Who we are?

YOUR GLOBAL PARTNER FOR HYDRO SOLUTIONS

We are a global supplier of electro-mechanical systems and services (“from water-to-wire”) for hydropower plants and a leader in the world market for hydraulic power generation.

• More than 175 years of turbine experience (1839)
• 120 years electrical equipment experience (1892)
• More than 7500 employees throughout the world
Nine At nightfall nine year old Nirina is finishing her work for the day in the light of candles. She fetches the tea, lukewarm from the fading sun – the family has no refrigerator -, but she has to hurry, because her little brother Miaro doesn’t like to sleep alone, it is too dark. The house has no electricity, they cannot afford the diesel for a generator and candles are lasting not long enough. After wiping out the candles Nirina cuddles her little brother in his sleep…
HYDROPOWER IN AFRICA

SHP Capacities (MW)

ZIMBABWE
UGANDA
TUNISIA
TANZANIA
SOUTH AFRICA
SIERRA LEONE
RWANDA
NIGERIA
NAMIBIA
MOZAMBIQUE
MADAGASCAR
KENYA
GUINEA
GHANA
ETHIOPIA
EGYPT
CONGO DR
CAMEROON
BURUNDI
BENIN
ANGOLA

0 500 1000 1500 2000 2500 3000 3500

Water = Energie = HydroPower = Turbine??
The purpose of the project is to provide electricity to the municipalities Ambatomanoina, Amparihibe and Mananjary.

- from a micro-hydroelectric power station of 100 kW on the Mananara River
- with a transmission line of 9.15 km
- and a distribution network of 8.32 km.

The rural municipality of Ambatomanoina has 23,425 inhabitants and has a target population of 8,538 clients. Agriculture is the main activity of the local population.
RURAL ELECTRIFICATION: 100% HYDRO

La Motte Josserand, France – 32 kW

- A mill of a miller family
- His objectives
  - Selling on the grid
  - Revitalizing the mill

Technical data:
On Grid application

MGK-4
Runner diameter: 400 mm
Head: 1,75 m
Output: 23 kW + 9 kW

MGK-6
Runner diameter: 580 mm
MINI-GRID PRODUCT

ANDRITZ HYDRO developed a range of standard products

• Output : 5 to 69 kVA
• Head : 1 to 200 m

• Off-grid or Grid connected application
• Manual or automatic operation mode
MINI-GRID: PRODUCT RANGE

MGK: Mini-Grid Kaplan

<table>
<thead>
<tr>
<th>Diameter</th>
<th>400 / 480 / 580 / 700 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Head</td>
<td>From 1 to 6 m</td>
</tr>
<tr>
<td>Discharge</td>
<td>From 400 to 1940 l/s</td>
</tr>
</tbody>
</table>
MINI-GRID: PRODUCT RANGE

MGX: Mini-Grid Crossflow

Diameter: From 300 to 400 mm
Width: From 100 to 650 mm
Net Head: From 2 to 60 m
Discharge: From 40 to 700 l/s
# MINI-GRID: PRODUCT RANGE

MGP: Mini-Grid Pelton

<table>
<thead>
<tr>
<th>Diameter</th>
<th>390 /500 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Head</td>
<td>From 15 to 200 m</td>
</tr>
<tr>
<td>Discharge</td>
<td>From 5 to 100 l/s</td>
</tr>
</tbody>
</table>
Accommodate with seasonal and periodic resource fluctuations
  - Day/Night
  - Winter/Summer
Facilitate energy transition
Bring flexibility to the final users
Enhance the amount of energy

- **Diesel**: Backup system
- **Hydropower**: HP unit (continuous operation)
- **Photovoltaic**: Photovoltaic unit (during the day)
- **Battery**: Storage usable during peak period
- **Resistor**: Dissipation in case of overuse
OUR MINI-GRID PROJECT

Why should we work together?

- Use of tested hydraulic model (CFD)
- EXW in 6 months
- Remote Control
- Less Civil Works (container possibility)
- On Grid or Off Grid Application

- Simple
- Cost-Effective
- Reliable
- Modular

DO IT YOURSELF... YOU ARE NOT ALONE

**Optional Services**

- Installation Supervision
- Installation
- Commissioning

**Optional Package**

- Spare Part Kit

**Additional Package**

- Training package
Let's create the opportunity for a partnership?

- Hybrid Mini-Grid
- 100% HydroPower
- Off Grid
- On-Grid
- Installation and/or Commissioning Team
MINI-GRID CONTACT

YOUR GLOBAL PARTNER FOR HYDRO SOLUTIONS

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