

Jajce – Modernization of the segment gate

The segment gate is located on the Veliko Plivsko Lake in central Bosnia, near the town of Jajce, approximately 4 km upstream from the confluence of the Pliva and Vrbas Rivers.

The water stored in the lake is used for electricity generation at the Jajce I Hydropower Plant.

The gate was originally built in 1983. At that time, the lifting system consisted of an electric motor and two drums, connected to the gate via steel cables.

The gate's dimensions are: width 6 m, height 3.4 m, with a curvature radius of 5 m.



After more than 40 years of operation, vibrations increasingly occurred, often causing the lifting cables to break.

The modernization and automation of the system were approached from two directions:

First, the gate is relatively light, with a total mass of approximately 2,600 kg. The project included reinforcement of the entire structure to increase its mass and reduce vibrations during operation..

Second, the designer proposed a different lifting principle — using an electric cylinder with a rigid mechanical connection, capable of absorbing vibrations. For this purpose, additional modifications were made to the gate to allow integration of the new drive system.

In addition to these works, the gate underwent sandblasting, application of a new anti-corrosion coating, and replacement of all seals.

HYDRO

INSTALLED EQUIPMENT

- > AUMA actuator SAV 14.2
- > AUMA control unit: ACV 01.2
- > Electric Cylinder: MST 80
Tensile force: 100 kN
Compressive force: 45 kN
Stroke: 1500 mm

JAJCE

<https://maps.app.goo.gl/qJ8uYrKeaUDsgrPY7>





Segment Gate:
stroke 1,5 m; width 6 m; high 3,4 m;

RECONSTRUCTION AND MODERNIZATION

For the modernization of the segment gate, it was necessary to modify and reinforce the existing gate to allow replacement of the old lifting mechanism with a new electric cylinder.

The segment gate, installed on the lake, serves to evacuate water in the event of a flood wave.

The designer and end user required that the system be self-locking. To meet this requirement, and taking into account the expected service life of the equipment, AUMA supplied an electric cylinder with a trapezoidal spindle (MST 80).

The gate is operated remotely via the electric cylinder from the control room, using a 24 VDC control signal.

After delivery, the equipment was installed, electrically connected, calibrated, and commissioned.



Electric Cylinder:
Opening speed: 5 mm/s
Opening time: 5 min for 1500 mm

