
Intro to DIY Off Grid Systems

Release 2.0

Demand Energy Equality

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INTRODUCTION

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2.2 Using this guide

2.3 Disclaimer

BASIC CONCEPTS

3.1 Power consumption

3.2 Voltage

3.3 Current

3.4 Resistance

3.5 Series and parallel circuits

WHAT IS AN OFF GRID SYSTEM

4.1 Why 12 Volt

GENERATION

5.1 Solar panels

5.2 Wind turbines

5.3 Hydro-generation

5.4 Cycle powered generation

STORAGE

6.1 Batteries

CHARGE CONTROL

7.1 PWM and MPPT

7.2 Choosing the right charge controller

DISCHARGE CONTROL

OTHER SYSTEM LEVEL EQUIPMENT

9.1 Fuses

9.2 Wire

9.3 DC voltage conversion: Step Up and Step Down

9.4 Connectors

USAGE LEVEL EQUIPMENT

10.1 Plugs and sockets

10.2 Switches

10.3 Lights

10.4 USB

APPLIANCES

11.1 Using Household Appliances

11.2 Inverters

CONSTRUCTING A SIMPLE 12V OFF-GRID CIRCUIT

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ADDITIONAL SYSTEM MODELLING

13.1 Balancing seasonal generation with battery storage

13.2 Time of day consumption modelling

13.3 Where to compromise

CONSTRUCTING THE WHOLE SYSTEM

RESOURCES

15.1 Useful Information for Installations

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16.1 Equipment List

16.2 Using a Multimeter