

The real cost of weather windows

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Weather can have a significant impact on the efficiency and cost of wind turbine blade repair campaigns. By planning enclosure, environmental control, access and logistics before mobilisation, operators and service teams can reduce disruption and make better use of available repair windows.



BladeTent creates a protected workspace around the selected blade repair area, helping reduce direct exposure to rain, wind and changing site conditions



Top installation allows the shelter to be lowered around a selected blade section when access from the tip is not practical

Wind turbine blade repair is often discussed in terms of technical scope, materials and access. In practice, the success of a repair campaign also depends heavily on the conditions surrounding the work. Wind, rain, moisture and temperature fluctuations can interrupt planned activities, reduce the effective working window and put additional pressure on technicians, equipment and project schedules.

For operators and service companies, a weather-related interruption is rarely limited to a single lost day. It can affect the availability of specialist teams, access equipment, transport and the sequence of subsequent repair activities. When several blades or locations are involved, even a short delay can have consequences across the wider campaign.

Environmental protection therefore needs to be considered as part of repair planning from the outset, rather than introduced only after unsuitable weather has already affected the schedule.

Weather is not an isolated problem

Blade repair is a sequence of closely connected activities. Technicians, access systems, materials, tools and supporting equipment all need to be available at the right place and at the right time. When external conditions prevent work from starting or force a repair to stop, the disruption can extend well beyond the immediate task.

A postponed repair may mean reorganising personnel, extending equipment rental periods or changing the order of planned work. Weather can also affect the repair

environment itself. Rain and moisture expose the work area to external conditions, while very low or high temperatures can make it harder to maintain a stable workspace. Strong wind can further reduce the time available for planned activities.

The challenge is therefore not simply to keep technicians dry. It is to reduce the influence of changing external conditions on the repair area and create a workspace in which the planned process can be carried out more predictably.

Creating a controlled workspace around the blade

One way to reduce exposure to external conditions is to create an enclosure directly around the section of the blade where the repair is being carried out.

BladeTent is a modular inflatable shelter designed for this purpose. Rather than enclosing the entire blade, the system is positioned around the selected repair area. This keeps the enclosure focused on the zone where protection is required and allows deployment to be adapted to blade geometry, access and repair location.

Environmental control with HVAC

Protection from direct weather exposure is only one part of creating a controlled workspace. For repair processes that require more consistent environmental conditions, BladeTent can be connected to an external HVAC system.

Conditioned air is supplied into the enclosure, while air from inside the workspace is returned through a separate duct. This supports more stable temperature and airflow and gives the project team greater control over the repair environment.

The objective is not to create laboratory conditions onsite, but to reduce fluctuations and provide a more predictable workspace for repair activities that are sensitive to environmental conditions.

Flexible by design

Blade dimensions, repair locations and site conditions vary considerably between projects, so a fixed configuration is not



An external heating, ventilation and air conditioning (HVAC) unit can be connected to the enclosure to support more stable temperature and airflow inside the workspace



Inside the enclosure, technicians can work in a protected space that separates the repair process from the surrounding environment

suitable for every application. BladeTent can be adapted to different blade dimensions, repair areas and deployment requirements, while its modular structure allows the working length to be adjusted to the task.

Custom options can include dimensions and colour, while the installation method can be selected according to the practical constraints of the project. The focus is on creating the required protected workspace without adding unnecessary structure around parts of the blade that are not involved in the repair.

Environmental protection should be part of mobilisation planning

A shelter is most effective when it is treated as part of the repair strategy rather than as an emergency response to poor weather. Before mobilisation, the project team should consider where the repair will take place, which section of the blade requires access, how the enclosure will be installed and whether additional temperature or airflow control will be required.

These decisions affect transport, equipment selection, site preparation and the sequence of work. For projects involving several blades, early planning becomes even more important. A repeatable enclosure and environmental-control strategy can simplify mobilisation

between repair locations and help teams make better use of available weather windows.

The shelter, HVAC system, access equipment and repair materials should therefore be considered as one working setup rather than as separate elements organised independently.

From reactive repair to planned repair campaigns

Weather will always remain a variable in wind energy operations. No enclosure can remove every environmental limitation, and certain conditions may still prevent work from continuing. The purpose of a protected workspace is not to eliminate weather risk entirely, but to reduce unnecessary exposure and give project teams another tool for managing operational uncertainty.

For operators and service companies, this supports a more structured approach to repair planning. Instead of deciding what to do only after weather stops the work, teams can define the required level of environmental protection in advance and include it in the mobilisation plan.

Conclusion

Successful blade repair depends on more than the repair method itself. Access,

logistics, environmental conditions and project sequencing all influence how effectively work can be completed. By considering enclosure and environmental control at the planning stage, operators and service companies can create a more predictable workspace around the blade and make better use of available repair windows.

The weather cannot be controlled. Its impact on the repair campaign can be planned for.

About BladeTent

BladeTent develops modular inflatable shelters for wind turbine blade repair and maintenance.

The systems create protected working areas around selected blade sections and can be adapted to different blade dimensions, repair zones and project requirements.

Where needed, the shelter can be combined with external HVAC equipment to support more stable temperature and airflow.

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