



Innovative fall protection systems

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In Europe alone, tens of thousands of wind turbines produce energy for countless households. Turbine maintenance or servicing is fundamental to ensure it stays this way. Because employees regularly work at great heights they cannot manage without fall protection systems - for example, when climbing a tower by means of a fall arrest system. PES went to find out about how SKYLOTEC ensure the safety of their employees and the training they offer both in house and globally.

Leading manufacturers of fall protection equipment, such as SKYLOTEC, develop solutions for working at heights on wind turbines, with cleverly designed details, which enable simplified application and reduce the risk of an accident. Nevertheless, even if the equipment is intuitive to operate, regular training courses for rescuing colleagues involved in an accident are vital.

In Europe, whenever maintenance or servicing work is due to be carried out on the wind turbines, fall protection for employees is mandatory. This does not just apply to once they have already reached the nacelle or the high external areas. In many cases, employees belonging to the



technical safety requirements a new cable runner took centre stage at SKYLOTEC too. The manufacturer of fall protection equipment, which develops and manufactures its products in Germany, is constantly working on new solutions.

One of the latest results to be launched on the market by the family company is the 'Claw' cable runner. This is ideal for vertical access on steel cables with a diameter of 8 mm and has a major advantage: it may also be used with existing systems from other manufacturers under certain circumstances. This constitutes a major advantage to companies concerning the question if and how existing systems can continue to be used or enhanced with a safer state-of-the-art runner.

With the introduction of EN 351-1:2014 older runners are no longer permitted for use. Wind turbine operators can, therefore, save costs on procurement because they do not have to exchange existing fall arrest systems completely and can convert them if required.

During the development of the 'Claw' cable runner SKYLOTEC specialists focused on one further aspect: the user. For when it comes to work safety, ease of operation of the equipment and minimising the risk of incorrect use are important elements. The cause of an accident in the workplace is often not equipment failure but much more likely incorrect use by the individuals concerned.

Also when using cable runners, there have been accidents in the past, which were often the result of misuse. For example, in hectic moments users might not check whether they have safely locked their cable runner on to the rail. With some old systems, the runner may have been fitted incorrectly to the structure. This can affect the braking mechanism of the system – and have serious consequences in the event of a fall.

With cable runners so far available, users often had to struggle with a restriction of movement because the cable runners slowed them down while climbing. As a result, users had to move with difficulty and working got more exhausting. While developing the 'Claw' cable runner, SKYLOTEC worked on that issue too – and developed a solution that is high quality and smooth running without exacerbating climbing upwards or downwards.

maintenance firms or the operator can only reach these work areas by means of a fall arrest system, such as a ladder that is installed within the tower.

The system can consist of a steel cable and a cable runner. This is worn on the body as part of Personal Fall Protection Equipment (PFPE) and attached to the harness when climbing. When the runner is attached to the steel cable, users can climb safely up and down. It also makes it easy for them to carry work materials or tools with them. In the event of a fall, a brake is triggered on the runner, preventing the user from falling.

When selecting an appropriate cable runner, solutions are required which are

state-of-the-art and, therefore, EN 351-1:2014 certified as a guided fall arrester on rigid anchor line. The introduction of this European standard raised technical safety requirements and factors other than normal ascent and descent were taken into consideration such as, for example, the user pulling the arrest device with one hand or forces acting on the arrest device laterally in the event of a fall. This can happen for instance if cable runners are used in wind turbine towers.

Manufacturers have since been faced with the challenge of taking into consideration EN 351-1:2014 when developing new fall arrest systems. Given the changes to



With the 'Claw' cable runner, users can focus on just climbing - and feel far more secure as a result

SKYLOTEC's new product is a response to this – and as a result fitted the 'Claw' with many clever details. For instance, the runner is secured directly in a number of ways to prevent incorrect use in error. It could happen that a cable runner, for example, is attached to the steel cable the wrong way round. An integrated locking mechanism of the 'Claw' helps to prevent this from happening and a skull symbol also clearly indicates the application error.

In order to prevent unintended or ill-considered removal of the cable runner may only be removed from the cable if the user actively releases a locking mechanism, loosening the runner in the process. The brake jaw opens with a light tug on the carabiner, while the user guides the runner up or down. This enables practically flawless climbing to a higher or lower work location with little effort.

A good and easy to operate product is no substitute for training however and companies may not dispense with their obligation to instruct. Anyone wanting to work in the offshore and onshore sector, as a maintenance technician on wind turbines must be trained in accordance with the requirements of the Global Wind Organisation (GWO). In this regard, operators of wind farms make no compromises amongst their own staff or employees from companies who are commissioned for the maintenance of turbines.

Ultimately, for legal reasons too, no training is not an option either. At its Vertical Rescue College (VRC), SKYLOTEC



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provides training and consultation worldwide. Training employees from suppliers or maintenance firms, from the renewable energy industry, is part of the core business for the company. The training can be carried out directly on site in a company if necessary. This means it can be tailored directly to the special requirements of the site in question and employees can be prepared as realistically as possible for daily operation. Safety is always the main focus – and this being regardless of whether novices or already properly trained maintenance technicians are taking part.

'Fundamentally, it is a matter of the

participants having confidence in themselves and their equipment which they are constantly using.' Steve Ceunen knows from experience. The Belgian has worked for several years as a freelance rope access technician on offshore turbines. He is now an instructor at SKYLOTEC.

During training at the VRC maintenance technicians are now trying out handling the 'Claw' cable runner. In Steve Ceunen's experience, users do not find it difficult because it is operated intuitively. 'In most cases my colleagues and I only have to demonstrate once how the 'Claw' functions,' says the instructor.



In an emergency, rescue concepts are indispensable, when it comes to work safety. In these situations, the use of the 'Milan' descender and rescue device is the best solution



The inscription clearly indicates in which direction the 'Claw' cable runner needs to be attached to the steel cable

The expert, meanwhile, has to explain other fall protection system methods more in more depth - for example, where users have to move on a ladder without a rigid anchor line. Here, they use a lanyard with carabiner hooks or attachment purposes. The disadvantage: in order to keep moving along they have to hook in and out at regular intervals. 'Not only does this increase the risk of an accident but can be very strenuous over comparatively short distances of ten to 15 metres,' explains Ceunen.

Cable runners such as the 'Claw', therefore, have clear benefits: users can focus on just climbing - and feel far more secure as a

result. Plus, an accident is all but eliminated thanks to the clever details of the new cable runner. This is also true if a user slips on the ladder or loses their footing. For in such instances the carabiner on the 'Claw' swings downwards very suddenly. This is how the 'Claw' stops the fall. A built-in fall attenuator reduces any forces that may arise in the event of a fall to below the permitted 6 kN. The forces exerted on the human body are moderated as a result.

When it comes to work safety, it is not just simply about the right equipment. Rescue concepts are indispensable in an emergency. Every company must ensure

that a rescue of accident victims can be guaranteed by their own personnel. 'When using the 'Claw' a fall from a height cannot occur. Provided the party concerned is conscious, they can move independently along the ladder,' clarifies Steve Ceunen. 'But there are also factors over which the maintenance technicians in wind turbines have no influence.'

A tool might slip out of a transport bag and strike a colleague, working down below, on the helmet. This can cause head injuries. In addition, medical issues can arise such as vertigo or dizziness. In both cases, the party concerned might become unconscious. Rescue by a colleague is then absolutely essential.

Here, the use of the 'Milan' descender and rescue device is the best solution. For almost two decades, this device has established itself as standard piece of rescue equipment in many areas as it offers a wide field of applications for different rescue situations. Safe and simple to use for the rescuer, it is also deployed in the wind energy industry for rescuing one or more persons who are working at height.

As far as Steve Ceunen is concerned, one thing is certain: 'Anyone using the 'Claw' can produce tangible benefits to safety in their company and in their wind turbines.' This is on the basis that the installation of a fall arrest system emerged as the most appropriate fall protection measure from the risk assessment.

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