

February 2015



Solar and standby power edition

This Newsletter is published by the Port Elizabeth Amateur Radio Society
P.O. Box 10402, LINTON GRANGE, 6015

Editing by Christopher ZS2AAW

QSX-PE - Newsletter for the discerning Radio Ham

Download QSX-PE from www.zs2pe.co.za/Newsletter/Newsletter.htm
or www.commco.co.za/pears.htm

PEARS Monthly Meeting

Tuesday 17th of February, 7:30 pm

ZS2ROB – an “African Adventure” presentation on his recent trips into wildest Africa!

at the Italian Sporting Club, 17 Harold Road, Charlo.

DIARY OF EVENTS

1 March	Hamnet simulated emergency contest
29 March	Ironman event
30-31 May	Zuurberg Trek

SA to get two new Solar Farms

Article from BusinessTech

The Department of Energy has announced the construction of two new concentrating solar power (CSP) plants, to be built in the Northern Cape. The Kathu Solar Park and Redstone Solar Thermal Power project, both of which have 100MW capacity, are part of the third round of the government’s Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

As reported in November, the Redstone CSP project will become the largest solar plant in South Africa when completed – overtaking the 96MW PV Jasper plant. The advantage of the CSP technology being used in the two projects over conventional solar power is that, besides not producing harmful emissions, it is able to provide electricity at night through stored energy.

“The 100MW project with 12 hours of full-load energy storage will be able to reliably deliver a stable electricity supply to more than 200,000 South African homes during peak demand periods, even well after the sun has set,” said the team behind the Redstone project, SolarReserve.

CSP uses thousands of mirrors to reflect and concentrate sunlight onto a central point – in Redstone’s case a 550-foot tower – to generate heat. Within the tower, fluid flows through piping which forms the external walls – this fluid absorbs the heat from the concentrated sunlight. In SolarReserve’s technology, the fluid used is molten salt which is heated from 500 to over 1,000 degrees Fahrenheit (260 to 540 degrees Celsius), and is then stored in a thermal storage tank. When energy is needed, high-temperature molten salt flows into a steam generator, as water is piped in from the water storage tank, to generate steam. This steam is then used to drive a turbine, which produces electricity.

SolarReserve has partnered with Saudi water and power company International Company for Water and Power Projects (ACWA Power) to build the Redstone plant, which is scheduled to be completed in early 2018. The Kathu Solar Park is being built by a consortium led by GDF SUEZ, comprising the Sishen Iron Ore Company Community Development Trust, Investec Bank, Lereko Metier, and the Public Investment Corporation.

In December 2014, Energy Minister Tina Joemat-Pettersson said that an additional 3,600MW will be announced in the REIPPPP, which will add to the existing 21 renewable projects providing 1,076MW to the grid.

(This article first appeared on MyBroadband)

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Jasper Solar Project

Article from BusinessTech

The 96 megawatt (MW) photovoltaic (PV) Jasper solar power project came online recently, providing enough electricity to power up to 80,000 households. The Jasper project is located in a Northern Cape solar park which includes the 75MW Lesedi solar power project which came online in May 2014.

With over 325,000 PV modules, the Jasper Project will deliver 180,000 megawatt-hours of renewable electricity annually for South African residents. The project also marked Google's first renewable energy investment in Africa after the company provided US\$12 million in funding.

Jasper solar power project

The Jasper solar power project, developed by SolarReserve, was constructed within a year – two months ahead of schedule. The project reached financial close in October 2013 and full construction began on site in December 2013. Full commercial operations were achieved a year later in October 2014. It cost approximately R2.9 billion (\$260 million) and has created in excess of 800 direct construction jobs.

During the 20+ year operating life (the Jasper project has a 20-year power purchase agreement with Eskom) the project will spend in excess of R2 billion on operations and maintenance costs.

For the life of the project 1.6% of revenues will be re-invested in enterprise development (ED) and socio-economic development (SED) of neighbouring communities.

SolarReserve spokesperson Mary Grikas explained that the cost of photovoltaic solar power has come down dramatically in recent times. “It is competitive with new build coal projects, especially when you consider the requirements for proper emissions control technology necessary to get coal projects permitted and financed,” said Grikas. “The competitiveness of solar energy is being proven in many markets around the world including in the US, Chile, Brazil, China, and South Africa.”

Medupi, in comparison with the Jasper project which was completed early, is around 4 years behind schedule. According to Business Day the Medupi project costs also escalated to R105 billion – R35 billion higher than the 2007 estimates.

The following infographic provides an overview of the two power projects.



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Across the Atlantic on an inflatable???

Rob, ZS2ROB

Intrepid adventurers meet Rob Mac Geoghegan ZS2ROB in Port Elizabeth while on route for a record breaking sail across the Atlantic Ocean on their small inflatable Trimaran made in Tomsk, Siberia. These four are members of the Russian White Water Rafting team that has successfully negotiated the steepest flowing rivers in the world

From left to right Evgeniy Tashkin, skipper and boat builder Anatoliy Kulik, Evgeniy Kovaleveskiy, Rob, Yuri Masloboer and foreground pets Royal and Python.



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Load Shedding & Back-up Power Supplies

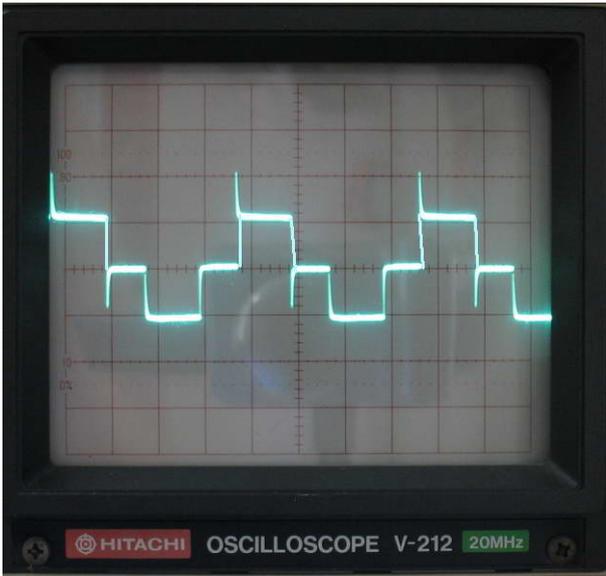
Beavan ZS2RL

The media has made it clear that load shedding is here to stay, and could get worse before it gets better. Consequently the scene resembles a farm-yard of decapitated chickens, with homeowners stocking up on candles, torches, gas bottles, and possibly even offering to swap their mercs for a standby generator.

Firstly, some basics that a self-respecting ham should be familiar with. Fourier theory tells us that any periodic waveform consists of a fundamental sinusoidal frequency plus a mix of harmonics. Zero harmonic content means a pure sine wave; and the greater the amount of harmonics present, the more the waveform deviates from a pure sine wave. For example, a square wave is no more than a pure sine wave of fundamental frequency plus a cocktail of harmonics.

ESKOM produces a pure sine wave (i.e. PSW), and all domestic electrical equipment is designed to operate on a 50 Hz sine wave, having minimal harmonic content. It is not a giant intellectual leap to realise that if something is designed for a 50 Hz supply, then it might not be too happy with a significant voltage at 150 Hz (viz a third harmonic)

There is a lot of confusion in the market place. The first thing most people consider is an inverter fed by a fat battery. The inverters that are commonly available produce what is called Modified Sine Wave (MSW), and the output waveform of a Waeco 150 W inverter looks like this –



It vaguely resembles a sine wave, but there are obviously plenty harmonics present. Use with care! There are inverters available that will generate a pure sine wave, but a 1 kW job will cost about R2k. Now for the battery: 1 kW at 12 V = 83 A, say 100 amps input – the DC leads will resemble a car's starter cables, and you'll require an impressive battery bank to supply that kind of juice for any length of time. Recharging could also be a hassle.

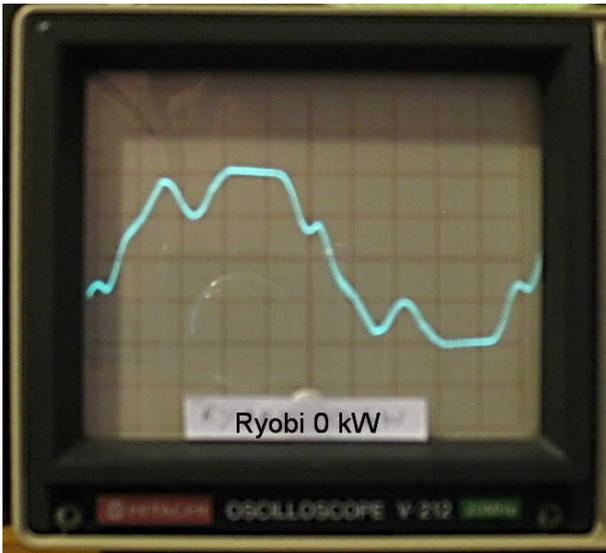
The next obvious choice is a portable generator, but the following needs to be considered

- Power output (anything from 1 kVA to 6 kVA)?
- Purity of output waveform?
- With or without automatic voltage regulation (AVR)?

How big should you go? From personal experience, a 1 kW gene cannot handle the starting surge of my fridge or freezer – it promptly stalls. A 1.6 kW machine takes it all in its stride, with only a slight burp. I would suggest nothing smaller than 1.6 kW. Don't get too enthusiastic either! – big machines slurp fuel, and you could be the recipient of written complaints about noise (unless you allow your neighbour to plug his extension cord into your system).

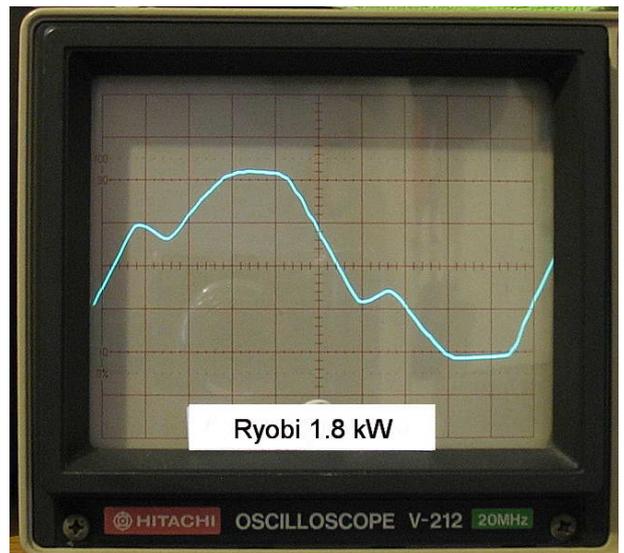
As for purity of waveform: there are some generators out there that produce MSW (stay away from them!), the majority produce a dirty sine wave that ought to be OK for domestic use, and some top end machines that produce a PSW (these often have a multiphase alternator which feeds a rectifier, the DC then feeding a solid-state PSW inverter).

With or without AVR? – this is a no-brainer; a machine with AVR will have a more stable output. However, a gene without an AVR should be able to maintain its output voltage within acceptable limits.



I possess a Ryobi RG2700 2.5 kW generator which has no AVR, and which has given good service for a number of years. Out of curiosity I decided to have a look at its output waveform, which is reproduced hereunder –

At no load it produced 225 V at 50 Hz. As can be seen, the waveform is not much to write home about – it can possibly be rated as “barely acceptable”.



The Ryobi was then loaded with a 1.8 kW kettle. Voltage dropped to 219 V, and the frequency sagged slightly to 49 Hz. Most noticeably, the waveform improved significantly, probably due to the characteristics of whatever voltage regulation circuitry was embedded.

A few words about petrol going stale will not be amiss. The volatile fractions of petrol are the first to evaporate, which in the long run will result in hard starting. Furthermore, the hydrocarbons in petrol react with oxygen, resulting in the precipitation of a sludgy goop and/or varnish – generally not good for carburettors. To summarise the words of wisdom to be found on the internet –

- If the engine is going to be idle for more than two or three weeks, drain the fuel from the carburettor;
- If the engine is going to stand idle for more than two months, then drain all the fuel from the tank and carburettor;
- Do not let the machine stand with a partly filled fuel tank: evaporation of volatiles will take place, and there will be interaction with the oxygen in the tank. Minimise the air space in the tank by keeping the tank full;
- Petrol can be stored for up to a year in a sealed container, filled to the brim (no included air space);
- It would be a good idea to give it a short run at least once per week.

In conclusion, a caution: do not attempt to back-feed your house unless you really know what you are doing.

A NOTE FROM THE EDITOR:

- Remember that in most instances your household power is NOT earth leakage protected when using a generator.
- It is extremely dangerous to wire a 16A plug back to back and feed into the house wiring, as this means that all those plugs on that circuit are also not overload protected. The household earth leakage device is also OUT of circuit for ALL plugs since it is being fed from the downstream side.
- It also becomes possible to inadvertently grab the 16A plug that is LIVE and be shocked by the exposed pins – connectors that SUPPLY power must always be FEMALE for this reason.
- Larger generators (5kVA and more) can supply more current than the rated 16A plug can handle – rather use a larger 32A connector
- Either use multiple extension cords to power the desired appliances directly, or do the right thing and have a proper manual change-over switch and “generator input” plug fitted next to the DB. This can be wired to exclude loads such as the geyser and stove when switched to generator input. It will also ensure that it is NEVER possible to parallel the generator and incoming mains supply 😊. Add an indicator to show when mains supply is alive, or else you will find it difficult to know when to switch back to mains when it has been restored.

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CONGRATULATIONS

BIRTHDAYS – February

- 02 Paul Galpin ZS2PG
Shirley Winter, XYL of Gus ZS2MC
Ginny Pullinger ZS2GIN, XYL of Pat ZS2PJP
- 04 Ivan Newman ZS2ILN
- 06 Mandy La Mude ZS2AV
Neels Kruger, OM of Patsy ZR2PTY
- 07 Chantal Looock, XYL of Yacov ZS2YCL
Joan Bowles ZR2ABA, XYL of Allan ZS2BO
- 09 Joy Leibach, XYL of Fredrick ZR2FM
- 10 Lynne Crothall ZS2MM
- 11 Dirk Ligthelm ZS2D
Ettienne Villiers
- 12 Peter Lunow ZR2PEL
Rosemary Mac Geoghegan ZR2MCR, XYL of
Rob ZS2ROB
- 17 Jeffrey Ferreira ZR2JEF
- 18 Peter Flynn ZS2PF

- 19 Gary Laaks ZS2GRL
- 21 Mathew Allen ZU2MAT
- 26 Henry Danielson ZS2HD
Jacques van der Heide ZR2JH
Charmaine Van Rooyen, XYL of Otto ZS2Q
- 28 Basie Du Plessis ZR2BA
Karel Stone ZS2KKK
- 29 Wolf Gerstle ZS2WG

ANNIVERSARIES – February

- 01 Merrick & Madeleine Flugel
Nico & Lizette Oelofse ZS4N
- 15 Christopher & Vanessa Scarr ZS2AAW & ZS2VS

If you are a member and your birthday or anniversary details are omitted or incorrect, please notify Clive ZS2RT (or any committee member) to update our records.

RAE classes starting soon

Donovan has confirmed he will still be presenting the Radio Amateur Examination classes in preparation for the exam in May. He has been relieved of the Practical examination responsibility, which will be fulfilled by other SARL-approved PEARS members.

MAY 2015 Amateur Radio Examination

EXAM DATE: 21st MAY 2015

Classes start: Wednesday, 25th February at 19:00 -20:30

Classes will continue until and including 13 May, the week before the exam.

The Venue: ITALIAN SPORTING CLUB, HAROLD ROAD, CHARLO.

LAST DATE FOR REGISTRATION: 9 APRIL 2015. This must be done online by yourself. The examination will take place at **19:00 on 21 May 2015** at the Alexander Road High School.

Cost of course: R500 per person, payable at the first class. **Please note** this does not include the R450 examination fee payable to the South African Radio League as part of your exam registration.

Course Material: All course material will be provided on CD to each candidate.

IMPORTANT INSTRUCTION:

Please refrain from jumping the gun and reading everything available online. The majority of the material available is out dated and may scare you off. I will teach you everything you need to know.

Please understand, I make a commitment to you for ten weeks of my life, and I expect that you return the favour by attending classes. There is no time to go over everything a second time and the course is pretty Intense, schedule wise.

I look forward to seeing all of you there.

Please e-mail me confirmation that you are still going to attend so that I can prepare enough CD's etc.

73

Donovan, ZS2DL

Zs2dl@hamradio.co.za

0828524885

Sunday Bulletins

PEARS provides a local reading of the SARL national bulletins in Afrikaans at 08h15 and English at 08h30. The club bulletins are transmitted immediately after the SARL English bulletin, i.e. at about 08:45 on 7098 kHz as well as the 2m linked network that provides coverage from Butterworth to George and up to the Free State and their environs.

A recorded rebroadcast of the society bulletin takes place on the Eastern Cape Linked Repeater Network every Monday night at 20h00, courtesy of Ewalt, ZS2EHB.

Bulletin Roster

1 February	Clive	ZS2RT
8 February	Johannes	ZS2JO
15 February	Tony	ZR2TX
22 February	Theunis	ZS2EC
1 March	Chris	ZS2AAW
8 March	Nick	ZS2NT
15 March	Clive	ZS2RT

The bulletin readers are always looking for something to announce. If you have something to contribute, please forward it to the next reader.



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Your Society's Committee for 2014-2015

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Secretary, Functions organising	Patsy Kruger ZS2PTY		patsy[at]peham.co.za
Treasurer	Clive Fife ZS2RT	041 367 3203	clive[at]peham.co.za
Public Relations	Johannes Geldenhuys ZS2JO	082 320 3032	Johannes[at]s4.co.za
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Meetings catering	Bill Hodges ZS2ABZ	041 581 2580	zs2abz[at]isat.co.za
QSX Editor	<i>Vacant</i>	-	-

Replace [at] with @ when you want to send an email (this is done to try to prevent spamming).

PEARS' VHF/UHF, Packet & Other Services

Local Repeaters: These repeaters form a separate sub-net in the PE - Uitenhage - Despatch area.

Town VHF 145,050/650	Town UHF 431,050/438,650	Uitenhage 145,075/675	Longmore 145,025/625	IRLP available on this subnet
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Cape Linked System Repeaters:

These form the PEARS long-range 2-metre repeater system, in conjunction with the Border, Southern Cape and WCRWG systems. See www.zs2pe.co.za/Repeaters/repeaters.htm for more details.

Lady's Slipper 145,100/700	Grahamstown 145,150/750	Cradock 145,050/650	Noupoort (link only) 438,750 / 438,675
Colesberg 431,075/438,675	Kareedouw 145,125/725	Plett 145,175/775	Brenton 145,075/675

Packet network:

ZS0NTP-2 Packet Node Lady's Slipper 144,800 1200bd 439,850 9600bd 434,800 1200bd APRS	ZS0NTP BBS Lady's Slipper On all node frequencies	ZS0GHT-2 Packet Node Grahamstown 144,800 1200bd 434,800 1200bd 439,850 9600bd (to LS)	ZS0CDK-2 Digi Cradock 144,800 1200bd
	ZS0KDJ APRS Digi Mount Road 434,800 1200bd	ZS0KDB APRS Digi Longmore 434,800 1200bd	ZS2ABZ-4 WMR918 WX Station 144,625 1200bd

VHF Beacon: 50,007 MHz FSK – ZS2X, 25 Watts into 2 element Yagi beaming north.

Banking details (for subs & donations): NEDBANK SAVINGS ACCOUNT No. 221 252 7594, Bank code 121217, A/C name: Port Elizabeth Amateur Radio Society. **Please use call signs as a reference.**

Disclaimer.

Note: The Editor, nor any PEARS club member, shall not be held liable for errors and/or omissions in any article and/or drawing contained in this newsletter. Furthermore, any view expressed is not necessarily that of the Editor, any committee member or other members of the Club. The material contained in this newsletter is not meant to defame, purge, humiliate and/or hurt someone's person or feelings.

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AMATEUR RADIO is the hobby for RADIO EXPERIMENTERS
and those who like to fiddle with ELECTRONICS,
COMMUNICATIONS or COMPUTERS