

Stellenbosch University spinout company ensures school receives first ever energy efficient certificate in South Africa

Stellenbosch University spinout company GreenX Engineering's initiatives to help equip Cloetesville Primary School with energy-saving technology ensured that it became the first school in South Africa to receive an Electrical Performance Certificate (EPC). The school received an A rating for electrical consumption of 17 kWh per m².

The EPC is the culmination of hard work and dedication, a great team effort and leaping over the final hurdle in completing his PhD, says Managing Director of GreenX, Jason Samuels.

Under the supervision of Thinus Booysen, professor in electrical and electronic engineering, and Saartjie Grobbelaar, associate professor in industrial engineering, Samuels is doing his PhD focusing on schools and their energy usage; creating methods to reduce their consumption and systems to manage the school more efficiently. Samuels, Booysen and Grobbelaar, together with entrepreneur Mario Roos established GreenX Engineering with the help of Innovus Technology Transfer, SU's innovation division. Booysen and Grobbelaar are both non-executive directors of GreenX Engineering.

"GreenX Engineering's creation can be traced back two years ago when I heard Prof Booysen on the radio talking about his involvement in projects to help schools in and around Stellenbosch and Paarl save water and electricity. I realised that my specialised lighting and electrical maintenance company could become an essential partner to Booyens initiatives at schools," said Roos, and the conversation started.

Roos said that when the amendment to the National Energy Act of 1998 was proclaimed in December 2020 by the Minister of Mineral Resources and Energy – requiring building owners to publish the electrical consumption per square meter by 2022, they saw a gap in the market for establishing a company that can ensure that buildings adhere to this new regulation.

As GreenX's technical director, Booysen brings the company his technical expertise and experience with assisting schools to become more energy-efficient and reduce their electricity and water bills. "There are many schools with no financial or technical means to manage their energy and water resources efficiently. We initially started with thirteen schools, and this number has grown to 25 schools in the Stellenbosch and Paarl area. Thanks to funding from the Western Cape Education Department, as well as from SU's social impact and transformation department, we can equip these schools with energy savings technology to help them reduce their energy bills," says Booysen.

For Roos, the dream is to ensure energy efficiency at all South African schools and actively reduce their carbon footprint. "Our calculations show that we can take out 120 kg of carbon

emissions per school per day. So, if we could expand our programme to incorporate all 1 600 schools in the Western Cape, it will translate to taking out 90 million kg of carbon emissions per year.”

Roos believes they are creating a blueprint that could be duplicated across the country and internationally. “Our initial focus is schools whereafter we will roll out to corporate and government buildings across the country.”

For Grobbelaar, the business model they have created will allow the company to grow while retaining a solid link to SU’s engineering research expertise. “Initiatives such as these is bringing SU’s research into the real world and actively changes the lives of people – currently starting at school level; a place where all people need to move through at some point in their lives.”

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*Note: **EPC certification** refers to the measurement of the net energy consumed in kilowatt hours per square meter (kWh/m²) to meet the different needs associated with the use of the building. Energy Performance Certificates are now mandatory for private sector, non-residential buildings with a total net floor area of more than 2 000 m², and government buildings of more than 1000 m². The certificates must be displayed at the building’s main entrance; and must be submitted to the South African National Energy Development Institute (SANEDI). The certificate is valid for a period of five years whereafter it must be renewed.*

*Note: **Stellenbosch University (SU)** received the very first Electrical Performance Certificate (EPC) for any building in South Africa in February this year. SU’s Admin B building received an A rating for electrical consumption of 48 kWh per m².*

Caption: Cloetesville Primary receives its Energy Performance Certificate

At a small function at Cloetesville Primary in Stellenbosch, Deputy director general: education planning of the Western Cape Education Department, Salie Abrahams, handed the school’s CPT certificate over to school principal Rodger Cupido on 10 June 2021. For Cupido becoming a sustainable and energy efficient school is high on his list of priorities. “Our school is also known as the ‘Green School’,” he says, referring the temporary green

structure that served as the original school building when the school was established in 1969. “Now we are green because we are energy efficient and for that I am very grateful.” Congratulating Cloeteville Primary with their EPC certificate, Prof Stan du Plessis, Chief Operating Officer at Stellenbosch University, said it is very symbolic to handover this certificate at a school. “It is not my generation, but that of my children’s who will suffer if we do not make a difference to our environment through energy saving projects such as this one. With this project we see what the impact is when we move ideas into the market – we built great companies like GreenX that can help a school like Cloeteville Primary save 20% on their monthly energy bill.” Abrahams says there is an immense pride in the approach that shaped this partnership between the WCED, local authorities, the University, school and the private sector. “My vote of thanks goes to all that contributed to this project and to the leadership of this school that, despite challenges and constraints, could make this happen and introduced our children to the development of entrepreneurial spirit – how young mind can give flight to their ideas. We hope to be part of a bigger project leading out of this.”

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Universiteit Stellenbosch afwentelmaatskappy help skool die eerste energie-doeltreffende sertifikaat in Suid-Afrika kry

Die afwentelmaatskappy van die Universiteit Stellenbosch, GreenX Engineering, se inisiatiewe om die Laerskool Cloetesville toe te rus met energiebesparende tegnologie, het verseker dat hy die eerste skool in Suid-Afrika word wat 'n elektriese prestasiesertifikaat (EPC) ontvang. Die skool het 'n A-gradering vir elektriese verbruik van 17 kWh per m² gekry.

Die EPC is die hoogtepunt van harde werk en toewyding, 'n groot spanpoging en 'n sprong oor die laaste hindernis om sy doktorsgraad te voltooi, sê Jason Samuels, besturende direkteur van GreenX.

Onder toesig van Thinus Booysen, professor in elektriese en elektroniese ingenieurswese, en Saartjie Grobbelaar, medeprofessor in bedryfsingenieurswese, doen Samuels sy PhD met die fokus op skole en hul energieverbruik; die skep van metodes om hul verbruik te verminder en stelsels om die skool doeltreffender te bestuur. Samuels, Booysen en Grobbelaar het saam met die entrepreneur Mario Roos, GreenX Engineering gestig met behulp van Innovus Tegnologie-oordrag, die US se innovasie-afdeling. Booysen en Grobbelaar is albei nie-uitvoerende direkteure van GreenX Engineering.

“Die eerste saadjie van GreenX Engineering is twee jaar gelede beplant nadat ek prof Booysen oor die radio hoor praat het oor sy betrokkenheid by projekte om skole in en om Stellenbosch en die Paarl te help om water en elektrisiteit te bespaar. Ek het besef dat my gespesialiseerde maatskappy vir beligting en elektriese instandhouding 'n noodsaaklike vennoot kan word vir Booysen se inisiatiewe by skole,” het Roos gesê en die gesprekke het begin.

Roos het gesê dat toe die wysiging van die Nasionale Energiewet van 1998 in Desember 2020 deur die Minister van Minerale Hulpbronne en Energie geproklameer is, wat vereis dat gebou-eienaars die elektriese verbruik per vierkante meter teen 2022 moet publiseer, het hulle 'n gaping in die mark gesien om 'n maatskappy te stig wat kan verseker dat geboue aan hierdie nuwe regulasie voldoen.

As GreenX se tegniese direkteur, bied Booysen die tegniese kundigheid en ervaring van die maatskappy om skole te help om meer energie-doeltreffend te word en hul elektrisiteits- en waterrekening te verminder. “Daar is baie skole sonder finansiële of tegniese middele om hul energie- en waterbronne doeltreffend te bestuur. Ons het aanvanklik met dertien skole begin, en hierdie getal het gegroei tot 25 skole in die Stellenbosch- en Paarl-omgewing. Danksy die befondsing van die Wes-Kaapse onderwysdepartement, sowel as die US se sosiale impak en transformasie-afdeling, kan ons hierdie skole toerus met

energiebesparingstechnologie om hulle te help om hul energierekeninge te verlaag,” sê Booyesen.

Vir Roos is die droom om energie-doeltreffendheid by alle Suid-Afrikaanse skole te verseker en hulle koolstofvoetspoor aktief te verminder. “Ons berekeninge toon dat ons 120 kg koolstofvrystellings per skool per dag kan verwyder. As ons dus ons program kan uitbrei om al 1 600 skole in die Wes-Kaap in te sluit, sal dit uitloop op ‘n verwydering van 90 miljoen kg koolstofvrystellings per jaar. ”

Roos glo dat hulle 'n bloudruk skep wat regoor die land en internasionaal gedupliseer kan word. "Ons aanvanklike fokus is skole waarna ons na korporatiewe en regeringsgeboue regoor die land sal uitbrei."

Vir Grobbelaar sal die sakemodel wat hulle geskep het, die maatskappy laat groei en 'n stewige skakel met die US se ingenieurswese-kundigheid behou. “Inisiatiewe soos hierdie bring die US se navorsing na die regte wêreld en verander die lewens van mense - wat tans op skoolvlak begin; 'n plek waar alle mense op 'n stadium in hul lewens moet deur beweeg.”

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Opmerking: EPC-sertifisering verwys na die meting van die netto energie wat in kilowattuur per vierkante meter (kWh / m²) verbruik word om aan die verskillende behoeftes verbode aan die gebruik van die gebou te voldoen. Energieprestasiesertifikate is nou verpligtend vir private sektor, nie-residensiële geboue met 'n totale netto vloeroppervlakte van meer as 2 000 m², en regeringsgeboue van meer as 1000 m². Die sertifikate moet by die hoofingang van die gebou vertoon word; en moet by die Suid-Afrikaanse Nasionale Energie-ontwikkelingsinstituut (SANEDI) ingedien word. Die sertifikaat is geldig vir vyf jaar, waarna dit hernu moet word.

Opmerking: die Universiteit Stellenbosch (US) het in Februarie vanjaar die heel eerste Elektriese Prestasiesertifikaat (EPC) vir enige gebou in Suid-Afrika ontvang. Die US se Admin B-gebou het 'n A-gradering vir elektriese verbruik van 48 kWh per m² gekry.

Byskrif: Cloetesville Primêr ontvang sy energieprestasiesertifikaat

By 'n klein funksie by Cloetesville Primêr in Stellenbosch, het die adjunk-direkteur-generaal: onderwysbeplanning van die Wes-Kaapse onderwysdepartement, Salie Abrahams, die skool se EPC-sertifikaat op 10 Junie 2021 aan die skoolhoof Rodger Cupido oorhandig. Vir hom is die doelwit om 'n volhoubare en energiedoeltreffende skool te word, hoog op sy

prioriteitslys. "Ons skool staan ook bekend as die Groenskool," sê hy, met verwysing na die tydelike groen struktuur wat gedien het as die oorspronklike skoolgebou toe die skool in 1969 gestig is. "Nou is ons groen omdat ons energie-doeltreffend is." Prof. Stan du Plessis, uitvoerende bedryfshoof van die US, het Cloetesville Primêr geluk gewens met hul EPC-sertifikaat, en gesê dit is baie simbolies om hierdie sertifikaat by 'n skool te oorhandig. "Dit is nie my generasie nie, maar dié van my kinders wat daaronder gaan ly as ons nie 'n verskil aan ons omgewing maak deur energiebesparingsprojekte soos hierdie aan te pak nie. Met hierdie projek sien ons wat die impak is as ons idees na die mark neem - ons het wonderlike maatskappye soos GreenX tot stand laat kom wat 'n skool soos Cloetesville Primêr kan help om 20% op hul maandelikse energierekening te bespaar." Abrahams sê daar is geweldig baie trots in hierdie benadering om 'n vennootskap tussen die WKOD, plaaslike owerhede, die Universiteit, die skool en die private sektor te gevorm het. "My dankbetuiging gaan aan almal wat bygedra het tot hierdie projek en aan die leiding van hierdie skool wat, ondanks uitdagings en beperkings, dit kon laat gebeur en ons kinders aan die ontwikkeling van 'n ondernemingsgees kann blootstel – om aan hulle te wys hoe jong entrepreneurs vlug kan gee aan hul idees. Ons hoop om deel te wees van 'n groter projek wat hieruit lei."