

# Safety at a height

In Great Britain and Ireland alone, Siemens Gamesa monitors more than 3,000 onshore and offshore facilities. (Photo: Siemens Gamesa)

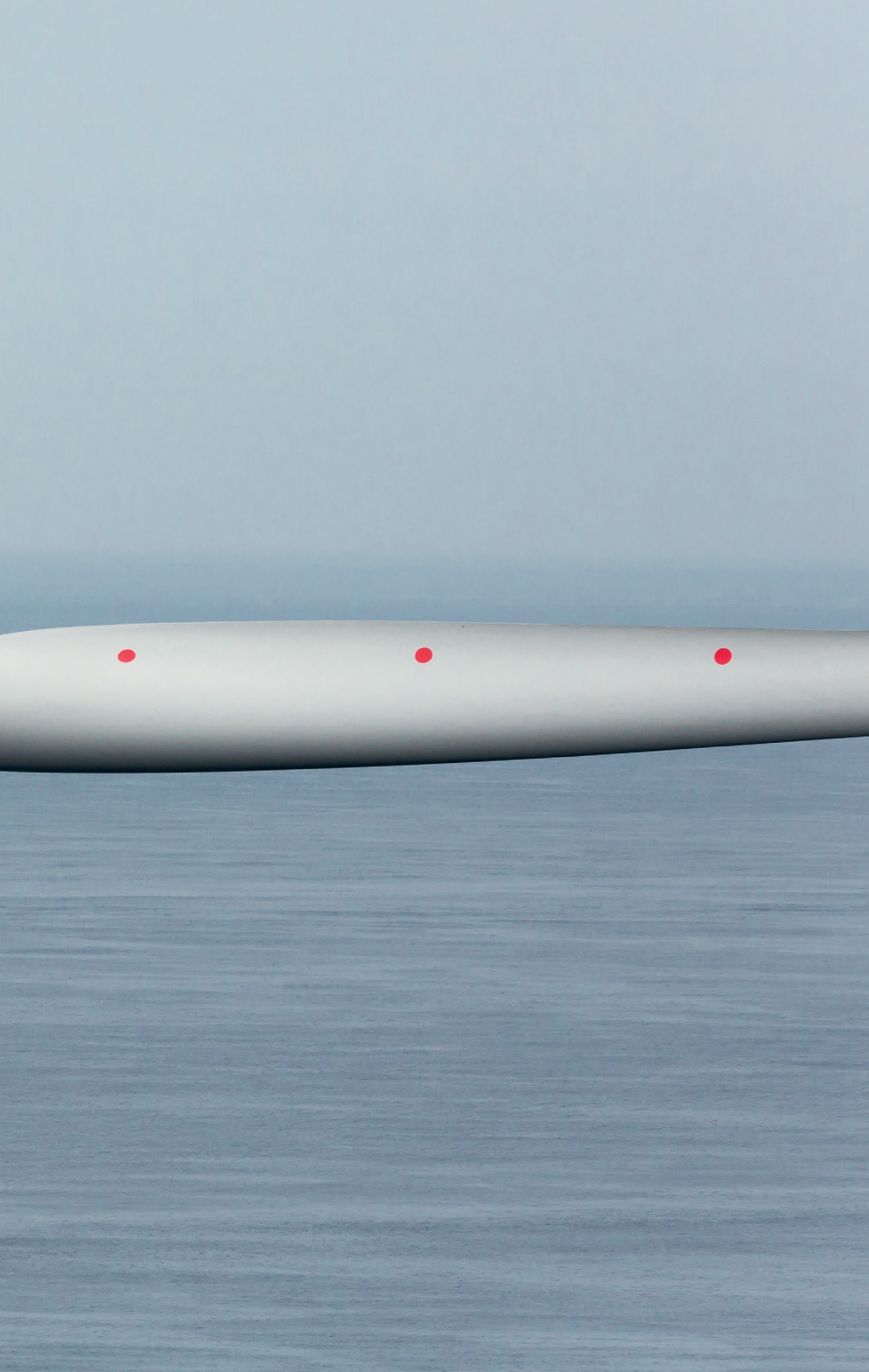
While performing service and maintenance on wind energy plants, employees routinely work at great heights. Fall protection is therefore a requirement for them. They use climbing protection equipment when climbing the towers. When it comes to work safety, leading manufacturers are increasingly involving users in the development of new solutions. Collaboration between Siemens Gamesa, the manufacturer SKYLOTEC, and the supplier ICM Safety shows how this works successfully. The 'Claw' cable runner for steel ropes is a solution that simplifies use and reduces the risk of accident.

With around 27,000 employees on five continents, Siemens Gamesa is one of the leading providers in the renewable energy industry. The company provides service and maintenance for 23,000 turbines

around the world. They monitor more than 3,000 onshore and offshore facilities in Great Britain and Ireland alone. Fall protection is required for employees while they perform service and maintenance work

on wind power systems.

This does not just apply to when they are working high up, on the turbine. In many cases, Siemens Gamesa employees reach



other than normal ascent and descent were taken into consideration, such as the user pulling the arrest device either laterally or with one hand on the arrest device in the event of a fall. These are influences that can also arise from the use of a cable runner for steel ropes inside a wind turbine tower. Since this change, manufacturers have been required to take the revised norm into consideration for the development of climbing protection equipment. ICM Safety also faced a new challenge, since its systems no longer met the new standard. As a result, ICM Safety would have needed to successively replace these systems. 'We looked for a solution that avoided the need to replace entire systems. Instead we wanted a new runner that would be compatible with the existing climbing protection equipment,' says Jan Selchau. The managing director/CEO of ICM Safety worked closely with Siemens Gamesa on this issue. The question of efficiency was also a crucial matter for them, as René Dyring-Andersen says. 'For us, complete replacement of entire climbing protection systems simply wasn't an option due to cost considerations alone,' says the engineer, who specialises in climbing protection equipment.

In their search for a suitable solution, René Dyring-Andersen and Jan Selchau approached several manufacturers, finally deciding on SKYLOTEC. This family company, which develops and manufactures its products in Germany, is constantly working on new solutions in the field of climbing protection systems. In light of the revised EN 353-1, specialists also focused on a new climbing protection runner. 'SKYLOTEC quickly showed us a sensible way to retrofit existing systems,' says Jan Selchau. In many cases, company decision makers and users still do not know that this is possible at all.

Indeed it has not been uncommon to view a rigid anchor line and a guided type fall arrester as a single climbing protection system and therefore only allow the use of components from the same manufacturer. This view, however, is based on the erroneous assumption that a rigid anchor line and a fall arrest device are considered to be a single PPE unit by European PPE law and therefore are only permissible in a specific combination.

In reality, the PPE directive 89/686/EEC classifies only the guided type fall arrester as PPE. Only this component is actually mobile and comprises the 'personal' protective equipment. The rigid anchor line, in contrast, is installed at a single location and like other fixed anchor points is not subject to the PPE directive. This therefore does not mean that both components are to be considered as a single-unit climbing protection system; certification for the specific combination of a rigid anchor line and a guided type fall

the turbine by means of a climbing protection system that is installed within the tower. This consists of a rigid anchor line, such as a steel rope or rail and a guided type fall arrester, the climbing protection runner. It is worn on the body as part of Personal Protective Equipment (PPE) against falls and attached to the harness when climbing. When the runner is attached to the rigid anchor line, 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 a long fall.

Siemens Gamesa employees use climbing protection runners that they attach to a fixed

steel rope. Equipment made by the Danish supplier ICM Safety, which sells its own vertical fall protection system, is installed within Siemens wind turbine towers in Great Britain. In 2010, the European Commission decided that EN 353-1:2002, according to which the guided type fall arresters including a rigid anchor line were certified, was no longer consistent with the PPE directive. That decision had consequences for manufacturers and users. This is because the installed climbing protection equipment no longer corresponded with the latest state of the art.

The introduction of EN 353-1:2014 raised technical safety requirements, and factors



The 'Claw' cable runner is suitable for cables with a diameter of 8mm and compatible with existing equipment. (Photo: SKYLOTEC)



The cable runner makes practically flawless and effortless climbing to a higher or lower work location possible. (Photo: SKYLOTEC)



A skull symbol clearly indicates that the cable runner is held the wrong way round by the user. (Photo: SKYLOTEC)

arrester from a single manufacturer is therefore not required by law [1].

For companies like Siemens Gamesa, this has a significant advantage: They can retrofit their existing systems as needed – as has already taken place to some extent in the case of wind farms in Great Britain. Compatibility with the existing systems was far from the only issue faced by René Dyring-Andersen. 'Since this equipment is in use by 2,000 to 3,000 technicians on a daily basis, we have conducted extensive advance trials,' says the specialist, who since 2012 has been responsible worldwide for fall protection at Siemens Gamesa. At a training centre in Brande, Denmark, employees initially tested a prototype on the systems that are also installed in the wind energy equipment.

'This already came very close to meeting our requirements for an optimal steel rope runner,' Dyring-Andersen says.

Users also tested the product to the smallest detail in practice. How does it handle when climbing and descending? What happens in a fall? What is a possible rescue plan if the cable runner has been engaged? Questions such as these were the focus of the tests. On a regular basis, he shared with SKYLOTEC the practical experiences that

the technicians had during the simulations. This made it possible for developers at the German manufacturer to further optimize the characteristics of the product.

The result of this collaboration is the 'Claw' cable runner, which is suitable for vertical access to steel ropes with a diameter of 8 mm. 'It is a small arrest device that meets the highest safety requirements,' says René Dyring-Andersen. When developing this product, SKYLOTEC went to great lengths to ensure that the 'Claw' would be easy to use and that the risk of misuse would be minimised. The cause of an accident in the workplace is often not equipment failure, but much more likely incorrect use by the individuals concerned.

Also there have been accidents in the past when using climbing protection runners, which were often the result of misuse. When it comes to users' safety, the 'Claw' boasts many clever details. For instance, the runner is secured directly in a number of ways to prevent accidental incorrect use. The fall arrest device cannot, for example, be attached to the rope if it is held with the wrong orientation by the user. An integrated locking mechanism prevents this from happening and a skull symbol also clearly indicates the incorrect use.

In order to prevent unintended or ill-

considered removal, the cable runner may only be removed from the rope if the user actively releases a locking mechanism, loosening the runner in the process. The brake shoe opens with a light tug on the carabiner, while the user moves the runner along with himself upward or downward. This makes practically flawless and effortless climbing to a higher or lower work location possible.

In the end, everyone involved benefited from the collaboration with SKYLOTEC. For Siemens Gamesa, the close collaboration was an important experience, as René Dyring-Andersen summarizes: "Without this intensive exchange with experts, we probably would not have been able to make a norm-compliant runner available so quickly." As a supplier, ICM Safety is able to capitalize on the know-how of a leading manufacturer of fall protection equipment. "This makes it possible to develop individualized solutions for each customer," says Jan Selchau.

[www.skylotec.com](http://www.skylotec.com)

[1] cf. Prof. Dr. Johannes Dietlein and Akad. Rat Sascha D. Peters: Legal issues of European product safety regulations, using the example of climbing protection systems with fixed rails, in: InTeR. Journal of innovation and technical regulations, special edition 1 / 2016, p. 1-24.