Microhydro Power Solutions

HOW IT WORKS:

The Harris system is an efficient, durable battery charging Pelton turbine. It is especially well suited to produce usable power from springs and creeks that are too small to sustain the same level of useful power from a conventional AC generating system. Because D.C. power can be stored, the system is collecting power 24 hours a day, a little at a time, to be used as needed.

Operates efficiently on heads of 20 to 600 feet and on flows of 2 to 250 GPM
Available with site-selected alternator or adjustable permanent magnet alternator

The average American household (not using electricity to produce heat) requires about 12 thousand watt-hours a day, or about 500 watts on a continuous basis. This can be reduced to about 300 watts by just turning the lights off when not needed. There are times, however, when as much as 10,000 watts are needed, such as when a refrigerator or vacuum cleaner is started. Because A.C. systems cannot store energy they must be sized to meet this peak load (requiring up to 40 times as much water as a similarly useful D.C. system). D.C. systems are matched to extract power the way that nature delivers it, slowly and steadily.

Harris Pelton Turbines

The Harris Pelton turbines are suited well to higher head and lower flow situations. Adjustment to variable flows is as easy as switching a valve and dialing in the alternator. Each hydroelectric system is custom-built to match your site specifications.
Head range: 20 to 600 feet • Flow Range: 4 to 250 GPM • Maximum 12 Volt Power: 700 Watts • Maximum 24 Volt Power: 1400 Watts • Maximum 48 Volt Power: 2500 Watts (with additional fan)

OUR HOURS OF OPERATION ARE

Mon-Fri
8:30 - 5:30

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803-802-5522

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803-233-1750

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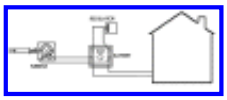
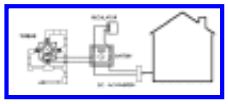
There are two basic system configurations:

Mountain Cabin - 12 volt  Click on the image for a larger view.

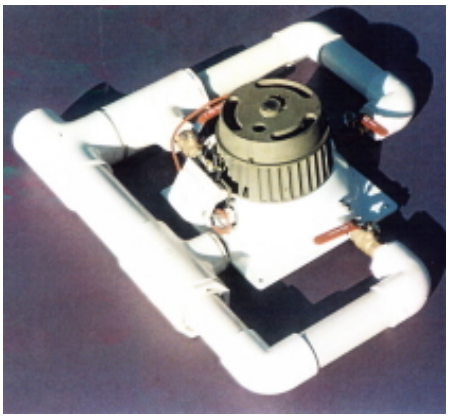
The basic system is suitable where 12-volt power can be used directly. Cabins using 12-volt lights, portable radios, televisions, and recreational vehicle type DC appliances are easily adapted to the basic system.

Conventional House - 110 volt  Click on the image for a larger view.

This configuration is suitable where higher output is needed and 110-volot, 60-cycle AC power is required to operate conventional appliances.

Both configurations are compatible with other DC charging systems of proper voltage, including photovoltaic systems, wind charging systems, and generator operated battery chargers.

A 4 P.M. Generator-equipped turbine.
Multiple nozzle arrangement allows much more water to impact the runner, resulting in greater output at any head, and usable power at a much lower head. All turbines include an output-optimizing circuit allowing maximum efficiency and any flow rate. Multi-nozzle systems include PVC penstock and individual ball valves on each nozzle.



The **Pelton type runner** is lost wax cast of silicon bronze. The wheel is 70 - 90% efficient, depending on nozzle size and head. The bucket shape allows high efficiency for nozzles and provides a flow range of over 100 to 1. The wheel has a hydraulic diameter of just over 4 inches. Each wheel is individually balanced.

How to Determine Output

Turbine output is determined by 4 factors:

1. Head, or vertical drop from source to turbine nozzle:
Head can be measured with a transit or level and a measuring stick of known length in successive steps. Or a quick pipe can be assembled from numerous garden hoses and the pressure can be measured with the hoses full of water. This, too, can be done in successive steps.
0.43 PSI = 1 foot of head
2.3 feet = 1 PSI

2. Flow in gallons per minute passing through nozzle:
A temporary dam can be built to measure flow. By timing the filling of a container of known volume the flow can be determined. Care should be taken to not dry up creeks, but to leave enough water to maintain natural environmental balances.

3. Diameter, length and condition of feeder pipe:
Generally, single nozzle systems with under 2000 feet of feeder pipe require a 2 inch pipe. A two nozzle system needs a 3 inch pipe and 4 nozzle systems require a 4 inch pipe. This will keep pipe losses under 25%.

4. Turbine efficiency:
Alternator systems are between 30% and 70% efficient.

P.M. Alternator Output in Watts

	Feet of Net Head						
Gallons/Minute	**25**	**50**	**75**	**100**	**200**	**300**	**600**
3	-	-	-	-	40	80	200
6	-	-	30	45	120	180	350
10	-	40	70	95	200	300	600
15	25	75	110	150	300	450	900
20	40	100	160	240	480	600	1200
30	60	150	240	340	650	940	1600
50	130	265	400	560	1100	1500	2000
100	230	500	700	975	1500	2000	-
200	-	580	900	1300	-	-	-

High Output Alternator Output in Watts

	Feet of Net Head						
Gallons/Minute	**25**	**50**	**75**	**100**	**200**	**300**	**600**
3	-	-	-	-	30	70	150
6	-	-	25	35	100	150	300
10	-	35	60	80	180	275	550
15	20	60	95	130	260	400	800

20	30	80	130	200	400	550	1100
30	50	125	210	290	580	850	1500
50	115	230	350	500	950	1400	-
100	200	425	625	850	1500	-	-
200	-	520	850	1300	-	-	-

Maximum Wattage at various voltages:

12 volt	24 volt	48 volt
750	1500	2500

Maximum Efficient Flow at Various Heads

Figures in gallons/min.

	Feet of Net Head						
# of nozzles	**25**	**50**	**75**	**100**	**200**	**300**	**600**
1	17	25	30	35	50	60	85
2	35	50	60	70	100	120	170
3	52	75	90	105	150	-	-
4	70	100	120	140	200	-	-

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Please provide as much information as possible.

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E-mail

Tel

FAX

☐ Please contact me as soon as possible regarding this matter.

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******NOTICE******

Please do not contact us in regards to exporting. We do not export panels**

Due to massive credit card fraud we do not ship to Africa.

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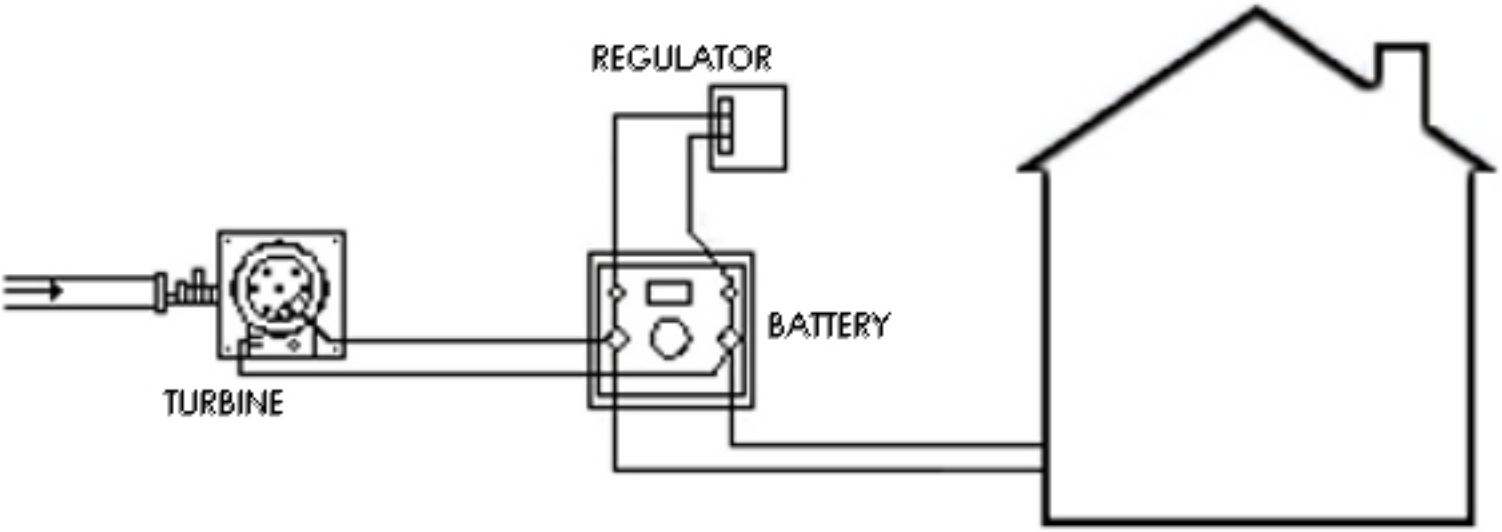
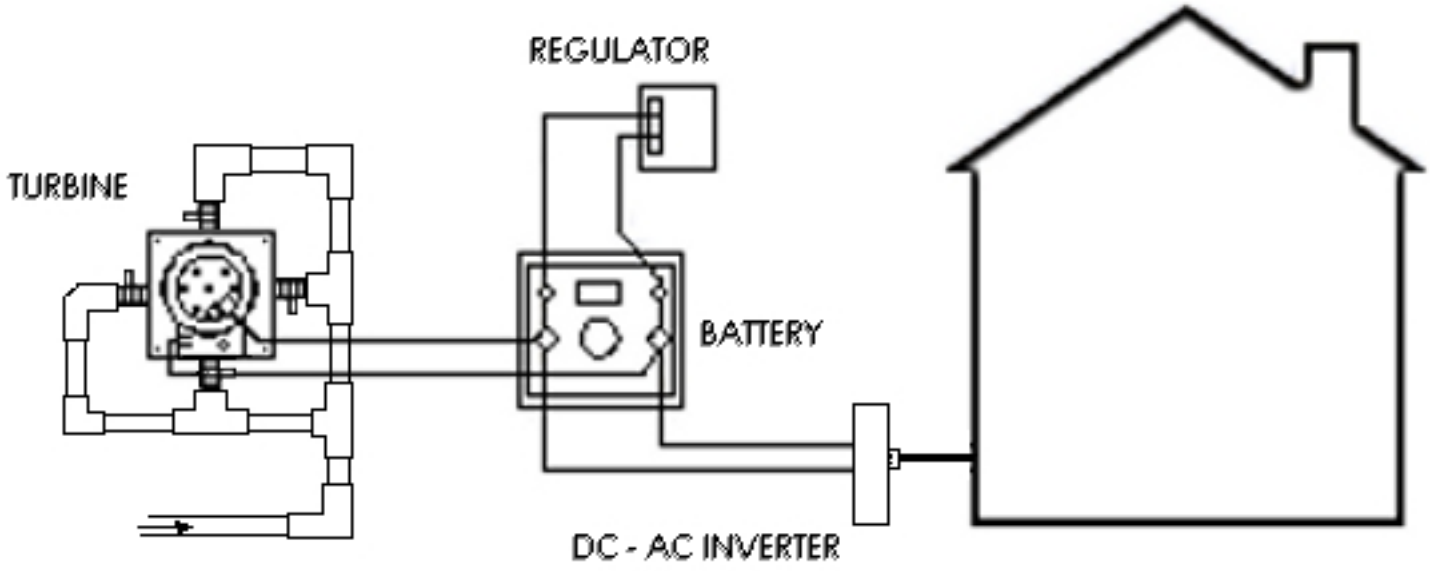

REGULATOR
BATTERY
TURBINE


REGULATOR
TURBINE
BATTERY
DC - AC INVERTER