STAYING SAFE ON TURBINES

Fall protection training is crucial and necessary to insure worker safety.

By Jim Hutter

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EVERY DAY WORKERS RISK THEIR LIVES at extreme heights to accomplish tasks that are essential to the development and operation of wind turbines. With some of the tallest towers reaching several hundred feet, there is no margin for error. It is essential that all workers be protected from severe injuries in the event of a fall.

FALL PROTECTION STANDARDS

Every company performing work at height must have a fall protection plan in place in order to comply with the ANSI Z359.2 standard. A written fall protection plan is required whenever one or more person(s) are routinely exposed to fall hazards and need to be protected with a fall protection system. ANSI also requires a documented fall protection plan be developed by the program administrator, made specific for each site, kept up to date and stored at the worksite.

Clearly, a written fall protection plan is not enough to protect workers. Even the most comprehensive plan will fail if workers are not adequately trained to execute the program and use the equipment properly.

TRAINING: THE WAY TO A SAFER WORKPLACE

Formal training is crucial for any person who performs work at height. Without such training, work-

ers may not realize the severe consequences of a fall, including serious injury or death. Eager workers may be anxious to prove themselves and, if they see safety equipment as a hindrance, may forgo using it. Others could be embarrassed to ask about the proper way to use the fall protection equipment and may use it incorrectly, which will ultimately decrease the effectiveness, comfort level and usability of the equipment. It is therefore important to instill the value of fall protection training within your workforce.

All employers in the wind energy industry should provide training programs through every step of the process, including installation of the turbine and regular maintenance activities. Training courses are in-depth sessions covering a variety of pertinent topics, such as:

- Identifying, eliminating and controlling potential fall hazards
- Selecting the right fall protection equipment for the job
- Inspecting, using and maintaining fall protection equipment on a regular basis
- Executing the tactics within a fall protection plan
- Compliance with applicable industry standards

One of the most important areas of fall protection training in the wind energy industry is rescue. Since wind turbines are frequently located in isolated locations, more time is required for rescue crews to reach an accident scene. Another issue is that most falls occur near the top of the turbine, where rescue can be nearly impossible from the ground using conventional rescue tactics.

For both of these situations, employees will need to know how to perform a prompt rescue procedure. Prompt rescue is typically defined as within four to six minutes and no longer than 15 minutes following the fall. The difference between a non-injury fall and one resulting in serious injury has to do with how quickly a worker is rescued. The longer the fallen worker is suspended or trapped, the worse the injuries he or she may sustain.

WHO SHOULD PROVIDE TRAINING?

Many fall protection regulations specify the involvement of a competent person as defined by OSHA regulations 29 CFR 1926.32(f). OSHA defines a competent person as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them." To become a competent person, one must undergo specific training and show adequate knowledge through extensive experience.

Competent persons should be identified within the company to oversee the fall protection plan, conduct fall protection training, and ensure all employees are prepared prior to working on a turbine. If you need help addressing fall protection topics or would like to ensure your training programs are comprehensive and in compliance, contact your fall protection manufacturing company. Many manufacturing companies, including Capital Safety, offer training courses for workers of all levels, and will work with you to develop a plan that is specific to the jobsite and appropriate for your workers' needs.

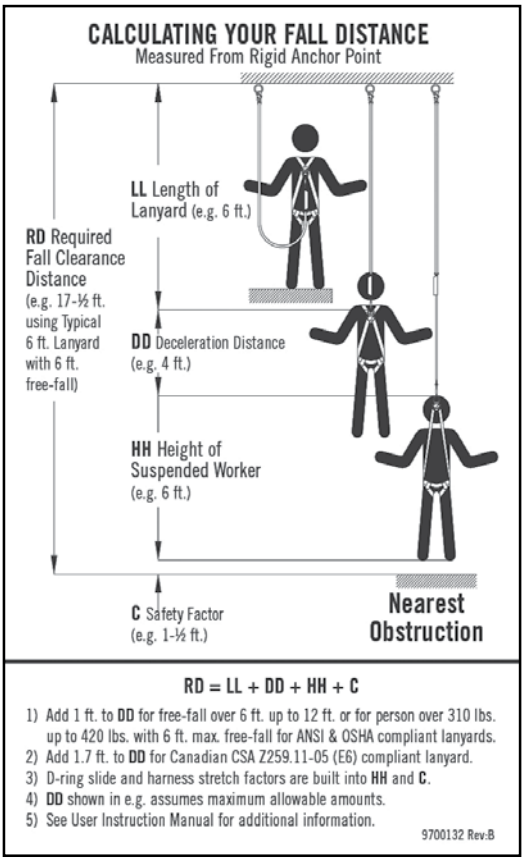
TYPES OF TRAINING

Since workers typically learn the most by watching and then by doing, it is best to conduct a training program with an equal amount of classroom and hands-on instruction. The key with any training program is to provide learning that approximates actual work conditions so the workers can easily apply what they've learned to real situations.

CLASSROOM TRAINING

An OSHA-defined competent person should conduct classroom training that is specific to the needs of the worksite in a controlled environment. The trainer must identify learning objectives and develop a lesson plan prior to conducting the class. Most classes combine lecture style training, including slides and video, with group discussions to apply theory to practical applications. Training manuals should be provided for workers to reference both during and following the course.

While many topics will be discussed during the course, such as those previously listed, it is crucial for trainees to review fall energy and fall clearance – the two most misunderstood topics. Many workers do not understand or even consider the amount of energy a fall generates. The force of a fall is dangerous and can extend the total fall distance considerably, leading to serious injury or death. For example, a 310-pound individual falling more than six inches will create forces up to 3,200 lbs. Understanding fall energy will help workers identify the best equipment to limit fall distance and thereby reduce the amount of energy generated in a fall event.



The other important topic to discuss in the classroom setting is calculating fall clearances. Should a fall occur, there must be sufficient clearance below the user to arrest the fall before the user strikes the ground or any other object. Fall clearance is more than a simple measurement from the worker to the nearest obstruction. The correct formula is the lanyard length + the energy absorber deceleration distance + the height of the dorsal D-ring on the harness from the worker's feet + the clearance to obstruction during fall arrest (see figure). Each of these measurements is critical and must be taken into consideration to correctly calculate the fall clearance distance. The results of a fall can be much worse, even fatal, if this measurement is miscalculated.

Equipment demonstrations and tutorial videos are also provided during classroom training to show workers best practices when working on the turbines. From here, workers should be prepared to move on to practical applications where they will experience firsthand how to properly use equipment and execute the fall protection plan.

HANDS-ON TRAINING

Hands-on training allows workers to learn by doing and gives them the opportunity to be corrected

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in a safe environment. When talking about a harness, for example, there is no substitute for strapping into it, connecting to an anchor, experiencing how it feels and seeing firsthand what needs to be inspected before use. Workers can also conduct mock trials of the fall and rescue procedures to become familiar and comfortable with the tactics in the comprehensive plan.

Hands-on learning experience can be offered either on or off the worksite. Courses at an off-site facility provide controlled environments uniquely designed to offer practical experience and unique complexities of working on a turbine. On-site courses, on the other hand, apply professional training to your specific daily work activities. By training in and around the workers' normal environment, you can ensure that the issues discussed are immediately applicable to your employees.

ASSESSMENTS

Training courses are typically competency-based, with each course having a specific and relevant unit of competency as indicated by the learning objectives and lesson plan. With these types of programs, writing assessments and/or hands-on exercises are to be completed by workers to show knowledge retention of the presented information and the ability to apply it in a work-like environment.

THE BOTTOM LINE

Wind turbine installation and maintenance calls for tight safety measures. With the sector showing enormous growth and potential for the future, the need for fall protection planning and training will be more important than ever. Give your workers the confidence they need to conduct their work safely with the right equipment and with the knowledge to help their co-workers in the event of a fall.