Colmenar drinking water treatment plant

IN SERVICE SINCE

- 1976

BACKFITTING

- 1984
  - Works that doubled the treatment capacity
- 1990
  - Automation of filters
  - Construction of settler bypass channels
  - Construction of facilities for the dosing of chlorine dioxide, potassium permanganate and powdered activated carbon
- 2000
  - General renovation of automatic operation
- 2008
  - Backfitting of the chlorine and chlorine dioxide dosing facility
- 2009
  - Extension of the facility to sludge dewatering

PROJECTED FACILITIES

- Granular activated carbon filters
- Ozonisation by means of ozone generating systems
- Backfitting of treatment facilities
- Increase of the sludge plant capacity

WATER SOURCE

- Lozoya river (El Atazar and El Villar reservoirs)
- Jarama river (El Vado reservoir)
- Sorbe river (Pozo de los Ramos mill dam)
- Guadalix river (Pedrezuela reservoir)

TREATMENT CAPACITY

- 16 m^3/s

WATER TREATMENT

STAGES OF THE TREATMENT 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 final pH adjustment stage
- Chloramines during the final disinfection stage

RELEVANT TECHNICAL DATA

- Six static settlers, horizontal flow, with 16 10 x 40 m compartments per settler
- 64 filters with a unit surface of 125 m^2 for a total of 8,000 m^2

TREATED WATER TRANSPORT CHANNEL

- El Atazar channel

CONTINUES

Canal de Isabel II

SLUDGE TREATMENT

TREATMENT CAPACITY

- 25,860 m^3/day
  - 0.600 m^3/day from the filter washing
  - 5,260 m^3/day from the settler blowdown

STAGES OF THE PROCESS

- Thicknening, gravity settling
- Mechanical dewatering (centrifuges)
- Storage in two silos with a unit capacity of 50 m^3

RELEVANT TECHNICAL DATA

- Four rectangular static settlers with dimensions of 22 x 8.75 x 4 m
- Two centrifuges that are capable of handling a maximum flow of 10 m^3/h of sludge and a third centrifuge capable of handling a maximum flow of 16 m^3/h of sludge

FINAL SLUDGE DRYNESS

- 15-20%

Canal de Isabel II