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Biological Wastewater Treatment

Dubai WWTP

U.A.E.

The project comprises the construction of a sewage treatment plant located approx. 15 km from the City of Dubai.
The capacity of the treatment plant is 130,000 m³/d average daily flow. The sewage treatment process consists of preliminary treatment, primary settlement, two-stage biological treatment and rapid sand filtration and dis-infection. The sludge treatment process consists of sludge digestion, conditioning, dewatering and thermal drying.
BAMAG's scope of work comprised the process-, mechanical- and electrical engineering design works as well as the supply, delivery, erection, testing and commissioning of the mechanical, electrical and control equipment.

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... the experts

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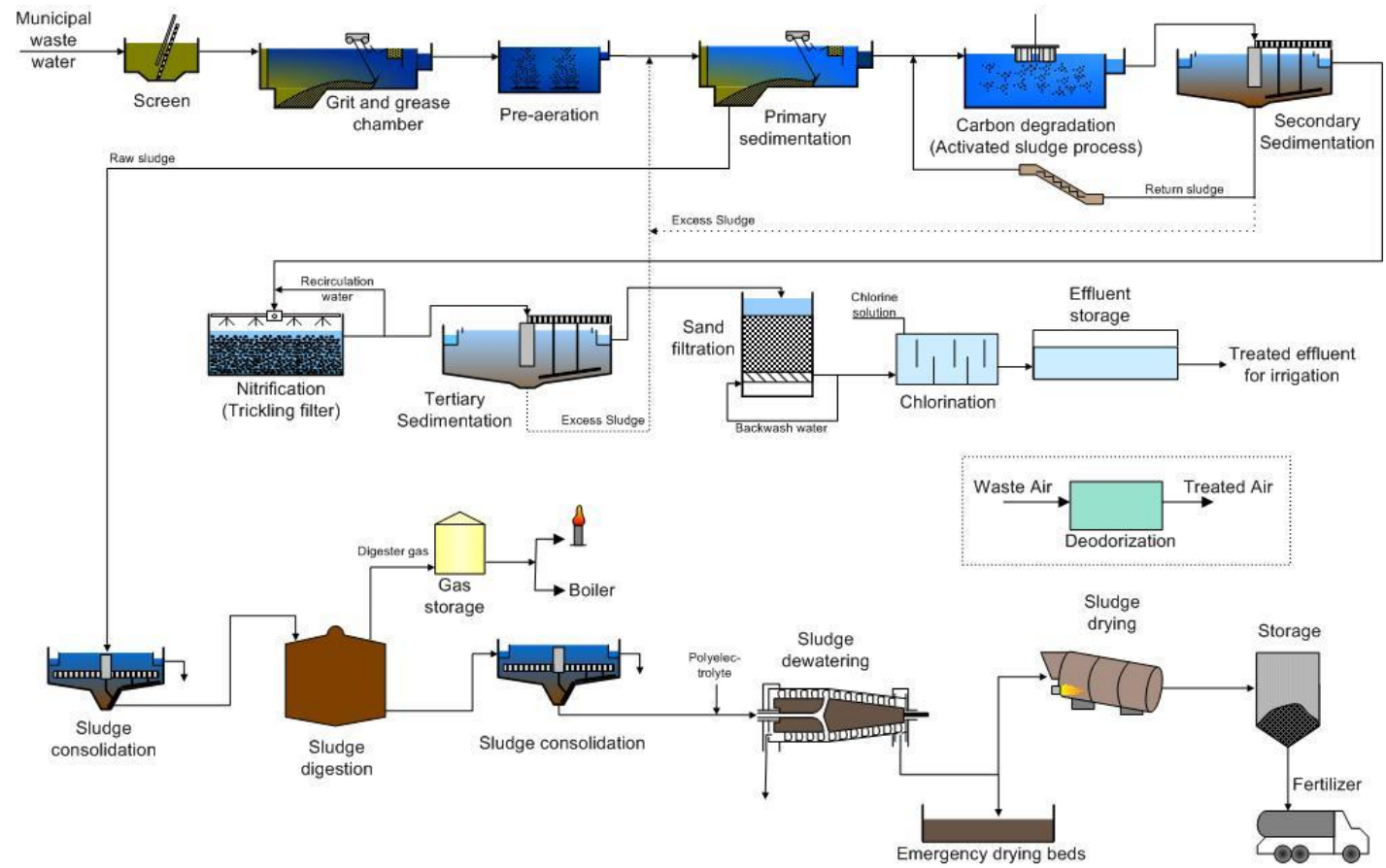

1. Objective

Sewage treatment of municipal wastewater

- Design data

Throughput	130,000 m³/d
max.:	10,000 m³/h
BOD_5 load	270 mg/l
COD load	750 mg/l
S.S.	270 mg/l
NH_4-N	30 mg/l

- Treatment criteria

BOD_5	≤ 10 mg/l
COD	≤ 40 mg/l
S.S.	≤ 10 mg/l
NH_4-N	≤ 1 mg/l

2. Plant concept

The wastewater is routed through screens, grit/grease chambers and pre-aeration directly to the primary settling tanks. In the primary settling tanks, the primary sludge and the returned excess sludge are settled before the pre-treated wastewater flows to the two-stage biological treatment.
Bio-degradation of the organic pollutants is accomplished in the activated sludge aeration tanks at first step and nitrification by means of trickling filters at second step. In a final treatment step the remaining solids are removed by rapid sand filtration and subsequently the treated wastewater is disinfected before being discharged.
Treated effluent is useable as irrigation water. The primary sludge and the biological excess sludge are treated by sludge digestion, sludge dewatering with centrifuges and thermal sludge drying. The dried sludge is utilized as fertilizer.

3. Characteristic plant data

1 Inlet chamber (300 m³)
4 Automatically raked screens
2 Aerated grit and grease chamber (2,200 m³ in total) with travelling grit scrapers
2 Sand classifiers
4 Pre-aeration tanks with diffused air system (3,700 m³ in total)
18 Primary settling tanks (22,400 m³ in total) with travelling sludge scrapers
3 Activated sludge aeration tanks (15,000 m³ in total) comprising of: Sludge recycling with
- 4 arcimedian screws
- 12 surface aerators

6 Secondary settling tanks (48,300 m³ in total) with sludge scraper bridges
12 Fixed-film-reactors (trickling filters) with plastic media (36,750 m³ in total)
6 Tertiary sedimentation units (38,000 m³ in total) with travelling sludge scrapers
14 Sand filtration units (980 m² filter-area in total)
1 Two stage chlorination unit
2 Effluent storage basins (30,000 m³ in total)
4 Sludge consolidation tanks (2,250 m³ in total)
3 Egg-shaped digestion tanks (27,000 m³ in total)
2 Gas holders (8,000m³ in total)
Several pump stations, Waste gas deodorization unit, associated equipment for sludge dewatering (centrifuges), heating, drying (drum dryer), storage.

4. Operating experience

Operation data

BOD_5 - Effluent	4 mg/l
S.S. - Effluent	9 mg/l

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