

Safety in Wind Energy – Cranes

AWEA's Safety and Health Strategy:

Worker safety and health are core values of the wind energy industry.

Support continuous training of wind industry employers and employees.

Empower workers to take ownership of safety and health programs.

Educate and Cooperate regulating agencies about how wind projects are developed and maintained.

Create and Distribute appropriate safety and health training programs and educational materials.

Monitor the injury and illness rate within the industry.

Identify high hazard areas.

Develop solutions to eliminate or reduce these hazards

Always remember to report injuries and incidents to the supervisor.

FOR MORE INFORMATION, PLEASE CONTACT:

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Wind turbine construction requires some of the largest equipment in use today. Lifting components in excess of 90 tons to heights exceeding 300 feet requires strict attention to safety. Every project in the wind industry is unique and will have project specific needs, challenges, and safety requirements. Crane safety should be addressed when assessing the project needs and requirements. The above information is intended to provide general guidelines to help assist in safe project planning which leads to safe project construction.

Hazard analysis

Every wind project requires a hazard analysis of the work being performed. This analysis should include the crane operator's input and all hazards should be identified prior to crane operation.

Assembly/Disassembly

Due to their size, cranes must be disassembled for shipping and reassembled once they arrive at the project. OSHA requires fall protection for heights at six-feet or above. A combination of personal fall protection systems (PFAS), platforms, and or man-lifts are typically necessary to complete this work.

Inspection

A key component to crane safety is frequent crane inspections. OSHA requires that a competent person be designated to inspect the crane and associated equipment prior to each use as well as thorough, documented, annual inspections. Inspection items include, but are not limited to:

- All Wire Rope
- Rigging
- Belts, Pumps
- Hoses
- Drive Systems
- Brakes
- Clutches
- Computer
- Anemometer Boom
- Anti-Two Block Device

In addition to the two mandated inspections mentioned above, cranes should also be shut down and re-inspected after any incident or occurrence that could affect the integrity of the crane.

Wind/Weather Considerations

Wind and weather wreaks havoc with construction schedules. However, Mother Nature and the laws of physics rule when it comes to crane operations. Never exceed the crane or component manufacturer's charts or recommendations pertaining to wind. Wind speeds should always be determined via a boom tip anemometer. Also, be sure to have a plan in place for lightning safety.

Communication

Communication while performing work in the wind industry is essential. A single signal person is may not be adequate for performing lifts. Workers should employ a system wherein qualified, designated people are assigned the responsibilities required to safely and properly signal the components into place. The system should include what methods and tools will be used (i.e. hand signals, radios, etc.) to perform this task.

Operator Training and Certification

Today's modern cranes are highly engineered and technically advanced machines that require thoroughly trained and competent operators to ensure safe use. It is imperative that operators are trained and tested on the specific type of crane used. Operator certification through an accredited crane/derrick operator testing organization is suggested. Specific state legislation requires the use of a certified crane operator (CCO) licensed crane operator. Check with your state regulations to determine if there are specific crane operator training requirements.

Ground Pressures and Travel Paths

Many crane incidents are due to inadequate bearing surfaces. Whether you are hoisting a load or simply walking the crane, bearing pressures and ground surface capabilities should be determined with each activity. During all major component lifts, crane mats should be placed on top of the crane pad.

Crane travel limits

All cranes should have a published chart indicating the travel guidelines for "walking or traveling" the crane. Considerations for the maximum percent grade, side slope and boom position should be accounted for when planning the roadways and especially when traveling the crane. In addition, all overhead and underground obstacles should be discussed and marked for safe crane travel.

Control of the Lift Area

Once ready to make a lift, a safe zone for all non-essential personnel should be established. Essential personnel operations should be planned and supervised so that no one is working under the boom or lifted component.

Lift Plans

Lift plans should be provided for each major component lift to the crane operator prior to performing the work. The operator should keep the lift plans on hand to ensure that each lift falls within the plans made. Lift plans should have basic information such as crane configuration, component weights, rigging requirements and weights, crane capacities, crane pad requirements and so forth. The more information that can be provided to the operator the safer the work site will be.

Please refer to the Occupational Safety and Health Administration's Construction Industry Regulations – 29CFR1926 for specific references on operating cranes safely during the act of construction. Specific regulations relating the safe operations of cranes are, but not limited to:

- §1926.500 – Subpart R – Fall Protection
- §1926.550 – Subpart N – Cranes, Derricks, Hoists, Elevators, and Conveyors (***anticipated updated final rule publication July 2010***)
- §1926.750 – Subpart R – Steel Erection