

San Javier D.W.T.P (Querétaro, México)

Name: Drinking Water Treatment Plant San Javier
Client: Comisión Estatal de Aguas de Querétaro
Situation: Querétaro (México)
Start-up date: 2011



FLOW

Design flow: 129.600 m³/d
 Peak flow: 155.520 m³/d

WATER LINE

Flow rate of raw water

1 Throttle valve servomotor-driven
 1 Electromagnetic flowmeter, Ø 1.200 mm

CO₂ Dosing

Nº lines of supply: 2
 Application chamber: 2 uds of 6,00 x 5,00 x 6,47 m, Vu = 54,91 m³
 Carbon dioxide: liquid supply in pressure vessel
 Stockage: 2 metallic basin Vu = 27 m³ GL
 Inlet chamber/isolation system : manual gate
 Inlet chamber system: submerged weir
 Outlet chamber system: lower deflector

Fast mixing chamber

Nº of lines: 2 uds
 Nº panels per line: 1 ud, of 5,00 x 5,00 x 6,40 m, Vu = 160 m³
 Agitation: 2 agitators (1 per chamber) of 7,50 kW

Flocculation

Nº lines: 2 uds,
 Nº chambers per line: 1 ud, of 11,50 x 11,50 x 4,07 m
 Nº panels per chamber: 2 uds
 Total volume adopted: 2.153 m³
 Agitation: 4 agitators (one per panel), of 0,75 kW

Reagent installation

Aluminium sulphate

Supply: liquid
 Stockage: 2 reservoirs PRFV, Vu = 30.000 l
 Backing-up basin: 2 uds
 Decanting: 2 (1+1) horizontal centrifugal pumps, Qu = 25 m³/h
 Dosing: 3 (2+1) dosing pumps, Qu = 125 l/h

Poly electrolyte anionic

Supply: liquid emulsion
 Stockage: 12 drums, Vu = 200 l
 Setting: 2 (1+1) setting facilities, Vu = 1.700 l
 Decanting: 2 (1+1) pumps, Qu = 14 l/h
 Dosing: 3 (2+1) helicoidal screw pumps, Qu = 350 ÷ 700 l/h

Potassium permanganate

Stockage: scale solid
 Stockage: 72 drums of 50 kg of unitary capacity
 Dosing: 2 (1+1) volumetric dosing, of 10 kg/h per unit
 Setting and dilution: 2 tanks of PRFV, Vu = 5.000 l, 2 agitators of 0,37 kW
 Backing-up basin: 2 uds, Vu = 5.000 l
 Dosing: 3 (2+1) pumps, Qu = 236 l/h

Pre oxidation and disinfection with gas chlorine

Supply: container
 Stockage: 10 containers with a unitary capacity 9 kg
 Chlorometers: 3 (2+1) en prechlorination, 1 in postchlorination
 Ejector pumps: 3 (2+1) in prechlorination and 1 in postchlorination, Qu = 5 m³/h

Sodium hydroxide

Supply: liquid
 Stockage: 2 Reservoirs of PRFV, Vu = 40.000l
 Decanting: 3 (2+1) horizontal pumps, Qu = 25 m³/h
 Backing-up basin: 2 uds
 Dosing: 3 (2+1) pumps, Qu = 236 l/h

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Laminated clarifier

Feeding: standard channel

Nº of lines: 2

Nº clarifiers: 6, 3 x line

Flow to treat per clarifier: 945 m³/h

Nº total lamellas module: 80 uds, per clarifier

Shape and material: sergeant braid, PPTV

Total volume lamella per clarifier: 170,94 m³

Sludge blowdown

Collection system: cowcatchers

Nº blowoff pipe: 6 uds, Ø 150 mm

Drained sludge flow: 639,70 m³/d

Filtration on grit bed

Type of filters: closed

Operating control: semiautomatic

Nº lines: 2 ud.

Nº service filters: 12 x line, 24 total

Dimensioning: 3,50 Ø x 11,40 x 13,20 l total

Filtration surface: 42 m²

Draining bed: glassmaking sand

Bed thickness: 1,20 m

Filter volume: 56,608 m³

False head construction: polypropylene punched plate

collection system of filtered water: by nozzles

Nº nozzle per filter: 2.075

Nozzle total amount: 49.800

Regulation system: level variation in feeding chest

Washing-filter blowers

Type: rotational pistons

Nº machines: 3 (2+1), Qu = 2.520 Nm³/h

Washing-filter pumps

Type: Submersible centrifuges

Nº machines: 3 (2+1), Qu = 1.050 m³/h

Filter wash water recovery

Nº tanks: 1, de 20,00 l x 6,65 a x 4,60 h, meters

Volume: 525 m³

Pumping Equipment

Type of pumps: submersible centrifuges

Nº pumps: 3 (2+1), Qu = 135 m³/h

Treated water tank

Nº tanks: 1 de 20 l x 6,65 a, x 5,40 h, meters

Useful volume: 630,42 m³

Flow rate

1 magnetic flowmeter in pipe, Ø 1.200 mm

SLUDGE TREATMENT

Sludge pumping to clarifiers

3 (2+1) submersibles centrifuges, Qu = 35 m³/h

Sludge thickener

2 thickeners of 7,2 l x 2,33 a x 2,03 h, meters

Drain system: superficial cowcatcher

Pressurized water pumping: 2 horizontal pumps

centrifuges, Qu = 10 m³/h

pressurized air: 2 compressors, Qu = 260 l/min

Flocculation: 2 flocculators, coil type

Sludge conditioning

Type and supply: solid poly electrolyte

Stockage: 10 sacks (250 kg unity)

Dilution: constantly automatic preparation system, 2 (1+1)

de 1.700 l/h

Dosing: 2 (1+1) helicoidal screw pumps, Qu = 300 l/h

Thickener sludge stockage - homogenization

1 tank, 9,80 l x 9,60 a, x 2,70 h, meters, V = 216,38 m³

2 submersible agitators, Pu = 1,70 kW

Sludge dewatering

Centrifuges feeding: 2 (1+1) progressive cavity pumps

Qu = 8 ÷ 15 m³/h

Sludge conditioning

Type and supply: solid polyelectrolyte

Stockage: 10 bags (250 kg unity)

Dilution: constantly automatic preparation system, 2 (1+1)

de 1.700 l/h

Dosing: 2 (1+1) progressive cavity pumps, Qu = 400 l/h

Centrifuges: 2 unities, Qu = 10 m³/h

Pumping and sludge dewatering stockage

Pumping: 2 progressive cavity pumps, Qu = 2,50 m³/h

Stockage: 2 hopper, de 60 m³ of unitary capacity

Casting and drain pumping

Physical - chemical casting

Type of pumps: Horizontal centrifuges

Nº pumps: 2 (1+1), Qu = 50 m³/h

Sludge treatment drainage

Type of pumps: submersible centrifuges

Nº pumps: 2 (1+1), Qu = 75 m³/h

Service water and Irrigation

1 pressure system, Q = 50 m³/h