Stream Engine Micro Hydro

The **Stream Engine** employs a brushless, permanent magnet alternator which is adjustable, enabling the user to match turbine performance with available water supply or turbine output to daily electrical load demand. The Stream Engine is capable of continuous outputs of over 1 kW (more than 24 kWh/day - depending on loads, timing of usage and available battery storage), while requiring virtually no maintenance. The Stream Engine micro hydro systems employs high efficiency, precision-cast parts, and non-corrosive alloys for long life and durability.

The Stream Engine is designed for use in battery-based power systems, with electricity generated at a steady rate, and stored in batteries for use at higher rates than is generated. During times of low demand, power is stored. An inverter is used when residential AC power is desired.

Power Output and Site Assessment

To determine the power available at a site, head and flow measurements must be taken. Flow is the rate at which water moves, measured in litres per second (l/s). This can be measured by channelling the all water into a container of a known volume, noting the time it takes to do so. A weir can be used to measure flows in larger streams. Head can be measured by using a transit, by siting along a level, or by using a pressure gauge at the end of the pipeline. An altimeter can also be used, so long as it is accurate, and sufficiently sensitive and the readings are taken within a reasonably short time frame under the same atmospheric conditions (ie no weather change). It is important to keep in mind that output can only be accurately determined if head and flow measurements are made correctly, so care should be taken during this process.

Water from a stream is channelled into a pipeline to gain enough head (the vertical distance the water falls) to power the system. The Stream engine operates at heads of about 2m and upward. The water passes through a narrow nozzle causing it to accelerate before striking the bronze turgo wheel. The turgo wheel then turns the generator shaft.

Up to 4 universal nozzles can be installed on one Machine. Nozzles are adaptable in sizing from 3mm to 25mm. Stream Engine is available for 12, 24, or 48 volts.

"Balance of System" & Other Components

Rainbow Power Company offers system design services. Also available are "balance of system" components including batteries, inverters, and charge controllers. Batteries are an integral part of the self-sufficient energy system. Lead-acid, deep-cycle batteries are usually used in conjunction with solar, small wind, micro hydro and hybrid (incorporating multiple energy sources) systems. Deep-cycle batteries are designed to withstand repeated charge and discharge cycles typical in renewable energy systems.

Inverters

Batteries can supply only DC (direct current) whilst most appliances use high voltage AC (alternating current). In certain cases where DC lights and appliances are available they may be preferable to their 240V AC equivalents. Refrigeration is one example. Inverters are used to convert DC into AC so that stored battery power may be used, as needed, by appliances and other loads. Contact Rainbow Power Company for our wide selection of inverters and batteries.

Charge Controllers

A charge controller is not included in the basic Stream Engine. When the batteries are charged to capacity, the power is diverted to a secondary, "diversion" load, such as hot water heaters. The diversion of the generated power is accomplished by using a charge controller. Many types are available to perform this function.

Available from:

RAINBOW POWER COMPANY LTD

Manufacture, Sales and Installation of Appropriate Energy Systems

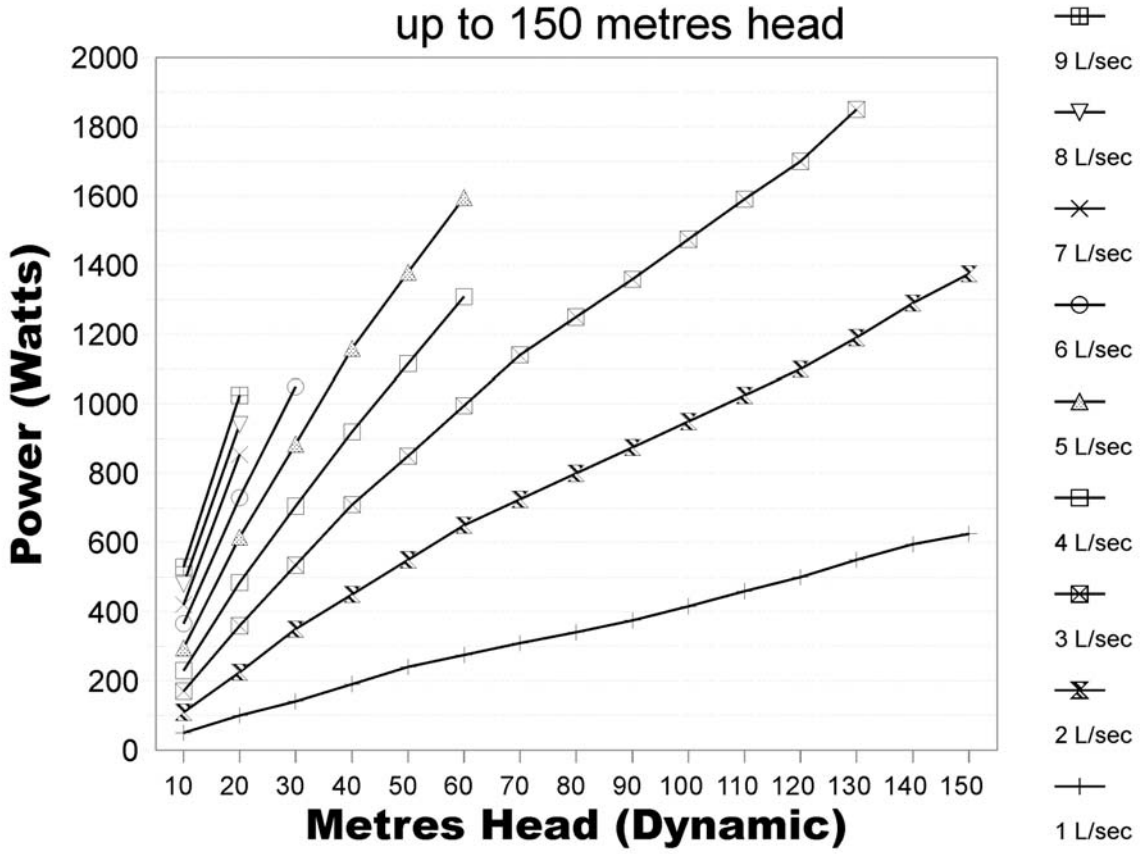
1 Alternative Way, Nimbin, NSW 2480, AUSTRALIA Phone: (02) 6689 1430 Fax: (02) 6689 1109

International Callers: Phone: (61) 26689 1088 - Fax: (61) 26689 1109

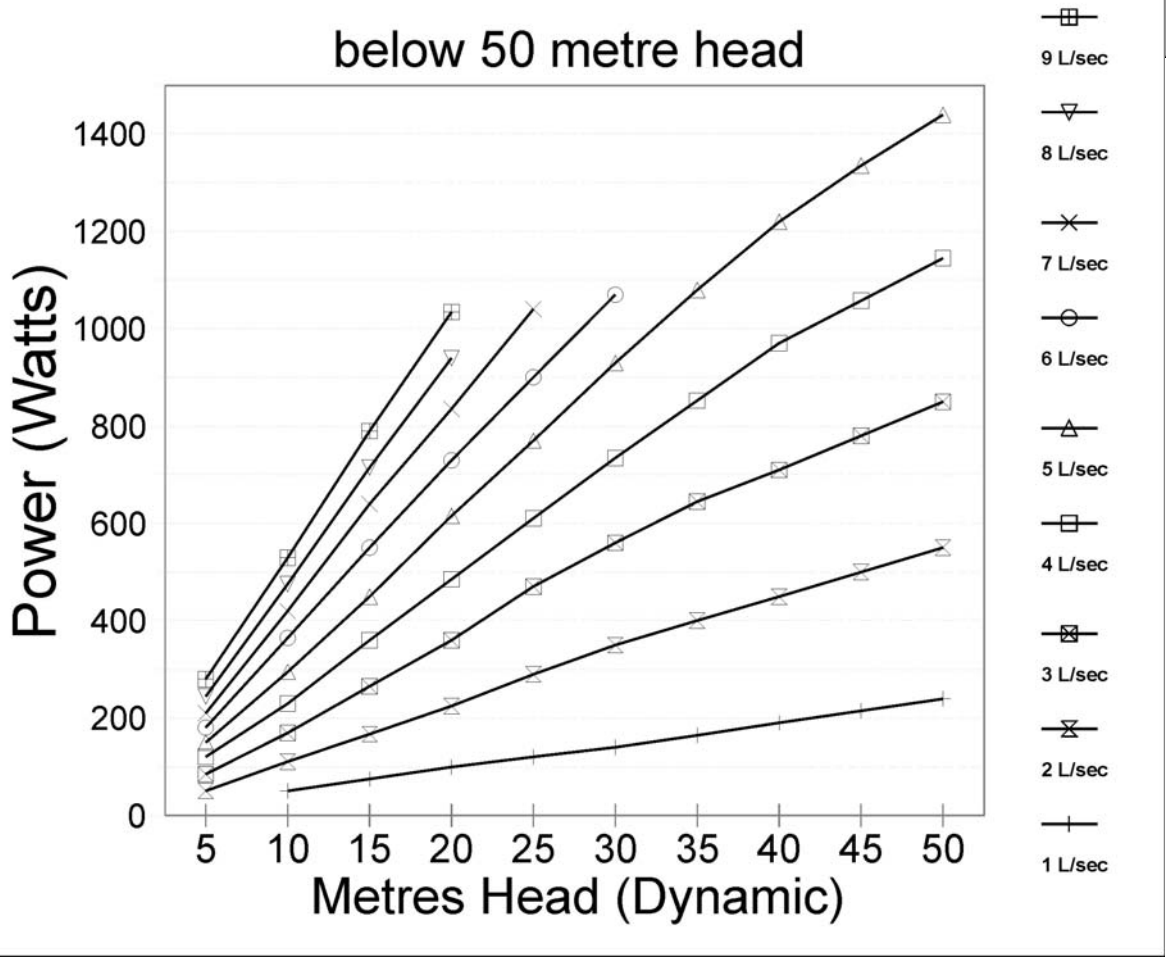
Email: sales@rpc.com.au - Web Site: www.rpc.com.au

Stream Engine Output

up to 150 metres head



below 50 metre head



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