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PECULIARITIES OF THE RUN-OFF-RIVER HYDROPOWER POTENTIAL IN ROMANIA

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Abstract

This research discusses the hydropower potential of hydraulic structures that were originally built for other uses, including hydrological and energy data. The historically known average specific water discharge of rivers in Romania is used as input data in hydropower potential determination. Recent flow measurements confirm that the available hydrological data are consistent and can be used in the analysis. The work defines a connection between the capacity factor, as an energy parameter of a location on a river, and the values of the standardized daily flow duration curve. Therefore, only one value of the daily flows' duration curve is needed in order to determine the energy potential of a location by using the capacity factor. Thus, in the future, if the hydropower potential of a certain site located on a river needs to be determined, it will only be necessary for the standardized flow duration curve to be outlined, without having to calculate the hydropower parameters (installed power and amount of energy obtained). From the graph, the probability value exceeding the 0.5 ratio (flow/multiannual average flow) should be extracted. Using this value, the capacity factor (with the correlation found in this study) can be calculated and the energy attractiveness of the site can be estimated. As a result, a rather accurate estimation of the potential installed power and of the annual energy output can be obtained. Such an approach was not found in the specialized literature.

Key words: capacity factor, energy parameters, standardized flow duration curve

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