



Lift off for efficiency at height

Imagine being a wind technician standing inside a 100m high wind turbine, where the only way up is via a vertical metal ladder. This was a very real challenge for anyone until the mid-2000s. And even though many wind turbines are now equipped with climbing aids, they still cannot eradicate things like physical fatigue, safety hazards, or low efficiency.

Global wind turbine tower internals solution provider 3S Lift has set out to solve the problem, with the invention of the Climb Auto System (CAS). The innovation is a single technician ladder-mounted lift that can be easily retrofitted and mounted onto the existing ladder in a wind turbine.

With subsidiaries in Dallas in the US, Hamburg in Germany, Chennai in India, plus Beijing and Tianjin in China, over the last two decades, 3S Lift has become a leading global provider for access equipment and services for people working at heights. So far, over 7,000 units of its Climb Auto System have been installed across the US, beginning a trend for retrofitting for the whole market. The system can transport personnel and equipment to the top of a 100m high wind tower in six minutes with zero sweat and eliminates the physical and mental strain of climbing completely. It improves health and safety for the technicians, while reducing the cost of ownership.

A bespoke retrofit solution that unlocks more potential

Modernizing existing wind turbines that do not yet have a lifting solution, future-proofs the investment of owners and developers in the wind industry and helps maximize energy production. That's why a number of large owners and operators in the US are retrofitting their fleet with the 3S Lift Climb Auto System.

Wind farm owners are feeling the pressure of trying to drive economic growth and boost operational efficiency. At the same time, recruiting and retaining qualified wind technicians to keep the turbines running can be a bottleneck. The daily climb is a burden for many technicians and limits their job longevity, because of the wear and tear it causes to the body. Retrofitting the system addresses these issues by improving employee satisfaction and efficiency, reducing staff turnover cost, and maximizing returns.

This is also a quick and cost-effective solution for wind farm owners, since the installation typically requires no changes to the wind turbine structures. It is applicable to most ladders and can typically be installed in eight hours or less.

Reduced physical exertion

The repetitive motion of climbing towers puts extraordinary strain on the muscles and joints of technicians and causes countless injuries. These lead to sick days and reduced motivation among technicians. Using 3S Lift's CAS, technicians can safely reach the top of a tower while putting zero stress on their muscles and joints.

This has been confirmed by technicians who now use the system every day, one of whom commented, 'With the 3S Lift Climb Auto System we don't have to worry about being worn out after one or two climbs.'

Reduce turnover costs through improved employee retention

General wind turbine operation and maintenance (O&M) costs account for up to 20 to 30% of the total expenditure, with labor costs making up a large share. As experts see the wind industry growing, the demand for technicians continues to increase.

However, there is a high turnover rate and limited job longevity if technicians need to climb towers on a daily basis. The decreased technician availability affects the project's potential to maximize operational efficiencies.

Solutions like the CAS improve technician satisfaction and retention, resulting in a more skilled workforce and longer career life. 'I feel that this system has made my career longer,' said one wind technician. 'I could stay with this job till retirement.' Higher employee retention will also lead to lower hiring and training costs, as the majority of those who stay are experienced employees.

Increase in uptime with greater efficiency

On wind farms with Climb Auto Systems, there is a reduced delay of crucial

maintenance, as technicians are no longer pressed to bundle activities in order to keep the number of ascents to a minimum. Necessary maintenance is completed in a timelier manner, leading to increased uptime, extended turbine life and lower operational costs.

Improved AEP with climb time savings

The system allows technicians to ascend towers more quickly than ever. It eliminates climbing, which means that technicians reach the top of the wind turbine fresh and ready to begin efficient work immediately. The savings in climb time result in increased AEP.

A smooth ascent

Taking a closer look at key features of the Climb Auto System, a few features stand out. The system is equipped with dual handle switches for start-up, three control modes, and dual fall protection systems in case of any emergency. The system is easy to use and maintain.

To ride it, the operator must press and hold the switches on both handles to ensure safe operation. If the operator releases one or



both switches, the system will stop immediately. The CAS has two obstacle sensors, one at the top of the handle and the other underneath the footboards. Once the sensors come in contact with any obstacle, the system stops running immediately.

The system can be controlled manually on the car, via remote control, or through the control cabinet, but priority is always given to manual control by the operator standing on the CAS. Tools can be transported using the metal toolbox and sent up and down via the remote control. Loads of up to 60kg can be delivered in this way. Each control mode features an emergency stop button, or E-Stop, providing an additional layer of safety across all operation modes.

To maximize the safety of personnel and equipment, the system is equipped with dual fall protection. The Fall Arrester is independent, offering redundant protection and peace of mind. The ladder-mounted guide rail is part of this, while also serving to strengthen the ladder.

The 3S Lift Climb Auto System complies with CE, UL, ANSI, OSHA. Worldwide, more than 80,000 units have already been installed, showing how this retrofit solution is winning over wind turbine manufacturers, wind farm owners, operators, and technicians around the globe.

3SLift.com/ClimbAuto