

**Technical Visit to Sg. Perting Mini Hydropower Plant,  
Dataran Bentong, Pahang**

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Dr Siow Chun Lim obtained his Bachelor of Electrical & Electronic Engineering and Ph. D in Electrical Power Engineering from University Putra Malaysia, Selangor. His research interests include electrical grounding systems, high voltage experiments and engineering education. He is currently the Associate Editor of Journal of Engineering Science and Technology.



Mr. Alex Looi Tink Huey is an electrical engineer and also a software engineer who is actively involved in renewable energy power plants, power system studies, and power quality analysis.

The above visit took place on 18<sup>th</sup> July 2016. Participants first gathered and then departed from IEM at 6:30am before eventually reaching Bentong at about 9:30am. Then, participants were transported to the Amcorp Sungai Perting Mini Hydropower station via four-wheel drive vehicles through jungle tracks as shown in Figure 1.



Figure 1: Journey to the main power intake

There are two main sections of the mini hydro station namely the main intake and the powerhouse. Participants were first taken to the main intake section where the river's water is diverted and channeled to the pipe to be further transported at high speed driven by gravity to rotate the turbine. Figure 2 shows the briefing by Mr. Shaiful at the main intake section.



Figure 2: Briefing session at the main intake

The pipe, as shown in Figure 3 is 1.4m in diameter and has a total length of 3.7km, which is approximately the distance from the main intake to the powerhouse. The head gained is about 168m and the maximum rate of flow of water is about  $5\text{m}^3/\text{s}$ . The main intake actually collects water from 3 rivers namely Sungai Raja, Sungai Temerlang and Sungai Genting with total catchment area of  $89\text{km}^2$ . Gravitational sedimentation technique and installation of trash racks as shown in Figure 4 are the filtration mechanisms in place to prevent large debris and minimize sands up to a practical level from reaching the turbine.

As the pipe can only transports up to certain capacity of water, any excessive water will be flown back to the river.



Figure 3: Pipe to transfer water to the powerhouse



Figure 4: Trash rack for filtration purpose

At the powerhouse, participants were briefed that the mini hydro station is rated at 6MW and runs 3 Turgo turbines connected to synchronous generators as shown in Figure 5. From 2009 till 2015, the hydro station actually delivers only 4MW and the addition of another 2MW was done as feasibility study concluded with positive result. The output voltage of the generator is 690V and it will be stepped up to 11kV before being fed back to TNB. Figure 6 shows one of the hydraulic control modules there. A group photo was taken at the end of the briefing and touring session at the powerhouse as shown in Figure 7.



Figure 5: Briefing at the powerhouse



Figure 6: Hydraulic control module



Figure 7: All of the participants with Mr. Shaiful

The final stop of the visit took place at the waterfall which was actually the by-product of the construction of the mini hydro station. Mr. Alex Looi presented a souvenir from IEM to Mr. Shaiful from Amcorp Sungai Perting Mini Hydro Station as a token of appreciation and this marked the end of the technical visit.



Figure 8: Souvenir presentation to Mr. Shaiful

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