

Family Hydro Power

First Family Tp100 installation

Salulombe, a few wooden cottages a 7 km walk from Sumarorong where the local market lies. Since 2002 the farmers there were at search, how to use the local hydro potential to produce electricity. Sasakan, the “main” village, finally got a micro hydro plant in 2006. It was supported by rural development programs from the local government. Salulombe still does not have electricity. It’s too small and there are bigger places where regional efforts in developing infrastructure have to be made. The 250 people from Salulombe lit their oil lamps at 6 o’clock every evening, only 250 people of some x million in Indonesia who do the same every night.

Pak Linggi a regional producer of small turbines in Sulawesi submitted a request towards MHPP in early 2008. He had heard about the newly designed Tp100, a turbine suitable to provide 2 kW. It’s fairly simple to install and could even be produced at his small workshop in Batang Uru.

One of the first produced Tp100 was shipped to Sulawesi Barat in August 2008. Pak Linggi already told the people from Salulombe how to prepare the site. The whole village worked each Saturday from June to August, to construct canal, forebay, penstock and powerhouse (picture left). Sand for the necessary masonry work had to be carried sack-by-sack 7 km from Sumarorong.

End of August, after a final site check the new turbine was installed, generator aligned and transmission cables hung. Since September 2008 the days in Salulombe “became longer”. Dinner is not longer at 6 pm as there is the possibility to prepare it later.

The money saved for the kerosene lighting is now paid as a monthly fee to use up to 3 pieces of 8 W energy saving bulbs per house. The tiny Tp100 produces enough power to supply the nearly fifty households. Costs in transport and material made about 5500 Euro in total.

Bookkeeping, collecting the fees, operating the turbine and maintaining the canal, the villagers manage their power plant on their own. The money collected is used to pay the operator and maybe some spare parts if later possible.

Should some difficulty appear, the operator from Salulombe can go to Batang Uru and ask Pak Linggi for help and support. Services and spare parts are in reach distance.

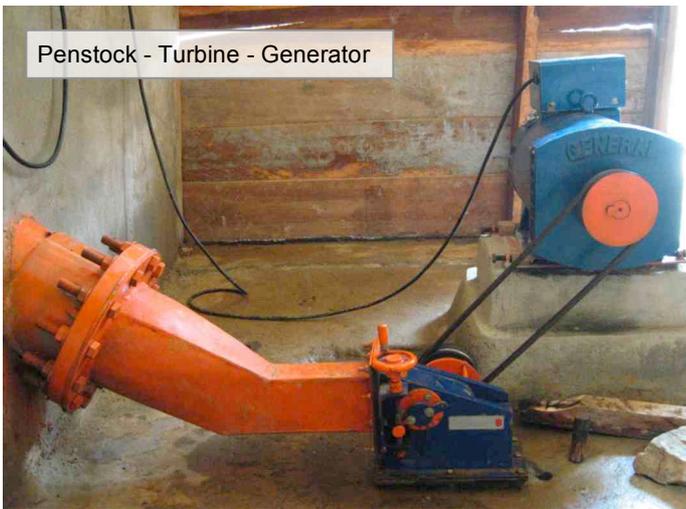
The next Tp100 Pak Linggi will build himself. The Tp100s bigger brother, the Tp125 is already sitting in the wings. It could produce 5 kW which is enough to run even TV sets in Salulombe later. After 2 – 3 years the collected tariffs could be enough to upgrade Salulombe’s family hydro power plant to a Tp125.



Village meeting

General Information

Dusun/Desa/Kecamatan	: Salulombe/Sasakan/Sumarorong
Kabupaten/Provinsi	: Mamasa/Sulawesi Barat
Inagoration date	: 09.2008
Connected households	: 49 houses
Total capacity	: 2 kW
Capacity per house	: 8 W CFL + 25 W conventional
Productive use	: -
Social connections	: Church, school
Tarif	: Rp 7,000/month household
Total project cost	: Rp 60 Mio.
Local organisation	: Pak Linggi
Installation	: Pak Linggi
Duration of construction	: 3 months
Site preparation	5 days
Construction	5 days
Installation/wiring	2 days/4 days



Penstock - Turbine - Generator

Technical Specifications

Civil structure

Intake	: Rock, wood and clay
Canal	: 1.5 km, earthen
Sand trap	: 2 / 1 / 0.3 m no flush gate
Flow	: 25 l/s
Penstock	: Ø 8", length: 43m
Transmission cable	: 4.5 km

Electro Mechanic

Turbine	: Tp100, bo 60 mm, 2 kW
Manufacturer	: Kramatraya, Bandung
Generator	: Synchronous 3 KVA, AVR, China
Control system	: none



Increased quality of life



Cost for 50 households

Total Cost	: Rp 55 Mio.
Civil structure	: Rp 9.5 Mio. in work
Cement	: Rp 5.5 Mio.
Penstock	: Rp 3.9 Mio.
Electro Mechanical	: Rp 12 Mio.
Transmission	: Rp 27 Mio.
House installation	: Rp 125,000/hh
Management	
Management and operators	: 2 (x 2) persons
Management cost	: Rp 500,000

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Tp100 design is made to be produced in small workshops, located closer to rural target areas. There it can become a viable business as costs for distribution and services drop with the clients close. Installation costs of a Family Hydro scheme can be cheaper as lower requirements in flow and head need less sophisticated civil structure. So the future users can do more work themselves. It reduces necessary financial resources and allows some communities to acquire even their own Family Hydro power plant.



Mini Hydro Power Project (MHPP) is a cooperation project between the Directorate General of Electricity and Energy Utilization within the Indonesian Ministry of Energy and Mineral Resources and the German Technical Cooperation (GTZ) on behalf of the German Government

EDITORIAL

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