

# 3<sup>RD</sup> SOLAR-DIESEL HYBRID & BATTERY SYSTEMS CONFERENCE

*Keynote Speaker  
& Workshop Presenter:*



**GLEN MORRIS**

Principal of SolarQuip  
Former Vice President of the  
Smart Energy Council  
CTO of the Smart Energy Lab

## WHAT YOU WILL GAIN FROM ATTENDING THIS CONFERENCE:

- Accelerate your understanding of the basic principles of stand-alone power system design
- Hear how solar-diesel hybrid installations can increase storage capacity and energy efficiency
- Learn about Australian Standard AS/NZS 4509.1 & 2 with emphasis on key areas of sizing and safety
- Discuss how renewable energy can help reduce costs and improve profitability and success
- Gain an understanding of the key differences between solar and battery products, and how to size and configure depending on needs
- Check out some of the latest battery and inverter models plus battery system selection including voltage and chemistry
- Network with experienced experts and your industry peers
- No sales pitches - non commercial presentations
- Hear local industry case studies from experienced installers and engineers covering small to large installations

## WHO SHOULD ATTEND:

- Electrical and mechanical engineers
- Electricians
- Electrical and mechanical technicians and installers
- Battery application engineers
- Project, process and applications engineers
- Technical directors and engineering managers
- Energy storage and solar professionals
- Marketing, BDM and product managers
- Smart grid engineers
- Renewable energy and power electrical systems engineers
- Manufacturing engineers

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**22<sup>nd</sup> & 23<sup>rd</sup>  
November 2018**

**Novotel Melbourne  
on Collins  
MELBOURNE, AUSTRALIA**

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Book on or before 25<sup>th</sup> OCTOBER 2018  
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**FOR MORE INFORMATION**

**Phone: 1300 138 522**

**conferences@idc-online.com**

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## CONFERENCE PROGRAM – DAY ONE – 22<sup>nd</sup> November 2018

8.00am	<b>Registration</b>	
8.20am	<b>Opening Address</b>	
8.30am Session 1	<b>Building the Autonomous Grid</b> <b>Glen Morris</b> – Principal of SolarQuip Combining multiple energy generation and storage systems, alongside smart load management makes for a resilient and extendable electricity network decoupled from traditional utility grids. Australian Standards and smart energy systems have made embedded control of generation and storage assets easier and safer. Glen Morris will draw on his experience in building small solar/diesel/battery microgrids and the associated standards and topology that underpin good network design, product selection and feature sets.	
9.30am Session 2	<b>Tipperary Station Case Study – Solar-Diesel Generator System in the Northern Territory</b> <b>Thomas Wearne</b> – Solar PV Design Engineer, Country Solar NT In 2016, the iconic Tipperary Station contacted Country Solar NT to discuss options for reducing their annual fuel bill of several hundred thousand dollars. Their largest generator (390 kVA) implied that the site's power requirements vastly exceeded the capability of off-the-shelf battery inverters and quick calculations suggested the investment would be several million dollars which did not suit the station's cautious investment approach. As an alternative, the station opted for 100 kW of solar to be directly integrated with their bank of generators. This provided a greater technical challenge than a solar/diesel/battery solution but had a significantly better business case. Thomas will discuss the project and lessons learnt.	
	<b>Morning Tea – 10.15am</b>	
10.45am Session 3	<b>The Role of Cloud Forecasting Systems in Hybrid/PV Installations</b> <b>Chris Pye</b> – Division Manager – Renewable Energy, ComAp Fuel optimisation, PV penetration and network stability targets can be competing interests when dealing with Diesel/PV hybrid microgrids. Typical solutions rely on Battery Energy Storage Systems (BESS) to bridge this gap, which are direct and easily understood, but can be cost prohibitive in larger applications. Accurate prediction of clouding effect and subsequent preventative call up of additional capacity can be a viable alternative solution. With smarter control of generator assets, both capital expenditure and complexity of the overall installation is reduced. Opportunities that may have typically presented as of marginal benefit to the customer/end user can subsequently become a viable commercial interest.	
11.30am Session 4	<b>Zinc-Bromine Modules (ZBM)s Batteries for Off-Grid Solar Application</b> <b>Mike Giulianini</b> – Chief Technical Officer, Redflow Zinc-Bromine Modules (ZBM)s have been designed to target applications where the availability of power is either demanded to renewables and diesel generators (off-grid) or it is unreliable (fringe of grid). Thanks to the 100% Depth of Discharge (DoD), no need to recharge, extended temperature range, no calendar life and extreme adaptability of performance, the ZBM)s are ideal candidates for all applications requiring a robust and reliable energy storage system. Here Mike will explain some of the benefits of ZBM)s batteries including some local case studies and applications of this new technology.	
	<b>Lunch – 12.15pm</b>	

1.15pm Session 5	<b>Hybrid Storage Systems – Battery Sizing, System Architecture and Applications/ Case studies</b> <b>Ganesh Ganeshkumar</b> – Microgrid, BESS & Stand-Alone Power Systems Specialist, Ecoul This presentation will discuss lead-acid battery UltraBattery, which is a class of battery invented by CSIRO. The battery is a hybrid device that contains a carbon ultracapacitor inside the cell. The chemical combination of a lead-acid battery and an ultracapacitor can achieve higher-rate partial-state-of-charge (PSOC) operation with extended longevity and high efficiency. Ganesh will cover the technology behind these batteries, battery sizing, system architecture, safety concerns and two case studies involving a cow milking robot and innovative car stacker.	
2.00pm Session 6	<b>Solar PV, Diesel and Battery Systems – Applications &amp; Case Studies</b> <b>Lachlan Bateman</b> – Managing Director, Clean Technology Partners Pty Ltd This presentation covers a selected range of applications for the integrations of solar PV, diesel generators and batteries for both grid connected and off grid (mini grid) installations. Drawing on project experience designing systems for remote mine-site, remote holiday resort and peak demand management applications. Lachlan will discuss the technical and financial factors contributing to a successful project. A selection of case studies will be presented covering specific challenges and lessons learned.	
	<b>Afternoon Tea – 2.45pm</b>	
3.15pm Session 7	<b>Off-Grid Solar Dairy Farm Case Study – 60KW Solar/Wind/Diesel Hybrid System</b> <b>Jason Svarc</b> – Hybrid & Off-Grid Specialist, Transfer Solar Dairy farms use a large amount of energy to operate due to the high power requirements of the vacuum pumps, compressors and milk vat refrigeration systems, as well as irrigation in summer. To add to the difficulties over a third of the energy used is early morning well before the sun is up. With this in mind powering a dairy farm using a solar off-grid battery system posed many challenges. This presentation will delve into the specifics of this local Victorian project and offer a review of the project two years after the initial installation.	
4.00pm Session 8	<b>When is a Micro Grid Appropriate?</b> <b>Craig Hunter</b> – Australian Manager, Selectronic Selecting when a Micro grid is appropriate can be very difficult unless all objectives and technical hurdles are understood. The term micro grid is used widely and depending on who uses it, it can mean a totally different thing and lead to a different overall solution. What is a micro grid? Who is using them? Do they already exist? Have they always been here? Is "micro grid" just a buzzword to categorise multiple different system approaches that use battery storage or is this an all new solution emerging. Let's look at what a micro grid is and maybe you can decide when one is appropriate.	
	<b>Closing – 4.45pm</b>	



### NETWORKING SESSION – 5.00pm to 6.00pm

An hour dedicated for all attendees to meet and socialise with experts and industry peers at the Solar-Diesel Hybrid & Battery Systems Conference Cocktail Hour.



8.30am

Session  
1WORK  
SHOP**FULL DAY WORKSHOP****(including morning tea, lunch and afternoon tea)****Designing Stand-Alone Power Systems****Glen Morris** – Principal of SolarQuip  
Former Vice President of the Smart Energy Council  
CTO of the Smart Energy Lab

Attend this one day workshop to accelerate your understanding of the basic principles of stand-alone power system design. The workshop will focus on the Australian Standard AS/NZS 4509.1 & 2 with emphasis on key areas of sizing and safety.

Topics covered will include: understanding the opportunities of demand side reduction and smart energy management; battery system selection including voltage and chemistry; sub-system efficiency considerations for storage, conversion and distribution; PV system sizing to meet load energy requirement, generation losses and environmental derating factors; battery sizing for days of autonomy, balance of backup resilience and choice of secondary generation priorities.

At the completion of this workshop, participants will have the necessary design knowledge to configure and size a stand-alone power system to meet an installation's energy needs. The workshop will be highly interactive and be led by the participants' skills requirements.

**WORKSHOP  
PRESENTER****GLEN MORRIS**

Glen Morris has more than 20 years experience in the renewable sector and has personally lived off the electricity grid for most of that time!

Glen is passionate about the benefits of clean energy, teaching widely on renewable energy across Australia, China and New Zealand. Glen sits on Standards Australia's EL-042 committee, which writes the industry standards for the renewable energy sector. As the former Vice President of the Smart Energy Council, Glen has helped develop industry training and certification in Australia. Glen has recently embarked on a new project, the SmartEnergyLab which provides testing and field evaluation for products in the energy storage, renewable energy generation and smart energy management fields.

**Closing – 4.30pm****ABOUT THE CONFERENCE**

Renewable energy is not common place or part of a mass market in Australia yet, but its time is coming. We are looking forward to a new era of clean energy where we can start to cut our carbon emissions by introducing solar-diesel hybrid and battery systems into our industrial plants and settings.

Solar-diesel hybrid and battery installations reduce diesel power generation reliance and improve the reliability of power systems. During the day the systems collect as much solar power as possible and when the sun goes down; the diesel power generation kicks in to take over the night shift. It's a beautiful relationship and prices for solar and batteries are quickly dropping making these systems more attractive. The benefits of installing solar-diesel hybrid plants are numerous; one installation can reduce carbon dioxide emissions by thousands of tonnes a year which is an example of renewables providing substantial and reliable results for Australian industries.

This conference will have a technical focus, covering key design, implementation, and operational considerations for solar/diesel hybrid and battery systems including installation and maintenance. It will explore the differences between battery storage and inverter products, and how to design appropriate systems according to different installation and customer requirements. Also covered will be the hurdles encountered when introducing solar to an existing diesel power system, retrofitting, and the importance of maintaining consistent electricity.

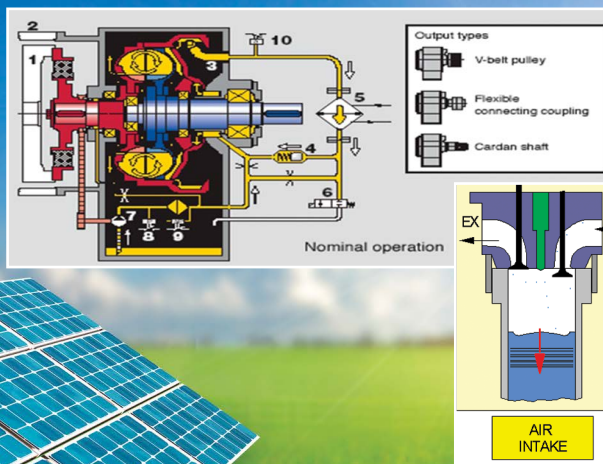
This event has been developed to build and accelerate the knowledge of industry employees and business owners on best practice when it comes to the design, installation and maintenance of renewable hybrid systems. The main goal of this conference is to help businesses take advantage of cleaner energy through improving the quality of power generation systems using innovative solar-diesel hybrid and battery installations.

All conference papers are reviewed and selected for their high quality and technical value by our panel of specialists experienced in the theory and practice of hybrid systems.

**Sponsorship Opportunities**

Representing your business at the Solar-Diesel Hybrid & Battery Systems Conference in 2018 will provide you the opportunity to reach key decision makers from a multitude of industries.

For more information on sponsorship and exhibition opportunities please contact Sarah Montgomery via email: [conferences@idc-online.com](mailto:conferences@idc-online.com)



## REGISTRATION FORM:

### 3<sup>RD</sup> SOLAR-DIESEL HYBRID & BATTERY SYSTEMS CONFERENCE

22<sup>ND</sup> & 23<sup>RD</sup> November 2018, Novotel Melbourne on Collins, Melbourne

Simply complete this registration form online or return by email

#### 1. DELEGATE DETAILS

Contact: \_\_\_\_\_ Company Name: \_\_\_\_\_

Company Address: \_\_\_\_\_

Suburb: \_\_\_\_\_ State: \_\_\_\_\_ Post Code: \_\_\_\_\_ Phone: \_\_\_\_\_

Admin/Accounts Payable Email: \_\_\_\_\_

ATTENDEES:	1	Mr/Ms:	Job Title:
		Email:	
	2	Mr/Ms:	Job Title:
		Email:	
	3	Mr/Ms:	Job Title:
		Email:	

#### 2. HOW DID YOU HEAR ABOUT THIS EVENT?

- ☐ Received an email from IDC
 ☐ Received a brochure in the mail
 ☐ Searched online (Google, Yahoo etc)
- ☐ Recommended by a friend/colleague
 ☐ Magazine advertisement/insert (please specify which magazine below)
- ☐ Other (please specify) \_\_\_\_\_

#### 3. REGISTRATION & PAYMENT DETAILS

Prices shown are inclusive of GST

#### 3<sup>RD</sup> SOLAR-DIESEL HYBRID & BATTERY SYSTEMS CONFERENCE – 22<sup>ND</sup> & 23<sup>RD</sup> November 2018

- ☐ **OPTION 1: Early Bird Discount 10% OFF**  
 – Book before 25<sup>th</sup> October (**SAVE \$179.50**)
 \$1615.50 x \_\_\_\_\_ delegates = \$ \_\_\_\_\_
- ☐ **OPTION 2: Standard Rate (NO Early Bird Discount)**  
 – Book after 25<sup>th</sup> October
 \$1795.00 x \_\_\_\_\_ delegates = \$ \_\_\_\_\_
- ☐ **OPTION 3: 3 for 2 Offer AND Early Bird 10% OFF**  
 – Book before 25<sup>th</sup> October (**SAVE \$2154**)
 3 delegates: 2 x \$1615.50 = \$3231.00 = \$ \_\_\_\_\_
- ☐ **OPTION 4: 3 for 2 Offer AND Standard Rate (NO Early Bird)**  
 – Book after 25<sup>th</sup> October (**SAVE \$1795**)
 3 delegates: 2 x \$1795 = \$3590 = \$ \_\_\_\_\_

**PLEASE NOTE: Full payment is required prior to the commencement of the conference.** TOTAL DUE = \$ \_\_\_\_\_

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#### EARLY BIRD OFFER:

10% off the conference fee  
for registrations received  
by 25<sup>th</sup> October 2018  
– SAVE \$179.50

**AND  
/OR**

#### 3 FOR 2 OFFER:

Register 3 delegates  
and only pay for 2  
– SAVE UP TO \$1795

#### GENERAL INFORMATION

##### Confirmation Details

A confirmation email and invoice will be sent to delegates within 3 days of receiving the registration.

##### Cancellation Policy

A fee of 20% cancellation will apply for cancellations received 7 – 14 days prior to the start date of the conference. Cancellations received less than 7 days prior to the start date of the conference are not refundable, however substitutes are welcome.

##### Venue

NOVOTEL MELBOURNE ON COLLINS  
270 Collins Street,  
Melbourne, VIC, 3000  
AUSTRALIA

Phone: +61 (03) 96675800

##### Accommodation

The conference venue has accommodation available. Contact directly on (03) 96675800 and mention the conference when booking and receive the best room rate available.

##### Food and Beverages

Lunch plus morning and afternoon refreshments are included.

##### Unable to Attend

If you are unable to attend the full conference program, contact us for details to attend individual sessions or to purchase the Conference Resource Kit.

##### Enquiries

1300 138 522 or [conferences@idc-online.com](mailto:conferences@idc-online.com)

#### REGISTRATIONS



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##### 3. On our Web Site:

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