

Energy Management News



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Meadow Feeds embarks towards greener pastures with lighting retrofit

Meadow Feeds has embarked on a journey to remain a globally competitive animal feed company by implementing greener business practices that not only make financial business sense, but most importantly considers the environmental impact. The first step towards achieving this was to install smart metering and implementing an energy efficiency lighting retrofit project that delivered real value to the production facility whilst cutting energy costs.

Regarded as market leaders in the animal feed industry in southern Africa, the company produces a variety of specialised diets and custom feed mixes for the poultry, dairy, ostrich and swine industries. Meadow's historical and continued success is driven by ensuring nutritional supremacy and the consistency of

supplying quality animal feeds and nutritional solutions. Therefore, the quality and standard of lighting could not be compromised, which was the mandate from Meadow Feeds to the energy engineering solutions consultants on the project, Energy Cybernetics, an EOH company.

Meadow Feeds contracted Energy Cybernetics to develop and implement an energy efficiency lighting project at their feed manufacturing facility in Randfontein. The project qualified for partial funding through the Eskom Standard Product Programme (SPP). In terms of the SPP, Eskom refunds a client part of the cost of an energy efficiency project, based on the energy (kWh) and demand savings that the project achieves. For this project, the Eskom rebate was just under 25% of the total project cost. *(continued on p 2)*



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Although energy efficient lighting projects are considered as low hanging fruit, it is recognised as the quickest, most cost-effective and least intrusive energy saving intervention. With plants that operate 24/7, lighting retrofits cause minimum disruption to day-to-day operations. In addition, many proven energy efficient lighting technologies are now available, which guarantees quality and expected energy savings thereby reducing the risk of the project investment.

Eskom requires that savings need to be substantiated through the use of a spreadsheet, or tool, that calculates the project impact as well as the rebate that Eskom would pay to the client on successful project completion. This tool was developed by Eskom and has been used in many projects. The validity of the tool is not at issue, as Eskom is prepared to pay out substantial rebate amounts to customers based on the outputs from the spreadsheet.

However, since Meadow Feeds has had very little prior experience with either energy efficiency projects or with Eskom's SPP, the client required measurement of the project impact to support or validate the Eskom SPP tool, purely as an internal control for the project and to motivate further investments in energy efficient projects within the group.

Energy Cybernetics installed PowerWatch, its in-house developed smart metering system on the incomer at Meadow Feeds which measured the consumption of the entire Randfontein site. Besides providing overall reporting and monitoring of the plant's energy use, PowerWatch allowed the corroboration of savings recorded by the Eskom tool. PowerWatch measures consumption data at a high frequency and can report amongst others energy consumption, demand, reactive energy and power factor information at intervals from 5 to 60 minutes.

The project's financial impact as calculated by the SPP toolkit amounts to R314 000 per annum. Given that the demand impact was evaluated with PowerWatch, this saving can be treated with a high degree of confidence as the credibility of the Eskom Toolkit was evaluated with PowerWatch data and resulted in only a 1,3 kW difference. The return of investment for Meadow Feeds is 18 months.

But did less energy use for lighting mean a compromise on the quality of light? The average lux levels were

measured in various areas of the plant, both before and after project implementation. On average, lux levels increased by 46% for all areas.

Embarking on projects of this nature, even if it is considered low hanging fruit, still not only saves energy and money, the Meadow Feeds energy efficient lighting retrofit has shown a significant increase in light quality as well – not only through better technology, but reviewing the lighting system holistically and improving on it to ensure long-term optimal use.

Energy Cybernetics offers a three-year warranty that assures the energy efficient lighting retrofit projects sustain their energy savings as well as the required lux levels.

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International

At the Energy Training Foundation's (EnTF) annual Association of Energy Engineers (AEE) Certification Ceremony held in November 2014, another group of energy professionals received international recognition in the energy efficiency fraternity.

South Africa boasts with 530 Certified Professionals in the Certified Energy Manager (CEM), Certified Measurement and Verification Professional (CMVP), Certified Energy Auditor (CEA), Certified Carbon Reduction Manager (CRM) and Certified Renewable Energy Professional (REP) out of 28 000 in the world. 'As a country we have taken on the responsibility to move forward through education ourselves and becoming certified, especially in CMVP as 6% of the total certified professionals in the world is from South Africa', said Prof LJ Grobler, Dean of NWU Engineering Department and Immediate Past President of the SAAEE.

Speaking to the newly Certified professionals at the Ceremony, Prof Grobler acknowledged that some of the AEE qualifications might be very challenging to achieve due to the intensive training and examination pass requirements, but achieving Certification is not the pinnacle of the achievement, he said, 'This is the start of a responsibility – Certified Professionals now have to ensure the qualification is put to work and to make a difference to the energy use and thinking around energy use, to the benefit of the country.'

Prof Grobler is one of the founders of the EnTF and has been instrumental in developing the educational programmes offered by the AEE in the Southern African region. Over 1 000 companies and more than 3 000 individuals have already benefited from EnTF and AEE training in the region since 2002. EnTF is the longest standing and most credible energy educational qualification providers in Southern Africa.

The AEE has been developing the energy engineering field for over 37

certified energy professionals recognised

years. In total AEE is active in 91 countries with the latest edition being the East Africa Chapter housed in Kenya for which EnTF is the AEE Certification Coordinator and AEE Approved Examiners. The Kenyan energy regulations stipulate that only CEM's may work in

the energy field as auditors and service providers which attests to the high esteemed value the qualification holds in Africa.

Another country whom is embracing the CEM qualification is Zimbabwe, and the Zimbabwean Energy Regulator-

ry Authority (ZERA) has awarded EnTF the tender to develop the CEM market for Zimbabwe which will commence in 2015.

AEE certification programmes involve not only the training sessions and achieving a 70% passmark for the prescribed examination in the time allocated, but it requires experience and previous qualifications where experiential work is insufficient. Certification is renewed every three years to make sure AEE Professionals remain proficient within their respective energy disciplines.

The Southern African Association for Energy Efficiency (SAEE) is the local chapter of the AEE, and the Energy Training Foundation (EnTF) is the sole approved training partner of the AEE for the Southern African region. All AEE courses are CPD accredited for between 2-5 credits for ECSA requirements.

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Certified Energy Managers receiving their international certification at the Energy Training Foundation's Association of Energy Engineers' Certification Ceremony held in November 2014 at Emperors Palace in Johannesburg



Certified Measurement and Verification Professionals receiving their international certification at the Energy Training Foundation's Association of Energy Engineers' Certification Ceremony held in November 2014 at Emperors Palace in Johannesburg





City to boost power network efficiency and reliability

The City's management of its electricity network is about to receive a boost. A new software system provided by international software supplier, Ventyx, will not only help with effective maintenance of infrastructure, but also smooth out the customer service experience.

As part of its drive to become an ever more efficient City, the City of Cape Town's Electricity Services Department is upgrading and expanding its network management software system in order to boost the reliability and resilience of its power distribution network.

Part of the upgrade includes the implementation of an outage management system (OMS) that ensures reduced timeframes for repairs, better workflow management, and improved outage communication. The system is being provided by international software supplier, Ventyx, and promises the following benefits for consumers:

- The system has the ability to send an SMS/ text message to customers before they are impacted by a pre-planned outage (as long as their details are up to date).
- It can identify the customer's meter number and location on the network without an agent having to capture the data and relate this to the customer's name and address on the customer information system.
- The system will be able to predict the restoration time.
- It will measure the period from when a fault occurred to restoration time for quality control purposes.
- The system has the ability to disseminate real-time outage status updates to customers.

The above will help the City restore power more quickly, safely and efficiently in the event of outages.

'The Electricity Services Department operates in a challenging environment of large-scale urbanisation, facing massive growth that increases demand on our infrastructure. The department is making strategic investments to meet this demand and to continue delivering a sustainable, reliable, and informative electricity service, in line with its commitment to being a well-run city.

'Our Ventyx software implementation will help us to proactively address challenges through our energy-saving and demand management programmes, of which the Ventyx integrated network control system is a key component – helping us to improve network reliability, outage restoration, reporting and customer satisfaction,' said the City's Mayoral Committee Member for Utility Services, Councillor Ernest Sonnenberg.

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Ensatech energy efficiency internships

Ensatech is an energy consultancy involved in providing detailed energy surveys via the Private Sector Energy Efficiency (PSEE) program and focuses on small, medium and large companies wishing to establish energy saving initiatives. The company wants to offer 2 internships to qualified individuals interested in the energy industry with the potential for a permanent appointment. The internship will enable exposure to a comprehensive work-stream aimed at efficiency interventions including energy auditing; M&V methodology; baseline, load matrix and feasibility analysis; EE technology research and procurement; report writing and project implementation in a junior consultant role.

They are looking to appoint ideally from recent post-graduates either having completed or working towards (part-time studies) a Master's degree. An honours graduate would also be acceptable depending on aptitude for the job description.

Interested parties should contact Mark Meyer at the details below.

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Renewable energy professional training going carbon neutral

The Energy Training Foundation (EnTF) hosted its second Certified Renewable Energy Professional (REP) training programme at the carbon neutral Hotel Verde in Cape Town from 14-17 October 2014. A tour of the hotel explaining the green aspects was hosted on the 13th of October followed by a welcoming networking function where delegates and their guests could view exhibits followed by a short welcoming speech and relevant speakers in the industry.

REP was presented by Dr Stephen Roosa from the USA, and EnTF ran train the trainer programme during this time to create local lecturing expertise in REP. Dr Roosa is a highly qualified expert on the subject and has his PhD in Planning and Urban Development and has completed energy studies on over 3 500 buildings. In addition, he holds Certified Sustainable Development Professional, Certified Energy Manager, a Certified Indoor Air Quality Professional, a Certified Measurement & Verification Professional, a Certified Energy Monitoring and Control System

Designer, a Certified Demand Side Management Specialist, a Certified Building Energy Management Professional, and a LEED Accredited Professional qualifications.

REP is a copyright training course of the Association of Energy Engineers (AEE) in the USA, EnTF is the sole approved training partner of the AEE for the Southern African region. AEE's qualification programmes are recognised in 90 countries, and are unique in that experiential background is recognised for obtaining Certification, as well as having to pass the AEE examination with 70%. No prior learning is necessary to attend REP. REP carries 3 CPD credits with ECSA.

To maintain Certification with the AEE, three-yearly re-application for Certification is required. Thereby AEE ensures its certified members are up to date on the latest knowledge, education and information in the industry – and being listed on the international database that is easily accessible for HR managers, which provides professionals in the renewable energy indus-

try with a world-renowned qualification.

REP provides the ideal platform to stimulate thinking on the very many levels of alternative methods to generate energy whilst keeping costs down, considering renewing and re-using of sources. It is not a technically challenging course, but content heavy with information that can be referred to and built on during a career in renewables. Therefore, the EnTF chose Hotel Verde as the venue for the next REP course in Cape Town as the innovation for greening at the hotel is in line with what is advocated in REP.

Hotel Verde was built by owners Mario and Annemarie Delicio. It is the Delicio family's vision and philosophy of, 'Looking after our world we live in and handing it over to our children in a responsible manner,' that has been created a team of experts dedicated to finding alternative concepts and angles to look at energy, water and waste reduction.' Hotel Verde is not hailed as Africa's greenest hotel for nothing. Platinum accredited by international recognised LEED, every aspect of the hotel is aimed to be as sustainable as possible- literally from below the ground up. From initiatives like a grey water plant, water tanks, void formers, a plant room, a green roof, wind and PV generation, an eco-pool, rain water harvesting, energy efficient lighting and use of natural lighting, chalk boards in the conference room, to name but a few. Guests can even assist in generating energy by visiting the gym as gym equipment used generates energy used within the hotel.

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Hotel Verde, venue of the Association of Energy Engineers Certified Renewable Energy Professional qualification programme training hosted by the Energy Training Foundation, presented by Dr Stephen Roosa from the USA



Solar thermal energy used in Ceres Prison

720 M² COLLECTORS HEATING 50 000 LITRES WATER

Short description of the system

Solarzone (Pty) Ltd is a company based in Cape Town, which specialises in planning and selling of high quality solar water heating and photovoltaic systems (solar electric). It was established in 2006.

The vision of Solarzone is to establish partnerships with companies from a wide variety of business sectors in Southern Africa in order to realize solar projects together. Their target market is very wide, but the main focus is large scale applications in the commercial, industrial and hospitality sectors. The focus is to supply solar installations to hotels, schools, hospitals, stadiums, residential buildings and housing developments.

The clients are trained by them to install and maintain their products. They intend to work very closely together with local government on realizing key projects. Solarzone (Pty) Ltd aims to supply the whole range of solar systems, but also to increase and to transfer the knowledge of solar energy and its benefits to all people in Southern Africa.

Characteristics of the system

As a subcontractor of Vusela Construction, Solarzone and Vortex Plumbing completed after 4 years total construction time the last Phase of the SWH

System at the Ceres Correctional Prison, Ceres, Western Cape, in 2013. The company specialises in integrated energy strategies for large scale, commercial solar water heating and photovoltaic systems.

The 720m² of flat collectors are split in three systems:

- Block E with 144m², 10 000 Litre Storage
- Block F with 288m², 20 000 Litre Storage
- Block A with 288m², 20 000 Litre Storage

All systems are similar in design and concept. The systems make use of the PAW Solar Kaskade heat transfer system. In theory it is heat exchanger connected in parallel with variable speed drive pumps fitted on each side of it. All systems have a heat pump backup. The system at Block A has additional instant water heater backup as well.

All collectors are connected in banks of 6 serial and then parallel. The system is filled with a glycol mix to protect it against frost. The tanks in the system will be heated up indirect through to the heat exchangers. Through to the external heat exchangers banks which working in master slave combination and with variable speed pumps, continuously the water is

warmed and distributed to the banks of tanks.

The Solar Kaskades is also fitted with water flow meters and temperature sensors. The VSD (Variable Speed Drive) pump speeds on both sides of the heat exchanger is constantly adjusted to maximise the solar energy input and to ensure that a minimum temp 50°C is send back to the tanks. All this is done by the Resol Deltasol E controller and a VSD (Variable Speed Drive) relay box. The 72 panel system has 2 x solar Kaskade heat transfer stations and the 144 panel system has 3 each.

The solar panels banks are broken up into banks of 24. A full Tichelmann configuration was designed to ensure that every panel in every bank gets the same amount of flow. They have installed flow adjusters on the inlet of each 24 panel bank, but none of them had to be adjusted, they all had similar flow.

CERES CORRECTIONAL PRISON FACTS

Total M ² Panels	720
Tank Storage	50 000
Year Commissioned	2012
Tank Construction	Black Metal
High / Low- Pressure Storage	High Pressure
Litre / m ²	69
Energy Savings / Annum kWh	617,580

Summary of the system

A very nice design and the first of its kind in South Africa for a correctional facility. The more government owned facilities are fitted with renewable energy technologies the better for the economy. A very good benchmark system of what can be done.

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Itron announces Itron Centian prepayment meter and Openway Riva solution

ABOUT ITRON

Itron is a world-leading technology and services company dedicated to the resourceful use of energy and water. They provide comprehensive solutions that measure, manage and analyse energy and water. Their broad product portfolio includes electricity, gas, water and thermal energy measurement devices and control technology; communications systems; software; as well as managed and consulting services. With thousands of employees supporting nearly 8 000 customers in more than 100 countries, Itron applies knowledge and technology to better manage energy and water resources.

Two announcements were made in November that are being marketed to the African continent.

1. ITRON CENTIAN PREPAYMENT METER

Itron is launching an industry first – a currency based smart payment solution, which includes the Itron Centian prepayment meter. For the first time, utility customers will be able to see their remaining balance in currency instead of kilowatt-hours, enabling them to better understand usage. The new meter will also include Near Field Communications technology so customers can apply credit using a contactless smart card.

2. OPENWAY RIVA SOLUTION

Itron is unveiling its OpenWay Riva solution that will enhance its smart grid solution using edge intelligence whereby data is collected and analysed at device level, or anywhere in the network. The new solution will push various smart grid applications to the edge of the network, as opposed to the utility back office, to deliver a host of benefits, including outage detection and analysis, transformer load management, revenue assurance and theft detection. The solution will feature three communications technologies working in tandem to provide reliability and versatility.

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Knowledge to Shape Your Future

City of Cape Town's accredited solar water heater providers

For anyone interested in a solar water heating system, the City of Cape Town has a list of their accredited solar water heater providers which you should find very useful. The City has kindly done some homework on behalf of its residents, and these are the providers which are likely to be safe bets.

Sarah Rushmere has recently been involved in a My Green Home project, which made use of a solar water heater sponsored by Sol-square (also called Solar Tech) which is one of these accredited suppliers.

A solar PV system was also sponsored by Citrine Construction, which is also an accredited supplier. She is sure that these would be good.

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A future of blackouts; what happens when the lights go out?

It is impossible to imagine the modern world without electricity. We are dependent on an uninterrupted source of power and when it fails the consequences are devastating. Over the past decade there have been 50 significant power-outage events occurring in 26 countries, and the demand for electricity continues to grow stronger with rapid population growth, compact urban areas and an 'addiction' to electric appliances. In their article 'Exergy and the City: The Technology and Sociology of Power (Failure)', Hugh Byrd and Steve Matthewman predict that these blackouts are only a dress rehearsal for a future in which they will appear more frequently and with greater severity.

The authors highlight the frail electrical power system of the 'privileged' West where it is taken for granted that there will be a continued stable supply of electricity for the distant future. Electrical power generation and distribution is more vulnerable than we might assume due to poor investment in infrastructure and many power grids operating close to capacity. Over the past 30 years, the demand for electricity has increased by 25%, while the construction of transmission facilities has fallen. It is argued that it will take large investments in electric utilities to meet future demand.

With our electrical infrastructures under threat, our dependence on electricity and our vulnerability when a blackout occurs are exposed; the economic damage of power outages and quality disturbances are estimated to cost the American economy between \$25 and \$180 billion per annum, although the indirect costs could be up to five times higher. Blackouts affect the economy and our everyday lives in a number of ways. Without electricity, food provisions are compromised as a lack of refrigeration means food cannot be stored safely, leading to increased risk of food poisoning; security systems fail and the crime rate increases, as it amplifies the opportunity for fraud, theft and exploitation. A lack of power also causes an immediate and prevalent problem for transport systems; traffic lights fail, rail systems come to a stop and air transport becomes compromised due to loss of communications and unlit runways.

Despite a frail electrical infrastructure and the consequences of blackouts, our dependency on electricity continues to intensify, fuelled in part by consumer 'addictions' to electronic devices, air conditioning and, in the future electric vehicles. Electricity demands will become even greater as our resources become constrained due to the depletion of fossil fuel, a lack of renewable energy sources, peak oil and climate change. As we become more dependent on an uninterrupted supply of electricity for our comfort, security, communication systems, transport, health and food supply...what will happen when the lights go out?

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Findings of the IPCC AR5 Synthesis

The latest climate science affirms again that warming of the climate system is 'unequivocal'. If we don't change our high-emission development paths, even if we try to adapt, it 'will lead to high to very high risk of severe, widespread, and irreversible impacts globally (high confidence)'. The IPCC's synthesis report makes it clear that the time for action is rapidly running out.

The Intergovernmental Panel on Climate Change (IPCC) assesses the state of knowledge of climate change every five to seven years. The 2014 synthesis confirms that human influence on the climate system is clear. It reiterates that global warming is 'unequivocal', a word first used in the fourth assessment (2007) – and much stronger than the first, when the signal of human-induced climate change was still being separated from the noise of natural climate variability. We know now – also through a wide range of observed changes – the climate is changing, and that human activities are contributing to this change.

If we do not change our development paths – including patterns of consumption and production, then the risks of serious impacts are high to very high – some of them irreversible. Temperatures are projected to increase 'over the 21st century under all assessed emission scenarios'. We will seek more heat waves, for longer. Extreme precipitation events – cool scientific language for things like droughts and floods – will become more intense and frequent in many places.

Not only will the temperature of the atmosphere increase, the ocean too – which stores a huge amount of heat. That puts enormous inertia into the system – even if we stopped all emissions right now, some warming will still continue. Some associated impacts 'will continue for centuries'. The pH of our oceans has already changed, and will continue to acidify – with consequences for huge ecosystems.

We know what we need to do: Reduce greenhouse gas (GHG) emissions, and adapt to that part of climate change that is already unavoidable. This IPCC report point out that we need to think about this from many perspectives: 'governance, ethical dimensions, equity, value judgments, economic assessments and diverse perceptions and responses to risk and uncertainty.' These are important dimensions, as we are already committed to some impacts – and trends are more towards world 4 °C warmer than pre-industrial levels, than the politically agreed limit of 2 °C.

The synthesis report is candid – we will have to adapt, but we cannot adapt our way out of the problem. 'Adaptation can reduce the risks of climate change impacts, but there are limits to its effectiveness.' The mitigation pledges made by countries in Kyoto, Copenhagen and Cancun are not nearly enough. Without addition mitigation efforts, we run high to very high risk of 'severe, widespread, and irreversible impacts globally (high confidence).' (a quote worth repeating, I think).

There are pathways to 2 °C – they would require 'substantial emissions reductions over the next few decades and near zero emissions of CO₂ and other long-lived GHGs by the end of

the century'. There are many options for mitigation but not one is sufficient by itself. There is no 'silver bullet'.

We need to strengthen a range of enabling factors for both adaptation and mitigation 'effective institutions and governance, innovation and investments in environmentally sound technologies and infrastructure, sustainable livelihoods, and behavioural and lifestyle choices.' Adaptation will be needed in every sector of the economy; as will mitigation.

The IPCC synthesis points to an integrated approach to mitigation: reduced energy use, lower GHG intensity in energy use, decarbonising energy supply (electricity and liquid fuels) and enhance carbon sinks in land-based sectors. If we do this, we can promote sustainable development. If not, 'climate change is a threat to sustainable development.'

The IPCC released its synthesis report on 2 November 2014. The synthesis builds on three working group reports – on the physical science basis; impacts, vulnerability and adaptation; and mitigation. Each of those reports were thousand-page-plus assessment of large bodies of peer-reviewed literature. The reports and summaries are available at www.ipcc.ch.

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Call for proposals

Curriculum development for environmental literacy

1. BACKGROUND

Climate change and sustainability is one of the areas of focus of the Cape Higher Education Consortium (CHEC), Western Cape Government (WCG) Joint Task Team. A working group of representatives from the four universities, the WCG and Greencape is responsible for conceptualising and coordinating projects in the area of climate change and sustainability. Under the auspices of this group, a research project was conducted to determine the high level education and training needs of the green economy and the extent to which the four universities in the Western Cape are currently responding to these needs. The report from this desktop study (Skills Development for Climate Change and Green Economy in the Western Cape, August 2014) can be accessed on the CHEC website (www.chec.ac.za).

A workshop was convened in August 2014 to comment on this research report, identify gaps and make recommendations on how the work could be taken forward. Although the research framework had identified 4 main sectors –renewable energy, natural resource management (including agri/ mariculture), tourism and transport and communication), the workshop focussed only on renewable energy.

At the workshop, there was considerable interest in exploring ways in which all students could be exposed to basic climate or environmental sustainability. There was some discussion on different curricula approaches, including dedicated courses and the embedding of environmental literacy issues in existing courses through the use of case studies. It was further recommended that a symposium should be convened in 2015 on 'curriculum development for environmental literacy', with a particular focus on good practice in 'embedding' and case study approaches.

2. CALL FOR PROPOSALS

Subsequent to the above workshop, Greencape (Skills for Renewable Energies Program) has made a generous grant of R100 000 available to support the development of case studies to promote environmental literacy across the curriculum. CHEC is now requesting proposals from each of the four universities for the development of case studies, especially with a focus on renewable energy. R25 000 is available to each university.

Each university is requested to submit proposal(s) by Friday 6 March 2015 to Eileen Arnold at CHEC (Eileen@chec.ac.za). It is anticipated that the projects should be completed in time for presentation at the symposium, which will be held in October 2015. Grant recipients will also be required to submit a written report by 31 October 2015.

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Study on renewable energy and research and innovation capacity of Sub-Saharan Africa

PRELIMINARY KEY FINDINGS: POTENTIAL RESEARCH IDEAS FOR COOPERATION BETWEEN SOUTHERN AFRICA AND THE EU

WORKSHOP ON RESEARCH AND INNOVATION IN RENEWABLE ENERGY, 13–14 NOVEMBER 2014, JOHANNESBURG

The below research ideas have been developed in an informal setting by a group of 25 leading scientists, government officials, utility providers and independent experts in the area of renewable energy from South Africa, Namibia, Botswana, Mozambique and Europe.

The Johannesburg workshop was one of three regional workshops, others being held in Ouagadougou (Burkina Faso) and Addis Abeba (Ethiopia). The workshop was organised in the context of the above study project commissioned by the EC DG Research & Innovation, and implemented by a consortium consisting of Ecorys/ RaL /IED. The aim of the workshop was to validate interim results and to generate research ideas for cooperation with the EU.

The research ideas below present under no circumstance any final conclusions of the research, but an intermediary step towards final outcomes and recommendations to the EU. Throughout the workshop, a large number of over 50 research needs and opportunities for cooperation with the European Union were identified. This longlist was then brought down to 10 key research ideas, which were then refined and elaborated by the group.

All participants have contributed on a personal level only and they do not represent the view from institutions they are associated with.

1. Resource mapping

Data on resource availability and accessibility is conditional for Renewable Energy development. Resource mapping should start with a systematic inventory of existing maps (already highly developed in South Africa) and contain data on across all energy resources. Identified parameters are DNI+DHI, wind speed portfolio (incl. extreme winds), temperature, river runoff (incl. seasonality), water availability, grid connectivity, agro-industrial residue, urban waste (incl. landfills) first

generation feedstock and lightning frequencies. Funding can be prioritised by country and region, based on and differentiated into different RET potentials. Such Resource Mapping provides potential for capacity building and local engagement.

2. An SSA Network for RE training and education

Innovation in and development of RET's requires significant skills development, both technical and non-technical skills. As a lot of initiatives already exist, an extensive inventory should be followed by matching local RE needs with existing human capacity. A network approach can be applied: training trainers, structural intra-SSA and EU-SSA exchange and sharing the infrastructure required for this. A close collaboration and exchange of scholars and students between EU and SSA region is foreseen, as well as intra-SSA exchange.

3. An SSA-specific network for RE research

The network would aim to prevent fragmentation of research, the promotion of collaboration and the advancement of applied science in the area of Renewable energy in the region. It would pay specific attention to the need to adapt existing technologies to the unique circumstances of the SSA region. The network could be inspired by the format of European Research Areas, e.g. the European Energy Research Alliance. It could consist of specific working groups for each of the technologies and closely collaborate with existing networks. Linking with the above-mentioned SSA Network and for RE training and education.

4. Dynamic energy supply modelling

Grids are key enablers for Renewable Energy development. Efficient development requires continuous insight into grid requirements. This insight can be

obtained by research into a future oriented, scenario-based, spatial and temporal model of energy supply. This includes distribution, transmission and off-grid regions. This work has a strong spatial and temporal dimension, thus allowing for the prioritisation of specific RED zones and synergies between various RETs involved (Symphony of RETs).

5. Rural mini-grid configuration

Low electrification rates, dispersed population and remote areas in SSA call for development of stand-alone mini-grids. Return periods are long, but with innovative business models based on e.g. the penetration of telecommunication, mini-grids can become a reality. It is vital to stress the importance of exploring and adapting these business models to the local rural needs.

6. Next generation CSP plants

Vast solar resources, expeditious technological development (potential) and crystal-clear EU and SSA leadership underline the potential of CSP research. Technological improvements can be made through i) analysis and optimisation of heliostat performance; ii) future thermal energy storage systems (synergetic with other RET's); and iii) Dry cooling systems (relevant for water shortage related impacts).

7. Technical network on biofuel research

Fully utilising biomass potential requires different processing technologies, the mix of which depends on local characteristics of energy demand. Lots of fragmented research initiatives can be streamlined in a technical network. Research should primarily focus on using second-generation biomass (agro-industry residues). The value of local inputs (biomass) and outputs (differentiating energy demands) call for integrative biomass value chain analysis, resulting in specific biofuel roadmaps for SSA countries involved,

taking full account of the local circumstances.

8. RET standards for SSA

Uncertainties about and consequences of low quality RET products provide a risk for RE development. This issue emerges especially for wind turbines, rooftop PV's as well as bio liquids. Efficient quality assurance, with appropriate testing facilities, provides the opportunity for setting product standards and introducing certification schemes. This will improve overall RE product quality, reliability and public acceptance of renewable energy. The EU has strong competencies in standard setting and cooperation is envisaged with bodies such as CENELEC as well as national bodies including testing facilities. This includes a training and dissemination component.

9. SSA-applied impact assessment programme

Renewable energy penetration has impacts on employment, social structures, economic development, the environment and training. These impacts can be substantial, both positively and negatively. One size does not fit all, as impacts very much depend on the local context and how projects are implemented. Insight into the SSA context for assessing impacts and optimisation and mitigation potential can be improved.

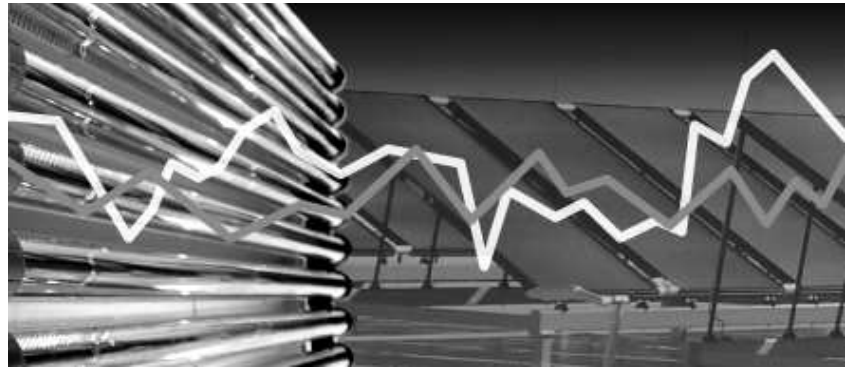
10. Waste to energy

Available scenarios for the next decade in SSA predict an exponential growth of waste in urban settlement. Proper management of such waste can be a challenge for local municipalities, but could become an opportunity for energy generation. Essential support should therefore be given to municipalities, in order to properly model energy potential and analyse urban waste value chain (e.g. separation and processing of different streams). In addition, demonstration projects and dissemination of results can be effective tools to promote awareness.

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Results of world's largest solar heating and cooling survey

The eighth World Map of Solar Thermal Industry illustrates the challenges that the global solar thermal sector has to face right now. Parts of the world are still suffering from rather low demand, while there is high business satisfaction in countries such as India, Brazil or Jordan. Duties and taxes shape industry growth. Since the Turkish government imposed an import duty on vacuum tubes in July 2011, three large vacuum tube factories have come into operation and exports are in sight. Vacuum tube technology is still on the rise in India, but the new Chinese export duty of 17 % has hit system assemblers hard. The air collector segment is subject to high fluctuation, as manufacturers are testing the market and then pulling out again.

The ISOL Navigator December 2014 helps you in exploring business opportunities all over the world: Based on 365 filled-in questionnaires from solar thermal specialists located around the globe, it analyses the trends in the solar heating and cooling sector and offers country portraits of 18 key solar thermal markets*. An especially important part of the ISOL Navigator is the forecast for 2015 and beyond: What do the stakeholders expect from the development in their national solar thermal market? Will the solar system prices rise or to fall next year? Which are the prospering market segments in the next years?

All companies which took part in the survey will receive a summary of the results at the beginning of January.

* The 18 key countries are: Austria, Brazil, Chile, China, Czech Republic, France, Germany, Great Britain, Greece, India, Italy, Mexico, Poland, Portugal, South Africa, Spain, Turkey and the USA.

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Energy sector is key to powering prosperity in sub-Saharan Africa – Report

IEA World Energy Outlook Special Report finds that action in the energy sector could unleash an extra decade of growth

Increasing access to modern forms of energy is crucial to unlocking faster economic and social development in sub-Saharan Africa, according to the International Energy Agency's (IEA) *Africa Energy Outlook* a Special Report in the 2014 World Energy Outlook series. More than 620 million people in the region (two-thirds of the population) live without electricity, and nearly 730 million people rely on dangerous, inefficient forms of cooking. The use of solid biomass (mainly fuelwood and charcoal) outweighs that of all other fuels combined, and average electricity consumption per capita is not enough to power a single 50-watt light bulb continuously.

'A better functioning energy sector is vital to ensuring that the citizens of sub-Saharan Africa can fulfil their aspirations,' said IEA Executive Director Maria van der Hoeven. 'The energy sector is acting as a brake on development, but this can be overcome and the benefits of success are huge.'

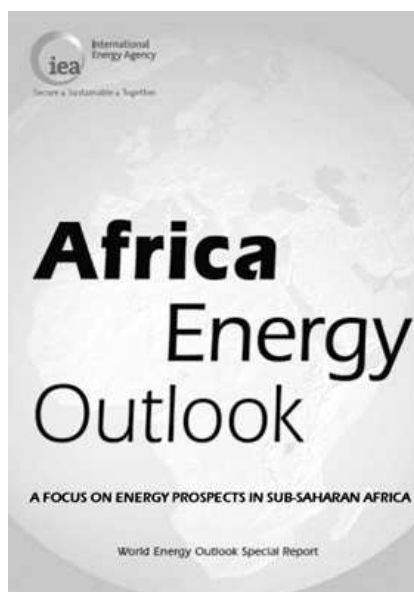
In the IEA's first comprehensive analysis of sub-Saharan Africa, it finds that the region's energy resources are more than sufficient to meet the needs of its population, but that they are largely under-developed. The region accounted for almost 30% of global oil and gas discoveries made over the last five years, and it is already home to several major energy producers, including Nigeria, South Africa and Angola. It is also endowed with huge renewable energy resources, including excellent and widespread solar and hydro potential, as well as wind and geothermal.

The report finds that investment in sub-Saharan energy supply has been growing, but that two-thirds of the total since 2000 has been aimed at developing resources for export. Grid-based power generation capacity continues to fall very far short of what is needed, and half of it is located in just one country (South Africa). Insufficient and unreliable supply has resulted in large-scale ownership of costly back-up generators. In the report's central scenario, the sub-Saharan economy quadruples in size by 2040, the population nearly doubles (to over 1.75 billion) and energy demand grows by around 80%. Power generation capacity also quadruples: renewables grow strongly to account for nearly 45% of total sub-Saharan capacity, varying in scale from large hydropower dams to smaller mini- and off-grid solutions, while there is a greater use of natural gas in gas-producing countries.

Natural gas production reaches 230 billion cubic metres (bcm) in 2040, led by Nigeria (which continues to be the largest producer), and increasing output from Mozambique, Tanzania and Angola. LNG exports onto the global market triple to around 95 bcm. Oil production exceeds 6 million barrels per day (mb/d) in 2020 before falling back to 5.3 mb/d in 2040. Nigeria and Angola continue to be the largest oil producers by far, but with a host of other producers supplying smaller volumes. Sub-Saharan demand for oil products doubles to 4 mb/d in 2040, squeezing the region's net contribution to the global oil balance. Coal supply grows by 50%, and continues to be focused on South Africa, but it is joined increasingly by Mozambique and others.

The capacity and efficiency of the sub-Saharan energy system increases, but so do the demands placed upon it, and many of the existing energy challenges are only partly overcome. In 2040, energy consumption per capita remains very low, and the widespread use of fuelwood and charcoal persists. The outlook for providing access to electricity is bittersweet: nearly one billion people gain access to electricity by 2040 but, because of rapid population growth, more than half a billion people remain without it. Sub-Saharan Africa also stands on the front line when it comes to the impacts of climate change, even though it continues to make only a small contribution to global energy-related carbon dioxide emissions.

'Economic and social development in sub-Saharan Africa hinges critically on fixing the energy sector,' said IEA Chief Economist Fatih Birol. 'The payoff can be huge; with each additional dollar invested in the power sector boost-



ing the overall economy by \$15.'

In an 'African Century Case', the IEA report shows that three actions could boost the sub-Saharan economy by a further 30% in 2040, and deliver an extra decade's worth of growth in per-capita incomes by 2040. These actions are:

- An additional \$450 billion in power sector investment, reducing power outages by half and achieving universal electricity access in urban areas.
- Deeper regional co-operation and integration, facilitating new large-scale generation and transmission projects and enabling a further expansion in cross-border trade.
- Better management of energy resources and revenues, adopting robust and transparent processes that allow for more effective use of oil and gas revenues.

As well as boosting economic growth, these actions bring electricity to an additional 230 million people by 2040. They result in more oil and gas projects going ahead and a higher share of the resulting government revenues being reinvested in key infrastructure. More regional electricity supply and transmission projects also advance, helping to keep down the average cost of supply. But the report warns that these actions must be accompanied by broad governance reforms if they are to put sub-Saharan Africa on a more rapid path to a modern, integrated energy system for all.

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New partnership between ZINWA and The meeco Group

SUN2WATER AND SUN2FLOW SOLUTIONS FOR WATER TREATMENT IN ZIMBABWE

In July 2014 a new agreement was signed between OurSun Energy (Private) Ltd, The Zimbabwean subsidiary company of The meeco Group and ZINWA, the Zimbabwe National Water Authority. This MOU will result in the establishment of a Public Private Partnership joint venture company OurSun ZINWA with a view to focus on solar-based water treatment developed by The meeco Group through its sun2water solutions.

The Zimbabwe National Water Authority is an entity wholly owned by the Government of Zimbabwe and is mandated to manage all the water resources of the country. This Authority was formed through the ZINWA Act [CAP20:25] in reaction to the Government's determination to reform the national water sector. Under the motto 'water is life, every drop counts', ZINWA works every day to make water resources even more accessible to the population on a sustainable basis.

Initially, OurSun ZINWA will provide solar power to existing water treatment facilities and will then be in charge of implementing the design, construction and operation of the water treatment plants. The PPP joint venture company intends as well to deploy sun2flow solutions for the farming community in Zimbabwe. Through sun2flow installations, oursun will deliver a connection of high-end solar modules with water pumping and irrigation solutions, which ideally suit remote off-grid areas. sun2water devices, a state-of-the-art energy production and storage solution, will also be implemented to purify and desalinate water sources via solar power generation.

Simba Mhuriro, in charge at OurSun Energy (Private) Ltd of the negotiations of this partnership, shares his optimistic opinion 'We are glad to get involved with ZINWA, our new business partner, who shares also our daily mission towards sustainable energy, reliable tier one quality water supplies and overall our corporate social responsibility based on environmental and social matters.

Envisioned further cooperation will include grid connected solar projects together with the introduction of hybrid, hydro and solar power stations on Zimbabwean dams and rivers.

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clean energy
services and solutions

Visiongain Energy Reports

GAS TO LIQUIDS MARKET FORECAST 2014–2024

Energy report

The implementation of Gas to Liquids (GTL) as a solution for the monetisation of natural gas is on the verge of no longer being determined by exceptional circumstances. Limited to a handful of facilities, the upfront capital cost of a GTL facility is a barrier that few can overcome. However, visiongain views this situation as soon coming to an end and: smaller-scale GTL solutions will change this by making GTL viable in more circumstances with a lower up front capital cost. The ability to monetise gas reserves of a lesser size in an economically viable manner will see a rapid expansion of CAPEX on GTL.

After some major setbacks in the early 2000s, when many large-scale projects were cancelled, the world's largest GTL facility, Shell's Pearl GTL plant, opened in Qatar in 2011. The plant is capable of producing 140 000 bpd of synthetic fuels and follows in the footsteps of the smaller Oryx GTL plant, also in Qatar, which was opened in 2006. With the opening of these two facilities, there are now four commercial Gas to Liquids plants operating around the globe. This number is set to increase with the completion of the 34 000 bpd Escravos GTL plant in Nigeria in 2014. Further large-scale GTL projects are planned around the world.

The primary driver for this interest in Gas to Liquids technology is the arbitrage opportunity between the price of oil and the price of gas. Since 2009, the natural gas price has decoupled from the crude oil price in the North American market, which has led to increased interest in building GTL facilities on the continent. Also, as the recently established plants in Qatar are operating at

full capacity and turning over large amounts of revenue, the rest of the oil and gas sector has begun to feel more confident about the viability of GTL on a large-scale.

Visiongain calculates that capital expenditure on GTL will total \$2,674m in 2014. The GTL market is composed of spending on (1) the EPC (engineering, procurement and construction) on large-scale GTL facilities (2) bringing smaller-scale GTL technologies online in the form of commercially viable facility – from R&D (research and development), through FEED (front-end engineering and design) and EPC.

Why you should buy the Gas to Liquids Market Forecast 2014-2024

What is the future of the GTL market? Visiongain's comprehensive analysis contains highly quantitative content delivering solid conclusions benefiting your analysis and illustrates new opportunities and potential revenue streams helping you to remain competitive. This definitive report will benefit your decision making and help to direct your future business strategy.

Avoid falling behind your competitors, missing critical business opportunities or losing industry influence. In their new report, you will discover forecasts from 2014-2024 for capital expenditure on GTL facilities, by type and by region. The report also comprehensively lays out the market drivers and restrainers, risks and trends, and leading companies and their strategies in order to help the reader make a balanced decision regarding their investment or involvement.

Visiongain business intelligence

Visiongain's increasingly diverse sector coverage strengthens its research portfolio. The growing cross-sector convergence of key verticals and the interplay

of game changing technologies across hitherto unrelated industries are creating new synergies, resulting in new business opportunities for you to leverage.

As such, Visiongain's team of London based in-house analysts offer a wealth of knowledge and experience to inform your strategic business decisions.

Key information guaranteed with benefits

- View market forecasts and analysis of capital expenditure on GTL from 2014-2024 to keep your knowledge ahead of your competition and ensure you exploit key business opportunities
- The report provides detailed spending projections for the market (\$US), the competitors, and the commercial drivers and restraints allowing you to more effectively compete in the market. In addition to market forecasts from 2014-2024, their new study shows current market data, and market shares.
- You will also discover original critical analysis, revealing insight into commercial developments.
 - Why struggle to find key market data? Why miss crucial information? Their comprehensive report provides instant market insight
- Their 224 page report provides 118 tables, charts and graphs. Let their analysts present you with a thorough assessment of the current and future GTL market prospects.
- This analysis will enable quicker, easier understanding. You will also gain from their analyst's industry expertise, allowing you to demonstrate your authority on the GTL sector.

- Visiongain is one of the few business intelligence companies that provide full transcripts of primary research company interviews. Be part of this knowledge. Learn what industry thought leaders are thinking. Leaders hold critical information.
 - By reading the exclusive expert interviews contained in the report, you will keep up to speed with what is really happening in the industry. You will gain a thorough knowledge of the GTL sector, finding strategic advantages for your work and learning how your organisation can benefit.
- Understand the prospects for the leading national GTL markets, in spending on new facilities, as well as a breakdown of spending by the size of GTL facility (in barrels per day of capacity) – where the greatest spending and best opportunities occur
- Highlights of the report include:
 - A forecast for capital expenditure on new and expanded GTL facilities year-on-year from 2014 to 2024 worldwide.
 - A submarket exclusively forecasting CAPEX on large-scale GTL facilities year-on-year from 2014 to 2024.
 - A submarket exclusively forecasting CAPEX on small-scale GTL facilities year-on-year from 2014 to 2024.
- National and regional market forecasts for large-scale GTL capital expenditure for the following market spaces:
 - US
 - Qatar
 - Southern Africa, including Mozambique and South Africa
 - Canada
 - Iran
 - The Rest of the World, which includes market prospects for Algeria, Australia, Malaysia, Nigeria, Russia, Trinidad & Tobago, Turkmenistan and Uzbekistan
- Contract tables for all planned, potential and currently cancelled GTL facilities worldwide.
 - Each potential facility has capacity, cost, technology type, main sponsor, time required for construction and earliest operation data specified. The current statuses of the projects are also noted individually.
- Tables of all current GTL facilities, including an assessment of their current production and the percentage of their production that can be classed as longer-chain hydrocarbons. Their original cost is also noted.
 - Tables of pilot GTL facilities.
 - A global forecast, year-on-year from 2014-2024, for GTL liquids produced worldwide.
 - A global forecast, year-on-year from 2014-2024, for GTL liquids sales worldwide.
 - Explore the factors affecting product developers, and everyone within the value chain. Learn about the forces influencing market dynamics.
 - Receive a PEST analysis identifying the political, economic, sociological and technological factors affecting spending in the GTL market from 2014 onwards:
 - Gas price considerations
 - The importance of government support or regulation
 - Emerging trends in the global gas market
 - Barriers to entry analysis for the leading national/regional market spaces.
 - In-depth analysis of the three leading producers of GTL products at present
 - Profiles of the most likely entrants to the GTL market and the smaller-scale GTL technology providers.
 - Their report reveals the most important companies in the market and provides an assessment of the future outlook for each. In particular, by exploring and analysing the activities of these companies you can see where the expected gains will be. Gain a thorough understanding of the competitive landscape with in-depth analysis and market shares of the 3 leading GTL companies – by amount of GTL liquids produced – and profiles of other active companies and leading GTL solution providers.

Independent assessment and uniqueness of the GTL market

This report provides impartial GTL market analysis. With the independent business intelligence found only in its work, you will discover where the prospects are for profit. In particular, their new research provides you with key strategic advantages: Their informed forecasts, independent and

objective analysis, and exclusive interview and revealing company profiles will provide you with that necessary edge, allowing you to gain ground over your competitors.

Visiongain consulted widely with leading industry experts and full transcripts from these exclusive interviews with Velocys, Primus Green Energy and Infra Technology are included in the report.

Visiongain's research methodology involves an exclusive blend of primary and secondary sources providing informed analysis. This methodology allows insight into the key drivers and restraints behind market dynamics and competitive developments. The report therefore presents an ideal balance of qualitative analysis combined with extensive quantitative data including forecasts by GTL facility size and by leading national market from 2014-2024.

The forecasts in this report utilise a method that focuses on synthesising and translating a range of factors and data points to quantify spending on GTL; the most important of these include: GTL technology cost, GTL liquids market access, cost competitiveness with other gas monetisation solutions, gas field size, GTL technology type, local climate, current GTL facilities and which projects proposed are likely to be completed. For emphasis: it is the synthesis and attribution of relative importance to each of the above elements (as well as regional trends) through which the forecasts are created.

Visiongain's report is for anyone requiring analysis of the GTL market. The report looks at CAPEX on GTL facilities by type, scale and leading national/regional market. You will discover market forecasts, technological trends, predictions and expert opinion, providing you with independent analysis derived from our extensive primary and secondary research. You will receive this critical business intelligence revealing where CAPEX growth is likely and where the lucrative potential market prospects are.

THE OIL AND GAS PIPELINES MARKET 2013 – 2023

Energy report

Oil & gas pipelines are an essential part of hydrocarbon transportation and distribution, required to ensure the smooth operation of the energy industry. The market is currently experiencing a num-

ber of important changes, with the factors driving spending differing considerably between each region. In particular, escalating oil & gas demand in Asia and the growth of the oil sands and tight oil markets in North America are creating opportunities for companies involved in the pipelines industry.

What makes this report unique?

Visiongain consulted widely with industry experts and a full transcript of an exclusive interview with Axpo Group is included in the report. As such, their reports have a unique blend of primary and secondary sources providing informed opinion. This approach allows insight into the key drivers and restraints behind market developments, as well as identifying the leading companies. The report also presents a unique blend of qualitative analysis combined with extensive quantitative data including global, regional and submarket forecasts from 2013-2023 – all highlighting strategic business opportunities.

Included in this report are:

- 212 pages of comprehensive analysis
- Exclusive Visiongain interview with industry expert:
 - Markus Brokhof, Head of Gas Supply & SEE (South East Europe) at Axpo Group
- 135 tables, charts, and graphs quantifying the market in detail
- Global oil & gas pipeline market forecasts between 2013 and 2023
- Ten year forecasts for the oil pipelines and gas pipelines submarkets, as well as the onshore and offshore submarkets
- Ten year market and submarket forecasts for the 6 regional markets within the oil & gas pipelines market:
 - Africa
 - Asia-Pacific
 - Eurasia
 - Latin America
 - Middle East
 - North America
- Oil & gas pipeline project tables for each region, showing the length, diameter, capacity, route, companies involved, cost, start date and status of all upcoming pipeline projects.
- A PEST analysis
- 7 key companies identified and profiled, including 2013 market spending and market share information.

THE WEST AFRICAN OIL AND GAS MARKET 2013-2023

Energy report

The West African oil & gas market is experiencing a period of strong growth, with significant exploration and production activity taking place in the region's offshore fields. The similarities between the pre-salt reserves in Brazil and West Africa is generating renewed interest in the latter's oil & gas market, while high oil prices are enticing companies to invest in deep-water E&P. This will lead to substantial growth over the coming decade, creating opportunities for companies involved in the region's oil & gas market. Visiongain's analysis shows that capital expenditure in the West African oil & gas market will total \$21.30bn in 2013. This includes spending on exploration and production projects, as well as oil & gas infrastructure projects, such as refineries, pipelines, LNG and GTL facilities.

The 8 West African countries profiled in the report are Angola, Cameroon, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Nigeria and the Republic of the Congo.

Though plagued by political and security concerns, the West African region possesses considerable oil & gas reserves which have been exploited for a number of decades. The more established Nigerian and Angolan markets will continue to dominate spending, though newer oil & gas producers such as Ghana will see the most impressive growth rates. Oil production will increase in most West African countries over the coming decade, while several nations have the potential to construct major LNG export facilities as global demand for gas continues to rise.

What makes this report unique?

Visiongain consulted with industry experts to identify key aspects and trends in the West African market. The report provides insight into key the drivers for, and restraints on, West African oil & gas capital expenditure. It also identifies future growth areas, analyses leading companies and provides a unique blend of qualitative analysis combined with extensive quantitative data, including regional and national market forecasts from 2013-2023 – all highlighting key business opportunities.

The report includes:

- 162 pages of comprehensive analysis
- 125 tables, charts, and graphs

quantifying the West African oil & gas market in detail

- West African oil & gas CAPEX forecast from 2013 to 2023
- Detailed ten year CAPEX forecasts from 2013-2023 with analysis for the 8 national West African oil & gas markets:
 - Angola
 - Cameroon
 - Côte d'Ivoire
 - Equatorial Guinea
 - Gabon
 - Ghana
 - Nigeria
 - Republic of the Congo
- Detailed analysis of regional and national economic development and business climate
- Information on current West African exploration activity and upcoming production projects
- National oil production forecasts for the period 2012-2017
- Tables detailing major upcoming oil & gas infrastructure projects, including refineries, pipelines, LNG and GTL facilities
- A PEST analysis for political, economic, social and technological factors affecting the West African oil & gas market from 2013 onwards
- Comprehensive information about the major companies active in the West African oil & gas market
 - Chevron
 - Eni
 - ExxonMobil
 - Royal Dutch Shell
 - Total S.A.
- Analysis of the factors driving and restraining spending in each national West African oil & gas market

OIL AND GAS AUTOMATION AND CONTROL SYSTEMS MARKET 2014-2024

Energy report

The oil and gas (O&G) automation and control (A&C) systems market is a well-established sector of the oil and gas industry. A&C systems are applied to all segments from upstream to downstream, and serve a large variety of applications, from emergency shutdown of production facilities to control sensors checking flows in pipelines and automation systems assisting manufacturing processes in refineries. The first A&C systems were in operation as early as the 1960s and they continue to play a critical role in the oil and gas industry today.

Nevertheless, the overall trend in

the automation and control systems market over the next 10 years is one of growth, thanks to robust demand for process optimisation, safety measures and remote-control solutions in every segment of the O&G industry. A&C systems allow companies to monitor operations in real time and improve on-site decision-making in order to maximise production. They raise facility uptimes and lower maintenance costs in the long term. Finally, they are critical in cutting costs, from those related to sub-optimal processes to those of personnel.

Visiongain calculates that the 2014 global oil & gas automation & control systems market will be worth \$13,194m in sales value. This includes the markets for Distributed Control Systems (DCSs), Programmable Logic Controllers (PLCs), Supervisory Control and Data Acquisition (SCADA) systems, Safety Instrumented Systems (SISs), Manufacturing Execution Systems (MESs) and the aggregated sales of other technologies such as Human Machine Interface (HMI) and Remote Terminal Units (RTUs).

Why you should buy Oil & Gas Automation & Control Systems Market 2014-2024

What is the future of the oil & gas automation & control systems market? Visiongain's comprehensive analysis contains highly quantitative content delivering solid conclusions benefiting your analysis and illustrates new opportunities and potential revenue streams helping you to remain competitive. This definitive report will benefit your decision making and help to direct your future business strategy.

Avoid falling behind your competitors, missing critical business opportunities or losing industry influence. In their new report you will discover forecasts from 2014-2024 at the global, submarket, and national level. The report also assesses technologies, competitive forces and expected product pipeline developments. Read on to discover the prospects for the oil & gas automation & control systems sector and find out what its future market prospects are.

Visiongain business intelligence

Visiongain's increasingly diverse sector coverage strengthens its research portfolio. The growing cross-sector convergence of key verticals and the interplay of game changing technologies across hitherto unrelated

industries are creating new synergies, resulting in new business opportunities for you to leverage.

As such, visiongain's team of London based in-house analysts offer a wealth of knowledge and experience to inform your strategic business decisions.

Key information includes:

- View global oil & gas automation & control systems market forecasts and analysis from 2014-2024 to keep your knowledge ahead of your competition and ensure you exploit key business opportunities
 - The report provides detailed sales projections of the market, the competitors, and the commercial drivers and restraints allowing you to more effectively compete in the market. In addition to market forecasts from 2014-2024, their new study shows current market data, and market shares
 - You will also discover original critical analysis, revealing insight into commercial developments
- Why struggle to find key market data? Why miss crucial information? Their comprehensive report provides instant market insight
 - Their 149 page report provides 100 tables, charts and graphs. Let their analysts present you with a thorough assessment of the current and future oil & gas automation & control systems market prospects.
 - This analysis will achieve quicker, easier understanding. You will also gain from their analyst's industry expertise, allowing you to demonstrate your authority on the oil & gas automation & control systems sector.
- Visiongain is one of the few business intelligence companies that provide full transcripts of primary research company interviews. Be part of this knowledge. Learn what industry thought leaders are thinking. Leaders hold critical information that you should know about
 - You will gain a thorough knowledge of the oil & gas automation & control systems sector, finding strategic advantages for your work and learning how your organisation can benefit.
 - Read the full transcripts of exclusive expert opinion interviews from four leading industry specialists informing your under-

standing and allowing you to assess prospects for investments and sales

- CCS, LLC
- Metso Automation
- Mitsubishi Electric
- Yokogawa Electric
- Learn about the market prospects for the leading product types from 2014-2024
 - How will individual product types perform over the forecast period? Discover how high sales will progress from 2014-2024, learning about products and years with the highest predicted growth and sales. You will be able to assess each technology's future, seeing progress and finding what it means, including emerging trends for those technologies. These forecasts will also reveal the competitive landscape. You will see what is happening, explaining the challenges, trends, competitors, and market opportunities. Our report reveals forecasts for the 5 leading key product types as follows:
 - Distributed Control Systems (DCSs) forecast 2014-2024
 - Programmable Logic Controllers (PLCs) forecast 2014-2024
 - Safety Instrumented Systems (SISs) forecast 2014-2024
 - Supervisory Control and Data Acquisition (SCADA) systems forecast 2014-2024
 - Manufacturing Execution Systems (MESs) forecast 2014-2024
 - Plus other aggregated oil & gas automation & control technologies forecast 2014-2024
 - Understand the prospects for the leading regional oil & gas automation & control systems markets – where will the highest revenues and opportunities occur?
 - Understand industry activity with detailed data revealing where companies are earning their revenues and with what products and with which technology.
 - Learn about the market potential for oil & gas automation & control systems companies in the developed and developing regions, from 2013 onwards. You will see where and how opportunities exist with revealing individual market forecasts and analysis from 2014-2024 for 7 regional markets.
 - North America forecast 2014-

- 2024
- South America forecast 2014-2024
- Europe forecast 2014-2024
- Russia & Central Asia forecast 2014-2024
- Africa forecast 2014-2024
- Middle East forecast 2014-2024
- Asia-Pacific forecast 2014-2024
- Explore the factors affecting product developers, and everyone within the value chain. Learn about the forces influencing market dynamics.
 - Receive a PEST analysis identifying the political, economic, sociological and technological factors affecting sales of oil & gas automation & control systems from 2014 onwards:
 - Developments in the upstream, midstream and downstream industry globally and their consequences for the oil & gas automation & control systems market.
 - Technological issues and constraints.
 - Supply and demand dynamics
 - Advances in product quality and their consequences for competing technologies.
- Identify who the leading companies are in the oil & gas automation & control systems industry
 - Their report reveals the technologies and companies which hold the greatest potential. In particular, by exploring and analysing the activities of these companies you can see where the expected gains will be. Prospects for advances in the oil & gas automation & control systems industry are strong, and from 2014 it holds many opportunities for revenue growth. View visiongain's assessment of the prospects for established competitors, rising companies, and new market entrants. Their work explains that potential, helping you stay ahead. Gain a thorough understanding of the competitive landscape with profiles of 10 leading producers of oil & gas automation & control systems examining their 2013 market sales and market share, capabilities, product portfolios, M&A activity, and major recent contracts:
 - Honeywell
 - ABB
 - Emerson
 - Rockwell Automation

- Yokogawa Electric
- Siemens
- Invensys
- GE
- Metso
- Schneider Electric
- Plus profiles of 48 other companies operating in the oil & gas automation & control systems market.

Information and assessment independent

The Oil & Gas Automation & Control Systems Market 2014-2024 report provides impartial oil & gas automation & control systems sector analysis. With the independent business intelligence found only in their work, you will discover where the prospects are for profit. In particular, their research provides you with key strategic advantages: Their informed forecasts, independent and objective analysis, exclusive interviews and revealing company profiles will provide you with that necessary edge, allowing you to gain ground over your competitors.

Visiongain consulted widely with leading industry experts and full transcripts from these exclusive interviews with CCS, Metso Automation, Mitsubishi Electric and Yokogawa Electric are included in this unique report. Visiongain's research methodology involves an exclusive blend of primary and secondary sources providing informed analysis. This methodology allows insight into the key drivers and restraints behind market dynamics and competitive developments. The report therefore presents an ideal balance of qualitative analysis combined with extensive quantitative data including global, submarket and regional markets forecasts from 2014-2024.

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Energy for the future – Navigating the power transition

ZIMBABWE RENEWABLE ENERGY CONFERENCE IN
MEIKLES HOTEL HARARE

The meeco Group has recently launched through its subsidiary OurSun Energy (Private) Ltd. its turnkey services and solutions into the blossoming Zimbabwean market. Lately, promising cooperation's have been initiated in Zimbabwe with key partners such as BDO, part of the fifth largest accountancy network in the world and ZINWA, an entity wholly owned by the Government and mandated to manage all water resources of the country. The ZIMREC conference represents for meeco a further step towards the expansion of its clean energy activities in Zimbabwe.

ZIMREC is organised by Esther Mhiribidi & Associates, a Harare based company, which focuses on events to connect companies in the renewable energy industry. This conference aims at addressing clean energy challenges faced by a great variety of participants such as engineers, investors and governments. Occurring every August of the year, it represents a decisive event in Zimbabwe with the involvement of key governmental figures. This is a real place to exchange and deliberate about strategic and technical solutions in order to integrate the Zimbabwean economy with an energy system transition.

During those days, The meeco Group was able to present its projects of the last few months and the initial success within the Zimbabwean market through several Public Private Partnerships with public institutions such as ZINWA and also strategic partnerships with leading companies in sectors ranging from construction, advisory to finance.

Zimbabwe is currently experiencing an outstanding growth presenting huge potential for renewable energy applications, opportunities and investments. Moreover, the geographical situation, one of the highest radiation levels worldwide, makes the implementation of solar energy ideal. Simba Mhuriro, in charge at OurSun Energy (Private) Ltd, thinks that 'ZIMREC is indeed the chance to get access to a valuable platform in order to vent ideas and develop networking opportunities in energy and power development sector as well as find solutions to accelerate the growth of the emerging Zimbabwean renewable energy.'

Oursun expects to realize in the course of the next five years from 50 to 100 MWp of solar projects via technical and advisory services. From now, The meeco Group looks forward to executing further projects as well as to building additional relationships in Zimbabwe and to share its experience at the next ZIMREC conference.

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clean energy
services and solutions

2nd Annual Cable Anti-Theft Technologies Summit to be held

EMPERORS PALACE, KEMPTON PARK, GAUTENG

The 2nd Cable Anti-Theft Technologies Summit will attract all major role players in an effort to combat cable theft and promote technology in curbing theft in industry.

Municipalities, law enforcement agents, railway industry, telecommunications, electricity, and cable manufacturers are some of the organizations that will be participating in the upcoming conference due to take place on 24 & 25 February, 2015 at Emperors Palace, Johannesburg, South Africa.

Hosted by Mogorosi Communications, the event is designed for manufacturers, importers, government departments involved in energy; trade and industry, security companies, law enforcement officers, network engineers, scrap metal dealers, and risk control managers, amongst other professionals.

This conference is a follow up to the conference that took place on the 25 & 26 June earlier this year and is also an extension to technologies developed in cable theft. Feedback received from delegates who attended the last summit suggested topics on: the role played by municipalities, improvements on applied technology, second hand goods act, and discussions based more on solutions to cable theft amongst others.

Some of the topics will include: Scale of cable theft in South Africa, municipal challenges and economic implications of cable theft, improvements of security of theft, copper clad steel: anti-theft earthing wire, technological advances in cable theft detection and response and more.

The conference is an annual event that brings together all role players involved in every aspect of cable anti-theft, offering valuable networking and information exchange. It will also assist participants to garner new contacts, new suppliers and discuss new developments with all who have an interest in cable theft.

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Mogorosi Communications Consultancy
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Email: amandab@mogorosicomms.co.za



Energy events 2015

FEBRUARY 2015

17 – 18

AFRICA ENERGY INDABA
Sandton Convention Centre, Johannesburg, South Africa
Website: www.africaenergyindaba.com

24 – 25

2ND ANNUAL SHALE GAS CONFERENCE
Emperors Palace Convention Centre, Kempton Park, Johannesburg, South Africa
Contact: Navin Desai
Tel: +27 11 326 0353
Fax: +27 11 326 0354
E-mail: navin@amabhubesi.com

FEBRUARY 2015

24 – 25

2ND ANNUAL CABLE ANTI-THEFT TECHNOLOGIES SUMMIT
Emperors Palace, Kempton Park, Gauteng, South Africa
Contact: Ms Amanda Bokleni, Conference Producer
Tel: 011 325 2485
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E-mail: amandab@mogorosicomms.co.za

MARCH 2015

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MEASUREMENT & VERIFICATION STANDARD OF SOUTH AFRICA
Johannesburg, South Africa
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Tel: 041 582 2043/ 087 942 551314
E-mail: info@entf.co.za
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16 – 20

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17 – 19

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Website: www.entf.co.za

24 – 25

POWER & ELECTRICITY WORLD AFRICA 2015
Sandton Convention Centre, Johannesburg, South Africa
Contact: Kelly Colkett
Tel: 011 516 4038
E-mail: kelly.colkett@terrapin.com

25 – 26

SUSTAINABLE INFRASTRUCTURE DEVELOPMENT: THE NEXUS BETWEEN URBANISATION AND ECONOMIC GROWTH
Kumasi, Ghana
Contact: Conference Secretary
E-mails: agyekom.kofi1@gmail.com or tekwofie@knust.edu.gh

4TH ANNUAL GASIFICATION SUMMIT

Prague, Czech Republic
Contact: Sylvester Gabriel
Tel: +44 (0) 203 141 0637
E-mail: mahsan@acieu.co.uk

30 – 1 April

DOMESTIC USE OF ENERGY (DUE) 2015
Cape Peninsula University of Technology, Cape Town, South Africa
Tel: 021 460 3660
E-mail: due@cput.ac.za
E-mail: <http://energyuse.org.za/>

MAY 2015

4 – 6

FUNDAMENTALS FOR ENERGY MANAGEMENT TRAINING
Cape Town, South Africa
Contact: Thieda Ferreira
Tel: 041 582 2043/ 087 942 551314
E-mail: info@entf.co.za
Website: www.entf.co.za

5 – 8

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E-mail: info@entf.co.za
Website: www.entf.co.za

7 – 8

IMPROVING CONDITIONS FOR DEVELOPMENT IN THE WESTERN CAPE
Crystal Towers Hotel, Century City, Cape Town, South Africa
Contact: Natalie Smit, Conference Secretariat
Tel: 021 914 2888
Fax: 021 914 2890
E-mail: registrar@sbs.co.za
Website: www.sbs.co.za/wcpdf201516

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25 – 28

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26 – 28

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AUGUST 2015

17 – 19

INDUSTRIAL AND COMMERCIAL USE OF ENERGY CONFERENCE 2015
Cape Town, South Africa
Tel: 021 460 3660
E-mail: icue@cput.ac.za
E-mail: <http://energyuse.org.za/>
Visit www.erc.uct.ac.za for further events and details

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Energy Management News

The newsletter is published quarterly by the Energy Research Centre (ERC) of the University of Cape Town. (ERC is an amalgamation in 2004 of two organisations at the University: the former Energy Research Institute and the Energy and Development Research Centre.)

Energy Management News is available free of charge. The articles do not necessarily reflect the views of the editor or of the ERC.

Enquiries, comments, articles, and information on energy events are welcome, and should be sent to:

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