

The two most important construction tasks that every wind project owner needs to know.

EVERY WIND CONSTRUCTION PROJECT has unique characteristics and challenges, but success ultimately depends upon the timely completion of two important tasks that typically occur at the end of the project schedule: high voltage electrical works (substation, interconnection and transmission line) and turbine installation. On most projects, any delay in completing the high voltage works or turbine erection can result in missing important project deadlines. This article will explore some of the critical items wind project owners and developers need to consider when selecting an erection contractor to ensure that wind turbine erection and mechanical completion—a highly specialized task—are carried out properly and do not jeopardize project completion.

EXPERIENCE

Wind turbine erection consists of activities in four main groups: 1. Turbine unloading and storage—typically performed using dedicated unloading crews at the wind turbine generator (WTG) foundation; 2. Rotor building and nacelle preparation at the WTG location; 3. Installation of tower components without the use of the main lifting crane; 4. Installation of tower and turbine components with the main lifting crane. Successful wind turbine erection depends upon experience and expertise in each activity. Perhaps the most important factor in determining whether the erection portion of a project is in good hands is the level of experience of the contractor. While many companies have access to cranes, only a few have erected large numbers of turbines. The most experienced contractors have erected more than 2,000 turbines. It's important to review a contractor's past experience in handling issues that can arise during critical phases of construction, to ensure timely completion and ultimate success of any wind project.

CHOOSE THE RIGHT CRANE

The most successful contractors choose the unloading and erection equipment for the project, and in particular the main lifting crane, based upon the particular turbine to be erected and the specific characteristics of the project. In general, smaller cranes are more easily obtained and are cheaper to operate. However, while a smaller crane may be able to physically handle the lifts, it may not be the

appropriate choice. Larger cranes, though more expensive and harder to locate, can handle heavier loads in higher wind speeds and give the project more options if time becomes short and deadlines loom. Leasing a crane may be the best option on many projects (as opposed to a crane owned by the contractor), particularly if it is better suited to the project loads and wind regime, and easily relocated to the site. The key is to plan the erection phase of the project around the right equipment. It's a mistake to plan a project's erection around the contractor's crane instead of around the right crane.

DEVELOP A BACKUP PLAN

Experienced erection contractors can overcome even the most drastic equipment failures or breakdowns. At the end of a project when time is at a premium, the contractor must have a plan to deal with a main crane breakdown or other failure. On larger projects, using two main cranes can mitigate the effect of the loss of a single crane and still allow for timely project completion. In other cases, knowing sources of readily available backup cranes is adequate. In any event, the contractor must have a viable contingency plan for major equipment breakdowns at critical schedule times.

The contractor also needs a backup plan to accommodate significant changes in the turbine component delivery schedule. The contractor must be able to quickly mobilize additional unloading equipment and crews.

COORDINATE DESIGN, ERECTION PLAN TO OPTIMIZE BUDGET

Crawler cranes operate within known parameters. The contractor should fully understand these parameters (e.g. maximum grades, lifting radii, filed walk capabilities, etc.) and be proficient in optimizing the civil design to the capabilities of the lifting equipment. For example, ridge top projects require a great deal of expensive and time consuming earthwork for roads, turbine erection areas and crane pads. A well-designed erection plan can reduce these costs by using narrow track cranes, hydraulic cranes, crane mats and other readily available equipment choices. In addition, many project locations lend themselves to field walks between turbine strings to avoid unnecessary road construction. The key is for the contractor to plan around the project's needs. ↘