

Micro-Hydro Power Basics

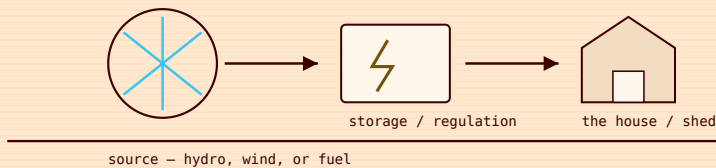
Turn a stream's flow and fall into continuous electricity

DIFFICULTY Hard
TYPE One-off installation, ongoing generation
TIME Weeks of assessment, days to install

 DIFFICULTY Hard	 TIME Assessment + install	 COST Moderate–high	 BEST SEASON Assess flow across seasons first	 FREQUENCY Continuous once running
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01 Head and flow drive output

Micro-hydro output depends on two things: 'head' (the vertical drop available) and flow rate — a small, steep drop with steady flow can outperform a larger, flatter watercourse, and unlike solar, it can generate around the clock.



02 What you'll need

- A permanent, year-round watercourse with usable head and flow
- A turbine sized to your specific head/flow numbers
- Pipe (penstock) to deliver water to the turbine
- A charge controller and battery bank, or grid-interactive inverter
- Relevant water use approvals for your state

03 Method

1. Measure available head (vertical drop) and flow rate across different seasons, not just at one point in time.
2. Check water licensing requirements — extracting or diverting water from a natural watercourse is regulated in every Australian state.
3. Select a turbine type matched to your head/flow profile (different turbines suit high-head/low-flow vs low-head/high-flow sites).
4. Install the intake, penstock pipe, and turbine housing, positioning the turbine as low as practical to maximise head.
5. Connect to a charge controller and battery bank, or a grid-interactive inverter, and commission the system.

04 Troubleshooting

- **Output lower than expected** — recheck actual head and flow measurements; losses in long or narrow penstock pipe reduce effective head.
- **Output drops in dry season** — flow-dependent generation varies seasonally; size the system around reliable low-flow output, not peak flow.
- **Debris blocking the intake** — fit and regularly clean an intake screen.
- **Water licensing issues after installation** — always confirm approvals before construction, not after; retrofitting compliance is far harder than starting compliant.

05 Timing & maintenance

BEST TIME	Assess flow across at least a full year before committing to a system size.
DURATION	A properly sized system generates continuously, day and night, unlike solar.
MAINTENANCE	Regular intake screen cleaning; periodic turbine and pipe inspection.
SIGNS OF SUCCESS	Consistent power output tracking your measured flow, with no unexplained drop-offs.

06 Tips & variations

PAIRS WELL WITH

Backup Generators

COMMON MISTAKES

Sizing the system around peak flow rather than reliable low-flow conditions

Proceeding without checking water use licensing requirements first

PRO TIP

Micro-hydro's constant, 24-hour output makes it a different proposition to solar — even a modest system can outperform a much larger solar array in total daily energy if you have reliable year-round flow.