

Stand Alone Power Systems: Design only

Duration
3 days

Domestic Fees
$2,739.00 (+$250 e-textbook or hardcopy)
All fees are GST inclusive
This course is not eligible for Sudylink

International Fees
$2,739.00 (+$250 e-textbook or hardcopy)
All fees are GST inclusive
This course is not eligible for Sudylink

nziht.co.nz

nziht | WITT

Stand Alone Power Systems: Design only

Stand Alone Power Systems (SAPS) can be a viable option for many applications, from a remote monitoring station to an off-grid household right up to village electrification.

For the reliable, long-term supply of power to off-grid users, electrical workers involved with these systems fully understand the operating theory and safety requirements in order to design safe and effective systems, as well as adequately manage customer expectations.

This course builds upon the basic knowledge provided in Grid-Connected Photovoltaic Systems: Design Only and expands upon that in Grid-Connected Battery Systems: Design Only.

Course structure

The delivery of this course is designed for busy professionals who do not have the time to attend lengthy face-to-face courses. The online component is fully flexible to allow students to complete the theory in their own time. (Estimated study times below)

- Pre-course learning: Online self-directed learning at your own pace, withtutor support (100 hours)
- Three day course at the WITT Campus, New Plymouth (24 hrs)
- Post-course assignment (16 hrs)

Please contact us for 2027 course dates: admin@nziht.co.nz

At the end of the course, participants will have the knowledge to:

- Assess a site's suitability for a Stand Alone Power System and calculate an estimated energy yield at each month of the year for the client.
- Assess a client's energy consumption, create a load vs renewable energy resource profile and estimate renewable energy % vs fuel generator energy %
- Determine best battery technology for a given scenario based on a variety of factors
- Determine best mix of energy resources for a given site
- Select appropriate components and assess their suitability
- Design a Stand-Alone Power System for installation by a licenced electrician
- Commission and Fault-Find Stand-Alone Power Systems in conjunction with a licenced electrician
- Optimise Stand Alone Power Systems.

Topics include:

- Commonly used off-grid battery chemistries and their characteristics
- Battery charging, PWM regulators and MPPT charge controllers
- Battery Inverters, Inverter/Chargers, hardware differences between hybrid inverters and specifically designed off-grid capable inverters.
- AC and DC coupled battery inverter architectures
- Cable sizing, fault level calculations and selection of protective devices.
- Balance of System components
- Site suitablility and Load assessment
- System Design and Yield calculations
- Backup generators
- Integration of muliple energy sources.
- Wind and Micro-Hydro generation (introductory info only)
- Applicable Regulations, Standards – in particular AS/NZS5033, AS/NZS4509.1 and AS/NZS4509.2, various battery standards including a lookat the new AS/NZS5139 (not yet cited in Regs) and examples of linescompany connection requirements in New Zealand
- Installation, testing, commissioning and fault-finding of Stand-Alone Power Systems
- Hazards associated with batteries and Stand-Alone Power Systems
- Energy consumption assessment, detailed load profiling andoptimisation strategies.
- Multiple scenarios where Stand-Alone Power

NZIHT reserves the rights to withdraw or adjust programmes, alter start date or fee schedules, and make any other changes as it may deem desirable or necessary, without prior notice. All programmes are subject to a sufficient number of enrolments and completion of all approval and accreditation requirements.

NZIHT and this programme are part of Te Pūkenga – New Zealand Institute of Skills and Technology

Systems can be of use:
-Remote Monitoring and Control
-Baches and Tiny Houses
-Off-grid homes
-Off-grid workshops and industry
-Remote village electrification

Entry Requirements

Applicants must meet the following entry criteria:

- **Professional or Educational Background:**

  Hold a qualification in the electrical/electrical engineering field, or have equivalent industry experience in electrical, renewable energy, or related technical environment (eg. an Electrical Engineer, Electrical Technician, or Technical Solar Salesperson with an electrical background).
- **Electrical Knowledge:**

  Possess a strong understanding of electrical theory.
- **Exclusions:**

  This course is not suitable for beginners or those with little to no electrical knowledge. Applicants are expected to have a foundational understanding of electrical systems – therefore this course is not suitable for those with little to no prior knowledge in this area.

N.B. Completion of Grid-Connected PV Systems: Design Only is a pre-requisite for this course. Completion of Grid-Connected Battery Systems: Design Only is highly recommended.

(Note: live testing etc will only be carried out by a licenced electrician and participants will interpret those results)

A WITT certificate of completion is issued on successful completion of the Design only course. It is not a NZQA registered course.

Cancellation policy:

Participant withdrawals must be notified in writing. Any withdrawals after 15 working days of receiving the online login details will be charged the full course fee, including text book fee. If a participant requests to be transferred to a practical course on a different date, or fails to complete the required online modules and WITT is required to transfer the participant to a different date, the participant will be charged an additional fee of $300. Non-attendance of participants on the course date will be charged the full course fee. These cancellation fees are non-transferrable.

Additional information

(Minimum numbers apply before a course is confirmed)
*Applicants must supply a verified copy of either their NZ Passport, NZ Birth Certificate or Residency Visa

NZIHT reserves the rights to withdraw or adjust programmes, alter start date or fee schedules, and make any other changes as it may deem desirable or necessary, without prior notice. All programmes are subject to a sufficient number of enrolments and completion of all approval and accreditation requirements.
NZIHT and this programme are part of Te Pūkenga – New Zealand Institute of Skills and Technology