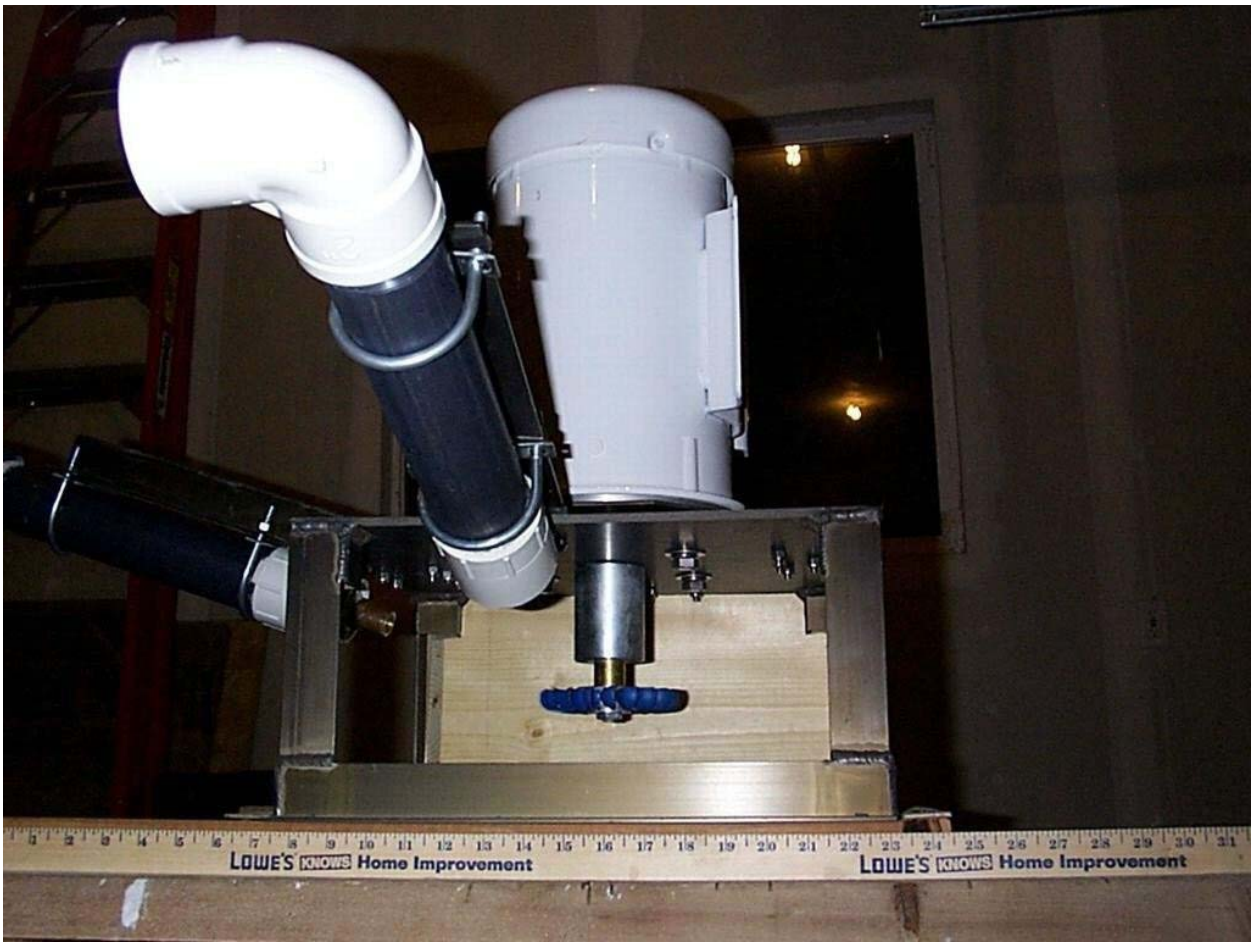
Micro-Hydroelectric Power System



An example of a micro-hydro system for sites with head's from 20' to 600' and with modest water flow. In this example the micro-hydro system will produce up to 1,500 watts of low voltage DC power (12, 24, and 48 volt models available). Each turbine should be customized to site specific characteristics. You have to determine what those site specifics are and then a system can be designed.

Power Calculation Example

For our example system we have the following site specifics to work with: 85' gross head; normally from 100 to 200+ gpm flow is available; 1,300'pipe length measured from top of pipe (intake) to the turbine itself; 750' wire run turbine to batteries. Actual water flow thru the turbine will vary from, about, 50 gpm to 120 gpm depending on the amount of electricity needed and, rarely, on a reduced flow rate in the stream.

Examples of power produced by the above mentioned turbine at various flow rates:

1) 83.2'x 50 gpm / 5.32 = 782 potential watts x.48 (efficiency of this turbine with these site stats) = 375 Watts turbine output (before wire loss).

@ 100 gpm , 4" pipe, net head = 787 (34 psi).

2) 78.7'x 100 gpm / 5.32 = 1,479 potential watts x .45 = 665 Watts output.
@ 50 gpm with 4" pipeline results in net head of 83.2' (36 psi) because of a friction power loss of 1.8' of head thru 1,300' of 4" schedule 40 pvc pipe.

3) 74.5 x 120 gpm / 5.32 = 1,680 potential watts x. 43 722 Watts output
@ 120 gpm, 4" pipe, net head = 74.5' (32 psi).

To highlight the amount of power the turbine will produce at this site do the math. Take the 665 watt figure and subtract 20% for wire loss.
4) 665 x.80 = 532 actual watts charging into battery bank. 532 w / 24 volts = 22.16 amps x 24 hours = 532 amp hrs per day. Or state it as 12,768 watt hours per day, or 388 kilowatt hrs per month.