

World's largest radio telescope is partly made in Landegem: "50 degrees hot in Australian desert, your equipment must be able to withstand that"

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SwitchGear Company or SGC is a subsidiary of the Vandoorne family's family holding company Het Veer. In 1979 Rik Vandoorne Deba, installer of high-voltage cabinets, stamped it out of the ground and it has grown into a holding company active in various sectors, including electricity. Today, his daughter Sophie (46) heads the family business and with SwitchGear Company is providing the building blocks of the Square Kilometer Array Observatory or SKAO, the world's largest radio astronomy observatory, currently under construction in the desert of Western Australia.

(Continue reading below the photos)



The SKAO site in Australia is currently under development. © SKAO



The future SKAO site in Australia. © SKAO

The SKAO aims to use advanced radio telescopes to help change our understanding of the universe. Headquartered in the United Kingdom, and with telescopes in South Africa and Australia, SKAO will become a leading research infrastructure for radio astronomy. "Construction of the world's largest radio astronomy observatory in Australia began in December 2022," said André Van Es, senior project manager of the LOW Telescope. "In the Australian outback, 130,000 antennas will be installed, called 'SKA-low,' which are highly sensitive to low radio frequencies and up to eight times more sensitive than current telescopes. In addition, 200 antennas will be installed in South Africa, called 'SKA-mid,' to capture higher radio frequencies. The project, a collaboration between several countries, aims to look back in time billions of years and study the formation of stars and galaxies. The observatory will also study the origin of hydrogen

and search for extraterrestrial life. The project includes the construction of two powerful supercomputers and is expected to be completed in 2028, with a total cost estimate of 1.3 billion euros."

These telescopes require a lot of energy, and this is where the Landegem family business plays an important role. Equipment is made at SGC along the E40 in Landegem, which is an important link in the chain of the SKAO project. "SGC is the only Belgian manufacturer of switching equipment for medium voltage," says Sophie Vandoorne. "For the radio telescope, we built 141 medium-voltage cells. These are placed along with a transformer in kiosks or booths. The telescope needs low voltage and what our cells do is convert high voltage, which is needed to carry electricity, to that low voltage. We supply these cells and the company NHP, our partner in Australia, will install them."

(Continue reading below photo)



Sophie Vandoorne at the cubicles of her company SwitchGear Company. © Anthony Stadius

According to Sophie, why exactly the equipment from Landegem was chosen for the SKAO project can be explained by several factors. "The radio telescope must last at least 50 years and so our medium voltage DF-2 type boards are

made with a strong focus on durability. The equipment will be exposed to extreme weather conditions. Right now it is 50 degrees Celsius in the Australian desert. Medium voltage boards by themselves generate heat, but by using thick copper this can be reduced."

"A unique requirement of the SKA telescope is that all electrical equipment must produce very low levels of electromagnetic noise. In other words, for optimal operation of the telescope, it must be quiet. The sizzling noise of electricity - in technical terms the partial partial discharge - must be as low as possible. We also distinguish ourselves in terms of safety. For example, the equipment is protected by the "Arc Killer. In the event of a fault in the high-voltage cabin, an arc flame can occur. These electrical sparks can destroy all equipment and pose a danger to operators who are nearby at the time. The Arc Killer is a mechanism that detects such a fault in 48 milliseconds - that's eight times faster than blinking your eyes - and diverts it away through the earth. So it can never come to a detonation."

On Monday, representatives of SKAO and NHP came to see the medium voltage boards in Landegem. "Four cells were already delivered by plane for a first test and the rest will follow by ship next week," said Sophie. "We are proud to play a crucial role in the SKAO project with SGC. For the construction of the telescope in South Africa they are still looking for a partner and we have a chance to be part of this as well."



SwitchGear Company's cells were inspected Monday by SKAO and NHP representatives. © Anthony Stadius



The future SKAO site in Australia. © SKAO



SwitchGear Company's cells are ready to be shipped to Australia.

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