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Heavy Equipment Simulators

Until about five years ago, the only way to practice operating an excavator or bulldozer was to climb aboard and start moving dirt, ideally in an area without too many buried power lines and gas mains. Today, however, many technical schools, unions, and other training providers rely on computerized



Recently developed heavy-equipment simulators from Caterpillar (top) and John Deere (above) help both civilian and military trainees develop basic skills without burning fuel or risking the real-world consequences of a rookie mistake.

heavy-equipment simulators to teach this skill. Both Caterpillar and John Deere make simulators for their excavators, bulldozers, graders, rubber-tired loaders, and other machines.

To a military or commercial pilot familiar with modern flight simulators — which cost millions of dollars and provide an experience almost indistinguishable from that of flying the actual aircraft — construction simulators might seem ridiculously underpowered. But as Caterpillar program manager Larry Estep points out, student pilots may train on a flight simulator for hundreds of hours before taking the controls of an actual aircraft. Construction simulators, by contrast, have a much more modest goal: to give trainees the equivalent of a few days of practice before they make the transition to the real world.

Caterpillar evaluates an individual trainee's readiness to leave the simulator and actually "get on the iron," as Estep puts it, with a simulator-administered proficiency test. John Deere relies on a scoring tool that compares the trainee's productivity to that of what company engineer Jonathan Goodney describes as "a pretty good operator." The score is expressed in dollars, with a negative figure indicating how much money the operator would be losing. A score of zero indicates a productivity exactly matching that of the baseline operator, while a positive total indicates that the operator is making hypothetical money.

If such game-like features sound like fun, you're not alone in thinking so. Both Estep and Goodney acknowledge that their companies have been deluged with requests from game developers. The problem, they say, is that the goals of hard-core gamers are fundamentally at odds with those of safety trainers. When a bulldozer or excavator is placed in an unsafe situation in a training simulator, for example, the machine simply comes to a stop, prompting a stern warning message on the screen and earning the operator a failing grade for the exercise. Gamers, by contrast, tend to want machine guns and fireballs. "They want to wreak havoc," Estep says, "and we don't want to associate our brand with that kind of thing. We think it would dilute its training value." — *Jon Vara*