

IUOE Local 701 Provides Over 24,000 Hours of Operator Training and Saves Over \$500,000 with Simlog's Personal Simulators

When International Union of Operating Engineers (IUOE) Local 701 in Gladstone, Oregon was looking for an affordable solution to training heavy equipment operators, it turned to cost-effective, PC-based simulators developed by Simlog Inc., and supplied by VISTA Training, Inc.

IUOE's mission is to provide participating contractors and municipalities with a supply of skilled heavy equipment operators who can operate safely and productively. It operates training facilities throughout North America. Each location is independently managed by a local chapter of the union. Usually, an IUOE local provides operator training on a variety of equipment types.

Providing hands-on training for heavy equipment operators is becoming increasingly expensive for vocational training centers. Training facilities must invest in qualified instructors, rent or borrow current model equipment, and pay for fuel, maintenance and insurance costs.

In addition to the equipment requirements, vocational training centers must provide a suitable work site with a variety of terrain and soil conditions where trainees can practice their equipment operating skills. These facilities must accommodate the training needs of a surprisingly diverse clientele, from entry-level apprentices who need close supervision, to journeyman operators who are learning how to operate a different type of equipment or upgrading their skills.

Meeting all of these needs within a budget is a formidable challenge.

Local 701's Requirements

IUOE Local 701, headquartered about 20 miles south of Portland, OR, owns a small fleet of equipment that it uses for operator training. The union leases 100 acres of land where it has set up job sites that mimic actual work sites and conditions. The union also rents specialized equipment as needed for training.

Local 701 business manager and financial secretary Mark Holliday learned about equipment simulators at a convention, and became convinced that they could help the union to train equipment operators more cost-effectively. Locating potential suppliers of simulation software and hardware became the responsibility of staff supervisor Gene Kidd.

A key requirement that drove Kidd's search was cost. "We wanted to enhance our training program but we couldn't afford to spend \$100,000 on a complex, full-motion platform unit," he explains.

Ideally, Kidd sought a price point that would enable Local 701 to purchase a number of simulators, so it could train multiple operators simultaneously and eliminate a significant bottleneck.

"A great deal of time, sometimes up to 40 hours, was spent in the field by the students learning the basic control functions of machines," Kidd recalls. "This was not only time consuming for the instructors but frustrating for the students, too."

Local 701's business manager felt that their budget could be spent more wisely on a program that not only taught basic equipment operating principles without going into the field, but also helped to screen the skills of potential operators in a more consistent way.

Kidd and Holliday also envisioned that simulators could be employed as testing tools for advanced apprentices as well as journeyman operators who wished to upgrade their status.

Finally, Local 701 wanted to partner with a developer that offered simulators for a large number of equipment types, and was committed to expanding its product offerings.

An Affordable Solution

Kidd discovered a promising solution by talking to VISTA Training, a value-added-reseller of Simlog's PC-based heavy equipment simulators and related equipment training products and services.

“VISTA took the time to thoroughly understand our needs, and then showed us how the company could work hand-in-hand with us to develop and maintain our program,” Kidd says.

VISTA provided Local 701 with several Simlog hydraulic excavator and crane simulators for evaluation. The union eventually purchased a total of eight simulators that were set up on six workstations. Five workstations are located at the union’s Eugene, OR training center and one at the union hall in Gladstone, OR.



A single PC with Simlog's Hydraulic Excavator, Tower Crane and Mobile Crane simulators sharing the same PC Controls at Local 701's Gladstone headquarters.

At the Operating Engineers Training Center (OETC) Eugene facility, two instructors oversee the simulators grouped by specialty field of expertise. The structures department has two simulator stations running either tower or mobile hydraulic crane, and the dirt group has three simulator stations set up to run hydraulic excavator and future simulators.

Each simulator station is equipped with a 2008 Toshiba 42-inch HD LCD TV with 1080P full HD display and a 2008 HP Pavilion Elite PC. Each simulator station at the Eugene location is dedicated to a specific type of machine, with appropriate controls. The single station at the union’s Gladstone headquarters has the excavator, tower crane and mobile hydraulic crane all installed on one PC. Controls for each of these equipment types, which are connected to the PC via standard USB ports, can easily be switched out in a matter of minutes.

The mix of hours spent in the classroom, on the simulator and field training on actual equipment is based on the skills of each trainee. The minimum amount of time spent on a simulator is 24 hours. This usually is enough time to complete hundreds of “trials” that make up the 12 simulator modules, but some trainees may require additional time. Each simulator module builds upon the skills of the previous one, covering the key tasks performed by a particular type of machine.

What constitutes a passing grade on the simulators? Local 701’s training staff has established benchmarks by machine type, based on an analysis of data from a diverse group of trainees.

“For example, in module one of the excavator simulator, which is controls familiarization, they must complete 150 trials with zero errors and within an allotted time of 7 to 10 minutes for that module. That represents an average level of performance,” Kidd explains.

Once trainees complete all 12 modules correctly, they are then moved into field training on actual equipment so they can apply the hands-on skills they have learned.

Bottom-line Results

By giving trainees such a deep immersion in basic equipment operating skills on the simulators, Local 701 has been able to significantly reduce the amount of “seat time” required to train operators. Kidd reports that equipment fuel and maintenance costs have “dropped dramatically” since Local 701 incorporated the simulators into its curricula.

Local 701 has trained over 1,000 apprentices and journeymen on its simulators, delivering over 24,000 hours of total simulator-based training time. Approximately two-thirds (16,000 hours) of the total simulator time was on the local's four hydraulic excavator simulators, with the remaining one-third (8,000 hours) on the two mobile crane and two tower crane simulators.

Based upon an average fuel consumption of 8 gallons per hour for earth-moving equipment, 5 gallons per hour for a crane, and a price per gallon of diesel fuel of \$3.00, Local 701 has saved over \$500,000 since the union began operating its simulators in October 2008.

"We invested approximately \$8,000 for each of the five dedicated simulator stations at our Eugene location and \$15,000 for the one multi-purpose station at our Gladstone headquarters, for a total of just over \$50,000," Kidd explains. "To date, which is well under 24 months, we have realized an impressive near 10-fold return on investment based on fuel savings alone."

In addition to fuel cost savings, the simulators have freed up instructors to focus on other higher value-added tasks because trainees can work their way through simulation trials at their own pace.

"Our instructors are now able to concentrate on proficiency by sending our trainees out with more comprehensive training during the two weeks per year that we require as part of our four-year apprenticeship program," Kidd reports.

Likewise, trainees are able to make better use of their time. "Every one of our trainees now has an opportunity to learn on the simulators instead of waiting for seat time on a full-sized machine," Kidd adds.

Training Effectiveness

Holliday and Kidd believe that the combination of classroom training and PC-based simulation produces more confident and well-trained apprentices who are better equipped to transition to operating actual construction equipment.



Pictured are 2 of the 5 simulator stations at Local 701's Eugene Training Center where each PC is dedicated to a specific type of equipment, with a combination of OEM, Replica and PC Controls.

"We are now able to provide a more thorough training program for our apprentices and to upgrade operators in their fields of expertise, whether they are moving dirt or operating a crane on a building project," Kidd emphasizes.

Program Promotion and Recruiting

The simulators have also turned out to be an excellent vocational recruiting tool. Local 701 holds several vocational fairs every year, where they attract a significant amount of attention. Kidd said the union also takes the simulators to its quarterly meetings, which all 4,300 members are invited to attend.

Future Plans

When Local 701 was first looking at simulator solutions, one of its primary concerns was partnering with a supplier that is committed to ongoing development of new simulators for a growing number of equipment types.

"We are presently looking to purchase a wheel loader simulator and look forward to testing it and then using it at the training center," Kidd indicates. "We're also very interested in a crawler dozer simulator and any type of road building machinery."

Kidd cites the strong relationship between Local 701, VISTA Training and Simlog as a key to its success. "The staff of both firms have been of enormous help in coming to our aid, especially as we worked our way through several hiccups when we started up our program. We appreciate that level of support."

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