

BUSINESS

IN THE METRO

SUPPLEMENT TO THE HERALD OF NOVEMBER 30 2015



REVVED FOR LONDON: The Nelson Mandela Metropolitan University Eco-Car team, from left, Takudzwanashe Vudzijena, Tinashe Maphosa, Oseloule Enabor, Crispin Mukalay and driver Martin Badenhorst have been invited to take the Eco-Car they created, designed and built to compete in London next year

PHOTOGRAPH: EUGENE COETZEE

The science behind saving billions of rands

Industry benefits from eNtsa's high-level research, latest in equipment

SOLID scientific study and innovation in Nelson Mandela Bay are behind a developed welding and repair process that is saving industry billions of rands.

Export markets for the WeldCore friction taper hydro-pillar welding and repair process developed by the eNtsa engineering technology station at Nelson Mandela Metropolitan University (NMMU), await following accreditation by the world's leading engineering body, the American Society of Mechanical Engineers.

"The strength of eNtsa builds on strong academic and fundamental evaluation of the processes and the programmes required to develop technology based on scientific principles.

"This guarantees, to a large extent, that the technology will perform as required," corporate materials specialist at Eskom Marthinus Bezuidenhout said.

Tomorrow key development players will be in Nelson Mandela Bay to witness how the WeldCore technology has helped keep the lights on by enabling the power utility to safely continue operating older power plants without having to invest billions of rands to replace equipment.

According to Bezuidenhout, the technology allows operators to take core samples of turbines, tanks and pipelines to determine how much life is left in the component.

Friction welding is used to permanently close the hole left when the sample is taken.

eNtsa has done testing for Sasol, as well as Eskom, and the



... how research can be focused on solving challenges facing industry in South Africa

technology is now ready to be used in other industries, according to eNtsa director Prof Danie Hattingh.

"It's a good example of how research can be focused on solving challenges facing industry in South Africa," he said.

Universities like NMMU have a vital role to play because they combine high-level research with the latest in testing equipment.

NMMU's investment in the first high-resolution transmission electron microscope (HRTEM) which can focus on the

atomic structure of materials, is cited by Bezuidenhout as one of the university's strengths.

"The university has made huge strides in developing the skills needed to understand the fundamentals of the mechanisms behind the ageing of materials," he said.

The microscope is one of four housed in the R120-million HRTEM centre for teaching and research, a partnership between the National Research Foundation, the Departments of Science and Technology and Higher Education and Training, NMMU and Sasol.

"eNtsa is really the only facility of its type in South Africa that I know of. It is an extremely good model of the processes required to develop industry-ready solutions needed by South African companies," Bezuidenhout said.

AMTC INVOLVES BAY COMPANIES

ENTREPRENEURS, engineers, technical and marketing leaders from at least 140 Port Elizabeth-based companies are involved in projects run under the auspices of the Advanced Mechatronic Technology Centre (AMTC) at Nelson Mandela Metropolitan University. According to lecturer Clive Hands, innovators who run their own companies in Nelson Mandela Bay, larger corporates like VWSA, others like CustomWorks and Modimad, as well as former students, are all attracted to the unit by the projects students are working on.

He said they give their time and often resources or equipment to assist students. Hands is heading up the university's Eco-Car project, which has been accepted to participate in the flagship Shell Eco-Marathon (SEM): Europe to be held in London in July next year. Team NMMU Eco-Car won the 2015 Shell Eco-marathon South Africa off-track award for perseverance and team spirit. NMMU is also encouraging innovation in high school pupils in the Bay.

"We want to involve at least four schools in a local competition, with the dual intention of promoting science and technology to attract future students, and to have an Eastern Province schools team accompanying the NMMU team to the SEM: Africa event in October next year," he said.

AUTOMOTIVE

WIN-WIN PARTNERSHIPS:

PG5



AGRICULTURE

GROWING EC'S 'DIAMOND' FIBRE:

PG7



RUBBER TECHNOLOGY

EXTENDING THE LIFE OF TYRES

PG10



GAME INDUSTRY

BUSINESS VISION 2030

PREPARING THE BAY TOGETHER

Editorial

A SYMBIOTIC, evolving partnership between the Nelson Mandela Metropolitan University (NMMU) and the business community of Nelson Mandela Bay is vital for the transformation and growth of the city and its economy – as we move towards the bright future we envisage for the region.

While both institutions can trace back their origins to the 1800s, NMMU and the Nelson Mandela Bay Business Chamber have evolved with the city in which they operate.

Both institutions changed names a few years after the Nelson Mandela Bay Municipality took on the name of the late iconic statesman. And it was indeed this great man, former president Nelson Mandela, who was famously quoted as saying: "Education is the most powerful weapon which you can use to change the world."

Named after this legend, NMMU was established in 2005 – the same year the new NMMU Business School was opened.

Similarly, the chamber changed names in 2011, from the Port Elizabeth Regional Chamber of Commerce and Industry (Percci) to its present day Nelson Mandela Bay Business Chamber. Both institutions are historically grounded, forming integral parts of the city and its community.

It is therefore also fitting that they share a common vision: Business Vision 2030.

The vision for the city had been jointly developed by the Chamber and NMMU's Business School to make the Bay "the best mid-sized city in Africa to live, work, play and grow a business".

Business Vision 2030 was created through a series of think tanks and launched in November last year, with a purpose to ensure the city is in a state of readiness to host medium to mega projects by 2030.

Linking the two institutions with this clear vision, we build onto our pillars of relevance in the community: through innovative research, skills development and social upliftment initiatives.

While only some residents are fortunate to benefit from a university education, those who are given this opportunity are encouraged – by both NMMU and business fraternity – to plough back their teachings and experience into the city once they become part of the working world.

This may vary from involvement in community projects and entrepreneurialism to implementing ground-breaking technology and research, as well tailoring their skills to a state of readiness for the megaprojects planned for Nelson Mandela Bay.

A symbiotic relationship between business and tertiary education institutions like NMMU assures us of establishing the future city that is indeed changed through the power of education. – Nelson Mandela Bay Business Chamber CEO Kevin Hustler



KEVIN HUSTLER



MEETING NEEDS: South Africa's game ranch industry is thriving, with the Eastern Cape a particular beneficiary of research that ensures the management of sustainable growth

Real shot in the arm for R13bn wildlife industry

NMMU behind growth of game ranch managers, wildlife guides, professional hunters

SOUTH Africa's game ranching industry has been growing at between 4% and 14% a year for the past decade.

That is according to research by Wild Summit Group chief executive John Hurter, who has also found the game industry has an annual turnover of more than R12.9-billion a year.

Nelson Mandela Metropolitan University (NMMU) provides support to the growing industry through ongoing research and its range of game ranch management diploma and degree courses.

"Without NMMU very few younger people would have the skills to work on game farms or would have been lost to other sectors," East Cape Game Management Association (ECGMA) chairman Neil Dodds said.

Graduates are much sought-after as game ranch managers, wildlife managers, extension officers, professional hunters, wildlife guides and safari outfitters, according to Prof Pieter van Niekerk, of the univer-

sity's game ranch management department. Hurter said game ranchers would work mainly on private game ranches, game farms and nature reserves, which cover an estimated 23 million hectares in the country and are home to more than 18 million head of game.

He says the industry has an annual turnover of more than R12.9-billion, and has been growing by between 4% and 14% for the past ten years.

He expects the industry to grow by at least 5% a year on average over the next decade. "There are an estimated 200 000 hunters in South Africa, who make up the bulk of hunting-related turnover.

"Foreigners account for between 7% and 9% of turnover," Hurter says.

Research undertaken by



HUNTING-RELATED TURNOVER
Approx 200 000 hunters in South Africa
FORGEIGNER TURNOVER
7% to 9%

South Africa (Chasa), and Secscom (Stakeholders in the Eastern Cape Safari Industry Committee).

This close relationship with the sector has helped the university to focus on relevant research.

A recently completed doctorate by NMMU student Wentzel Coetzer into public attitudes towards hunting is an example.

Dodds said members of the ECGMA hosted students for their practical training.

The students go on to work on game farms and ranches or start their own game farms, he says.

Van Niekerk says graduates from the NMMU course are also fully accredited by the Professional Hunters Association of South Africa.

Students also do practical courses such as welding and basic mechanics – skills that are needed in the bush.

PARTNERSHIP TO PRODUCE QUALIFIED WELDERS

A PARTNERSHIP between business, government and NMMU is helping to meet the shortage of certified welders in South Africa.

Four technical high schools are benefiting from a programme implemented by NMMU, Afrox and merSETA.

Technical schools will be reintroducing welding as a subject from 2016, and the schools' welding facilities were

in need of an upgrade.

"Welding is a specialised field under the subject mechanical technology in technical high schools and recapitalising these schools will go a long way in preparing learners for careers in welding," says merSETA ETQA and partnerships senior manager Christo Basson.

The schools are Westview High, Kwezi Lomzo Compre-

hensive, Gelvandale High, and McCarthy Street Secondary in Uitenhage.

Afrox has supplied welding equipment and products to the value of about R1.2-million to the schools.

Classrooms have also been upgraded.

The merSETA chair in engineering development at NMMU has provided funding for accredited Afrox training

for two teachers per school, as well as for a Department of Education representative.

"Education in engineering is an expensive exercise, but this collaboration has provided the four schools with equipment that can yield skills to prepare learners for tertiary studies," said Karl du Preez, of the merSETA chair in engineering development at NMMU.

CONTACT DETAILS

EDITOR: DEBBIE DERRY

DERRY@NMMU.AC.ZA

WRITER: ED RICHARDSON

EDRICH@SIYATHETHA.COM

PHOTOGRAPHER: LEONETTE BOWER

MARITIME



UNTAPPED POTENTIAL: With 2 500km of coastline, South Africa – and the Eastern Cape in particular – is ideally positioned to harness the benefits of a sustainable blue economy

PHOTOGRAPH: ROB DUKER

Laying the keel for vessels to suit rough African conditions

The unlocking of the continent's blue economy for sustainable ocean development offers NMMU new growth areas, including that of education and training, writes **Ed Richardson**

A PARTNERSHIP between Finnish company Wärtsilä and Nelson Mandela Metropolitan University (NMMU) will help produce the skills and knowledge required to develop the South African "blue economy".

That's according to Wärtsilä business development partner in Africa, Greg Davids.

He said Wärtsilä's relationship with NMMU will go far beyond the donation of an 11-ton Wärtsilä 20 engine through the South African International Maritime Institute (SAIMI), which is being hosted by NMMU.

The vision is to have the capacity to "design and build vessels in Africa for African conditions".

Davids said most vessels currently working in African waters were not designed for the continent's sea conditions, which are rougher than most other places in the world.

"The majority of fishing vessels operating in African waters are bought second-hand.

"If they are bought new from an overseas shipyard they are not designed for our rough top deck conditions and seas," he said.

What was needed were patrol boats and hydrographic research craft to protect the country's marine resources, as well as workboats such as tugs, bunker barges, cable-laying vessels and boats to



SYMBOLIC START: Nelson Mandela Metropolitan University vice-chancellor Prof Derrick Swartz, from left, international shipping giant Wärtsilä's business development partner Greg Davids, NMMU's Prof Dalena Pottas and SA International Maritime Institute project manager Odwa Mtati, with an 11-ton ship's engine that will form part of future training of maritime engineers at the university

service the growing offshore oil and gas industry. While Wärtsilä does not build vessels, it is one of the leading suppliers of marine propulsion systems and has 180 years of experience to share with local ship

designers and builders.

"Africa has never fully harnessed its ocean resources," Davids said.

"Working with NMMU, Wärtsilä wants to assist the continent to do that."

All hands on deck FOR ENGINEERS

NELSON Mandela Metropolitan University is positioning itself as an African centre for the training of marine engineers.

According to Faculty of Engineering, the Built Environment and Information Technology executive dean Dr Ossie Franks, a new marine engineering department will draw from the existing mechanical, electrical and mechatronics departments within NMMU.

He says the university is able to fast-track the introduction of a new course "by leveraging the strength of existing competencies and infrastructure".

"We have challenged all our departments to find ways they can adapt their programmes to ensure that our graduates are properly equipped for a maritime career," he says.

Seed funding to establish the department has been provided by merSETA, which will invest R30-million over the next three years to help establish a Bachelor of Engineering Technology in Marine Engineering degree.

NMMU is working closely with the maritime industry and Wärtsilä to ensure that it produces the skills that are needed.

According to the International Maritime Organisation, more than 1.5 million people are employed as seafarers globally. It is estimated that about 40 000 new ships officers will be needed by the industry every year from now until 2013.

"The modern ship's officer needs to be far more than a navigator or an engineer, and the crewman needs to be far more than a manual labourer.

"A modern ship is a highly technical workplace operating on the tight margins of commercial viability – which means that, as well as a highly advanced technical skillset, shipboard staff now also need to be fully conversant with management and communication skills, IT knowledge, budget handling and so on," it says. Land-side activities such as shipbuilding, ship repair and ship recycling will also have growing requirements for manpower resources.



DR OSSIE FRANKS



**Nelson Mandela
Metropolitan
University**
for tomorrow

**ASPIRE
ACHIEVE**

Postgraduate studies

Future dreams and ambitions are inherent in every one of us, but our future dreams are inspired by an initial individual aspiration, a starting point where you look at yourself and say, 'yes I can, and I will achieve.'

With more than 320 postgraduate programmes across a vast selection of disciplines and over 200 short courses available, NMMU offers what you need to take a step closer to realising your ambitions.

Contact us today

- Andrew Kock • Tel: 041 504 2162
- E-mail: postgrad@nmmu.ac.za







www.nmmu.ac.za

MANUFACTURING

NMMU engineers business support

MORE than 400 small engineering and manufacturing companies in the Eastern Cape have been helped to be more competitive by the eNtsa engineering technology station at Nelson Mandela Metropolitan University (NMMU).

Funding by the Technology Innovation Agency helps keep the costs down – and in many cases the support is free, according to eNtsa engineering technology station director Andrew Young.

For Port Elizabeth-based Yenza Manufacturing this has meant providing and installing equipment on loan.

Yenza is a supplier to the auto industry, with past and present clients including General Motors South Africa, Mercedes-Benz South Africa, Tenneco and Benteler Automotive.

Support by eNtsa includes the training of operators, says Themba Mtati, managing director of Yenza Manufacturing.

“When I think of the support they gave us, I cannot put a value to it because of the amount of time they spent here.

“They also did a lot of work behind the scenes,” he says.

The support helped Yenza to expand its customer base and its reach. Components manufactured in Port Elizabeth by Yenza are exported to Germany.

Yenza is an example of how larg-



SEEKING SOLUTIONS: Regardless of the type of industry, help is at hand in the form of research, knowledge and training for manufacturers in partnership with the university's technology stations

er manufacturers in Nelson Mandela Bay provide support where eNtsa is involved in the development of suppliers to the manufacturers themselves, says Young.

Here the focus is usually on refining manufacturing processes to ensure consistent quality.

This includes support for automation and robotics on the production line, as well as identifying

ways of lowering the costs of the energy used in the manufacturing process. Testing facilities within eNtsa will help identify reasons for failure and will be able to accurately predict the service life of a component, he says.

“We support small businesses with technology and expertise they would not otherwise be able to afford.” Affordability is impor-

tant for Kate Gluckman, managing director of specialised industrial brush supplier John Gray & Son.

“We have a product which we were importing, and my brief to them was to find a way for me to make it in the cheapest possible way,” she says.

The solution could be labour-intensive because “we need to employ more people,” she says.



We support small businesses with technology and expertise

“But we just did not want to have to lay out huge amounts of money for the manufacturing equipment.”

Support for small business includes help with development and design.

eNtsa has the equipment and the people to do mechanical design, 3D modelling, finite element analysis and rapid prototyping, says Young.

“Entrepreneurs come to us with an idea and we will help them to refine their design.

We can make anything here.

eNtsa both designed a machine and provided the full set of drawings and bill of quantities to John Gray & Son for the building of a prototype.

“They have been phenomenal. It is a design which my technical manager can build – with eNtsa providing ongoing support.

“They will make any components we can’t make ourselves or source from suppliers they have recommended,” says Gluckman.

Where the initial focus of the unit was on the automotive industry, it has since expanded into other sectors, with particular emphasis on renewable and green energy solutions, according to Young.



A decade of driving our future.

Volkswagen Group South Africa would like to congratulate Nelson Mandela Metropolitan University for providing ten years of quality education and creating a culture of academic leadership. Your commitment to education and the upliftment of the Eastern Cape is shared with our dedication to grow and improve the lives of all South Africans. We believe in the future of this nation as passionately as you do. In 2016 we will celebrate 65 years of driving South Africans and are proud to be German engineered with a South African heart.



Das Auto.

AUTOMOTIVE



BUILDING BRIDGES: VWSA is always open to building relationships that can benefit students, the university and the company, spokesman Matt Gennrich says

Project keeps wheels moving

All stakeholders stand to benefit as VW focuses on skills transfer

SKILLS required to ensure that Volkswagen South Africa (VWSA) continues to produce globally competitive cars are being honed and shaped in a collaborative partnership between the auto maker and NMMU.

The focus is already on the next model for which VWSA will have to compete against Volkswagen plants around the world.

"Given our new 'project' and the rapid changes in engineering, automation, tech-

nology and business, we will consider expanding on further collaborative projects, where resources can be shared, experiences from industry and leading education specialists can be multiplied," says VWSA general manager: group communications Matt Gennrich.

This will be "building on the sound relationship" already established in certain faculties – such as engineering, the built environment and information technology.

Gennrich says the company is already in discussion with



NMMU is always open to discussing opportunities for further growth

the faculty about a collaborative qualification programme for the new project and the VASS skill-building process in the company's body shop.

He says NMMU is ever open to projects which benefit the university, students and industry.

"Students gain practical and relevant insights into industry through this."

The university builds on its curriculum offerings that are aligned to business and industry requirements and industry and business gain by having strong graduates, who are prepared for challenges.

"NMMU is always open to discussing opportunities for further growth, expanding on programmes, adjusting curricula, and working collaboratively in offering technical courses cost effectively," he says.

COURSES ADAPTED TO HELP MOTOR INDUSTRY ADVANCE

VWSA in association with the German Academic Exchange Service founded the international chair in automotive engineering at NMMU in 2007. The aim was to increase innovation, international competitiveness and grow engineering skills and expertise in the region to support the industry and supplier base.

A year earlier, in 2006, VWSA introduced an automotive manufacturing orientation programme for first year engineering students to stimulate interest in the industry among engineering students. Now the establishment of the NMMU-Siemens Training Centre "provides a local solution for this critical training".

"It's in our interest to continue to help NMMU to grow in expertise – which, in turn, supports our region and business," VWSA said.

Hard-wired to FIND SOLUTIONS

NELSON Mandela Metropolitan University engineering students are hard-wired to solve problems.

That's the conviction of automotive industry insiders who work with NMMU students, interns and graduates, who regularly go on to work for the top motor giants and companies around the globe.

The opportunities they receive during internships and other projects to get hands-on experience means they are exposed to real-life challenges before they graduate.

"They are solving real-life problems we have in the plant and making improvements we haven't even thought of," GMSA training and organisational de-

velopment manager Wayne Osborne says.

NMMU department of mechanical engineering's Karl du Preez agrees that NMMU's engineering students are "hard wired" to be problem solvers.

There is a strong focus on finding solutions to the engineering, power and process challenges facing South African companies rather than pure "blue sky" academic research, says Du Preez.

"Then, our teaching is solution-driven.

"We teach our students to be problem solvers, and we stretch them by getting them involved in projects where they get hands-on experience.

"In addition, most of our staff

members are themselves innovators, who invent new tools and products as a hobby," says Du Preez.

Representatives of companies working with NMMU praised the institution for offering both professional and vocational training.

"Many of our senior managers studied at the university and we continue to recruit graduates into the business from NMMU," Volkswagen South Africa general manager: group communications Matt Gennrich says.

"The university is growing quality graduates in the engineering fields and supporting the development of our employees by offering quality education," he says.



HANDS ON: Students who get the opportunity to work in the motor industry in Nelson Mandela Bay are 'hard wired' to seek solutions

BUSINESS

Family companies drive economy

NMMU-based Family Business Unit assisting companies throughout SA

"WHAT we are seeing with our clients is that it is family businesses which are driving the South African economy," KPMG Family Business South Africa head Alan Barr said.

The South African unit, which is part of KPMG's Global Family Business Centre of Excellence, is based in Port Elizabeth.

This is because of the existence of the country's only university-based Family Business Research Unit at Nelson Mandela Metropolitan University (NMMU), and because of the high number of successful family businesses in the Eastern Cape.

According to Barr, KPMG works closely with the NMMU Family Business Unit (FBU) to identify and meet the many challenges facing family businesses across the country and farther afield.

KPMG provides these businesses with access to best practices in terms of how they deal with the unique challenges they face, instead of travelling abroad for the same insight.

The Family Firm Institute of Boston in the US estimates that 30% of family-owned businesses survive to the second generation, while only 12% survive to the third generation and a mere 3% to the fourth generation and beyond.

Research undertaken by the NMMU FBU is helping to identify the main challenges facing family businesses in South Africa, according to unit director Prof Elmarie Venter.

Findings are shared at regular family business forums and conferences hosted by KPMG and the NMMU FBU.

The consulting firm and the FBU also work together where necessary to assist family-owned and run businesses, according to Barr. "It is a collaborative relationship," he says.

Around the world the experience is that healthy family businesses are needed to create sustainable jobs and create wealth.

They face a number of unique challenges.

A survey of 100 South African family businesses by PwC found that about 26% of respondents were apprehensive about the transfer of the business to the next generation, stating that they would not have the required skills and aptitude to own and run the company.

Another 22% foresaw that there would be conflict between the family and those managing the company.

However, Venter said, the FBU is helping family businesses across the country to overcome the challenges through short courses and the training of family business practitioners.

Owners can also have a free one-hour introductory consultation at the FBU. Despite the challenges of both the economy and managing family-run businesses, they continue to flourish.

Prof Venter says family businesses in the Eastern Cape and the rest of the country that are growing are doing so because they are innovating and embracing the King Code of Governance principles.

Instead of seeing them as a burden, they see them as a guide to doing business properly.

WHAT IS FAMILY BUSINESS? THE LOWDOWN

YOU know you are in a FAMILY BUSINESS when:

- The family sees their business as a family business;
- Family ownership in the main operating business is above 50% (voting share);

- The family is active in the business, and not only a passive shareholder or investor;
- At least two generations are involved in ownership and/or management of the business;
- The next generation of family members wants to go into the business.



CLOSE KNIT: The head of the Family Business Unit at Nelson Mandela Metropolitan University, Prof Elmarie Venter is joined by, from left, KPMG Eastern Cape managing partner Alan Barr, Coca-Cola Sabco chairman Phil Gutsche, KPMG global head of family businesses Christophe Bernard, and Tavor Motor Company CEO Alan Taverner. The Gutsche and Taverner families both run successful family businesses in the metro and beyond

A GLOBAL STEP-UP

NELSON Mandela Metropolitan University's Family Business Unit is the first in Africa to become an affiliate of the global Successful Transgenerational Entrepreneurship Practices (STEP) project.

Funding for the affiliation is being provided by Gutsche Family Investments, best-known for its ownership of Coca-Cola Sabco. Currently, the NMMU FBU is the only unit of its kind in Africa.

"The STEP project provides the opportunity to put the Eastern Cape, South Africa and Africa on the map in terms of the field of family business," the unit's director, Professor Elmarie Venter says.



"To a decade of successful collaboration and commitment to deliver top quality talent and rounded future leaders in our business community.

Thank you NMMU
look and congratulations!
We look forward to many more."



FAMILY BUSINESSES ARE THE BEDROCK OF ECONOMIES AROUND THE GLOBE

ACCORDING TO A RANGE OF SOURCES:

- Family businesses make up **70%** of all businesses in Africa and **65%** of companies in South Africa.
- Family businesses account for **80%** of all businesses in the US and are responsible for nearly **50%** of gross domestic product (GDP).
- Family businesses in Europe represent between **60%** and **70%** of all small- and medium-sized enterprises (SMEs), and contribute between **45%** and **65%** to the continent's gross national product (GNP).
In Germany, for example, family businesses represent **79%** of all businesses and employ **44%** of the working population.

FAMILY BUSINESS IS ALSO BIG BUSINESS

ACCORDING TO THE ECONOMIST:

- Family businesses make up **19%** of companies in the Fortune Global 500, which tracks the world's largest firms by sales.
- About **85%** of US \$1-billion-plus (R14-billion-plus) businesses in South-East Asia are family-run, about **75%** in Latin America, **67%** in India and about **65%** in the Middle East. In sub-Saharan Africa, the percentage is about **35%**.



NURTURING ENTREPRENEURSHIP

A COMMON challenge facing family businesses is to rekindle the spirit of the entrepreneurship of the founders.

This is one of the findings of a two-year study by scholars from 35 institutions across Africa, Europe, Latin America, Asia and North America.

"Families are the dominant form of business organisation worldwide and play a leading role in both social and economic wealth creation," STEP (Successful Transgenerational Entrepreneurship Practices) Project's academic director, and faculty director for the Institute for Family Entrepreneurship at Babson College in Massachusetts, US, Matt Allen said.

"Our survey validates the growing need for owners to develop and pass on entrepreneurial mindsets that will build new practices and solutions for the next generation," he said.

Entrepreneurship is needed to ensure that family businesses continue to expand to absorb a growing number of family members, NMMU Family Business Unit director Professor Elmarie Venter said.

"The number of family members the business supports grows with every generation," she said.

"They need to transfer the entrepreneurial spirit of the founders to ensure the business creates wealth faster than the family grows."

In July, Venter presented a summer school on entrepreneurship theory and practice in Utrecht, the Netherlands, to students from 15 countries.

AGRICULTURE

Partnership underpins lustre of 'diamond fibre'

Exciting model with student designers rolled out internationally

A 12-YEAR partnership between Nelson Mandela Metropolitan University (NMMU) and Mohair South Africa has helped raise the profile of "the diamond fibre".

Mohair South Africa (MSA) managing director Deon Saayman said the partnership had begun slowly. "It was a very small beginning where we started working with NMMU fashion design students. The objective was to give the young designers the experience of working with fibre after we realised that the younger generation didn't know mohair."

"NMMU really embraced the project from the start, which has contributed to its success."

According to Agri Eastern Cape, the 700 000 goats in the Eastern Cape account for about 52% of the global production of quality mohair.

MSA sees its investment in the university and young designers as a long-term investment in sustaining demand for the fibre.

"Mohair is such a niche product that young designers would not otherwise have the opportunity to work with the fibre," says Saayman, adding that these graduates also go on to become buyers for retail chains, and hopefully include it in their collections.

In addition to providing mohair to the students, MSA has been awarding bursaries to third-year students. And for the past four years, it has collaborated with NMMU as the key sponsor of its showpiece Collective fashion show. A competition for interior design students was also added two years ago.

Past fashion design winners who are becoming household names in the fashion industry include Laduma Ngxokolo, Kelly Esterhuyse and Ruth McNaughton.

The programme has been so



HOME-GROWN: Fashion design students have been given the opportunity to work with mohair – as showcased with these mohair garments, above and left, in a mutually beneficial partnership for Mohair South Africa and NMMU. The partnership has been so successful it is being rolled out through other education institutions around the globe. Above right, the Eastern Cape's 700 000 Angora goats are responsible for providing 52% of the world's production of mohair

successful that it has been introduced to universities abroad.

Five years ago MSA entered into an agreement with Japan's Mode Gakuen University.

Third-year students there are also supplied with material, yarn and information and this gives them the opportunity to design a collection of garments and also to participate in an annual design competition. The winners travel to Port Elizabeth to take part in the Collective fashion show.

Building on the foundations of its success with NMMU, MSA now

Mohair is such a niche product young designers would not otherwise have the opportunity to work with the fibre

also collaborates in design programmes at Nottingham Trent University in London and Donghua University in China.

It also works with the young designers in the Propella business incubator on NMMU's Bird Street

premises. Propella helps designers to commercialise their work.

NMMU provides further support for the mohair industry by using specialised equipment in a new purpose-built laboratory to develop quality control systems for the mohair market. NMMU is the only facility in South Africa for postgraduate studies in textile and clothing science.

"Without the existence of the department it would be impossible to do the research we need," Saayman says.

LADUMA A LEADING EXAMPLE

ONE of the best-known successes of the NMMU / Mohair South Africa partnership is Laduma Ngxokolo, whose MaXhosa men's knitwear range inspired by traditional Xhosa designs is in demand around the world.

Born in Port Elizabeth in 1986, Laduma had his first hands-on experience of textile designing in 2003 when he studied at Lawson Brown High School.

Ngxokolo's flair for knitwear design earned him a bursary from both Port Elizabeth-based Cape Wools South Africa and MSA during his BTech studies at NMMU in 2010.

His business was given a head start by Hinterveld Mohair Weavers, which provided small quantities of mohair on credit, according to Jacqui Barnett, director of NMMU's Innovation Office.

She says business support of this kind helps emerging entrepreneurs.



HOME GROWN: NMMU Textile Design graduate Laduma Ngxokolo says 'there is a science to what I do. It's about exploring heritage and turning it into something that people have not seen before'



AUTOMOTIVE

EC major mover in automated guided vehicle production

Meeting factory needs

Industry partnership
BRINGS EXPERTISE TO REGION



ON THE LINE: Mechatronics and other engineering students benefit from industry and university partnerships. NMMU has been successful in attracting women to the profession

SCHOOL-LEAVERS wanting to enter the motor industry as engineers are obtaining a world-class education in the Eastern Cape.

This is thanks to a partnership between General Motors South Africa (GMSA) and Nelson Mandela Metropolitan University (NMMU).

GMSA helped fund the establishment of the GMSA Chair of Mechatronics and continues to support the faculty.

Manager of training and organisational development at GMSA, Wayne Osborne, says: "We approached the university after finding one could never source or recruit qualified and registered engineers in the Eastern Cape."

It was agreed to establish a mechatronics chair because the relatively new field is better suited

to the needs of the motor industry than traditional mechanical or electrical engineering.

"Mechatronics is a combination of the electrical, mechanical, robotics and programming disciplines," Osborne says.

Head of the GMSA Chair of Mechatronics, Prof Igor Gorlach, says students have completed more than 30 projects since 2010.

"The beauty of the faculty is that it provides theory combined with good hands-on experience."

A further strength of the faculty, he says, is the mix of students.

Osborne says: "They have been incredibly successful in attracting women to the profession, and also have a good racial mix representative of the population."

"It works like a dream," he says.

AN OPPORTUNITY for the Eastern Cape to become the centre of production of automated guided vehicles (AGVs) for use in factories is an increasing possibility.

When General Motors South Africa (GMSA) identified the need for a low-cost AGV for its Struandale plant it approached the GMSA Chair of Mechatronics at Nelson Mandela Metropolitan University (NMMU) to find a solution.

The GMSA Chair of Mechatronics was established in 2009.

According to Professor Igor Gorlach, who heads the Chair, the automated guided cart (AGC) was developed for the transfer of instrument panels within the plant.

The capabilities of the carts are being expanded into other areas through ongoing research.

Postgraduate Mechatronics students are working closely with the GMSA production engineers and maintenance team in order to improve the ergonomics of the final design and to satisfy the stringent safety requirements.

Extensive trials are already being run in the GMSA factory.

According to Gorlach, the AGV is ready for commercialisation by a spin-off company.

A business plan had been drawn up by a team of industrial engineering students as part of their undergraduate studies.

Another, more sophisticated AGV for use in warehouses has been developed by the university's eNtsa unit in collaboration with the Port Elizabeth-based Corporate Renaissance Group (CRG), which is one of the leading warehouse consulting companies in South Africa. The AGV is equipped with a



UP A GEAR: Automated guided carts are being developed to assist with transfer needs within warehouses. General Motors South Africa is working with NMMU to determine the capabilities of such carts

laser navigation sensor to help it find its way around the warehouse, while instructions are sent wirelessly from a base station connected to the Warehouse Management System (WMS).

"eNtsa have an outstanding engineering team," says Grant Minnie, general manager, supply chain service services at CRG.

Working off the brief provided by CRG, the eNtsa team was involved in the detailed design of the AGV and built the first prototype.

"From an administrative per-

spective the project was also very well managed. They kept us up to date with progress and held regular meetings to ensure that they were on the right track," he says.

CRG is now raising the necessary funding for eNtsa to conduct industrial trials before the AGV is put into commercial production.

"We know there is a market, particularly with the weakening rand."

"Warehousing is growing increasingly sophisticated and automated, and the trend is to move towards using AGVs," Minnie says.

Mechatronics Engineering (BEng)

School of Engineering

**Nelson Mandela
Metropolitan
University**
for tomorrow



As a dynamic African University, Nelson Mandela Metropolitan University is committed to excellence and innovation. The Faculty of Engineering, the Built Environment and Information Technology (EBEIT) meets the technological needs of industry by providing teaching, research and technological support of international standards.

What is Mechatronics?

Mechatronics is a combination of precision mechanical engineering, electronics and computer systems. A typical Mechatronics system is characterised by close integration of the mechanical components, electrical sensors, mechanical and electrical actuators and computer controllers into products and systems useful to man and society. www.ebeit.nmmu.ac.za

Minimum admission requirements:

- English (Home Language/1st Additional Language – NSC level 4) • Mathematics – NSC level 5 • Physical Sciences – NSC level 5

For more information: <http://mechatronics.nmmu.ac.za>

Head of Department: Prof. F. Smith

Tel: (041) 504 3368

Email: Farouk.Smith@nmmu.ac.za

Faculty Officer: Jorinda Botha

Tel: (041) 504 3480

Email: Jorinda.botha@nmmu.ac.za

ebeit.nmmu.ac.za

MOTORING FUTURE



SILENT SOLUTIONS: The silent Nissan Leaf is one of a fleet of electric vehicles that is being researched as part of a mandate to Nelson Mandela Metropolitan University to focus on facilitating local technology development to support a future electric vehicle industry for South Africa and the rest of the continent



GREEN RIDE: Shamwari Game Reserve is working with the university to test an electric game vehicle as part of its holistic conservation efforts

Electric cars drive a SILENT REVOLUTION

uYilo e-mobility programme steers research into specific needs of a future industry

ONE of the biggest and most diverse fleets of working electric vehicles in South Africa provides a showcase of developments in the industry.

Nelson Mandela Metropolitan University's uYilo e-Mobility Technology Innovation programme fleet of vehicles include the Nissan Leaf, cars built for South Africa's electric car platform (the Joule), a game-viewing vehicle that has been converted to run on electric drive, and "electric all-terrain vehicles" donated by Imperial Green Mobility.

Imperial Green Mobility managing director Jonathan Cohen says the company is benefiting from work undertaken by the uYilo programme to evaluate battery life for vehicles operating on different terrains and in identifying which types of electric vehicles are best suited for which terrains.

One of the vehicle platforms is being used for anti-rhino poaching patrols.

"I would like to thank Hiten Parmar and his team for always being so helpful and also for making the sponsorship of the anti-rhino poaching a success," Cohen said.

According to Parmar, acting director of the uYilo E-Mobility programme, the patrol vehicle is one of eight being tested at Shamwari Game Reserve.

"Shamwari is providing a test environment for the use of electric vehicles in a safari environment, where there is often limited or no grid power," he says.

"These vehicles will be charged by energy harvested via solar panels as will the road-going fleet



These vehicles will be charged by energy harvested via solar panels as will the road-going fleet

els, as will the road-going fleet housed at the NMMU."

Charging stations supplemented via solar power help reduce the environmental impact of electric vehicles, which would otherwise be recharged using electricity from coal-fired power stations.

"All that does is to move the pollution away from where the car is to somewhere else," he says.

NMMU is focusing on facilitating

local technology development to support the electric vehicle industry to meet specific needs in South Africa and the rest of the continent.

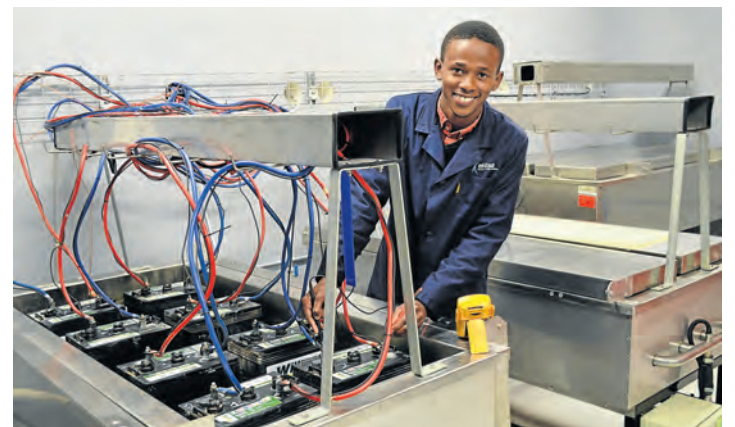
uYilo was established in March 2013 by the Technology Innovation Agency.

The five-year multinational multi-stakeholder programme seeks to ready South Africa for the introduction of e-mobility by creating new business opportunities and generating the know-how to support electric vehicles.

"We are looking beyond the passenger car to niche markets such as the safari and mining sectors that South Africa has the capacity and capability to develop, to add value or to adapt to local conditions," Parmar said.

Other partners in the programme are BMW South Africa, the Department of Science and Technology, Nissan South Africa, Eskom, the Industrial Development Corporation, Nelson Mandela Bay Municipality, Powertech Batteries, the South African National Energy Development Institute, the Department of Trade and Industry and United Nations Industrial Development Organisation.

Battery accreditation



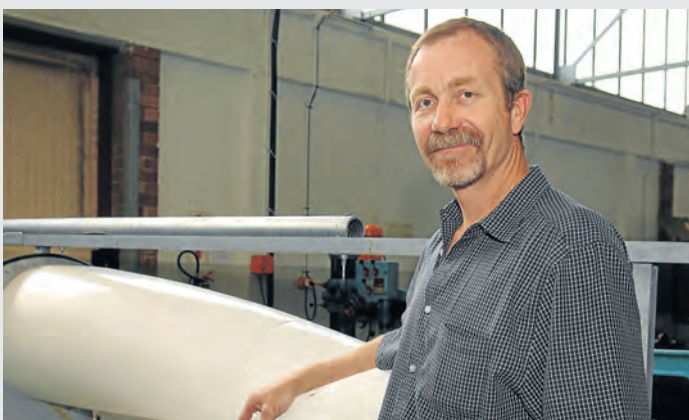
CHARGING IT UP: Former NMMU intern Yonga Dlembula in the uYilo battery testing laboratory which can test and certify the next generation of technologies

THE uYilo battery testing laboratory recently received certification from Sanas (South African National Accreditation System).

This means that tests conducted by the laboratory are now recognised according to local and international guides and standards, uYilo E-Mobility programme acting director Hiten

Parmar said. The laboratory supports local manufacturing companies by providing accurate and reproducible testing services for both new and existing battery technologies, he said.

It is unique in South Africa in that it can test and certify the next generation of storage technologies, which includes lithium-ion batteries.



PROF RUSSELL PHILLIP

STORING ENERGY – THE 'HOT ROCK' WAY

PERHAPS the biggest challenge facing renewable energy is energy storage when the wind is not blowing or the sun is not shining.

NMMU is working with industry to research a number of systems for the storage of power.

They range from a new facility to test lithium-ion batteries used in electric vehicles to standard lead acid batteries and a "Hot Rock" system.

Postgraduate battery research projects in collaboration with Powertech Batteries are focusing on the use of additives to improve the

anode and cathode materials of conventional Pb-acid batteries.

At the heart of the battery testing is a 21-channel Bitrode battery tester that can subject cells and batteries to a range of pre-programmed testing sequences of charging and discharging under various voltage, current and temperature controls.

Developed by NMMU researchers working under mechanical engineering associate professor Russell Phillips, the Hot Rock system allows heat to be stored during the day for later conversion to electricity at a

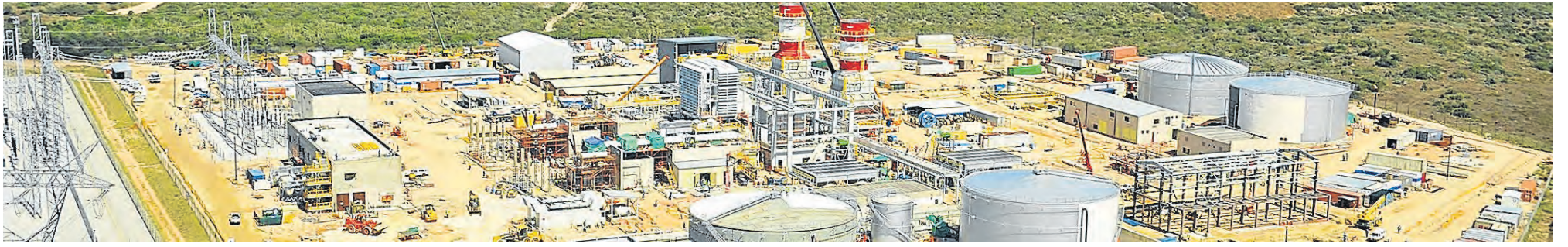
household scale using a heat engine.

What makes it a breakthrough is that at present the conversion of solar heat to energy is only economically viable using giant concentrated solar power plants, Phillips said.

The Hot Rock system reduces battery energy storage costs and lowers the risk of theft due to the low value of the components used in the system, he says.

A prototype is already working, and the technology is ready to be taken to the next level for commercialisation.

RUBBER TECHNOLOGY



FUTURE FACILITY: The Coega Industrial Development Zone will offer a tyre testing operation from 2017

PHOTOGRAPH: ROB DUKER

Testing centre at Coega IDZ to follow NMMU's new Rubber Science Centre Helping extend life of tyres



MOVING FORWARD: A new rubber research facility headed by Dr Percy Hlangothi will offer support to the three international tyre manufacturers in Nelson Mandela Bay and others throughout the continent

AFRICA's first and only rubber research facility is working with the industry to find ways of extending the working life and recyclability of tyres.

Housed at Nelson Mandela Metropolitan University (NMMU), the facility has been modernised by funding from the Recycling and Economic Development Initiative of South Africa (Redisa), which in turn is funded by a mandatory levy paid on every new tyre sold in South Africa.

Redisa invested R10-million

to establish NMMU's Centre for Rubber Science and Technology, headed by Dr Percy Hlangothi. It was officially launched this month.

In addition, Redisa is providing funding to cover additional equipment, operating expenses and bursaries for at least five years.

Redisa, in partnership with NMMU, is also establishing a tyre-testing centre in the Coega Industrial Development Zone. The facility should open in 2017.

The NMMU centre will test tyres against specifications and will also provide an envi-

ronmental rating in terms of issues like their recyclability.

Redisa chief executive officer Herman Erdmann said the facility would be the largest of its kind in the southern hemisphere.

As one of the few metros in the world to host three international tyre manufacturers, Nelson Mandela Bay was a natural centre for rubber research, Erdmann said.

Rubber science and technology research began at the then University of Port Elizabeth in 1975 with the assistance of General Tyre (now Continental Tyre SA).

Research and development falls under the Physical and Polymer Chemistry Research Group, and is supported by companies such as Continental Tyre SA, Goodyear Tyre SA, Algorax, Karbochem, Aberdare Cables, Eskom and Sasol.

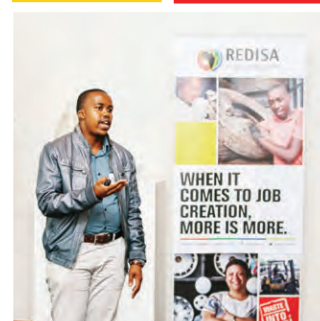
The Redisa-NMMU partnership extends into other departments, such as botany, which is researching the use of rubber crumb as a soil ameliorant, while the Computer Science Department is involved in the development of a model that will assist in tyre identification and harvesting.



FINDING INNOVATIVE WAYS OF DEALING WITH WASTE TYRES

REDISA's research partnerships with the University of Stellenbosch (SUN) and the Nelson Mandela Metropolitan University (NMMU) sees focus being placed on the establishment of research and development to grow tyre recycling processes.

For a look at our latest achievements, statistics and positive stories worth celebrating, please visit our website.



REDISA
RECYCLING AND ECONOMIC DEVELOPMENT
INITIATIVE OF SOUTH AFRICA

JOIN THE JOURNEY | www.redisa.org.za | [f/wasteintoworth](https://www.facebook.com/wasteintoworth) | [@wasteintoworth](https://www.twitter.com/wasteintoworth) | +27 87 35-REUSE (73873)

'Disruptive' technology HAS ROOTS IN NMMU

"I CAN categorically state that without the support of Nelson Mandela Metropolitan University, this project would have failed."

That is the word from Rubber Nano Products co-founder and technical director Robert Bosch.

His company is "disrupting" the conventional rubber manufacturing process by replacing the toxic heavy metal zinc element with Activax as an additive for curing rubber.

It is composed of a nano composite with an inert core of silica embedded in a rubber-compatible wax.

Benefits to rubber manufacturers include lower energy costs, quicker turnaround times for moulds and reduced environmental impact.

Bosch said a shoe manufacturer using the compound to cure rubber has, for example, identified unexpected savings.

Because rubber cured with the compound

comes out of the mould clean, the shoe manufacturer has been able to eliminate a whole step in the production process. With zinc as a curing agent, the soles had to be washed using toxic chemicals.

Rubber Nano's origins started at NMMU with research conducted by Bosch towards his doctoral thesis.

"But NMMU's support has been far more than just academic. It has been a whole entrepreneurial experience, with the university supporting us at every step."

That support is continuing through the Propella Incubator, which is home to the first Activax demonstration-scale production facility in South Africa. The project is also supported by the Technology Innovation Agency, which is funding the development of a new range of compounds for the tyre industry.

Demand for the product is growing rapidly across a diverse range of markets.

MORPHING IDEAS INTO PRODUCTS

BRAIN power is being turned into commercial products through Innovolve (Pty) Ltd, the wholly-owned commercialisation company of NMMU.

Working closely with NMMU's Innovation Office, Innovolve is responsible for the licensing of intellectual property and the establishment of spin-off companies.

Researchers and innovators working at the university are helped to commercialise their work and ideas, while businesses and entrepreneurs partner with NMMU and Innovolve to assist with research and development to refine products for the marketplace.

Innovolve is a shareholder in Propella, the NMMU's incubator.

SIEMENS BOOSTS ENGINEERING SKILLS

MORE than 4 300 engineering students and technicians working in the Eastern Cape manufacturing sector have benefited from Siemens's accredited training at the NMMU-SITRAIN training centre.

"The vision of Siemens is not only to grow industry knowhow but also contribute to the Eastern Cape engineering skills development. This

partnership plays a vital role in achieving this objective," Sakkie du Preez, a Port Elizabeth-based Siemens account manager says.

Du Preez adds "the quality of training provided over the past 10 years has been refined to a level that NMMU is now known as a training centre of excellence.

Du Preez says graduates and trainees from the centre are in big demand.

RENEWABLE ENERGY



LIGHTING THE WAY: Prof Russell Phillips with a renewable energy streetlight solution – the Twerly – which engineers have refined in preparation for commercialisation

OFF-GRID communities around South Africa and the rest of the continent can have their lives transformed in hours through street lighting, surveillance and Internet connectivity.

Entrepreneur and innovator Nikolas Jankovich-Bésán has been refining the Twerly hybrid street light, which was invented and developed by engineers from eNtsa, an engineering technology station at Nelson Mandela Bay Metropolitan University (NMMU).

The Twerly combines wind and solar to charge batteries that keep street or security lights burning through the night.

Jankovich-Bésán was introduced to the Twerly at an environmental expo in East London.

"I did not see just a street light. I saw a product that could generate

renewable power and store energy to power other devices such as Wi-Fi for schools and businesses, surveillance cameras for security, traffic lights, as well as many other applications."

Being completely independent of the grid, it starts operating as soon as it is installed, and is not affected by cable theft. Cameras on each Twerly provide security.

Over the past two years Jankovich-Bésán – whose Twerly operation is based in the East London Industrial Development Zone – has transformed his vision into reality by working with NMMU engineers to add data and digital surveillance capabilities to the system.

Connectivity allows the company to monitor the status of all its installations around the world through a central server, situated in London.

Bringing communities INSTANT LIGHT AND DATA

Developed by NMMU electrical engineer Etienne Phillips, the "brain" or "maximum power point tracker" in the Twerly provides monitoring and control of the system via a smartphone or the cloud.

Having connected the Twerly to the Internet, the next logical step was to provide connectivity through Wi-Fi to the neighbourhood, says Jankovich-Bésán.

He is keen to see the lives of people transformed in rural areas through the construction of South Africa's first connected neighbourhood using what

is known as a wireless mesh network.

This would bring services such as telemedicine, banking and education to isolated communities, as well as new neighbourhoods – without the cost of having to install a network of copper cables to connect the street lights.

The system continues operating when there is a power failure.

"This makes it ideal to power robots at intersections as there are no underground cables to be affected by rain or to be stolen," he says.

There is global interest in the

technology, which was initially designed by Prof Russell Phillips of the NMMU's Department of Mechanical Engineering – a "true genius", says Jankovich-Bésán.

The next step for the Twerly is to go into commercial production.

The Twerly is being supported by The SABLE Accelerator, a Silicon Valley-based network of South African expats that provides domain expertise, mentoring, marketing support, resources and introductions to promising South African business ventures seeking global traction.

There is a huge market – an estimated 1.6 billion people live without access to electricity worldwide, and the global market for off-grid green lighting technology is projected to be worth about R170-billion by 2025.

Focus on solar power

Centre for Energy Research seeking alternative renewable energy solutions

"ANOTHER first for the Eastern Cape," is the way PiA Solar co-founder Colin Muller describes the Centre for Energy Research (CER) at Nelson Mandela Metropolitan University (NMMU).

Established in 2006, the centre was one of the first academic units in the country to focus on finding sustainable energy alternatives to fossil fuels.

"The CER is clearly a leader in its field because international companies are entrusting it to conduct research on their behalf," says Muller.

The CER is currently conducting research projects funded by the Department of Science and Technology, the South African Renewable Energy Centre of Research and Development (Record), in partnership with the German International Co-operation Agency (Giz).

Port Elizabeth-based PiA Solar is the first company in Africa to design and install mounting systems for utility-scale solar farms.

According to CER head Prof Ernest van Dyk, the centre combines the strengths of a number of different departments within NMMU.

"It coordinates multidisciplinary research in the fields of science, engineering and economics."

He says it brings international best practice and the latest research to the Eastern Cape through collaboration with local and international industries, research institutes and universities engaging in energy related research and development activities.

The photovoltaics (PV) research activities of the CER are based in the department of physics.

Research capabilities to which industry has access include PV materials and defect studies, device physics, solar cell and PV module characterisation and systems evaluation.

The university has one of only two centres in the country with a complete indoor PV characterisation laboratory and an outdoor facility for evaluating PV devices and systems.

It can evaluate the full range of standard silicon solar cells, thin film solar cells and high efficiency concentrator solar cells.

The CER also has the country's first outdoor electroluminescence (EL) imaging camera, which is capable of evaluating the condition of photovoltaic modules in the field.

What sets it apart is that it doesn't require the darkened lab environment usually required for EL testing, which means that test-



LET THE SUN SHINE: The Centre for Renewable Energy works with companies around the globe as part of its ongoing research activities

ing can be conducted on-site.

It is a good example of how university research is contributing to the field of renewable energy – the camera was developed in Germany by a spin-off company from

Berlin's Humboldt University. Van Dyk says NMMU, through the CER, has the capability to make similar contributions that will help reduce the cost of solar power in South Africa.

... international companies are entrusting it to conduct research on their behalf

It is a two-way process, according to Muller, where companies can collaborate with the CER.

PiA Solar, for example, provided a dual-axis tracker to assist with research.

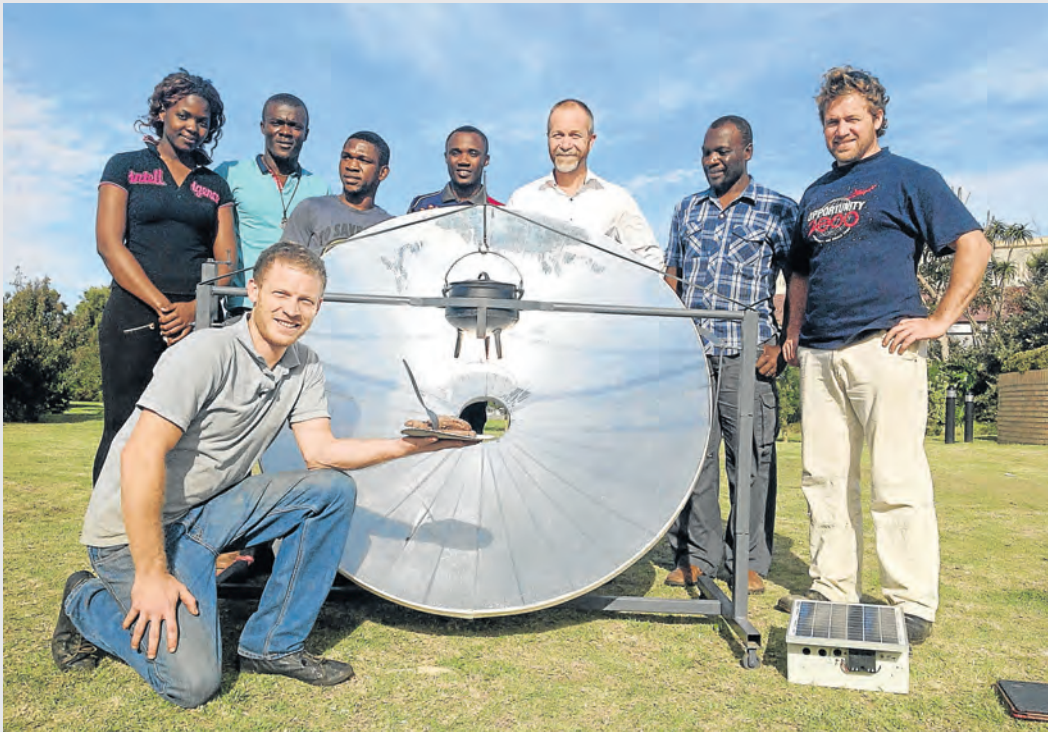
While CER is collaborating with a number of industries in the Eastern Cape region and nationally, it also plays a role in creating awareness and developing the skills required to support the industry over the long term.

In addition to the active research projects, the team has established a photovoltaic testing laboratory, called PVInsight.

The laboratory is currently undergoing accreditation according to ISO17025 and is able to provide PV module testing services to the local industry.

PVInsight is funded by a Technology Innovation Agency seed fund grant through the NMMU Innovation Office.

INNOVATION



SUNNY BUSINESS: This outsized kettle dish can be adapted for various purposes, including as a giant solar cooker

TIME TO PUT THE KETTLE ON TO DISPOSE OF WASTE NATURALLY

COMPANIES wanting to reduce the volume of liquid effluent safely could benefit from trials with concentrated sunlight being conducted in Nelson Mandela Bay.

A four metre diameter dish is being used to concentrate sunlight on what is essentially “a big kettle”, says Dr Russell Phillips, associate professor in mechanical engineering at Nelson Mandela Metropolitan University (NMMU). The university is working in partnership with Aberdare Cables, part of the Altron Group.

If the pilot works, the technology will be adopted by Aberdare and offered to other companies in the Altron group, says Andrew Rist, group sustainability manager. “It is part of the Aberdare drive towards sustainability. The technology we use at present is energy-hungry. Solar is a more sustainable option over the long term,” he says.

In the system being developed by NMMU, the oil in the effluent will first

be removed by a centrifuge, according to Phillips.

“The remaining liquid consists mostly of contaminated water and constitutes approximately 90% of the total volume of the effluent.

“This will be disposed of by evaporating it with the solar concentrator.

“The desired result will be an inexpensive means of disposing of large volumes of the effluent on site in an environmentally friendly manner.”

In order to produce heat all day long, the dish will need to track the sun. The department has developed a prototype frame for the dish, and will also be programming the software to ensure the dish is optimally positioned all day.

Phillips believes the system could also be used to help reduce the cost of the production of the heat needed for certain manufacturing processes.

Innovation propels partnerships

WANTED – innovators of disruptive technology – something which will give manufacturing in the Eastern Cape and the rest of South Africa a competitive global advantage.

On hand to help innovators transform their ideas into commercial reality is the technical expertise and equipment of Nelson Mandela Metropolitan University (NMMU) and business mentoring and training from Propella, the university’s technology and business incubator based in Humewood, Port Elizabeth.

Propella is a new partnership between the university and the private sector, providing impetus for the development of companies, according to Wayne Oosthuizen of Engeli Enterprise Development, which is managing Propella.

Seed funding has been provided by the Industrial Development Corporation, as well as General Motors, BASF and the university.

“We established Propella to assist with the commercialisation of innovative solutions to manufacturing challenges developed inside and outside the university,” NMMU Innovation Office director Jaci Barnett says.



It gives innovators and entrepreneurs access to equipment and expertise

“Having NMMU as a partner adds a huge amount of value to Propella,” Oosthuizen says.

“It gives innovators and entrepreneurs access to equipment and expertise they would not otherwise be able to afford.

“Through the university they are also linked to research institutions around the world, which ensures that they are on the cutting edge

and aren’t repeating something which has already been done.”

Propella is fully equipped to support both small-scale manufacturing and information technology hubs.

The focus is on energy efficiency, renewable energy, advanced manufacturing (including ICT), and supply chain optimisation.

It has a satellite facility at NMMU’s Bird Street Campus in Central, which supports creative arts, textile and fashion entrepreneurs.

Innovators wanting to be part of Propella can visit the website www.thepropella.co.za for more information.



JACI BARNETT



propella

Incubate ▶ Accelerate ▶ Graduate

Propella is a joint venture incubator company between Innovolve (commercialisation company of the NMMU) and Engeli Enterprise Development (EED), set up as the development catalyst for local innovation and commercialisation support.

Propella functions as the hub of innovation and business support in NMB and is a key player in the Regional Innovation System. Our key focus areas are:

- Renewable Energy Generation and associated technologies
- Energy Efficiency and associated technologies
- Advanced Manufacturing – technologies, materials, systems and processes
- Information and Communication Technology (ICT)
- Supply Chain Development and localisation

Inventors, Innovators, entrepreneurs and existing technology based businesses are encouraged to contact us for support in the following areas:

- Technology transfer
- Product testing and verification
- Facilitation of IP registration
- Advanced Market Research
- Management system implementation
- QMS advising and implementation
- Business-to-business facilitation
- Facilitate access to finance
- Mentoring and Coaching Services
- Trade show facilitation
- Export readiness assistance
- Specialised business training
- Access to technical training

Please contact the Business Support Manager, Ellen Fischat on 041 5023700 or send an email to efischat@propellaincubator.co.za

Propella, Humeral Business Park, Oakworth Drive, Port Elizabeth
www.propellaincubator.co.za




BRIGHT IDEA: ‘Gonzo’, the prototype built to test the use of solar energy without battery backup, has been tested at Verneukpan in the Northern Cape by innovators from Nelson Mandela Metropolitan University. The vehicle clocked speeds of up to 40km/h and raced successfully against a battery-driven bike. Solar-powered vehicles could provide a low-cost alternative means of transport for rural communities

Innovation keeps WELFIT ODDY COMPETITIVE

CONSTANT innovation supported by the Nelson Mandela Metropolitan University (NMMU) has ensured the success of Port Elizabeth-based Welfit Oddy – one of the only specialist steel tank container manufacturers in the world outside of China.

“All our products are for the export market, and we therefore have to be developing all the time,” engineering executive at Welfit Oddy, Tim McLaren, says.

NMMU’s mechanical engineering department and its engineering technology innovation station, eNtso, support the development of new products, and provide product verification and testing services.

The university’s industrial engineering department works with Welfit Oddy to provide training on site four days a week after hours.

NMMU also helps companies like Welfit Oddy by conducting psychometric tests to identify the strengths of employees before

training, head of the industrial engineering department Dr Ann Lourens said.

Training at Welfit Oddy includes a short course designed to bring the academic level of staff members to the point where they can be accepted into the Operations Management Diploma course.

In turn, Welfit Oddy supports the School of Engineering by providing in-service practical training required by students to obtain their diplomas.