

## KEY PARTNER

Lead Partner / Owner:

**GlobalHydro**

<https://www.global-hydro.eu/en>

## OVERALL PROJECT

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

### Coordination:

Technical University of Munich  
eMail: [coordination@hydro4u.eu](mailto:coordination@hydro4u.eu)

www: <https://hydro4u.eu/>

LinkedIn: [Hydro4U](#)  
X: [@Hydro4Uproject](#)  
YouTube: [Hydro4U](#)

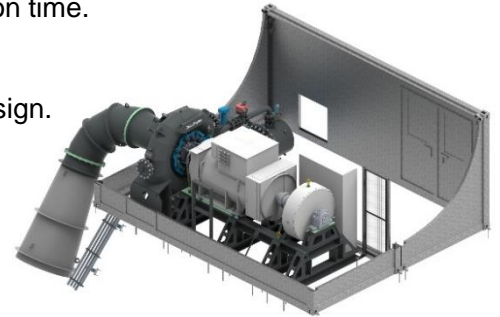


*„Innovative and sustainable concept“*

## Francis Container – The Compact Solution

### ► RESULT IN A NUTSHELL

- Low operation and maintenance costs thanks to a fully automated system.
- Perfect for remote, rural and remote areas (i.e. islands).
- Saves costs and reduces installation time.
- No need for large civil works.
- Low environmental impact.
- Expandable, thanks to modular design.
- Hybrid Energy concept allows for combinations with solar, wind and battery storage.



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### ► DEMONSTRATION-SITE



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**Country:** Uzbekistan  
**Region:** Shakimardan  
**River:** Koxsu River

### Site Parameters:

Partially developed small hydropower project with existing intake structure and steel-penstock. The initial project was abandoned in the 1980's in an unfinished condition state.

## 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.

### Global Hydro Energy GmbH - Role in Hydro4U

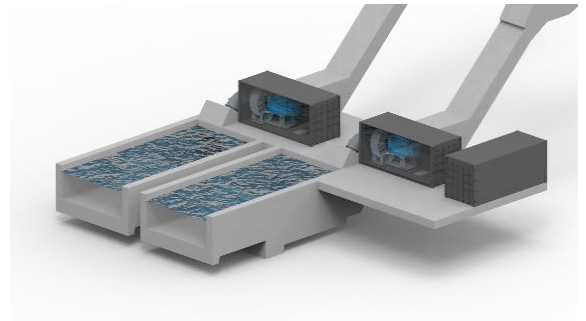
- Industrial Partner
- Provider of different technologies in collaboration with partners
- Leader of the implementation work in Hydro4U
- Analysis of technology optimization potential
- Manufacturing of Francis Container Solution with Turbine in a compact container frame
- Installation and Commissioning of the Equipment

## DETAIL ON RESULT

### Technical aspects

Net Head (m)	10 - 100
Discharge (m <sup>3</sup> /s)	0,25 - 2
Power Output	100kW – 1MW

- Residual and low water power station
- Isolated operation
- Auxiliary power supply
- Micro grids
- Modular expansion possible
- Possible combination with wind power, PV and battery storage



Francis Container demonstration  
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### Value Proposition

The uniqueness of the Francis Container Solution (FCS) lies in the container, which replaces the powerhouse and offers the highest possible degree of pre-assembly. Its compact and optimized design makes the overall project and installation easier, as there is no need for extensive civil works. This results in a shorter lead time and a swift installation process, minimizing the risk of budget overruns. This solution is not only less cost-intensive in terms of civil works and installation, it also offers optimized plant performance, as the integrated design and automated operation also result in lower operating and maintenance costs in the long term.

As the FCS generates sustainable energy without much interference with the existing natural structure, the environmental impact on the surrounding area is lower than typical hydropower plants and the solution has a higher acceptance rate compared to larger projects.

The FCS is the ideal solution for any microgrid near a water source and is therefore ideal to enable rural electrification of remote or rural areas. It can be combined with wind power, solar cells and battery storage. Furthermore, the FCS can be expanded to generate more power output and even combined with water treatment facilities to provide drinking water in remote areas.

### FURTHER DEVELOPMENT

Thanks to successful inhouse R&D Global Hydro Energy has already approved this solution and has implemented it in various projects around the world.

Further potential lays in the development of an advanced solution for broader use cases, modularization or standardization.

## ► REPLICABILITY ASPECTS

Crucial for the feasibility of the Francis Container Solution are:

- access to a water source and hydropower site which fits the technology operation range;
- possibility of a connection to the energy grid;
- governmental and local authorisations to start the project.

A replication model will be developed in Hydro4U to address the identification of further potential small-scale hydropower sites suitable for the Hydro4U technologies in Central Asia. This will be supported by a web-based Decision Support System.