

Name : Max Enfield

Personal Details: Date of Birth: 15th March 1945
Nationality: British, with permanent Australian residency
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Languages and Proficiency: English – native tongue

Professional Qualifications: Bachelor of Science (Mathematics) *University of NSW*

Industry Qualifications: Australian Clean Energy Council - full accreditation:
- Design and Installation of Remote Area Power Supply Systems.
- Design and Supervision of Grid-connected Photovoltaic Systems

Professional Affiliations: International Solar Energy Society - Professional Member
Institution of Engineers Australia - Affiliate Member
Australian Computer Society - Member

Industry Affiliations: Australian Solar Council - Member
Australian Clean Energy Council – Member Accredited Installer
Reference Group (since Feb 2017)
Solar Energy Industries Association Inc. –
National Committee Member (since Aug 2018);
Chairman, Qld. Chapter (since Aug 2018)

Countries Worked: Australia, Pakistan, Fiji

Summary of Skills: Practicing renewable energy technologist, experienced in site and load assessment, specification, design, project management, installation supervision and ongoing customer support for remote area and renewable energy power supply installations.
Have special interest in micro-hydro, although most experience has been with PV systems.
Installations have included single dwellings, multiple dwellings, resorts, aboriginal communities and outstations, water pumping and community facilities.

Professional Experience:

- 2012 - 2018 **AC-Coupled Stand-Alone Power Supplies**
Designed, managed and either installed or supervised the installation of 9 AC-coupled residential stand-alone power supplies across Qld. This number comprises 8 new systems and one upgrade and is in addition to the three AC-coupled projects mentioned elsewhere in this CV.
- All the systems include roof mounted photovoltaic arrays of between 2kW and 8kW.
- 1990 - 2018 **DC-Coupled Stand-Alone Power Supplies**
Designed, managed and either installed or supervised the installation and/or upgrade of stand-alone power supplies for private residences throughout Far North Qld and Norfolk Island numbering in the hundreds.
- Of these, excluding upgrades and projects mentioned elsewhere in this CV, 65 systems have been identified with PV arrays at least 0.5kW, or with an equivalent micro-hydro or wind power component. 60 systems had a PV array of between 0.5kW and 5kW, while 14 systems had a micro-hydro generator and 5 had one or more wind turbines.
- 39 of the systems had diesel or petrol generator backup, while 27 had only renewable inputs. Of those with a backup generator, 3 used a parallel configuration, 18 used the auto-switched configuration, 3 used a manual switched configuration and 15 used a series configuration.
- 2008 - 2018 **PV Grid Feed Systems**
Designed and supervised the installation of 79 rooftop or ground mount grid feed photovoltaic systems for private residences & small commercial site throughout Far North Qld. with a total installed capacity of 247kW. 17 are upgrades, the remainder are complete new systems. PV arrays range in size from 1k to 13.2kW.
- 1990 - 2018 **various pumping sites – Designer & Project Manager,**
PV Water Pumping, For Horticulturalists, Hobby Farmers, Pool Pumping And Domestic Users
Designed, managed and either installed or supervised the installation of numerous small solar powered water pumping installations, with pumped heads to 50m and flows up to 20,000 litres/day. Projects include a small system for the nursery on Phillip Island, within the Norfolk Island National Park.

- 2017 – 2018 **Norfolk Island, South Pacific. – Designer & Project Manager,**
PV/Diesel Hybrid Micro-grid Power Supply.
 Designed, managed and supervised the installation of an AC-coupled mini-grid for a private residence. The system included an 11.8kW roof mounted photovoltaic array.
- 2012 - 2018 **Yourka , Nth. Qld. – Designer & Project Manager,**
PV Diesel/Battery Hybrid Power Supply, Yourka Reserve, Bush Heritage Australia
 Designed, managed and supervised installation of diesel battery hybrid power supply. Includes a 3.2kW roof mounted photovoltaic array installed in 2012 and a 5.4kW AC-coupled ground mount array installed in 2018.
- 2017 **Aurukun, Far Nth. Qld. – Designer & Project Manager,**
PV/Diesel Hybrid Micro-grid Power Supply
 Designed, managed and supervised the installation of an AC-coupled micro-grid at the Blue lagoon Ranger Base for APN Cape York. The system included a 9.2kW roof mounted photovoltaic array & diesel generator backup.
- 2017 **Norfolk Island, South Pacific - Designer & Project Manager,**
Remote Area Power Supply for Norfolk Island National Park
 Designed, managed and supervised the installation of a power supply for the Phillip Island Parks Hut as part of the recovery program for the critically endangered Norfolk Island Green Parrot. The system includes a 3.9kW DC-coupled ground mounted PV array and petrol generator backup.
- 1996 - 2016 **Diesel/Battery Hybrid Power Supplies**
 Designed, managed and either installed or supervised the installation of 12 diesel/battery hybrid power systems at private residences within Far North Qld. All the systems included ground or roof mounted DC-coupled photovoltaic arrays of between 1k and 2.6kW and interactively coupled diesel generators. Additionally two of the installations included wind power as well as PV and another included wind and micro-hydro power as well as PV.
- 2014 **Ipswich. Qld. – Designer & Project Manager,**
Grid Support System, Veterinary Surgery
 Designed, managed and supervised the installation of a grid support power supply, to ensure continuity of power for refrigeration and other essential equipment in the event of grid failure.
- 2013 **Goodna, Brisbane, Qld – Designer & Installation Manager,**
PV/Hybrid Mini-grid Power Supply, Goodna Technology Park, LC Engineering Pty Ltd.
 Designed and supervised installation of an AC micro-grid as a demonstration project, including a 2.8kW roof mounted photovoltaic array.
- 2012 **Kalpowar, Nth. Qld. – Project Manager,**
Remote Area Power Supply Kalpowar Aboriginal Community, Bushlight Program
 Responsible for tender preparation, procurement and on-site supervision of a new solar power system as part of the Bushlight Program. This included the installation of an 8.1kW ground mount PV array and electrical fit-out of associated dwellings and community facilities.

- 2010 **Coen, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Moojeeba Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation management of an upgrade to this facility. The upgrade included installation of a 2.7kW ground mount PV array and electrical fit-out of associated dwellings and community facilities.
- 2009 **Herberton, Nth. Qld. – Designer & Project Manager,**
Grid Support PV System, Private Residence
Designed, managed and supervised the installation of a grid support power supply, including a 1.1kW roof mounted photovoltaic array
- 2009 **Albany Island, Nth. Qld. – Designer & Project Manager,**
PV/Diesel Hybrid Mini-grid Power Supply at Albany Island Fishing Resort, IWTS Investments Pty. Ltd.
Designed, managed and supervised the installation of an AC-coupled micro-grid to service a 14 bed resort and associated facilities. The rated output is 29kW, including a 7.3kW ground mounted photovoltaic array.
- 2008 - 2010 **Malanda, Nth. Qld. – Micro-Hydro Consultant,**
PV/Micro-Hydro Power Supply, Private Residences
Responsible for the assessment, specification, design and integration of the micro-hydro component of a stand-alone power supply. The hydro generation component included two turbines delivering 1.8kW to two separate dwellings, associated controls, a 90m penstock and over 500m of transmission line
- 2008 **Pakistan. – Technical Consultant,**
Off Grid Rural Electrification Program, AccessGlobal Pakistan (Pvt) Ltd.
Working from Islamabad, wrote the technical proposal for the provision of up to 2,500 small solar home systems to be installed in Southern Balochistan.
- 2007 **Coen, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Silver Plains Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation management of a 9.4kW stand-alone community photovoltaic power supply and electrical fit-out of associated dwellings and community facilities.
- 2007 **Coen, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Puntimu Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation management of a 5.7kW stand-alone photovoltaic power supply and electrical fit-out of associated dwellings and community facilities.
- 2007 **Taveuni, Fiji - Designer & Technical Consultant,**
Pool Pumping, Nakia Resort & Dive
Provided design and technical support for a solar powered pool pumping system at the resort.

- 2006 **Kowanyama, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Scrubby Bore Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation management of a 5.4kW stand-alone photovoltaic power supply and electrical fit-out of associated dwellings and community facilities.
- 2006 **Kowanyama, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Fish Hole Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation management of a 2.7kW stand-alone photovoltaic power supply and electrical fit-out of associated dwellings and community facilities.
- 2005 **Mornington Island, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Lametha Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation management of a 4.2kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.
- 2005 **Mornington Island, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Gubbangurru Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation management of a 4.4kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.
- 2005 **Mornington Island, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Gunbah Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation management of a 2.9kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.
- 2004 **Mornington Island, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Birri Williams Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation supervision of a 2.9kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.
- 2004 **Mornington Island, Nth. Qld. – Project Manager,**
Remote Area Power Supply at Gunun Woonun Aboriginal Outstation, Bushlight Program
Responsible for tender preparation, procurement and installation supervision of a 2.9kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.

- 2003 **Herberton, Nth. Qld. – Designer & Technical Consultant,**
Pool Pumping & Chlorination, Private Community
Provided design and technical support for a solar powered pumping and chlorination system for a 150m³ swimming pool, including a 1.3kW roof mounted photovoltaic array
- 2002 **Cairns, Nth. Qld. – Designer & Project Manager,**
Grid Support PV System, “Sunbird House”, Edge Hill, Cairns
Designed and supervised the installation of a grid support power supply, including a 3.8kW roof mounted photovoltaic array for an award winning home showcasing environmentally friendly technologies
- 1994 **Mossman, Nth. Qld. – Designer & Project Manager,**
Micro-Hydro System, Qld. National Parks & Wildlife Service
Designed and installed a micro-hydro system for the amenities block at the visitor area of the Mossman Gorge National Park. The power generated was used principally to run the mini sewerage treatment plant at the site.
- 1992 **Japoonvale, Nth. Qld. – Micro-Hydro Consultant,**
PV/Micro-Hydro Power Supply, Private Residences
Responsible for the assessment, specification and design a micro-hydro system that supplied power to two dwellings. Each dwelling also had a small PV system to supplement the micro-hydro input. The hydro generator included twin coupled Banki-crossflow turbines, associated controls and 300m of transmission line.

updated
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