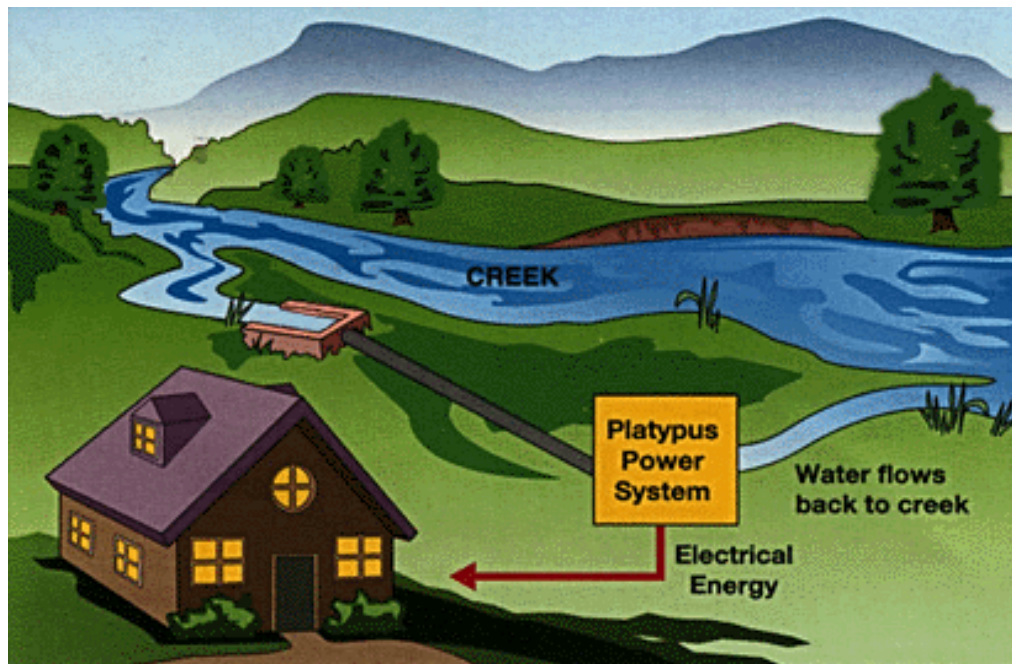


# Hydro Power



## Micro Hydro Systems work?

Hydro power is an old established method of energy production.

Water is captured via a filter / intake structure and passes downhill in a pipeline to the turbine. The water exits the pipe under pressure through a nozzle and strikes a water wheel (runner). The force of which spins the runner which is direct coupled to an electricity generating permanent magnet alternator or enhanced performance induction generator. The electricity is then electronically regulated and transmitted via cable for use.

## How much energy can be produced?

This depends on the water pressure and volume available. Pressure is measured in terms of "head". Head is the **vertical** distance, in meters, from the water take-off point to the turbine. The volume is measured as "flow" in litres per second. Once accurate head and flow figures are available potential energy can be calculated. Accurate site evaluations and system design are just some of the services available to you.

## How much of the creek flow should be used?

Generally speaking less than 50% of the flow at the driest time of year. This will allow water for the fish, other creatures and the environment.

## What are some of the things I should look for in a Hydro site?

The greatest fall over the shortest route. It is easier and cheaper to transmit electricity than to pipe water. A micro hydro can be situated up to 2km from the facility it is supplying. However when systems are designed this distance is kept as short as possible.

A permanent water supply is needed and a turbine site that is above high water. Also look at the terrain, to choose the best route and method of running the pipe.

The higher the flow that is available the less head is needed to produce a given amount of power, and vice versa. See performance curves for figures.

## Does Micro Hydro offer value for money?

Micro hydro is the most cost-effective way of generating electricity where there is a reliable supply of water. Maintenance is minimal and there are no fuel costs. Electricity is generated 24 hours a day, 7 days a week.

The average hydro electric generator costs only one-tenth as much as a solar system of equivalent output.

Each site is different so civil works and pipe costs vary tremendously. For turbine prices see 240 V AC and Battery Charging pages. The return on your investment is determined by how much your electricity is costing at present, including fuel, fuel transport costs, maintenance, reliability, capital investment in equipment and running costs.

Our technically advanced equipment offers **quality** and **performance** with **simplicity** and **reliability**.

## What type of system should I use?

Quite often your system options are determined by your site. Site evaluation is the first step. Another factor is electrical load. AC systems have the ability to supply much larger loads than DC units. There is usually a larger investment in the pipeline for AC systems but this is offset by the fact that no inverter or batteries are required.

### **How much power do we need?**

This is an individual question. A load analysis will determine this. The "typical" Australia household requires between 250 to 350 watts continuous from a DC system or 1500 watt from a direct 240 volt AC system.

This will run all appliances and lights in an average household, including a fridge and washing machine. Stoves and hot water are usually powered by gas, wood or solar hot water systems, unless more electricity is available.

### **What are some of the advantages of this equipment?**

In brief the technology developed in the last 20 years allows simplification and size reduction along with a corresponding cost reduction. See product information for more comprehensive information on turbine and governor features, including  
use of a single resistive dump load for three and single phase  
use of enhanced performance induction generators  
proven electronic regulators.

#### **Other areas of progress include**

reliable filter designs  
availability of large diameter long lasting poly pipe eg. 125 mm poly in 70 m rolls. Hydro equipment is designed to run continuously for years before maintenance is required. Attention to detail during installation of the pipeline, turbine and axillary equipment are key area to ensure reliability along with proper water filtering.

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