

MICRO



HYDROPOWER IN-CONDUIT

EXPLAINED

Stewardship
Community
Education

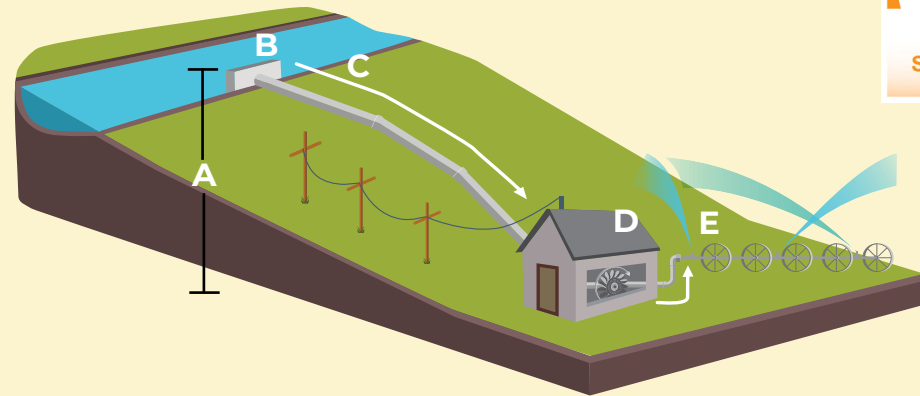


Community
Solutions, Inc.

In-conduit hydropower is a method of using existing water-conveyance structures, such as irrigation canals or pressurized pipelines that deliver water to municipalities, industry, or agricultural water users.

Water supply systems normally reduce pressure through pressure reducing valves. In-conduit hydropower projects commonly use a turbine to perform the function of a pressure reducing valve to reduce pressure. Instead of dissipating this excess energy like a pressure reducing valve, the turbine converts it to usable power.

In-conduit hydro generation not only uses the amount of pressure to determine available energy but also head (elevation change) and flow (the amount of water moving) to determine the amount of energy available.



- A. HEAD** - Total vertical drop from intake to turbine. The available pressure for power production will be the difference between the turbine inlet and outlet.
- B. INTAKE** - Screened to prevent debris from entering pipeline.
- C. PENSTOCK** - Sized for amount of flow.
- D. POWERHOUSE** - Houses turbine, generates power.
- E. TAILRACE** - Returns water to irrigation equipment.

BENEFITS OF MICRO HYDROPOWER

▶ EFFICIENT ENERGY

These systems take advantage of the excess pressure developed as water is piped from higher elevations by replacing the pressure reducing valves with small turbines and electrical generators, while leaving enough pressure behind to be utilized for irrigation.

▶ RELIABLE ENERGY

Hydro produces a continuous supply of electrical energy, unlike solar panels which require the sun's light and wind turbines which require at the very least a strong breeze.

▶ ZERO TO LITTLE IMPACT

Conduit-hydro is considered zero impact as it utilizes water already designated for a primary beneficial use such as irrigation, municipal or domestic use for energy production.