



Helios PowerWheel™  
**STEELHEAD**  
Micro-Hydro System

**Modular**  
**Scalable**  
**Affordable**



Environmentally friendly micro-hydro systems  
for grid-tied and off-grid applications.

## FEATURES

# Turn Running Water Into Power!

### Convenient

- ✓ Easy to install and maintain.
- ✓ Integrates with solar, wind, and battery.
- ✓ Generates 3X the power of similar renewables with 50% lower LCOE.

### Versatile

- ✓ Optimized for slow, fast, shallow, and sub-zero water.
- ✓ Built to last 30+ years in water.
- ✓ Sizes range from 40 watt to 10 kW and larger.

### Innovative

- ✓ Designed by world-class engineers and micro hydro experts.
- ✓ 100,000 hours of product development, and testing.
- ✓ Four patents in 37 countries with more pending.



## Minimal Depth and Flow Requirements

Requires only 6 inches of water depth and 3 feet per second of water flow to operate.  
Perfect for small, shallow, and slow moving streams and canals.

## MODELS



Our latest Helios PowerWheel STEELHEAD features our patented wing-blade turbine design along with a single ultra-high efficiency permanent magnetic generator (PMG) assembly.



Our Helios PowerWheel STEELHEAD DUO features two ultra-high efficiency permanent magnetic generator (PMG) assemblies for twice the power with a slightly wider footprint.



## DESIGN

### Steelhead and Steelhead DUO

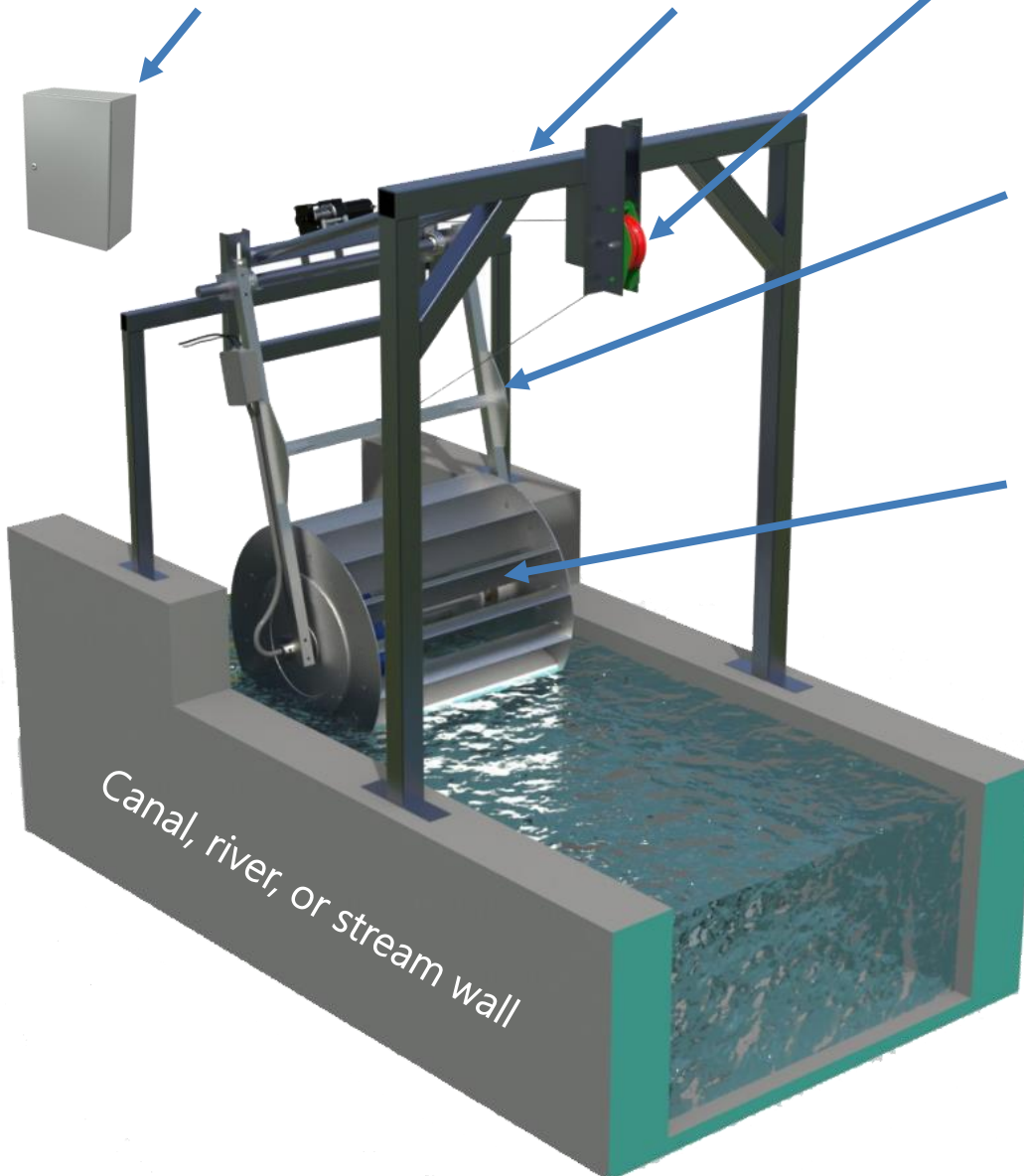
**Power Takeoff System** – Rectifies the AC from the generator, converts it to a smooth DC, then inverts to synchronized AC, which can be tied to your grid or appliances.

**Mounting** – Units can be mounted onto any platform, overhang, or walkway. We can design and build a custom structure. Optional raise/lower winch available.

**Span Structure** – Supports the suspension system, which can be used to move the wheel up and down or out of the water completely.

**Upper and Lower Clamps** – Specially designed clamps allow the suspension system to function properly while supporting the frame and structure.

**Turbine and Generator Assembly** – Wing-blade turbine and high efficiency permanent magnet (PMG) generator



## TECHNOLOGY

### Industry-First Design Features

- ✓ Multiple PMG and wing-blade turbine design configurations optimize power and increase efficiency up to 72% (compared to 35% with other micro hydro).
- ✓ Flow-Through Technology allows debris and marine life to freely pass under the unit without disrupting water flow.

### Remote Control, Monitoring, and Automation

- ✓ Sensors monitor components and transmit real-time data and warnings.
- ✓ Sensors automatically raise unit out of the water if wheel rotation is disrupted or water levels rise.
- ✓ Automatic response saves the unit from potential harm and saves waterway from potential overflow.

### Global Water Monitoring Database

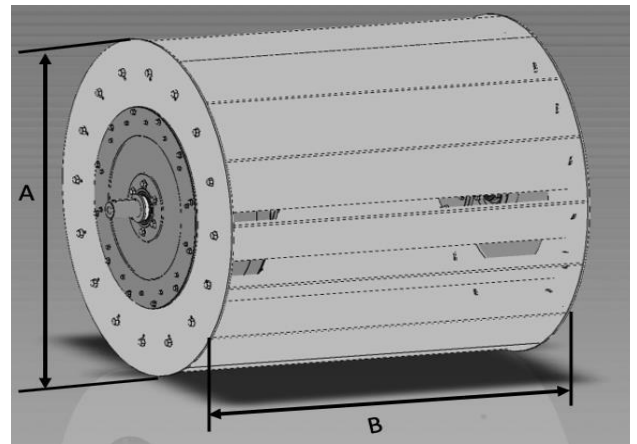
- ✓ Environmental sensors transmit real-time data about water flow conditions including velocity, temp, depth, PH, and turbidity.
- ✓ Compiling this data across multiple regions creates the potential for a global water monitoring database.



# SPECIFICATIONS

## Steelhead and Steelhead DUO

The Helios PowerWheel STEELHEAD and STEELHEAD DUO are housed in the same size shell so the dimensions will be identical. The STEELHEAD contains a single PMG assembly while the STEELHEAD DUO contains two PMG assemblies.



STEELHEAD	
Wheel Dimensions	Diameter (A): 40 inches / 102 cm Width(B): 44 inches / 112 cm
Weight	836 lb / 380 kg
Shell Material	Stainless Steel endplates and Aluminum blades
Generator type	One Permanent Magnet Generator Assembly (3 phase AC)
Lifting system	DC-Powered Winch

STEELHEAD DUO	
Wheel Dimensions	Diameter (A): 40 inches / 102 cm Width(B): 72 inches / 183 cm
Weight	1260 lb / 572 kg
Shell Material	Stainless Steel endplates and Aluminum blades
Generator type	Two Permanent Magnet Generator Assemblies (3 phase AC)
Lifting system	DC-Powered Winch



## ENVIRONMENTALLY FRIENDLY

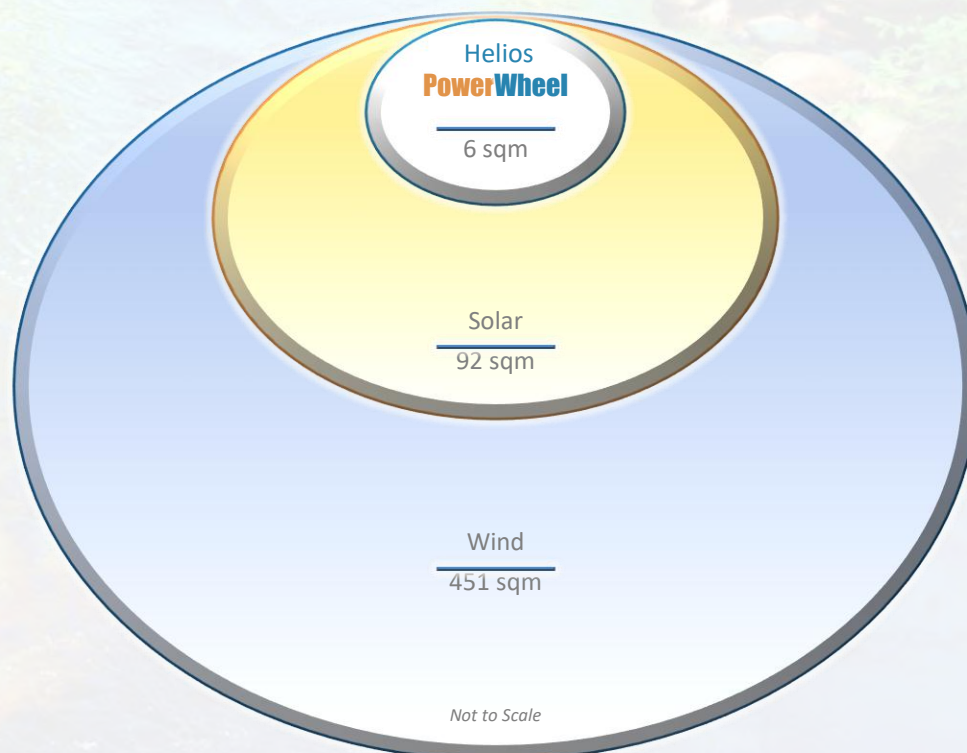
# Maximum Power, Minimum Impact

### Smallest Environmental Footprint

- ✓ Many renewable energy systems require significant physical and economic resources to operate.
- ✓ Offers the smallest environmental footprint of any comparable energy system.
- ✓ Requires only 6 sq. meters to produce 102 kWh in 24 hours.

### Environmental Impact

- ✓ Patented Flow-Through technology allows full aquatic and debris passage.
- ✓ Remote suspension system removes unit from water during storms and floods.
- ✓ No impact on fish, wildlife, or surrounding environment.





## INTEGRATES WITH SOLAR



### Saves Batteries

Improve battery life of solar systems

Integrating micro hydro with PV and batteries can drastically improve reliability and increase battery life by providing a consistent charge that keeps batteries from draining at night and failing prematurely.

### Delivers 24/7 Power

Perfect compliment to solar grids

The stability and reliability of micro-hydro delivers 24/7 baseload power. Providing a perfect complement to any PV and battery microgrid system.

Integrates with any new or existing grid-tied or off grid system.

## USE CASES

The Steelhead expands the use case for micro-hydro and creates additional opportunities that were previously unavailable.

### Alternative to Conventional Power

Utility cooperatives, private companies, and government agencies seeking alternatives to coal, diesel and heavy oil including rural areas and 'last mile' expansion projects for utility grids.



### Non-Powered Dams (NPDs)

Thousands of non-powered dams, dam tailraces, and dam bypass flows around the world can now generate megawatts of surplus power with no disruption of dam infrastructure or water flow.

### Industrial Canals

Chemical plants, water treatment facilities, and other large industrial operations are now able to generate additional power from their own water circulation canals and industrial loops.



### Water Pumps and Irrigation

24/7 remote power is now available for operating water pumps and irrigation systems, capable of supporting millions of acres of land in areas where solar and battery power are not feasible.



We are excited to introduce the new PowerWheel Steelhead micro-hydro system. Give us a call to discuss your renewable energy needs today.

## Call or Text

Anchorage (907) 561-7941

Wasilla (907) 707-1110

Fairbanks (907) 458-8000

[renewablealaska.com](http://renewablealaska.com)

