

# IPET NEWS. *March 2018*

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## Civilition Forum

The purpose of the movement is to form a body that speaks with one voice on common issues relating to all engineering related matters. Representatives from various Voluntary Associations have attended a number of meetings to date.

A name for this organisation has not been finalised yet.

The South African Forum for Engineering Practitioners (SAFEP) has been proposed. A Memorandum of Understanding has been drafted and requires approval by all the participating VA's before being signed.

A further progress meeting will take place in the coming quarter.

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## The Court Case Against ECSA – Update.

Some 16 Voluntary Associations are part of the litigation process.

Before the VA's got together, the team was made of CESA, SAICE, SAIMECHE and two other individuals who were part of the old ECSA Council. Before going to court these individuals followed all available processes to resolve the matter amicably and in a collaborative manner with ECSA.

ECSA and the CBE were approached, then the Minister of Public Works. The team met with the Minister, deputy minister, the DG and their advisors. The Minister and his deputy both

confirmed that they were not aware of the details of the issues regarding the ECSA case and promised to get back to the VA's. It's been more than a year since this meeting was held and the team has not received any response from the minister's office.

Due to no response from these bodies, the only option available was to go to court.

Papers were lodged in high court in October 2016.

The court date for this case is likely to be in the 2nd term of 2018.

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## ECSA Discount for members.

ECSA last year reduced the discount offered to our members as ECSA appears to be spending more money than they receive. This reduction was apparently hotly debated at an ECSA Council meeting as it affects all Voluntary Associations.

The actual fees for 2018 and the discount for 2018 has not been announced at the time of compiling this newsletter.

ECSA has requested a list of all paid up member and members who have been deleted due to non-payment, resignations and death etc. These lists then may affect the discount ECSA grants to members.

Lists as at the beginning of March 2018 have been sent to ECSA.

Please see our Website for a list of members in good standing.

[www.ipet.co.za](http://www.ipet.co.za)

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## [Madonsela's report on Malema.](#)

A month after Julius Malema appeared in the magistrate's court for money laundering, the Public Protector has released her report into the company he co-owns, On-Point Engineering. The findings are damning. Further action may just happen in the future, but the law seems to be very slow in SA.

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### ***IPET supports the view of the NSTF published below.***

*Matric results – certain misconceptions?:*

*Message from NSTF Executive Director*

#### **Matric results – certain misconceptions?**

**Looking beyond the matric results:** As always we emerged from the festive season with news of the matric results. Much was made of the matric pass rate as usual. For some it is too high, for others too low. Some people even want a 100% pass rate nationally. A 100% pass rate would be nonsensical – some

children must be 'allowed' to fail matric. Even in an education system that works well, some learners will fail and that should be okay.

In fact, the matric passes should conform to a normal distribution curve – like the results of any other objectively designed test. There seems to be a perception that a matric pass is something that everyone should achieve, like a human right. Although basic education is a human right, a matric pass cannot be guaranteed in any education system, and should not be handed out freely.

The obsession with the pass rate has detracted attention from the issues that matter more, namely:

\*How ready are matrics for a Bachelor's degree when they obtain a Bachelor's endorsement? (The universities have the ultimate say over admission requirements.)

\*How ready are matrics to become employees immediately after matric?

\*How ready are matrics to start businesses of their own?

\*How many and in what proportion have passed mathematics and physical science, respectively? How does this compare to previous years?

\*How many have the 'matric equivalent' of NQF4? If the [National Qualifications Framework](#) is taken seriously as a hierarchy of qualifications comparable to the academic route, this ought to be announced at the same time as the matric results.

As time moves on and other news takes over the public's attention (particularly this year), these issues fade until next January when people are again annoyed at the pass rate but fail to unpack its implications properly.

**Why IEB and state exam systems should not be merged:** It was mooted this year that the Independent Examination Board (IEB) should be merged with the state's system. The IEB exams for the National Senior Certificate (NSC, also known as matric) are considered by many, including some overseas universities, as a more challenging set of tests and therefore lead to a better qualification than the non-IEB NSC. Both however, are formalised with the same certificate from the state.

It is strange reasoning to argue that the IEB and state systems should somehow be merged because of the massive inequality in the two parallel systems. Firstly, the IEB schools are a tiny proportion of the education system – The public schools are 93% of the system, independent schools only 4%

Secondly, it is not the particular exam board that creates the discrepancies between matric pass rates and numbers of distinctions – it is the unequal provision of resources at the different schools, including especially, good teachers.

IEB schools are located in privileged (formerly white) residential areas, and there are very few of them compared to the schools for which the state bears sole responsibility. They are usually private schools and particularly well resourced. Their classes are smaller, they have certain

teachers appointed and funded through high school fees by the School Governing Bodies (SGBs), pay their teachers better salaries (again by raising funds from better resourced parents), ensure that the schools have good facilities like computers, libraries, and laboratories.

The shocking inequality in the performance of IEB and non-IEB schools is part and parcel of our society's socio-economic inequality. It is not something you can fix by 'legislating it away', and hoping to escape the decades of hard work required to create a functional education system for the country.

**Celebrating *all* top achievers in matric science and maths when matric results are released:** [The 'top performers in the country' are celebrated by the Minister and Deputy Minister of Basic Education](#)

early in the year, when the pass rate is revealed and release of the matric results announced. This is a moving and exciting event for the learners, schools and parents, as well as the public watching it online or on television. Bursaries and other prizes are awarded to the selected top achievers. Achievers in the various quintiles are honoured, as well as the best learners with special education needs.

The awards also include the so-called 'top 3 performers' in the country, in mathematics, and likewise the 'top 3 performers' in physical science, and then especially honouring the 'top (one) performer' in each. It is these latter awards for maths and science achievement that I want to challenge.

Although it is wonderful that some top performers are indeed celebrated by the Ministry, and receive prizes, *there are more than one 'top-performer' in these subjects* – and we at the NSTF find this evidence every year during the selection of students for our '[Brilliants' programme](#).

The NSTF Brilliants is a programme that identifies the top performers across the country in matric maths and science, from public

schools. A boy and girl are chosen from every province, based on both their matric marks for (only) these two subjects, and their choice of studies. They have to be enrolled at a South African university or university of technology, in natural sciences, engineering, maths, or medicine. We obtain the lists of the top 100 learners in maths and science from each province. As we have been doing this for many years, we have an 'insider' perspective on these results. The Brilliants are sponsored by the Carl & Emily Fuchs Foundation.

Every year, the top 100 in every province include many learners who scored above 90% in maths, above 90% in physical science, a substantial number of them score above 90% in both, and a number of them (always more than one) get 100% in maths, or science, or both. This is the case in all provinces every year. It is therefore impossible to designate any ONE learner as the 'top performer' in maths or science in the country.

For example, during the past year, our shortlist for selection included the following figures: (Bear in mind that this is not a comprehensive list of the top performing matriculants – these were selected on the basis of their study choices):

\*There were 25 learners across the country who had 90% and more for Physical Science on our shortlist

\*There were 20 of these learners who also had 90% or more for Mathematics

\*There were 22 who had an average of these two subjects of 90% or more

**\*5 of the learners had 100% in BOTH Maths and Physical Science**

These were all learners at public schools, from a variety of backgrounds and areas where they are situated. Not only do these annual figures debunk the myth of one overall top achiever, they also demonstrate that talent in maths and science is to be found in all areas of the country, in all types of communities, across races and economic groups.

This year, according to the NSTF shortlist:

\*12 of the group of 25 were African

\*12 of the group of 25 were women

Finally, we want to assert that *all* top achievers in maths and science deserve to be celebrated. Just because two learners were identified first as being top achievers, does not make them the top achievers in maths and science of the year.

At the same time, the country still has too few learners who take these subjects, and too few pass them. So please, next year – do not disregard this remarkable group of learners, who hail from all parts of South Africa, and who are high flyers when it comes to maths and science.

[1] Source: National Treasury, PROVINCIAL BUDGETS AND EXPENDITURE REVIEW:

2010/11 – 2016/17,

<http://www.treasury.gov.za/publications/igfr/2015/prov/03.%20Chapter%203%20-%20Education.pdf>, p 35, Graph showing

Percentage distribution of learners in the

education system, 2013, from *School*

*Realities 2013*, Department of Basic

Education

February 21, 2018

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### **NSTF Bursary Directory (sponsored by the Fuchs Foundation).**

Visit the [NSTF Bursary Directory](#) to find information on [available bursaries](#), the different science, engineering and technology (SET) [careers](#), and [inspiring stories](#) of people in SET.

### ***Snippets.***

*The following mini articles, notices and news follow the trend of interesting scientific, engineering developments and general interest items that we come across. Read and enjoy!*

*Please feel free to contribute by sending your articles to share with our members! Ed.*

### **Biogas will help solve urban sewage crisis**

The Bill & Melinda Gates Foundation has awarded a \$1.14 million grant to install an innovative new sewage treatment solution to Durban. The innovative generator is able to process sewage into nutrients, biogas and clean water.

University of South Florida associate professor Dr Daniel Yeh designed this innovative NEWgenerator in response to the stress mass urbanisation puts on water and sewer lines. Already deployed in India, the generator generates nutrients, energy in the form of biogas, and water by safely recovering them from wastewater containing fecal organic matter and urine.

In Durban, the generator will accompany a Community Ablution Block (CAB), which is a modified shipping container with toilets, showers and sinks. South Africa's government provides these CABs to informal settlements lacking in such amenities. However, as populations grow rapidly, CABs are putting a strain on the sewage system.

According to a statement from the University of South Florida, the unit will aim to allow CABs to operate without being hooked up to sewer lines.

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### **Energy from anaerobic digestion**

The system uses anaerobic digestion to convert organic material into biogas. It mimics a miniature wastewater treatment plant, but eliminates the usual energy intensive aeration tank that blows air to break down pollutants and chemicals.

When coupled with solar panels, the biogas produced allows the unit to produce electricity and run independently.

Clean water is generated through a multistage disinfection process. Once cleaned, this water can be used for toilet flushing in the CABs, or for irrigation. Meanwhile, nutrients extracted from the wastewater will be used to produce fertiliser for local community gardens.

The University of South Florida team will bring two versions of the NEWgenerator to

Durban. The first will be an updated version of the unit used in India in 2016, which supplied 100 users a day. The second will increase the NEWgenerator' s capacity to serve 1,000 users a day. Both will be connected to CABs in Durban.

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### **The world' s largest supplier of wind turbines in 2017.**

This is **Vestas** a Danish supplier..

US-based business advisory firm, FTI Consulting, released its preliminary ranking for the world' s top five wind turbine original equipment manufacturers (OEMs), which will be published in the *Global Wind Market Update – Demand & Supply 2017* to be released in March 2018.

Preliminary results are subject to change between now and the release date of the actual report.

### **Wind turbines.**

Siemens Gamesa ranked second in 2017, primarily due to the recent merger between Siemens Wind Power and Gamesa, its strong position in the offshore sector and India and improved position in the US..

The research found that Chinese supplier Goldwind remains in third position in 2017.

GE fell to fourth place, particularly due to the two positions loss in its home market, where Vestas overtook it as the No. 1 supplier for the second year in a row.

Enercon retains fifth place by taking advantage of strong domestic market growth in Germany, where nearly 6.5GW were installed in 2017, making it a record year.

\* Based on preliminary data analysis

The final report will be available free of charge on FTI Intelligence' s website in March 2018.

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### **World's largest solar park.**

The world's largest solar park, the 2,000MW Shakti Sthala in India, built over 13,000 acres across five villages with an investment of INR165 billion (\$2.53 billion), has been inaugurated.

This makes the 2GW(AC) capacity project, which has been separated into eight sections of 250MW, the world's largest solar park.

Situated at Pavagada in Tumakuru district of Karnataka, India this massive project had been conceptualised, planned and built over a period of three years, according to Karnataka' s energy minister DK Shivakumar.

The project involved a unique lease programme whereby the government took on a long-term lease from the farmers that owned the land. As part of the project, 2,300 farmers are now eligible to INR21,000 (\$322) rental per acre, according to a government video.

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### **SA Navy orders new vessels.**

Local shipbuilder Damen Shipyards Cape Town (DSCT), which is part of the global Netherlands based Damen Group, recently said that it had received an order to build three inshore patrol vessels (IPVs) for the South African Navy (SAN). The order was placed by Armscor. The order forms part of the SAN' s Project Biro to acquire new offshore and inshore patrol vessels.

The order was placed four years after the shipyard received a previous order for two tugs. Each IPV will have a length of 62 m and a beam of 11 m.

The three IPVs will employ Damen' s patented Sea Axe hull design and they will be the first vessels of this type to operate in local waters. The design features a straight-edged, axe-shaped bow. The company describes the Sea Axe as "revolutionary" and providing "exceptional seakeeping behaviour with improved safety and comfort on board as well as significantly reduced fuel consumption and emissions.

The company is committed to the South African government' s Operation Phakisa, to develop the country' s maritime industry.

Consequently, it will source as many as possible of the inputs for construction of the vessels from local suppliers.

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### **Theft of copper cables etc.**

Theft of Eskom infrastructure including copper cables, overhead lines, transformers and conductors, among others, remains a serious concern for the power utility.

Eskom, along with other state-owned entities such as Transnet, Telkom and municipalities, is plagued by infrastructure theft with the value of material stolen remaining a serious concern, as it is indicative of organised, syndicate-driven criminal activity in the copper theft environment.

According to the South African Chamber of Commerce and Industry's copper theft barometer, copper theft costs the economy between R5 billion (\$415 million) and R7 billion (\$581 million) a year.

Replacing stolen copper cables, alone, costs Eskom in the region of R2 billion (\$166 million) a year.

According to the power utility's Security Risk Management division, the fight against infrastructure theft is being addressed by means of intelligence-driven investigations by the Hawks, a division of the South African Police Services (SAPS), which encompasses aggressive policing of the scrap metal market for stolen goods.

The courts are also taking this crime seriously and significant sentences are being handed out to perpetrators. A joint industry working group, formed by Eskom, Transnet, Telkom, the SAPS, the National Prosecuting Authority and the South African Chamber of Commerce and Industry, also continues to contribute positively in the fight against this crime.

In fact, of the 8,988 cable theft incidents reported between 2012 and 2016, there was a recorded 1,159 arrests made. This indicates that something is being done to avert this crime but it also indicates that a lot more can still be done to reduce the impact of this crime.

The Power utility said that the Criminal Matters Amendment Act, which came into effect this year, states that the minimum sentences for first-time copper thieves is three years and the maximum is 30 years for those involved in instigating or causing damage to infrastructure, which indicates the seriousness of this crime.

With improved legislation and tougher sentences, Eskom believes that the theft and vandalism to critical network infrastructure will ultimately cease.

### **Report cable theft at**

[info@operationkhanyisa.co.za](mailto:info@operationkhanyisa.co.za) Or

SMS 3221

In Durban;

031 311 9611 Or SAPS 10111

For Telkom;

0800 124 000

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### **News From Johannesburg Roads Agency (JRA)**

The Johannesburg Roads Agency (JRA) has repaired 44 350 potholes across the city since the beginning of the 2017/18 financial year. The city currently has a backlog of R11.8-billion for upgrading the city's 13 599 km road network, of which R7.1-billion is required for repairs to surfaced roads and R4.7-billion for the upgrade of gravel roads to tar.

City-wide, the JRA is faced with an R81.5-billion ten-year backlog to address the city's ageing roads. Based on the 2017 JRA roads conditions study, it is faced with a 25% increase in the deterioration of the network condition, from 89% to 64%. The JRA noted that it continues to prioritise pothole repairs, with R88-million allocated towards fast-tracking repairs and priority roads scheduled for upgrades.

Since July 2017, 520 km have been resurfaced, 32.26 km upgraded from gravel to surfaced roads and a total 300 m of open storm water drains have been converted to underground systems. In an effort to enhance delivery, the JRA is in the process of completing the installation of a new R53-million asphalt plant.

The JRA said R240-million has been allocated towards resurfacing and reconstruction. The allocation is split with R140-million for resurfacing and R100-million for reconstruction. A further R295-million has been allocated towards the upgrading of gravel roads. At present, 32% of surfaced roads, which make up 3 968 km require reconstruction, 45% of surfaced roads, which make up 5 581 km, is in very good and good condition and 23% of surfaced roads, which make up 2 852 km, require resurfacing.

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### [Recycling and reusing worn cathodes to make new lithium ion batteries](#)

Nanoengineers have developed an energy-efficient recycling process that restores used cathodes from spent lithium ion batteries and makes them work just as good as new. The process involves harvesting the degraded cathode particles from a used battery and then boiling and heat treating them. Researchers built new batteries using the regenerated cathodes. Charge storage capacity, charging time and battery lifetime were all restored to their original levels.

*Ed; This is good news as there is a limited amount of Lithium available in the world!*

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## **Adverts of interest to members.**

### **Jobs Required.**

# My name is Ebrahim Padia. In Dec 2017, I won the IPET Medal for Best BTech Engineering Student at Durban University of Technology. I am currently searching for a job.

The following information about me.

Ebrahim Padia is an experienced Senior Industrial Engineer and Lean Six Sigma Black Belt Professional. An avid problem solver who is driven by the philosophy of “making things better”. He has industry experience spanning multiple companies including Automotive, FMCG, Service Providers and Heavy Engineering (Power Plant fabrication and Ship building). He has lead projects comprised of teams of Industrial Engineers. Their goal was to reduce cost/variation through waste reduction and process improvements. He believes in organisations leveraging control for their advancement, through measurement and standardisation. He is also passionate in educating and training Industrial Engineering students through University lecturing as well as mentoring in-service trainees. Skilled in DMAIC, Value Stream Mapping, Failure Mode and Effects Analysis (FMEA), Process Design, Process Improvement, Systems Creation. Strong engineering professional with a Bachelor of Technology (BTech), Cum Laude in Industrial Engineering from Durban University of Technology. Awarded the Institute of Professional Engineering Technologists best BTech Engineering Graduate Award for Durban University of Technology in 2017.

I am open to gaining experience in other industries irrespective of the experience I have already obtained. I am also eager to further my studies by doing a Masters Degree in Engineering, whilst pursuing work opportunities which will utilise my skills as an Industrial Engineer. Should there be any opportunities available, please do contact me. My contact details are:

Mobile: (+27) 0829771183

Email: [epadia@gmail.com](mailto:epadia@gmail.com)

LinkedIn Profile: [www.linkedin.com/in/ebrahim-padia/](http://www.linkedin.com/in/ebrahim-padia/)

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## # Job Required.

I have experience in project execution, data analysis, manufacturing, and research environments. This encompasses internships/ volunteer work. I am currently completing my MEng: Chemical Engineering and will graduate this year.

I completed my Bachelors Degree of Technology: Chemical Engineering with a Cum Laude honor and received the Deans Annual Excellence Award as top achiever in the Chemical Engineering Department. I was honoured with the IPET (Institute of Professional Engineering Technologists) national award for the highest academic achievement in Engineering (all disciplines) by a lady graduate in **South Africa**. I obtained a distinction pass for the undergraduate Chemical Engineering Process Design Group Project and the Chemical Engineering Undergraduate Research Project. I am considered to be a good communicator and enjoy taking on various work related challenges. I can definitely work under pressure and maintain good results as well.

I am highly interested in working areas of process design, process optimization, project execution, data analytics and project management environments. I am open to gaining experience in other industries irrespective of the current experience already obtained. I am also eager to further my studies in relation to the industry I enter into whilst exploiting every opportunity I have to gain experience as a Process/ Project Engineer.

I am willing to relocate anywhere, both national and international, to excel in my career. And I firmly believe that I will be an excellent fit for any company as I have a strong work ethic and want to be part of a challenging, diverse and intellectual culture.

If there are any opportunities available, please do contact me as per the details below.

### Contact details

*Micaela Lisa Harry*

Email: [micaelaharry@gmail.com](mailto:micaelaharry@gmail.com)

Cell: +27 84 725 2245

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Name: AG Bright Pr Tech Eng.

Company Name: AGB Road Design

### **Service Offered:**

Civil Engineering Technologist now retired; registered with ECSA and IPET, has experience in the geometric design of roads and pertinent associated services.

This encompasses both a, municipal and consulting civil engineering background.

Preparation of layouts (TRL's) and designs, to assist in a clients project planning and preparation requirements, or as may be required is offered, and can be provided.

Terms and conditions in respect of project payments undertaken, would be in conformance to rates and tariffs applicable, of the appropriate controlling associations in respect of the civil engineering industry in South Africa, such as ECSA and IPET.

Please contact Arthur G. Bright Pr.Tech.Eng. – 0837062222 should any assistance be required.  
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## **Contractual landscape for Built ENVIRONMENT PROFESSIONALS**

Workshop, discussion and case studies on various contracts in the built environment.

Your Presenter:

Adv. Dirk C. Robertson

Admitted as Advocate of the High Court of South Africa

Professional Engineer: Engineering Council of South Africa (ECSA)

Adjudicator: Association of Arbitrators (Southern Africa)

Member: SAICE

What is the workshop all about?

The workshop will focus on the following:

Contractual law principals. (Relevant to construction procurement contracts).

General Conditions of Contract. (GCC)

Difference between the General and Specific Conditions of Contract.

Format and layout.

Subsections of the Tender Documents.

GCC Works as published by SAICE. (2015 edition).

FIDIC Suit of Documents. (Red, Silver & Yellow Book)

The use of the NEC family of Documents in SA. (Focus on ECC)

JBCC Principal Agreement.

Date: 16 March 2016

Venue: Midrand

Cost: R 2 900.00, discount for IPET members R 2 200.00

For booking and more information contact:

Johan van Schalkwyk

0827375532

johan@6cds.co.za

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## **# *Services Offered By Members.***

*Please visit our Website*

<http://engineersdirectory.co.za/>

*For all details.*

***Wherever possible support your fellow members!***

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## ***Bachelor of Engineering Degree.***

IPET is planning to have a one day workshop on the new qualification replacing the BTech, that is the 3 year full time Bachelor of Engineering Technology degree, provisionally for May this year.

More details will be available in the near future.

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## **Health Issues!**

When it comes to nutrition, everyone has an opinion. Some have stronger views than others, particularly if one takes a quick look in to the vegan Reddit thread space. But a new study published by the [BBC](#) has revealed that pork fat is one of the top ten most nutritious foods you can possibly eat. Full of unsaturated fats and healthier than lamb or beef, your serving of pork belly is probably good for you!

*Ed; Certainly better than Paloney!*

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