CASE STUDY

PROJECT WATER TREATMENT FACILITIES FOR IRON ORE MINE

PRODUCT Sea Water Reverse Osmosis (SWRO), Activated Sludge Bioreactor (ASBR), Oil Water Separator (OWS), Sodium Hypochlorite Disinfection Recirculated (SHDR)

INDUSTRY Mining

LOCATION Goldfields-Esperance Region, Western Australia

BACKGROUND

The owner of a new iron ore mine in Yilgarn, Western Australia required water treatment facilities for potable water, sewage treatment and heavy vehicle (HV) washbay wastewater treatment. MAK Water worked closely with the client to design a custom package of four (4) separate plants, providing the best possible water treatment solutions across the entire mine site.

MAK Water supplied a potable water treatment plant located at the iron ore mine to treat hypersaline bore water; a sewage treatment plant located at the camp; HV washbay wastewater treatment for removal of hydrocarbons; and additional disinfection and pH adjustment for water reuse in the washbay.

POTABLE WATER

SOLUTION

Containerised Sea Water Reverse Osmosis (SWRO) plant designed to treat blended bore water with up to 59,200 mg/L of dissolved solids and produce 25 m^3/day of potable water.

MAK Water containerised SWRO plant

Internal view of the containerised SWRO plant

MAK WATER KEY SOLUTIONS

- Custom designed pre-treatment to suit poor quality bore water with high TDS, iron and manganese
- Multimedia filtration and additional DMI-65 media filtration with manual bypass line
- Chemical dosing: pH adjustment (2), chlorine (2), de-chlorination, anti-scalant
- Increased instantaneous capacity to improve plant performance and reliability
- Clean in Place (CIP) upgrade for improved membrane cleaning
- Potable tank recirculation and monitoring of free chlorine
- Containerised (1 x 40') solution for easy installation
- Onsite plant commissioning and operator training

RESULTS AND BENEFITS

- **Flexible Design.** Robust solution with operating flexibility to handle challenging feed water quality
- **Compliance.** Achieves ADWG potable water compliance
- **Technical Support.** Expert advice and consultation with client to provide the best possible solution
- **Plant Reliability.** Custom design and quality equipment will provide reliable operation with minimal maintenance
- **Flexible Delivery.** Prioritisation of individual plant delivery to suit client's schedule

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SEWAGE TREATMENT

SOLUTION

Modular Activated Sludge Bioreactor (ASBR) plant designed to treat 25 m^3/day of domestic strength sewage.

MAK Water modular ASBR plant during site installation

MAK WATER KEY SOLUTIONS

- MAK Water Packaged Sewage Pump Station (PSPS)
- pH balancing and treated effluent tanks
- Supernatant sump for transfer to balance tank
- Modular (1 x 22') corrosion resistant fibre-reinforced plastic (FRP) bioreactor with internal plant room
- Premium instrument package with ClearAccess™ remote monitoring
- Onsite plant installation, commissioning and operator training

RESULTS AND BENEFITS

- **Easy Installation.** Modular plant design for easy transport and fast site installation
- **Compliance.** Treatment to Class C (low risk) for disposal via irrigation
- **Improved Operability**. Premium instruments and remote monitoring allow for improved plant operation efficiency
- **Technical Support**. Expert advice and consultation with client to provide the best possible solution
- **Plant Reliability.** Custom design and quality equipment will provide reliable operation with minimal maintenance
- **Flexible Delivery.** Prioritisation of individual plant delivery to suit client's schedule

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mak water
water | wastewater | sewage

HV WASHBAY WASTEWATER TREATMENT - HYDROCARBON REMOVAL

SOLUTION

25 m^3/hr Oil Water Separator with floating suction skimmer, treated water transfer tanks and transfer pump, with 40' flat rack installation.

MAK WATER KEY SOLUTIONS

- 25 m^3/hr (CL30) separator with feed pump
- Floating suction skimmer (SK-80) with screen and vacuum delivery hose
- 2 x 2.5kL PE treated water transfer tanks
- 25 m^3/hr treated water transfer pump
- Mine spec control panel
- 40' flat rack installation of all equipment
- Custom access stairway
- Onsite plant commissioning and operator training

MAK Water OWS system installed on a 40' flat rack

MAK Water OWS system

RESULTS AND BENEFITS

- **Plant Portability**. 40' flat rack installation achieves clients requirement for the ability to easily relocate plant
- **Easy Installation.** 40' flat rack installation for easy transport and fast site installation
- **Ease of Maintenance.** Custom access stairway for safe access to equipment during maintenance
- **Simple Design.** Vertical Tube Coalescing (VTC) technology with minimal moving parts and ability to deal with varying raw water quality without the need for adjustment or calibration
- **Technical Support**. Expert advice and consultation with client to provide the best possible solution
- **Plant Reliability.** Custom design and quality equipment will provide reliable operation with minimal maintenance
- **Flexible Delivery.** Prioritisation of individual plant delivery to suit clients' schedule

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HV WASHBAY WASTEWATER TREATMENT - DISINFECTION AND PH ADJUSTMENT

SOLUTION

Containerised Sodium Hypochlorite Disinfection Recirculated (SHDR) plant designed to treat up to 400 m^3/day of wastewater for reuse.

MAK WATER KEY SOLUTIONS

- Containerised (1 x 10') with air conditioning to minimise stored chlorine heat degradation
- Recirculation of clients' wastewater tank, treating up to 400 m^3/day
- Dual chemical dosing of chlorine for disinfection and acid for pH adjustment
- Continuous online monitoring of free chlorine and pH levels with automated chemical dosing
- Onsite plant commissioning and operator training

RESULTS AND BENEFITS

- **Easy Installation.** Containerised plant design for easy transport and fast site installation
- **Cost & environmental impact reductions.** Treated wastewater is reused in the HV washbay.
- **Plant Reliability.** Custom design and quality equipment will provide reliable operation with minimal maintenance
- **Flexible Delivery.** Prioritisation of individual plant delivery to suit clients' schedule

MAK Water containerised SHDR plant during site installation

MAK Water SHDR plant