



El Atazar reservoir

The integrated water cycle • Water collection

El Atazar reservoir

It is located at the tail of the system that regulates the River Lozoya basin and has a water storage capacity of over 425 hm³, representing 73% of this basin's capacity and 46% of the total Madrid region supply system.

It has a thick arch vault type dam, with a basal plinth, gravity-type abutments and lightweight crest. It has a stage height above its foundations of 134 m. The arch vault is divided into 21 blocks whose lengths vary depending on the stage height but at the crest they reach lengths in the order of 17 m. The thickness also varies from 36 m at the base to 6 m at the crest in the central block, which is the highest. The stored water flows through El Atazar canal that starts at the reservoir's intake tower.



Capacity
425.3 hm³
Surface area
1,070 ha
Type
Thick arch vault dam



Auscultation at the dam is permanent and is equipped with a complex monitoring system. Supervision and maintenance of the dam wall is facilitated by a set of 6 horizontal galleries and 1 perimeter gallery as well as a horizontal underground gallery, located under the dam foundations. These galleries have a total length of 8 km.

A hydroelectric power station was installed in 1991 whose turbines are driven by the discharge derived for consumption.

 [Watch a video about El Atazar reservoir](#)

 [See a table of reservoirs](#)



Relevant technical data

Reservoir

| | |
|--|--------------------------|
| Capacity: | 425 hm ³ |
| Average supply: | 51 hm ³ /year |
| Basin area: | 244 km ² |
| Maximum surface area of the reservoir: | 1,070 ha |
| Length of the shoreline: | 72 km |
| Length of the river in the reservoir: | 17 km |

Dam

| | |
|--------------------------------|--|
| Classification: | Type A |
| Type: | Thick arch vault |
| Stage height over foundations: | 134 m |
| Crest length: | 484 m |
| Crest width: | 7 m |
| Wall slopes: | upstream: variable downstream: variable |
| Volume of the construction: | 1,100,000 m ³ |
| Galleries: | 1 in the foundations 1 in the perimeter 6 horizontal |

Control elements

Spillway

| | |
|------------------|-----------------------|
| Number of runs: | 3 |
| Total length: | 45 m |
| Control element: | No |
| Relief capacity: | 500 m ³ /s |

Drainage

| | |
|---------------------|--|
| Location: | invert + intermediate |
| Number of conduits: | 2 + 2* |
| Control element: | Upstream: Double slide gates* Downstream: Hollow jet valve Taintor gates* |
| Dimensions: | Upstream: 195 x 220 cm 350 x 325* cm Downstream: Ø 220 cm 185 x 260* cm |
| Drainage capacity: | 500 m ³ /s |

*Data relating to intermediate drainage

Auscultation elements

- 46 pendulum stations
- 176 joint gauges
- 158 extensometers
- 48 strain gauges
- 2,113 drains
- 126 manometers
- 90 thermocouples
- 16 thermoresistors
- 202 topographic bases for levelling and collimation
- 33 zonal gauging points

Automated auscultation elements

- Measurement of reservoir level
- Thermometer
- Pluviometer
- 25 pendulum stations
- 30 extensometers
- 12 manometers
- 16 thermoresistors
- 16 flowmeters
- 6 three dimensional seismometers



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