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## **MERJENJE DRENAŽNIH VODA KOT DEL TEHNIČNEGA OPAZOVANJA PREGRAD**

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### **Povzetek**

Na reki Soči se je začela graditi črpalna hidroelektrarna Avče. Kot večina hidroenergetskih objektov, ima tudi ČHE Avče dva pregradna objekta na območju zgornjega bazena. Diplomatska naloga podaja probleme slovenskega elektroenergetskega sistema, osnovno razdelitev pregrad, osnovna načela projektiranja, vzdrževanje in obratovanje pregrad, ukrepe ob neposredni nevarnosti in zakonsko podlago. Pregradni objekti morajo biti podvrženi stalnemu tehničnemu opazovanju, s čimer dokazujemo varnost pregrade. Podatke pridobljene s tehničnim opazovanjem lahko vrednotimo s determinističnim, statističnim modelom ali hibridnim modelom. Opisana je merilna oprema, ki se ponavadi vgradi v zemeljske pregrade, in osnovni principi za merjenje pretokov. Trikotni prelivji spadajo med merilne objekte za merjenje pretoka, ki so opisani v standardih. Pretok pri trikotnih prelivih je odvisen od višine na potenco  $5/2$ , zaradi česar se da natančno meriti širok spekter pretokov, hkrati pa lahko s trikotnimi prelivji merimo manjše pretoke, kot na primer s pravokotni prelivji. S pomočjo trikotnih prelivov se bo na ČHE Avče merila količina drenažne vode, ki bo tekla skozi drenažno galerijo. V diplomski nalogi je izdelan idejni projekt merskega objekta, za merjenje drenažne vode.

**Ključne besede:** črpalna hidroelektrarna, pregrada, merjenje pretoka, drenažne vode, tehnično opazovanje, trikotni preliv, varnost pregrad

### **Abstract**

The pumped storage plant will be constructed on Soča River. Like the majority of such plants, the PSP Avče has two artificially built dams for upper reservoir. This paper deals with issues related to the Slovenian power supply system, dam classification, the basic principles of planning, maintenance and operations of dams, emergency operation requirements as well as the legal base of dam operations and monitoring. The dam should be subject to a constant technical surveillance during construction and lifetime of the building. The dam safety is finned out on the base of the data gathered during dam monitoring. The acquired data may be valued by the application of a deterministic, statistical or hybrid model. The measurement equipment that is regularly used with embankment dams is described, as well as the basic principles of discharge measurement. Triangular thin plate weirs are described in standards. One of the main advantages of the triangular weir is the fact that discharge depends on the  $5/2$  power of the head. In practice, the use of triangular notch extends the flow range down to cover much lower flows than can be metered for example with rectangular weir. With V-notch we will be measuring discharge of drainage water through drainage gallery. This paper presents a feasibility study for a measurement object with a triangular thin-plate weir to be used for drainage water metering.

**Key words:** pumped storage plant, dam, discharge measurement, drainage water, technical observation, triangular thin-plate weir (V-notch), dam safety