

## First "PSK Tersebar" Project Successfully Commissioned

The first Small Private Renewable Energy Power (*PSK Tersebar*) project in Indonesia since the introduction of the PSK Tersebar legislation in 2002 was successfully commissioned on 20-21 October. The 25kW scheme is owned and managed by the *Paguyuban Kali Maron* (PKM), Seloliman, East Java, an informal traditional village institution, and represents a major milestone for the emerging Indonesian renewable energy sector. The scheme was first built in 1992 by GTZ-MHPP in cooperation with *Yayasan Mandiri*, Bandung to provide electricity to the Environmental Education Center (PPLH), a Seloliman based NGO active in environmental awareness programs, and the adjacent hamlet of Janjing. Inter-connecting and selling the excess power to the PLN grid represents the final stage in the schemes 10 year evolution. In 2000, the electro-mechanical equipment was replaced as part of an up-grade increasing the output to its present capacity of 25kW. This up-grade was carried out with support provided by GTZ-MHPP in cooperation with *Yayasan Bina Usaha Lingkungan Kecil* (YBUL) through their GEF small project facility. As part of the up-grade a number of local village enterprises were connected to the supply to improve its daytime usage for productive purposes.



Photo 1: Representatives from JASTEK, GTZ-MHPP, PLN Mojokerto and PT. Heksa Prakarsa Teknik in the power house of the 25kW Kali Maron scheme. The plant is the first small private renewable energy project to be commissioned following the introduction of the ministerial decree in June 2002. (PSK TERSEBAR-KEPMEN No: 1122K/30/MEM/2002)

Commissioning was carried out by technicians from *PT. Jasa Teknik Kelistrikan* (JASTEK), Jakarta. A technician from *PT. Heksa Prakarsa Teknik*, the responsible contractor for the supply and installation of the inter-connection equipment was in attendance throughout. In addition representatives from PLN Mojokerto Branch Office and GTZ-MHPP were present to witness the commissioning procedure. This event represents a major landmark for the Indonesian mini hydro power sector. More than 10 years after the first discussions on the introduction of legislation permitting grid-connection of small renewable energy projects, a fully fledged *PSK Tersebar* project is now finally

running and selling power to the grid. The scheme is connected at medium voltage (20kV) and sells to PLN at Rp.425 / kWh (approx. 5 US cents). The scheme will generate approximately Rp 5 million/month gross revenue via this power purchase agreement.



Photo 2: The scheme is inter-connected at medium voltage (20kV). The transformer and inter-connection point is located directly at the road side approximately 150m from the power house

The technology transfer component of this scheme represents the continuation of a cooperation initiated by MHPP in 1995 with UK supplier of electronic control equipment, G.P Electronics. Following the successful introduction of Electronic Load Control (ELC) technology to Indonesia, the cooperation was extended to include the "Mainscon" inter connection equipment which works in combination with an ELC (see MHPP Newsletter 4th edition 2003). This cooperation was facilitated through the UK based firm Dulas Engineering, who work closely with GP. Electronics on grid connection technology. The Seloliman scheme is the first of two demonstration projects initiated by MHPP together with the Directorate General for Electricity and Energy Utilization (DGEEU). The second site also located in East Java is scheduled to be commissioned by the end of the year.

## Field Trip to Wonosobo District, Central Java

As part of MHPP's activities in supporting district Governments efforts in developing their renewable energy resources, representatives from MHPP made a field visit to Wonosobo, Central Java in September as a follow-up to a visit made earlier in the year. Wonosobo is an area which is blessed with abundant natural water resources. The visit combined discussions with local Government officials and representatives from Ministry of Energy & Mineral Resources and the implementation of a number of preliminary site surveys. The surveys carried out focused on a selection of existing "stand alone" sites to assess their rehabilitation potential and the hydraulic potential within the many existing irrigation channels in and around the city of Wonosobo. With the legislation now in place for grid connection, exploitation of this potential within existing irrigation structures can often be a very attractive option depend-

ing on available head and flow. There are two main possibilities for harnessing hydraulic potential within irrigation networks. One is through the exploitation of “drop structures” which are integrated into irrigation channels to overcome changes in elevation along the length a channel. The second option is by harnessing excess water passing over a “spill-way” usually located a junction point within the irrigation network.



Photo 3: Typical hydraulic potential within an existing irrigation channel network close to the city of Wonosobo

The local Government of Wonosobo has expressed its interest in developing this potential if financially attractive either independently or in cooperation with the private sector. MHPP carried out preliminary site surveys of the most promising locations over a period of one week. This was followed up with another visit in late October to collect more detailed site data. A number of potential sites with significant potential were identified. At the request of the local Government, a proposal for three schemes was prepared and submitted to the local Government in October.

#### Cihanjuang Inti Teknik (CIT), Cimahi, West Java

In the last MHPP Newsletter we featured an article on the activities of P3MH, Padang, West Sumatra. This time we focus on the activities of *Cihanjuang Inti Teknik* (CIT), Bandung, West Java. CIT has been engaged in the manufacture of turbines and other MHP associated equipment since 1998 and has in the past produced a variety of turbine types including propeller, pelton and crossflow. CIT's focus, however, is in the design and manufacture of small “pico” sized turbines. Although CIT have also produced fabricated cross flow turbines, their main speciality is in steel casting. CIT is confident that provided the right products are available to villagers in rural areas, the pico hydro market in Indonesia will develop similarly to that in Vietnam and China where the equipment is mass produced and marketed nationwide.

In addition to turbine production, CIT is also active in promoting and developing appropriate technologies for productive end uses. CIT is aware that a sustainable concept of mini hydro power development for rural areas must address the issue of utilization of energy for small scale industrial applications in addition to domestic requirements. By ensuring there are daytime uses of the energy for income generating activities, the presence of a MHP scheme can make a tangible contribution to the local economy. Based on this fundamental principle, CIT has developed a number

of designs of electrically powered small scale agricultural processing machines, applicable for use in rural areas utilizing power from MHP schemes. As a means to further develop additional technologies and applications, CIT has established a small test installation close to their workshop facilities utilizing water from the Leuwiteurep river which runs through Cimahi. CIT is currently preparing plans to extend this site with the installation of an additional scheme to be operated as a mini-hydro development laboratory. Although functioning as a test plant, energy produced will be used for real end use applications which CIT has integrated into the scheme. Via an arrangement facilitated through MHPP, CIT recently entered into an agreement with a Swiss client for the design, manufacture and supply of a propeller turbine to be installed in a 130 kW MHP scheme in Switzerland. This research component of this project will be carried out in cooperation with ENTEC AG and the Institute for Fluid Hydraulics & Hydraulic Machines, Stuttgart University, with the entire manufacturing process being carried out in Bandung.



Photo 4: Technicians from CIT with assistance from MHPP are currently developing a range of pico-hydro turbines suitable for small power requirements

#### Promotional visit to the Dewata MHP, West Java

Since the Dewata MHP went into full operation at the beginning of the year, there has been considerable interest from both private and public sector regarding the innovative nature of the scheme, in particular the adoption of a “digital control system” which provides the scheme with a wide flexibility in operation, an important element for ensuring optimum use of the water resources. In response to this interest on 26th August, MHPP organized a field trip to the site to study the various components of the scheme and its performance since going into full operation. 12 participants from 6 private and public institutions participated in the field trip. These included PT. PLN (Hydro Dept), PT Dirgantara Indonesia T&ES, PT PINDAD, PT. Indonesia Power, PT. PJB. During the field trip, engineers from ENTEC AG were present to explain the operating concept and various functions of the electro-mechanical equipment and other salient features of the 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 German Technical Cooperation (GTZ) on behalf of German Government

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