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OVERALL PROJECT

EU-Programme: Horizon 2020
Activity type: Innovation Action
European grant: 9.9 M €
Duration: 06/2021 – 05/2026

Coordination:

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X: [@Hydro4Uproject](https://twitter.com/Hydro4Uproject)
YouTube: [Hydro4U](https://www.youtube.com/channel/UC...)



*“Increasing the climate resilience
of eco-friendly hydropower designs”*

Reliable and eco-friendly hydraulic steelwork components for Hydroshaft Power Plants

► RESULT IN A NUTSHELL

Muhr's optimized hydraulic steelwork solution ensures maximum ecological protection and operational reliability for Hydroshaft Power Plants. By redesigning the shaft trash rack and flow control gate, we deliver equipment that safeguards river wildlife and guarantees uninterrupted performance - even under extreme cold conditions.

Impact:

- Promotes biodiversity in river ecosystems.
- Enhances trust in Hydroshaft technology as a green energy solution.
- Aids reliable clean energy in challenging environments.

Technology Readiness Level (TRL):

- TRL 9 (proven in operational hydropower plants)

► DEMONSTRATION-SITE



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Country: Kyrgyz Republic
Region: At-Bashy District
River: At-Bashy

Site Parameters:

- Existing diversion weir with around 7 m head and three pressure segments
- Emergency spillway for water diversion during construction in place
- Elevation at 2,400 m

CONTEXT

Hydro4U overall...

... is an EU-funded project with 13 partners from 8 countries with the goal of implementing sustainable small-scale hydropower in Central Asia.
... focusses on the modularity and pre-fabrication of hydropower plants to enable a fast and simple implementation also at remote sites.
... will demonstrate EU quality standards and create entry points in developing markets for the European small-scale hydropower industry.

Erhard Muhr GmbH - Role in Hydro4U

- Erhard Muhr GmbH's core activities in Hydro4U are the economic and ecological optimisation of Hydroshaft Power Plant equipment, the manufacturing, delivery, installation and commissioning of trash rack with integrated cleaning device, flow regulation gates, stop logs.

DETAIL ON RESULT

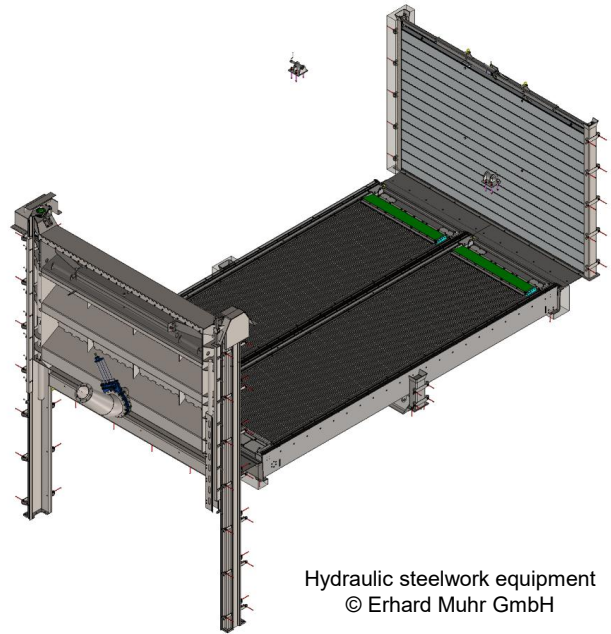
Technical details

Advanced Trash Rack Design:

- Smaller and fewer passages to prevent fish from entering turbines.
- Enhanced wildlife protection aligned with Hydro4U sustainability goals.

NextGeneration Flow Control Gate:

- Integrated downstream fish pass with optimized flow and pressure for safe migration.
- Structural reinforcement and targeted heating zones for reliable operation in harsh climates.



Smart, Sustainable, and Safe Hydraulic Steelworks

MUHR delivers a complete hydraulic steelwork package for small hydropower plants - from design to after-sales service. The solution includes stop logs with a lifting beam, a trash rack with an innovative cleaning system, and a control gate with integrated fish passage.

Engineered for minimal material use and low environmental impact, MUHR's equipment supports sustainable energy generation while protecting river ecosystems. The trash rack safely guides fish away from the hydroshaft and manages natural debris flow, while the control gate ensures safe downstream fish passage - reducing ecological disruption compared to conventional systems.

With a strong focus on operational safety, MUHR's design and maintenance standards help create a secure working environment for plant operators, making it a reliable choice for long-term hydropower planning. The modular predesigned equipment blocks with prepared manufacturing plans allow, after small adjustment to the actual hydroshaft site conditions, for efficient and fast realization schedules.

FURTHER DEVELOPMENT

Evolving legal frameworks and developments in ecological protection, might demand design adjustments.

► BENEFITS FOR INVESTORS & PLANNERS

Eco-Friendly by Design:

- Proven fish protection measures increase social acceptance and regulatory compliance.

YearRound Reliability:

- Climate-resilient design minimizes downtime and maintenance costs.

Future-Proof Investment:

- High quality equipment ensures long-term performance and reduced operational risk.



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