

VISIONARY POWER

— FROM AUSTRIA —



OUR WORLD IS BEAUTIFUL, LET'S KEEP IT THAT WAY.

OUR VISION.

GLOBAL Hydro is the primary contact worldwide for small hydropower technologies and secures a liveable environment for the next generations due to innovative solutions.

OUR MISSION.

We grow together with our customers based on our innovative technological competence and the claim to always seek out the optimal solution.

A POWERFUL VISION.



Bernhard Kodré

Heinz Peter Knaß

Richard Frizberg

THE PASSION FOR HYDROPOWER IS IN OUR DNA.

GLOBAL Hydro is a recognised competent partner for hydropower with innovative products and a successful worldwide operation. Hydropower is the only truly competitive form of renewable energy. Moreover, it significantly contributes to independent, sustainable power supply. The Frizberg family already understood this 115 years ago as they poured their heart and soul into converting hydropower to electric energy. The cross-generational passion of the Frizberg family for hydropower and the experience of GLOBAL Hydro over many decades merged and has become the present-day foundation on which the dynamic company is built. Since the beginning, the passion for hydropower has been the driving force with which GLOBAL Hydro established itself as a globally recognised turbine and technology provider for small and medium hydropower plants. "And hydropower will remain our passion in the future," says Richard Frizberg.

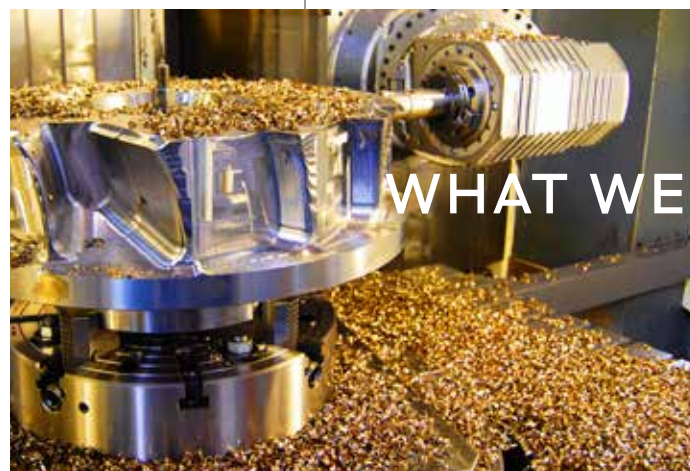


01 POWER



WHO WE ARE

02 FLOW



WHAT WE DO

03 COURAGE



HOW WE DO IT

04 PASSION



WHY WE DO IT



Power

INSPIRING THE WORLD. FROM AUSTRIA.

The Danube is the second longest river in Europe and flows through more countries than any other. GLOBAL Hydro's location along this major river has become an essential part of the company's philosophy and also symbolises its international orientation. As an independent Austrian company, GLOBAL Hydro presently operates as an integrated system supplier. GLOBAL Hydro, as a flexible company with international experience, offers its customers the advantages of a powerful symbiosis based on the good feeling that comes from generating electricity from hydropower, continuous further development and many years of expertise.



OUR MISSION:
WATER TO WIRE.

Flow

WATER TO WIRE.

PELTON TURBINE ROBUST AND DURABLE.

Patented by Lester Pelton, Pelton turbines utilise the kinetic energy of water similar to the classic water wheel and are, therefore, optimally suited for relatively low water volumes from especially high heads. The runner is milled in high quality alloy from a forged mono block in order to withstand extreme strains. Pelton turbines can be easily regulated and ensure the highest level of efficiency in the part load range. Depending on the alignment of the turbine axis, the robust horizontal or vertical turbine variant can be optimally adapted to local eventualities.

Performance range: 100 kW to 25 MW per unit
Nozzles: one to six nozzles (with interior and exterior nozzle adjustment option)



KAPLAN TURBINE WORLD FAMOUS AND EFFICIENT.

The Kaplan turbine rightfully shapes modern energy production even today: The turbine is extremely efficient in various usage areas due to the twofold regulation of the runner blades and guide vanes. It is especially suitable for large water volumes from low drop heights and, therefore, also used in run-of-the-river power stations for larger rivers. GLOBAL Hydro delivers Kaplan turbines in different variants, equipped with 3, 4, 5 or 6 blades, depending on requirements:

Kaplan spiral turbine: preferred usage for higher drop heights, available in steel as a horizontal or vertical variant.

Kaplan turbine with concrete spiral: preferred usage in large-scale run-of-river power stations, concrete intake area, vertical design.

Kaplan pipe turbine: especially versatile usage, various variants, horizontal, vertical and inclined axis design.

Performance range: 100 kW to 15 MW per unit



FRANCIS TURBINE VERSATILE AND FLEXIBLE.

The most commonly used turbine type is available from GLOBAL Hydro as a spiral or shaft turbine. The most popular version – especially due to comparably low production costs as well as minimal maintenance expenditure – is the horizontal spiral turbine with a runner that is directly coupled to the generator shaft. The compact construction of the turbine also reduces the mounting dimensions at the power house and thus the total volume of the construction project. The guide vanes give way as needed in order to avoid damage from foreign objects carried along by the current. Automatic resetting of guide vanes is possible due to the new mechanism, patented by GLOBAL Hydro.

Performance range: 100 kW to 25 MW per unit
Operation: possible usage for drinking water, wastewater or crude oil



FACTS

100 %

- Reproducible
- Made in Austria (core components)
- Certified Quality
- Trustable
- Renewable Energy
- 100kW – 25 MW
- Highest runner quality



TURN-KEY SOLUTIONS.

GLOBAL Hydro HAS DISTINGUISHED ITSELF AS A REAL TURN-KEY SUPPLIER FOR ELECTROMECHANICAL PRODUCTS AND OFFERS AN ELABORATE, INTERNALLY HOMOGENEOUS TOTAL CONCEPT FOR HYDROPOWER STATIONS.

Total turn-key solutions that go far beyond the core competencies of a turbine manufacturer are planned and conceptualised, solutions that are instantly operational after delivery and conscientious training.

INDUSTRY 4.0

At GLOBAL Hydro, the total value creation process is digital, from construction to work preparation and the fully automated manufacturing of core components.

COORDINATION

The customer communicates throughout the entire project phase via a central contact partner who coordinates the entire process and regularly reports current progress to the contractual partner. As a turn-key supplier, we coordinate sensitive interfaces with reliable sub-suppliers and long-term partners in order to significantly reduce project cycles.

COMPOSITION

The scope of service is extensive: In addition to turbines, we also deliver generators, hydraulics, valves, lubrication and cooling systems, low, medium and high voltage switchboards, transformers, emergency generators, steel constructions for hydraulic engineering – i.e. the total electromechanical product range – and

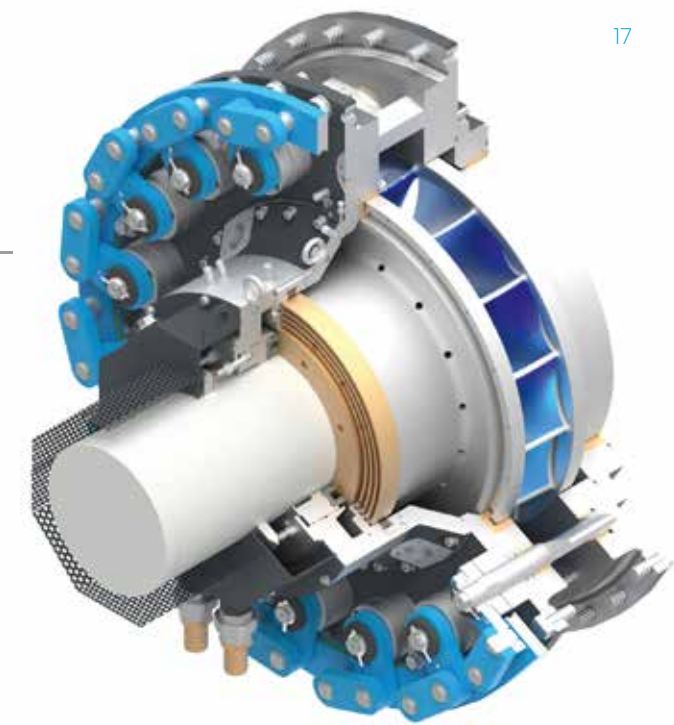


View of a Powerhouse in Indonesia



High Voltage Switchgear

Photorealistic 3D visual of a Francis runner



much more. The exception is construction work, which is most often performed by local construction companies. The result is a coherent and reliable composition as our fully automated turbine and control system HEROS4 manages the total process. Smooth delivery to the site, site management, complete installation and commissioning are rounded off with customised maintenance contracts.

INNOVATION

Challenge and inspire us with ideas that we can flesh out for you! We will gladly transform your courageous visions or applications into concepts and solutions.



Plant house arrangement of a Powerhouse in Chile

THE smarT WAY TO GENERATE POWER.

The highest quality and intelligent standard modules in combination with the greatest possible degree of pre-assembly: smarT, the perfect product for the lower performance range. smarT is an economic turbine concept for outputs up to approx. 1 MW. The development goal was to reduce the total costs of a power station project in order to ensure optimal amortisation even for low feed-in rates. The use of high-quality materials and precise manufacturing ensures a long lifecycle for the turbine as well as high yields. The power station smarT is already fully assembled at the factory and can be easily and quickly set up and commissioned on site. The intelligent software HEROS4 has been integrated to ensure a fully automated system control. Of course, a variety of individual options are available despite standardisation.



HEROS^{4.0}

A VISIONARY OPERATION SYSTEM.

HEROS4 IS A FULLY AUTOMATED TURBINE CONTROL SYSTEM INCLUDING INTEGRATED VISUALISATION AND SCADA SYSTEM.

Operational parameters can be directly configured on site at the power station with our standardised software solution. Thus, the intelligent control system goes far beyond the basic tasks of a conventional control system for power stations. HEROS4 was developed for greatest possible flexibility according to the following principles:

EASY TO OPERATE

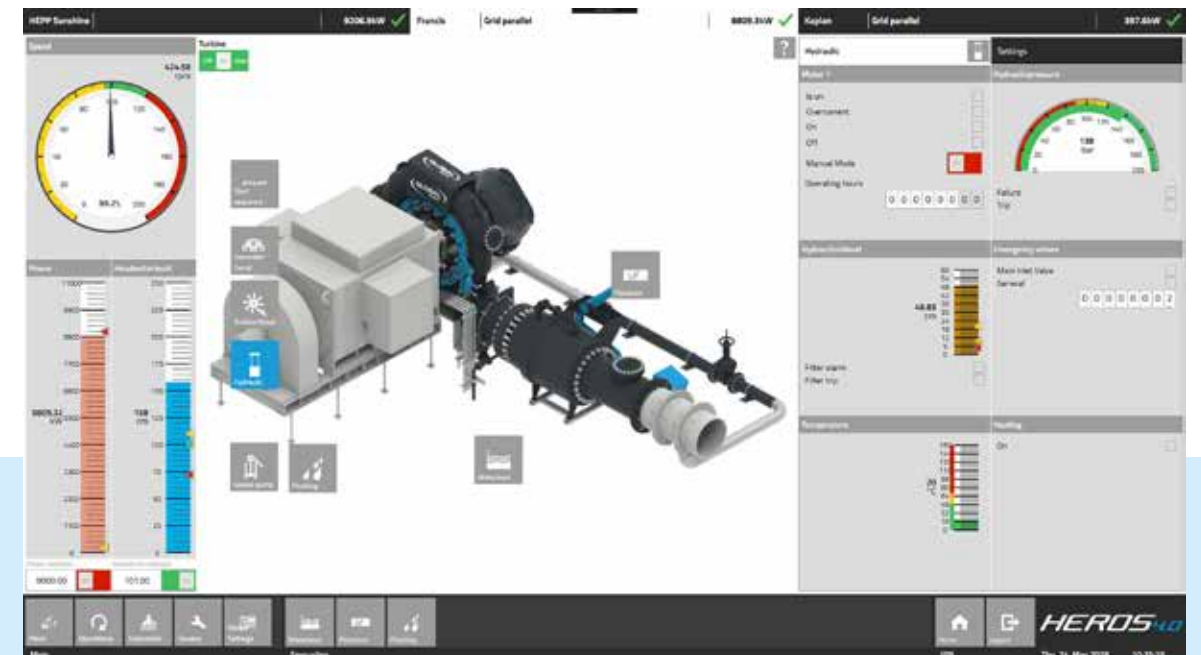
Intuitive multi-touch control of the visualisation, an individually configurable menu and

free window allocation ensure an especially efficient and convenient system operation. Another highlight is the integration of personal user levels.

SAFE FOR INVESTORS

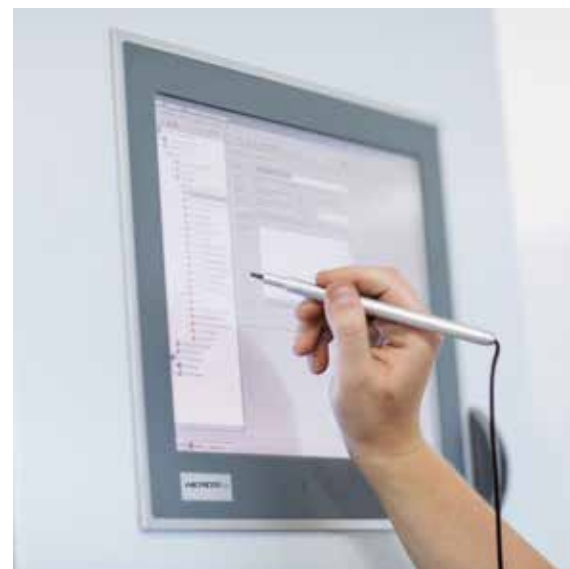
Comprehensive database archiving in HEROS4 makes it possible to, at any time, check and comprehend all technical and commercial key figures for the system.

Users in the multi-user mode can access saved values via a secure Internet connection and operationally access the controls – for maximum control and the highest level of security at all times.



SMART GRID SOLUTION

HEROS4 contains all relevant country-specific specifications for smart grids such as the frequency-dependent performance control for stabilising the power grid. In addition to the intelligent network connection, HEROS4 also ensures the longevity of all components due to smart controls as the system provides optimal efficiency with minimal wear.



FACTS

100%

- Easy to operate
- Safe for investors
- Smart grid solution
- Remote Accessibility
- Unmanned operation
- Archive function

PIONEERING
SPIRIT.

Courage

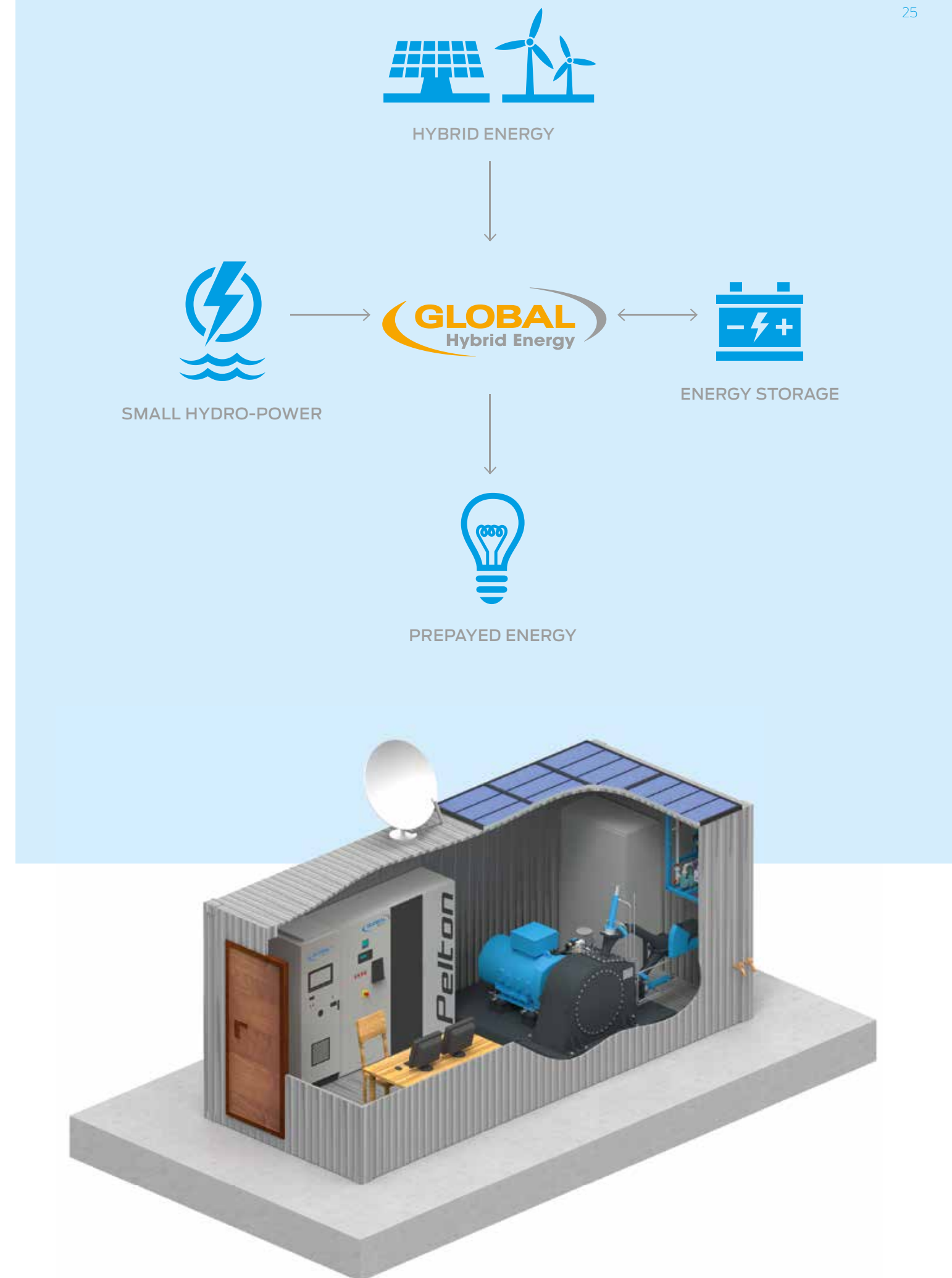


MICRO GRID SOLUTIONS.

TURBINES AS WELL AS SYSTEM SOLUTIONS FOR ENERGY SUPPLY ARE IN DEMAND IN AREAS WITHOUT AN EXISTING NETWORK – MAINLY IN EMERGING COUNTRIES, BUT ALSO IN REMOTE AREAS WITHOUT ADEQUATE INFRASTRUCTURE.

These regions across the world exhibit an enormous, fast-growing demand for network-independent solutions, which requires a change in thinking towards decentralised

energy supply: Micro grids. GLOBAL Hybrid Energy by GLOBAL Hydro is such a ready-to-use total package for electric power supply including financing models as well as expertise for operation, training and service. Systems can be maintained remotely and are installed, operated and maintained by certified, local partners. The compact, pre-installed version as a container solution offers a high degree of flexibility, mobility and the shortest possible construction time.





Passion

24/7/365 CUSTOMER SERVICE.

IT IS OUR GOAL TO ALWAYS DELIVER AN OPTIMAL SYSTEM, WHICH IS WHY GLOBAL Hydro PROVIDES AN EXTENSIVE SERVICE PACKAGE – IN ADDITION TO THE PRODUCT.

Our service hotline as well as our worldwide service establishments are available to customers around the clock. We can directly react to all queries through system monitoring and remote maintenance. As an option, maintenance contracts include all wear parts, which are exchanged according to a maintenance plan based on many years of experience and specifically adapted to the respective system.

REFURBISHMENT

GLOBAL Hydro is also a refurbishment specialist from turbine runner replacement to automation modernisation and the exchange of the complete turbine – a matter of course for us for systems from all manufacturers. We are thereby able to perform a balancing act between repair, new production and recycling. The result is a cost-optimised service that allows to optimally operate the system in the coming years.



ALL-ROUND CAREFREE PACKAGE

We also offer an all-round carefree package in addition to the regular operating training: Among other things, we provide service personnel, maintenance and insurance of the total system within the context of operational management.



POWERFUL REFERENCES.

GLOBAL Hydro produces core turbine components directly on site in Austria. The systems are exported to many other countries worldwide. We have already installed several systems with a total performance capacity of over 1 GW. From the initial design to commissioning, from service to maintenance and refurbishment, we are always available to our customers throughout the entire lifecycle of a system.



Guatemala, 2 x 12,5 MW, H=110m, Francis



Malaysia, 2 x 5,2MW, H=139,26m, Pelton



Austria, 1 x 1 MW, H=3,9m, Kaplan



Turkey, 2 x 4,6MW, H=505,14m, Pelton



Hungary, 2 x 1 MW, H=4,45m, Kaplan



Italy, 1x 0,3MW, H=2,88m, Kaplan



Norway, 1 x 4,3MW, H=175m, Francis



Austria, 2 x 1,5MW, H=7,72m, Kaplan



Indonesia, 1x2,1MW, 1x1,14MW, H=81,37m, Francis

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