

Smart cities depend on adoption of 4IR

Taru Madangombe, vice president of Power Systems in the Anglophone Cluster for Schneider Electric, talks about the Fourth Industrial Revolution (4IR) technologies likely to drive the direction of the world's future smart buildings, infrastructure and cities.

"If you are not digital it will be very difficult to be competitive in industry, or in the buildings you produce. Because what you are building is here for the next 50 years, and it has to be green, smart and automated." This is the opinion of Taru Madangombe of Schneider Electric, who notes that cities are a complex web of interconnected systems that each face their own challenges.

Schneider Electric has taken the lead in developing systems and solutions around Smart Cities over the past decade and is excited to see the concept being more broadly embraced by the industry. "As the World Economic Forum on Africa met in Cape Town in September for its 28th meeting, it was significant that the theme was 'Shaping inclusive growth and shared futures in the Fourth Industrial Revolution (4IR).'"

Today's cities cover only 2% of the planet's surface but hold 50% of the world's population. They also generate 80% of the global CO₂ emissions and consume 75% of the energy. In South Africa, urbanisation is also advancing

at this pace and its city planners have to accept that extremely rapid growth is inevitable. This brings added pressure to the supply of energy, waste-disposal, transportation and other services," he says.

Future 4IR opportunities

"The key technologies powering Industry 4.0 (4IR) – artificial intelligence (AI); augmented/virtual reality (AR & VR); and the internet of things (IoT) – are reshaping business processes, unlocking opportunities and encouraging new business partnerships.

"A rich ecosystem of tools, organisations and experts is paving the way to a healthier workplace, more efficient businesses and a greener planet. Making the most of these new technologies requires openness, agility, collaboration and a clear understanding of the benefits that digital transformation will bring.

At present, those in charge of running cities, particularly at the operational level, are too focused on reducing costs, rather than on improving quality of life or service. "We need



to widen our vision, and see the potential of smart cities built on the latest technologies," Madangombe continues.

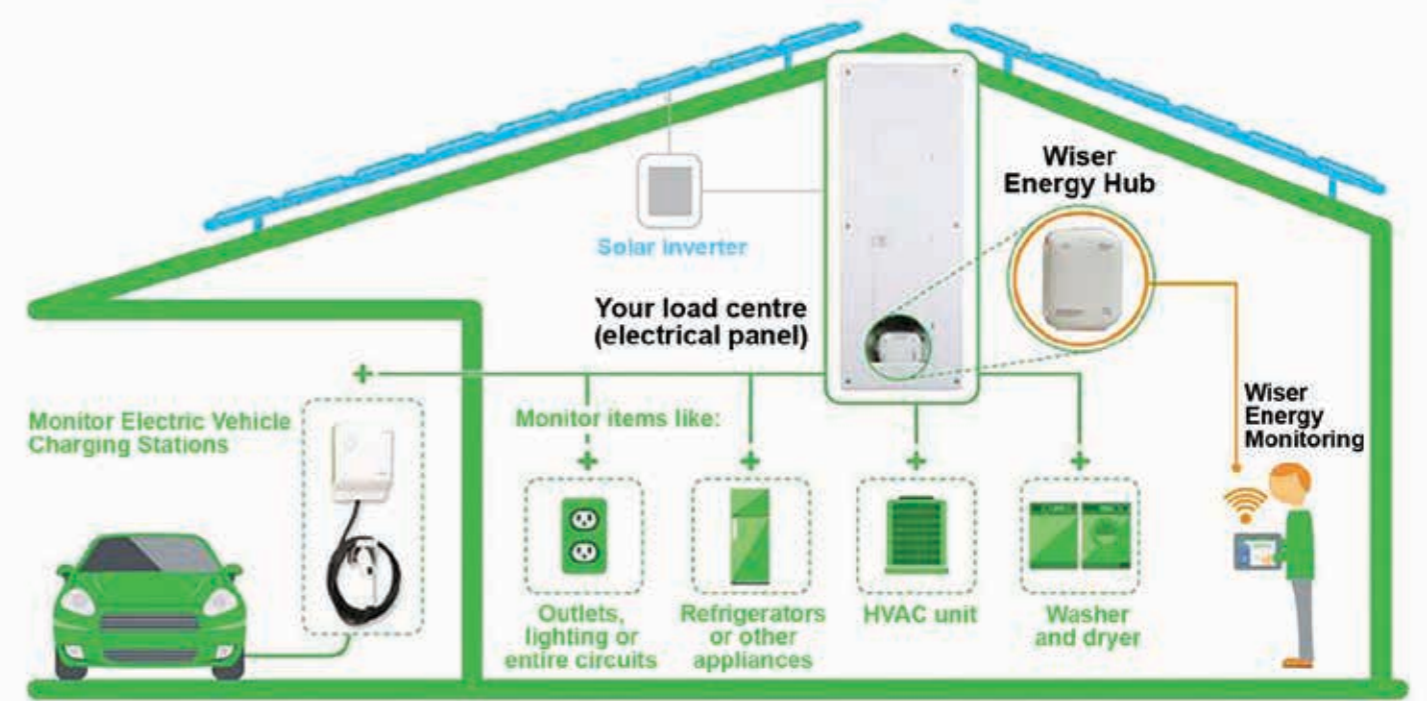
"As urbanisation increases, cities and suburbs will undergo significant transformations to create sustainable living conditions for their residents. Energy and mobility are the twin pillars of these transformations and both will require radical adaptation to meet the demographic and economic growth, without increasing congestion and pollution.

"The question is whether policymakers and business leaders can harness and combine them in ways that maximise benefits for the environment and create greater efficiency and economic growth. The 4IR offers an unprecedented opportunity to do so," believes Madangombe.

Mobility in African cities

"Africa is urbanising faster than any other continent, at a rate of 4% every year, compared to the global average of 2%. The continent's rapidly growing urban population continues to strain transport and energy infrastructure. Electric vehicles (EV) can materially change this landscape through ride and car sharing, concepts that could reduce congestion in rapidly growing African cities.

"South Africa is hosting the Electric Vehicle Road Trip Africa (EVRT Africa) for the first time in October 2019, an indication of the interest that EV is generating. As EVs become more affordable, some are predicting they will constitute almost a third of new-car sales by the end of the next decade. Ride shar-



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Schneider Electric's Wiser Energy System enables electrical contractors and solar installers to monitor their customers' energy consumption and solar power generation and remotely diagnose issues. The system can also be easily combined with the company's Square D electrical systems and home protective devices.

ing continues to surge, with estimates that by 2030, it will account for more than 25% of all distances driven globally, up from 4% today," notes Madangombe.

"These changes are just the first hints of what is to come, as we will soon see autonomous vehicles (AVs) and commercial fleets of EVs integrated as parts of everyday life. In the future, AVs will also cost significantly less per kilometre than vehicles with internal combustion engines for personal-use, by as much as 40%, and could also reduce congestion and traffic incidents."

Cleaner energy closer to customers

We are amid a global evolution toward energy systems that are cleaner and increasingly decentralised, with renewable energy sources and storage technologies being used to generate, store and distribute power closer to final consumers. At the same time, digitalisation will allow customers and electricity system operators to control where, when and how electricity is being used and allow new business models to emerge. Finally, new and more energy uses are going to be electrified – mobility being one of the critical ones.

"These trends have the potential to reinforce each other and actively contribute to making our cities smarter. Forward-thinking business leaders and policymakers must act now to lay the foundation for sustainable innovation in urban environments, able to capture and combine these new trends. If cities and citizens are to receive the maximum benefits, the convergence of energy and mobility must be strategic, intentional and guided," he predicts.



EVlink electric vehicle (EV) charging stations from Schneider Electric offer convenient ways for charging EVs at home, work and any other public or private facility.

"Innovative, IoT-enabled operating technologies from Schneider Electric can help make cities more efficient, resilient and sustainable. Industry 4.0 and the industrial internet of things (IIoT) present new opportunities to unlock process innovations to develop sustainable, environmentally friendly

materials; decarbonise energy; tap digital innovation for doing more with less; and extend the life cycle of goods within a 'zero waste to landfill' framework.

"They also enable the use of the 5Rs approach – repair, reuse, refurbish, remanufacture and recycle," concludes Madangombe. □

Life is On

Schneider believes access to energy and digital technologies is a basic human right. It strives to empower all to do more with less, ensuring Life is On everywhere, for everyone, at every moment.

The company provides energy, automation and digital solutions for efficiency and sustainability, combining world-leading energy technologies, real-time automation, software and services into integrated solutions for homes, buildings, data centres, infrastructure and industries.

Via its meaningful-purpose, inclusive and empowered values, Schneider Electric is committed to unleashing the infinite possibilities of an open, global, innovative community that is passionate about people and their lives.



With the coming of the IoT, digital integration of power distribution systems is not a choice, but a necessity. To harness the power of these disruptive technologies to improve operations and increase business value, one needs to explore opportunities offered by systems such as Schneider's IoT-enabled EcoStruxure Power architecture and platform.