

Electricity Use v. HDI
(Lawrence Livermore National Laboratory UCRL - ID- 140773)

picoHydro Context

International Development Design Summit 2008

- 75% of people in rural Guatemala and 55% of people in rural Honduras live without access to electricity
- The total hydropower potential in Guatemala and Honduras is around 10,000 MW
- MicroHydro power systems require trained technicians for installation and maintenance
- picoHydro systems (less than 5kW capacity) are more appropriate for isolated rural areas

- In developing economies, increasing access to electricity tends to increase human development
- A 400 W picoHydro system could provide enough power for lighting, radio/TV, cell phone battery charging, and agricultural equipment



Rural mountain village in Guatemala



Hydro installation in Honduras
(V. Grau)

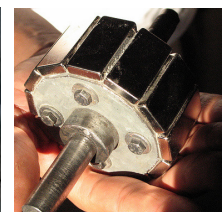
- The Appropriate Infrastructure Development Group (AIDG) is developing a picoHydro system for use in rural Guatemala that uses
 1. an impulse turbine built from PVC piping
 2. a Toyota pickup alternator converted into a generator (which runs at a more suitable rotational speed)

- The most expensive and difficult-to-build part of the picoHydro system is the generator
- The generator requires a laminated steel core to which strong magnets are attached
- Cutting out laminates for the generator core by hand takes one person three days

AIDG's picoHydro System



Impulse Turbine



Generator Core

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