

Innovative project with twofold purpose: "Hydropower plant – landing stage of HPP reservoir with changing mark"

(Animated video on the example of the reservoir of Zhinvali hydropower plant)

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Conventional hydropower plants operate at maximum capacities only under the conditions of maximum level of their reservoirs. In case the levels are less than maximum, loss of potential energy of the river flowing down to the reservoir occurs. The value of the potential energy loss is proportional to the difference value between the marks of the flowing river (relevant to the maximum reservoir level) and the current reservoir level.

With the innovative technology power is generated on the account of the potential energy of the river which is normally lost when it flows down to the reservoir of the conventional hydropower plant, during its emptying (autumn-winter) and fill up (spring) periods.

Feeding river water to two power intakes hooked up to the hydraulic units located on the platform floating on the reservoir with the pipelines located on movable metal span is supplied through the diversion canal (or a pipeline) from the maximum or higher marks of the reservoir level. In addition, with the innovative hydropower plant more power (66%) is generated within the autumn-winter months, when the opposite happens at Georgian hydropower plants within the above period and power generation decreases three or more times due to the shallow water. It is also important, that the innovative hydropower plant has better economics than the similar capacity conventional hydropower plants.

Introduction of the suggested technology in Georgia is feasible at the following existing hydropower plants with the reservoirs, namely: Zhinvali hydropower plant, Enguri hydropower plant, Sioni hydropower plant, and Khudoni and Namakhvani hydropower plants planned for future.

It is possible to locate two hydropower plants with the changing mark with the capacity of 7 MW each on the reservoir of Zhinvali hydropower plant respectively at the mouth of Tetri Aragvi and Pshavis Aragvi, where difference of max and min head is 40 metre.

Second target of the innovative project is tourism promotion. The platform floating on the reservoir connected to the bank with the cable way will be used as a landing stage which is excluded in other cases due to significant level changing of the regulating reservoirs. Except for tripping around the reservoir area with the motorboat, water skiing will be absolutely attractive for tourists and for healthy life lovers, and this is indeed very important under the conditions of enhanced tourism development in Georgia.

The project has no analogue. It is protected by Georgian patent (#3735, 2004.03.18) – Author, Prof. Vazha Jamarashvili.

The author of animation of the hydropower plant with the changing mark of Zhinvali hydropower plant reservoir is the engineer Amiran Khantadze and the author of ecological assessment is Giorgi Suladze.