

# Navacerrada drinking water treatment plant

## IN SERVICE SINCE

- 1969

## BACKFITTING

- 1989/90
  - Automation of the filters and incorporation of air into the washing process
  - Updating of the reagent facilities and incorporation of chlorine dioxide
- 2004/05
  - Modification of filters and updating of the automation system
- 2016/17
  - Updating of the reagent storage and dosing facilities

## WATER SOURCE

- Samburiel river (Navacerrada reservoir)
- Navalmedio river (Navalmedio reservoir)

## TREATMENT CAPACITY

- 1 m<sup>3</sup>/s

## WATER TREATMENT

### STAGES OF THE PROCESS

- Preoxidation-prechlorination
- Coagulation-flocculation
- Settling
- Fast sand filtering
- pH adjustment
- Disinfection

### REAGENTS USED

- Chlorine and chlorine dioxide for preoxidation and prechlorination
- Potassium permanganate for preoxidation
- Aluminium salts in the coagulation stage
- Powdered activated carbon in the coagulation stage
- Flocculation aid in the flocculation stage
- Calcium hydroxide in the pH adjustment stage
- Chloramines during the final disinfection stage

### RELEVANT TECHNICAL DATA

- Two Accelerator-type settlers with a diameter of 31.8 m
- Eight sand filters with a unit surface of 70 m<sup>2</sup> for a total of 560 m<sup>2</sup>

### TREATED WATER TRANSPORT CHANNEL

- It supplies the Navacerrada tank



## SLUDGE TREATMENT

### TREATMENT CAPACITY

- 1,150 m<sup>3</sup>/day:
  - 1,000 m<sup>3</sup>/day from the filter washing
  - 150 m<sup>3</sup>/day from the settler blowdown

### STAGES OF THE PROCESS

- Mixture in the tank (289 m<sup>3</sup> projected)
- Thickening by subsidence and flotation
- Mechanical dewatering (centrifuges)
- Storage in 15 m<sup>3</sup> silo

### RELEVANT TECHNICAL DATA

- Two lamellar settlers with dimensions of 5.70 x 1.90 x 2.90 m
- Two floats of 1.50 x 1 x 0.50 m with a unit capacity of 3.5 m<sup>3</sup>/h
- Two centrifuges capable of treating a maximum flow of 5 m<sup>3</sup>/h of sludge

### FINAL SLUDGE DRYNESS

- 15-20%

