



# IZAZOVI I PROBLEMI PRILIKOM IZRADA PROJEKTA REKONSTRUKCIJE PPV JEZERO I PREDLOZI ZA POBOLJŠANJE RADA POSTROJENJA

## DIFFICULTIES AND PROBLEMS DURING PREPARATION OF REFURBISHMENT DESIGN FOR WTP JEZERO AND SUGGESTIONS FOR PLANT OPERATION IMPROVEMENT

### REZIME

Završetkom i puštanjem u rad postrojenja za pripremu vode za piće Makiš II (2.2 m<sup>3</sup>/s) stekli su se uslovi da se uđe u proces rekonstrukcije druga dva postrojenja (Makiš 1 i Jezero). Zbog smanjenog kapaciteta u odnosu na projektovani postrojenje Jezero je prvo na redu za rekonstrukciju.

Prvobitno projektovano postrojenje „Jezero“ je imalo funkciju predtretmana površinske vode reke Sava, odakle se voda transportovala na konačno prečišćavanje na PPV Bele vode. Usled nedostatka pijaće vode koji se javio usled razvoja grada i povećanja potreba za vodom, a koji usled ekonomske krize, nije pratio razvoj vodovodnog sistema, došlo se na ideju da se rekonstruiše postrojenje „Jezero“ i dogradnjom 1997. god. je definisano kao postrojenje za preradu Savske vode do nivoa vode za piće. Kompletno postrojenje za preradu vode "Jezero" pušteno je u rad 1997. godine. PPV „Jezero“ se sastoji iz dograđenog filterskog postrojenja i postrojenja za bistrenje vode koje se vrši na Predtretmanu "Jezero". Ova dva građevinski nezavisna objekta čine jednu tehnološku liniju. Projektovani kapacitet ovog postrojenja je 1000 l/s.

Maksimalni kapacitet sa kojim je postrojenje radilo je oko 950l/s, a neposredno pre odluke da se vrši rekonstrukcija što je uslovalo i izradu projekta rekonstrukcije, postrojenje je radilo sa kapacitetom od oko 300l/s.

**Ključne reči:** Tehnološki postupak, hidraulički proračun, minimalni građevinski radovi, izbor najpovoljnijeg rešenja, minimalni troškovi rekonstrukcije.

### ABSTRACT

Completion and commissioning of water treatment plant Makiš II (2.2 m<sup>3</sup>/s) secured conditions to commence refurbishment process of two other plants (Makiš 1 and Jezero). Due to decreased capacity compared to the designed one, treatment plant Jezero has been chosen as the first one to be refurbished.

Original design of the TP Jezero included pre-treatment of river Sava surface water, wherefrom water was transported to WTP Bele vode for final treatment. The lack of drinking water that occurred because of development of the city and increased necessity for water, which due to economic crises didn't follow development of water supplying system, brought the idea that treatment plant Jezero should be refurbished and with extension and upgrade in 1997 it was defined as Sava river water treatment plant to the level of potable water. The complete water treatment plant was commissioned in 1997. WTP Jezero consists of subsequently built filtration unit and settling unit which is now conducted at Pre-treatment Jezero. These two independent facilities form one technological line. The designed capacity of this plant was 1000 l/s.

The maximum capacity of the plan was about 950l/s, and prior to the decision to conduct refurbishment which conditioned preparation of the design for refurbishment, the plant worked with the capacity of about 300l/s.

**Key words:** technological treatment, hydraulic calculation, minor civil works, selection of the most favourable solution, minimal refurbishment expenses.

## 1. UVOD

Postrojenje za preradu vode "Jezero" pušteno je u rad 1997. godine. Prvobitno projektovano postrojenje „Jezero“ je imalo funkciju predtretmana površinske vode reke Sava, odakle se voda transportovala na konačno prečišćavanje na PPV Bele vode. Postrojenje „Jezero“ je rekonstrukcijom i dogradnjom 1997. god. definisano kao postrojenje za preradu Savske vode do nivoa vode za piće. Projektovani kapacitet

## 1. INTRODUCTION

The water treatment plant Jezero was commissioned in 1997. The initially designed Jezero plant functioned as treatment of the river Sava surface water pre-treatment unit, wherefrom the water was transported to final treatment at Bele vode treatment plant. The Jezero plant was refurbished and upgraded in 1997, and then defined as plant for treatment of the Sava river water to the level of potable water. The designed