



## SPECIAL REPORT

# HUMAN RESOURCES, LAW & EMPLOYEE BENEFITS

# Tools for training

### Zachry officials have high hopes for virtual simulator software programs

BY SANDRA LOWE SANCHEZ

**M**ike Monnot believes he has found what could be the construction industry's next hottest tool.

The director of equipment for Zachry Construction Corp. came about it quite by accident two years ago while he was attending Con Expo in Las Vegas, the construction industry's annual trade show. Officials with Caterpillar invited him to a private showing of the M-series motor grader, a machine the company was transitioning to. The new machine utilizes a hydraulic system that employs joysticks and levers as opposed to a steering wheel. As part of the demonstration, Monnot was able to use a simulator software program being developed for the motor grader. The program mimicked the actual operation of the highway construction machinery — but without the inherent risks involved.

"At that time, I wanted to buy it, but they wouldn't sell it to me," Monnot says, referring to the virtual reality program.

"He was elated when he saw the software," recalls Ken Powell, an executive with the equipment distributor Holt Caterpillar, who was with Monnot at the time.

The software program was aimed at convincing customers that the equipment was much easier to use than the existing steering-wheel system. But Monnot immediately saw that such virtual training programs could be used for many other pieces of heavy machinery in the business and he pursued efforts to purchase such programs, which were recently successful. Such programs could offer a profound improvement in both hiring and training construction equipment workers, as well as offering new excitement in a growing industry struggling with a labor-supply shortage.

Gauging a job candidate's actual experience in operating certain equipment is one of the first areas Monnot expected that Zachry would see a benefit from the software. Currently, Zachry applicants fill out an employment application and are interviewed by the company's employee relations department, or human resources.

"Human resources, who is doing the interviewing, really doesn't have any expertise in what a loader operator or an excavator operator should or shouldn't do," Monnot explains. "This tool would allow them to actually put (the applicant) in a seat and see.

What we do now is take them at their word, face value, and then process them and send them to the field. If they get to the field and can't do it, we've expended a lot of money."

Another way company officials could utilize such software is by cross-training people on the various jobs required at a site, so that workers can fill in if someone is out. With virtual equipment, a new employee can train on a computer before utilizing the real thing.

"Cross-training is a big issue for us because if we have half a dozen people on the job, we just hire half a dozen operators. And then when one



**Monnot**

of them is out sick ... we expect (the replacement worker) to be both safe and productive," Monnot says. "And that's often not the case. This will allow the project manager to train all of his operators ... on multiple pieces of equipment and cover that. It doesn't consume any fuel, it doesn't take any time (at the site), and he doesn't have to fill up a hole he just dug with an excavator."

"It's going to dramatically reduce the training time," Monnot adds.

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Zachry Construction Corp.

### Reaching Up

While the motor grader software was not ready for release at the Las Vegas show, Monnot decided that Zachry needed to further research the virtual programs available for various types of equipment. He continued to inquire with Caterpillar about the release of the motor grader software and another program under development for a hydraulic excavator, where the software actually measures the amount of dirt the shovel picks up and deposits in a nearby virtual truck.

Last year, after two years of development, Caterpillar released its first simulator — for the hydraulic excavator. Zachry acquired it in September.

The product lived up to Monnot's expectations, taking users through increasingly difficult tasks. Monnot then asked his



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**John Kennemer, equipment superintendent with Zachry Construction, believes the virtual simulators the company is acquiring will help it improve safety.**

# TRAINING: Zachry to use simulators to reduce expenses, help employees build skills

equipment superintendent, John Kennemer, to search for a crane simulator. It was in conducting that research that Kennemer came across the name of a Canadian company, Simlog Inc., which he learned had developed the simulator training program for the hydraulic excavator equipment in conjunction with Caterpillar.

Montreal-based Simlog was founded by Paul MacKenzie and Paul Freedman, who originally developed simulation equipment for the logging industry when both worked for an industry research organization called CRIM, or Centre de Recherche Informatique de Montreal. In 1999, the pair received permission to leave the organization and start their commercial venture.

Co-founder Freedman says the heavy equipment required for logging, mining and heavy construction share some common threads, so it was a natural for the firm to expand its operations to those industries. By 2002, the company had developed crane simulators and was marketing them to rental firms. Still, most of its customers are operator training schools, he says.

More work is on the horizon for the small company, however, which has grown to nearly 10 people since its inception. In 2004, Simlog began working with Caterpillar on its training programs.

Caterpillar's release last year of its hydraulic excavator simulator was among the first results of that joint effort. "Both (Caterpillar and Simlog) contributed dollars and expertise," Freedman says.

He adds that his firm is already busy on further projects in conjunction with Caterpillar. "Over the next three years, we'll work our way through the Caterpillar families of products," he says.

According to Freedman, Caterpillar and Simlog expect to jointly release simulators for off-highway trucks, wheel loaders, and possibly track-type tractors (or dozers) in 2007. A preliminary version of the motor grader simulator is now available, he says.

A call to a Caterpillar official was referred to a spokesperson, who did not respond by press time.

## Training first

In the equipment yard outside of Zachry Corp.'s headquarters off of Military Drive on the city's South Side, Kennemer points to a mobile crane that company workers are attending to.

"If we put somebody in the seat of that and expect them to operate that, there's nowhere for an instructor or operator to sit because the cab's too small," he says.

That leaves the instructor with two options: call out the instructions from the ground or stand on the cab's fender (while holding onto the cab) and dictate instructions. Even following safety measures, Kennemer says the practice for a first-time user is by nature unsafe. "If somebody gets excited and they don't know what they're doing, they could hurt somebody or swing (the ball) into something and tear it up. You're literally being unsafe when you have to train people to do this unless you're in a wide open space," he says.

In comparison, the simulation software mimics the sounds of the real machines, yet delivers crucial information as the operator completes each task — on a crane for example, the range of sway of the load.

"I can't put the vibration in the seat that goes with the machine, though," quips Sam Rogers, supervisor of the company's crane operator certification program, who has worked with both crane simulator programs. Rogers, who helps prepare employees for national crane operator certification, says while he would not want the program used as a final test, "it exceeded my expectations."

The simulators are expected to capture interest among industry representatives concerned with safety as well. Mark Bakeman, safety director with the Associated General Contractors San Antonio chapter, says training is an area lacking in the construction business and simulators would help address the issue.

"I think it's a great idea," he says.

Steve Furkin, senior vice president with the Kansas City insurance brokerage firm The Lockton Cos., says he believes such programs can



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**John Kennemer, Zachry Construction's equipment superintendent, instructs Sam Rogers, supervisor of crane operator certification, on a crane simulator.**

potentially improve the insured's safety record and therefore the insurance company's performance.

"If I were an underwriter, it's the comfort level I would get knowing that higher-level training was being provided," says Furkin, a former underwriter. "If these safety programs are what I think they can be, there will be less claim activity."

## Bargain buy

So far, Zachry has purchased simulators for both the mobile and tower crane, as well as the excavator. The Caterpillar simulation system — complete with a stand and controls — costs about \$13,000.

Monnot and Kennemer chose not to buy controls for the crane simulators after learning how other companies had fashioned their simulator equipment acquired from Simlog. Ultimately, the two construction officials built their own stand with the help of their metal shop and a pair of joy sticks purchased at Wal-Mart. Monnot bought a wide screen TV at Costco to complete a training station that allows users to learn how to run the equipment from an office chair.

The additional software modules cost the firm about \$3,000 each, making further acquisitions economically possible.

"It's really a very small amount of money when you consider the benefit we get out of it," Monnot says.

As the owner of some 45 motor graders, Monnot expects the company will transition its equipment to the new hydraulic versions over time and will acquire further simulators as they are released.

And the company is sharing resources related to the simulator programs with other Zachry Corp. subsidiaries that may have a need for the equipment.

Zachry Construction officials say company President David Zachry has asked each business division to determine its needs for simulators for bulk purchase. Monnot estimates the company will acquire about 20 more simulator programs.

Zachry is now working out which of its departments will actually oversee the training efforts. It has trained some 20 workers so far using the simulators.

Meanwhile, the equipment is also being taken to schools and college job fairs to pique the interest of students and potential job candidates. The simulators are not unlike some of the video games the younger generation is growing up with and offers construction companies like Zachry hope in interesting a potential pool of workers for the future.

"It's going to have a pretty big impact on the company," Monnot says.