problems that plagued early systems have been improved upon and resolved. Innovation continues to this day;

machine GPS and machine control are fully realized and mature tools for construction.

The ROI is measured in time and margin. Contractors utilizing

machine control will be seen to outpace their competition—being able to complete more projects, in particular, jobs with constrained timetables. Finishing faster, more accurately, and with less labor makes machine control worth the cost of entry.

Versatile and Accurate

As GPS controls become more familiar on the job site, operators are quickly applying the technology to new solutions. In every facet of use, they're proven to perform with pinpoint accuracy.

Utilization in airports for GPS millimeter paving with asphalt and concrete, or stringless curb and gutter, are examples of how the industry is advancing; rather than string lines being placed to mark elevations and steer machines, GPS control works from design files to tell the machine where to go and what grade to put it at. It saves time, labor, and finding margin where you didn't think to

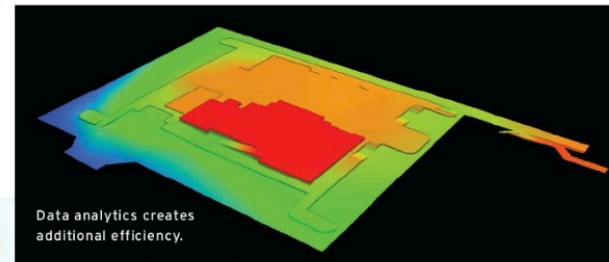
area. An over-cut of 1 inch on a parking lot is not the end of the world, but laying an inch of gravel over a sizable site can cost thousands of dollars in additional costs. Material not planned or budgeted for can make your project less profitable. Not to mention that more material cut means additional trucking to haul it out of the job site.

Hiring surveyors to stake out the site or having workers level and measure as you go are things of the past. GPS machine control means your base and rover store all of that information themselves—and your equipment will put the grade right where it's supposed to be.

Data Analytics

What about creating new profitability? Data recording and information storage as you go can open up new avenues of performance to measure. You can view production and keep track of material used in real-time. Measuring used material against planned material can analyze how accurate your estimations were.

For moments where you feel you're moving more than planned, it's easy to verify against the data. Bringing that recorded information to owners or general contractors



GPS towers rise above the dirt of a dozer.

look. As small and mid-sized contractors use GPS technology for jobs like sports fields, running tracks, housing subdivisions, ponds, house pads, or parking lots, machine control is the new way of the world. Contractors and system manufacturers are finding new applications that would have been restricted to science fiction only a decade ago.

Consistent Performance

Grading right the first time is a multifaceted benefit. You no longer need to worry if a particular machine operator has limited experience or lacks the veteran skill to complete a difficult task. Machine control will increase and normalize accuracy—putting the grade right where it needs to be every time.

That means a substantially reduced chance of operator error over-cutting an

can prove the site was off, and x amount of material was moved but not planned for. Hard data eliminates any question of right and wrong...and can ensure you get paid for your effort.

A New Era in Construction

Unlike other revolutionary technologies that disrupt certain fields, GPS machine control has a proven track record in a variety of sectors. Digital control, automation tools, and data analytics are already changing the construction industry. Adopting the technology for your operation will result in a strategic edge, reducing personnel costs, boosting accuracy, and increasing efficiency. **CD**

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