

## Evaluasi desain headrace, headtank, dan penstock pada pembangkit listrik tenaga mini-hidro Way Giham = Design evaluation of headrace, headtank, and penstock of Way Giham mini-hydro power plant

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### Abstrak

Keberhasilan Pembangkit Listrik Tenaga Mini-hidro (PLTM) Way Giham ditentukan oleh desain headrace, headtank, dan penstock. Tujuan penelitian ini adalah untuk mengevaluasi desain headrace, headtank, dan penstock pada PLTM Way Giham. Evaluasi dilakukan pada kapasitas aliran dan stabilitas dinding headrace, kapasitas aliran dan tampungan headtank, serta kapasitas aliran dan kapasitas tekanan penstock. Evaluasi dilakukan dengan menggunakan persamaan Manning dan standar American Society of Mechanical Engineers (ASME).

Hasil dari penelitian ini menunjukkan bahwa desain eksisting untuk: headrace memiliki kapasitas aliran cukup dan aman dari guling ataupun geser, headtank memiliki kapasitas aliran dan tampungan yang cukup, dan penstock memiliki kapasitas aliran yang cukup namun ketebalan pipa belum cukup kuat untuk menahan tekanan water hammer.

.....The success of Way Giham Mini-hydro Power Plant is determined by the design of headrace, headtank, and penstock. The purpose of this study is to evaluate the design of headrace, headtank, and penstock of Way Giham Mini-hydro Power Plant. Evaluation carried out in headrace flow capacity and wall stability, headtank flow and storage capacity, and penstock flow capacity and pressure capacity. Evaluation carried out by Manning equation and American Society of Mechanical Engineers (ASME) standard.

The result of this study shows that the design existing for: headrace has satisfied the requirements of flow capacity and stability, headtank has satisfied the requirements of flow capacity and storage capacity, and penstock has satisfied the requirement of flow capacity but the thickness of the pipe couldn't stand with the water hammer pressure.