PRODUCT OVERVIEW OWS

water | wastewater | treatment | recycling

Clearmake
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Overview

MAK Water's Clearmake oil/water/solids separators (OWS) are designed to remove free floating hydrocarbons such as diesel, hydraulic fluid and oil as well as heavier suspended solids from a waste water stream.

This form of treatment is the minimum required prior to trade waste (sewer) discharge for any wash bay where hydrocarbons may be present.

The MAK Water Advantages:

- Very few moving parts
- Quality Australian design and manufacture
- May be constructed in 304 or 316 stainless steel
- Water Services Association of Australia (WSSA) approved
- Superior Vertical Tube Coalescing (VTC) technology
- Robust and simple to operate and maintain
- Fully automated system designed to operate unmanned with only intermittent operator attendance
- Options for recycling available

3 off MAK Frame Mounted Oil Water Separators

3 off MAK Frame Mounted Oil Water Separators

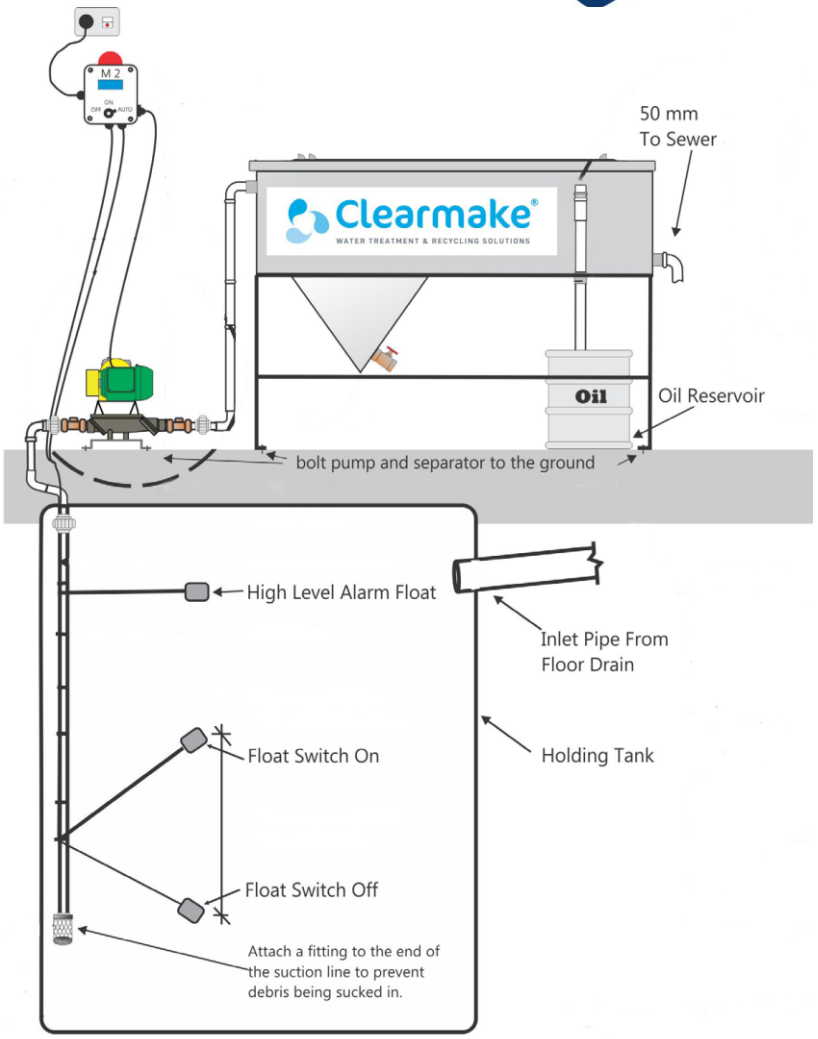
Overview

MAK Water's Clearmake OWS utilises low-shear feed pump (helical rotor or diaphragm-type), that is specifically designed for transfer of waste water from the collection tank to the OWS separator. The low shear nature of this pump helps to reduce the emulsification of the oil in the water.

The Vertical Tube Coalescing (VTC) pack is constructed from oleophilic polyethylene, which provides increased efficiency and performance via its enhanced flow, phase separation characteristics and longevity.

Final cleaning of the waste water prior to discharge to sewer at compliant levels occurs via a bag filter, which is a feature unique to the Clearmake brand.

The concentrated solids collected in the hopper are removed by a readily accessible manual gate valve at the base of the unit. Waste oil is drained into a separate oil reservoir.



Overview

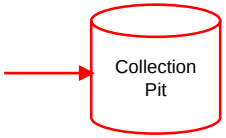
The following table summarises the standard specifications.

Parameter	Unit	Raw Water (typical)	Treated Water (typical)
Free Floating Oil & Grease	mg/L	<5,000	<5*
Temperature	°C	15 to 45	-
Solids Separation (OWS only)	Mg/l		
Solids Separation (MMF)			

*Based on removal of free-floating oils and grease

Process Steps

By MAK
By Others

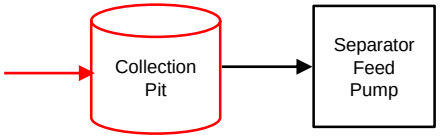


Collection/Sump Pit (By Others)

The collection pit may be designed to handle peak flows and allow a pre-determined and controlled flow for subsequent treatment. The waste water is temporarily stored in the collection pit before being pumped into to the oil water separator.

Process Steps

By MAK
By Others



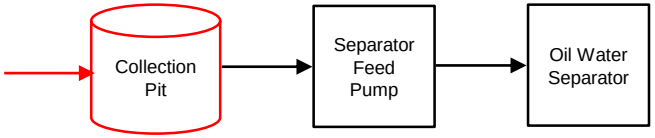
Separator Feed Pump

The low-shear feed pump (helical rotor or diaphragm-type), takes suction from the collection pit and transfers the waste water to the oil water separator. The pump is specifically designed for transfer of waste water from the collection tank to the oil water separator. The low shear nature of this pump helps to reduce the emulsification of the oil in the water.

The flow through the oil water separator is regulated by 2 float-type level switches

Process Steps

By MAK
By Others



Oil Water Separator

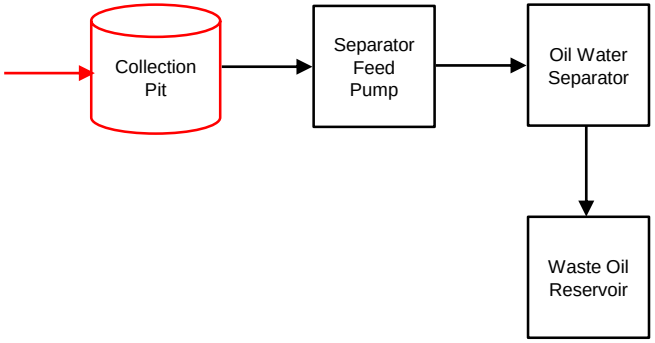
The waste water is delivered to the separator containing a Vertical Tube Coalescer (VTC) pack which utilises a block of vertically oriented 40mm tubes that consist of bonded strands of polyethylene in a helical pattern. The waste stream enters the chamber and is forced through the foraminous structure of the tubes.

The solids gravitate to the sludge hopper below and the waste stream continues through the tube pack.

The oil droplets coalesce on the surface of the tubes and then rise to the surface.

Process Steps

By MAK
By Others

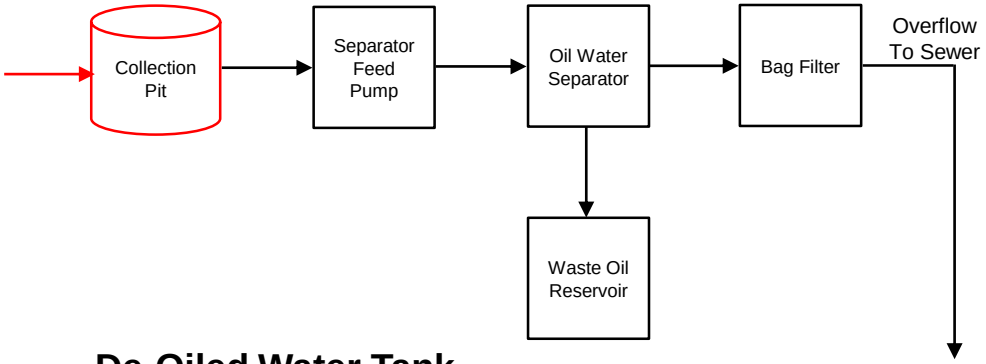


Waste Oil Reservoir

The resultant build-up of oil on the surface is automatically skimmed off and transferred by gravity to the waste oil reservoir. The waste oil from the reservoir may be manually disposed of or transferred to an optional waste oil tank for disposal via a waste removal truck

Process Steps

By MAK
By Others



De-Oiled Water Tank

The cleansed wastewater flows under the oil dam and over a final weir, through a bag filter for solids separation before being transferred by gravity to the discharge point or an optional de-oiled water tank for further treatment.

Options – ClearAccess™

Optional ClearAccess™ Remote Monitoring enables personnel to view and operate the plant remotely. This saves time in response to emergencies and assists local operators to diagnose problems. It prevents unnecessary service call-outs and improves reliability and plant uptime.

Process Support via ClearAccess™

Key Functionality:

- Remotely view and operate the plant on your PC, smart phone or tablet
- Automatic alerts (email or SMS) on alarm conditions
- Automatic report generated daily and emailed to your inbox
- Real time monitoring of process data, such as flow rates and alarm conditions/status messages
- Password protected system with two login security levels

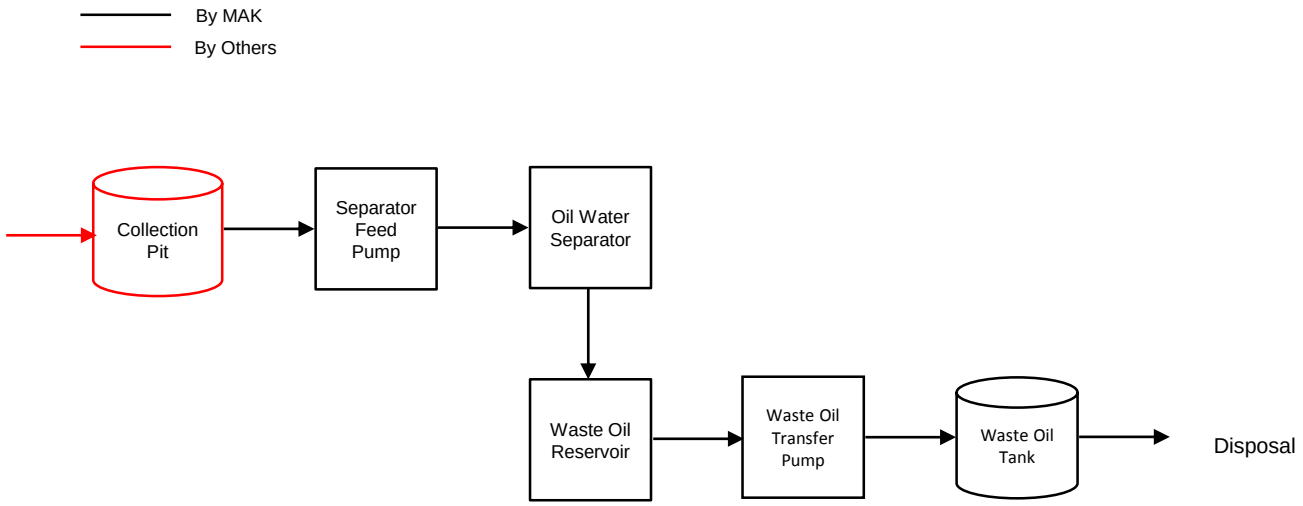
ClearAccess™ from your Smart Phone or Tablet

Inclusions:

- Additional electrical instrumentation (premium package)
- Additional PLC hardware and programming
- Programming of email alert system

NOTE: Remote monitoring requires an internet connection or mobile network coverage (client to provide SIM card).

Options – Waste Oil Transfer Station

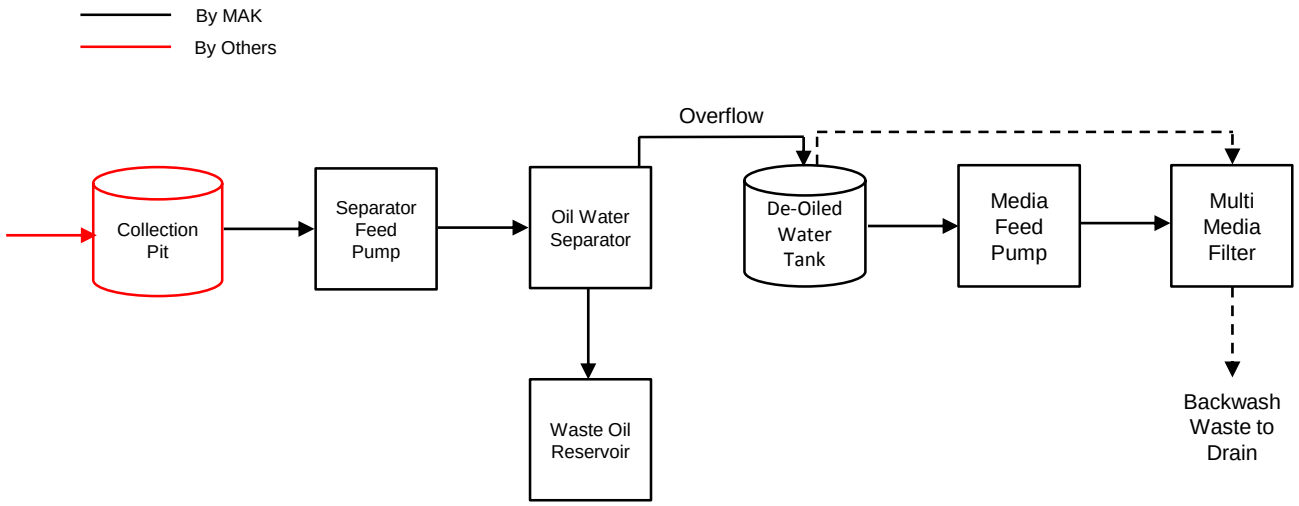


Waste Oil Transfer Station

Where manual emptying of the waste oil reservoir is not possible or impractical a waste oil transfer pump and tank may be installed. The waste oil transfer pump would take suction from the waste oil reservoir and discharge into the waste oil tank. The waste oil tank may be provided with a cam lock fitting for pump out by a waste disposal truck.

The waste oil transfer pump is regulated by float-type level switches and an alarm is generated when the waste oil tank reaches its high level.

Options – Multi Media Filtration

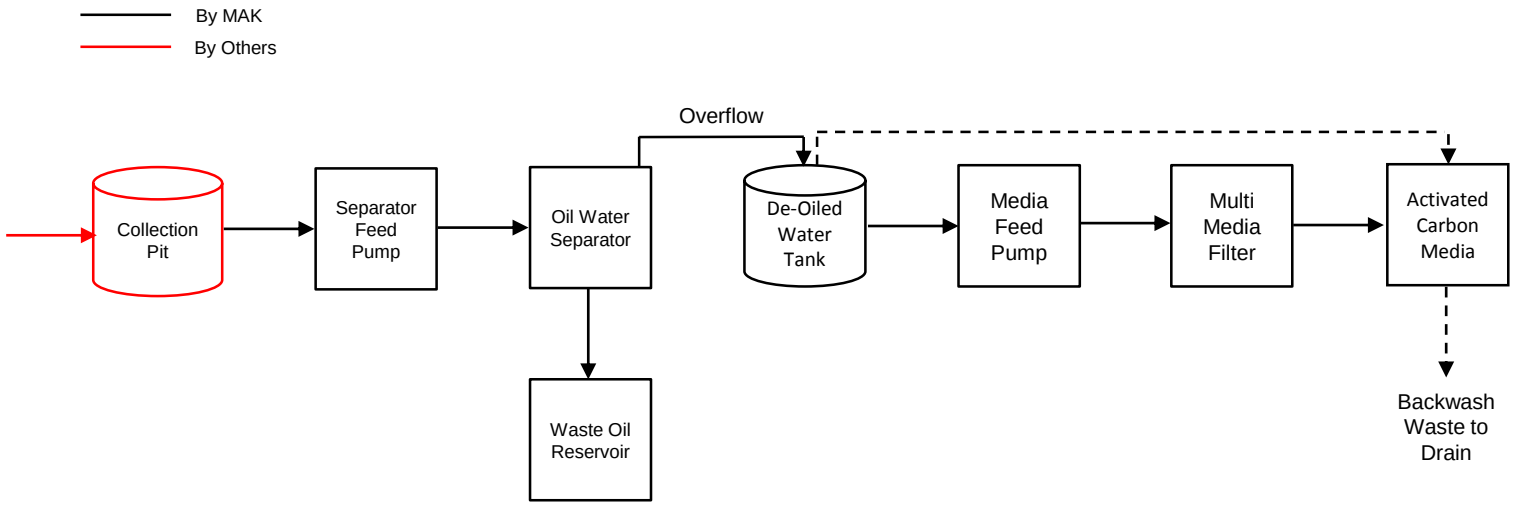


Multi Media Filtration

Where there is potential for reuse and recycling multimedia filtration may be used to remove carry over suspended solids prior to activated carbon filtration and sodium hypochlorite dosing. The feed pump takes flooded suction from the de-oiled water tank and supplies water to the multimedia filter(s), which remove suspended solids (20 micron or greater) from the water. The filter is periodically backwashed with de oiled water, based on operator adjustable time clock setting, via an electrically actuated multi-port control head.

Where ClearAccess™ remote monitoring is installed, pressure transmitters continuously monitor the differential pressure across the media filter; the filter is automatically backwashed when the differential pressure set point is triggered.

Options – Activated Carbon Filtration



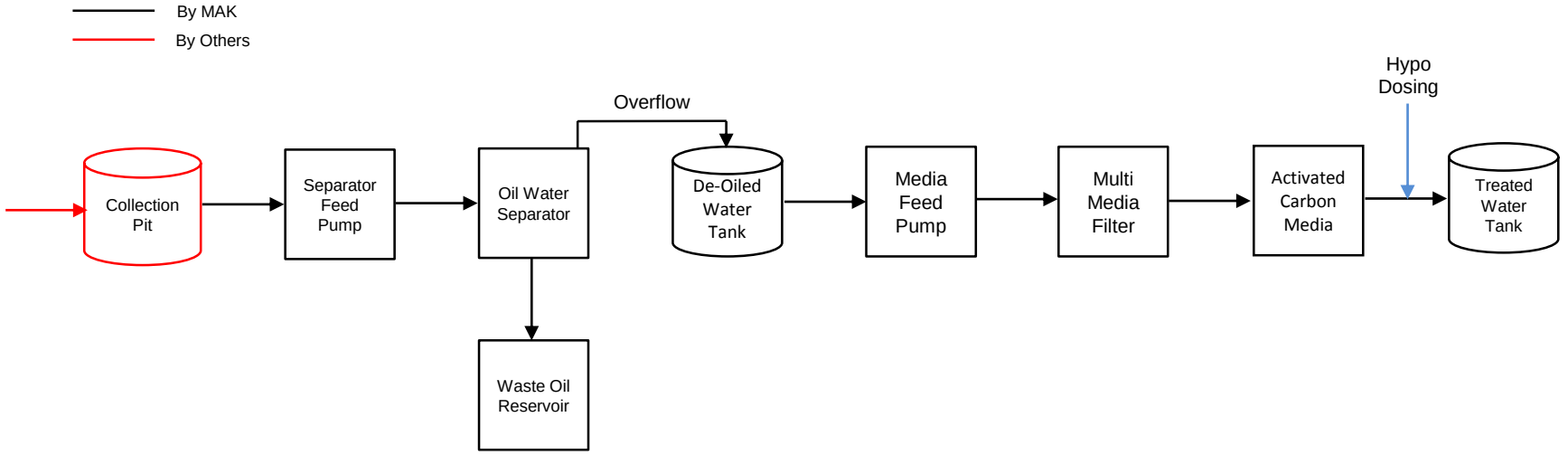
Activated Carbon Filtration

Activated carbon filters can be used to remove to remove trace amounts of hydrocarbons and odour prior to reuse or discharge to environment.

The filter is periodically backwashed with raw water, based on operator adjustable time clock setting, via an electrically actuated multi-port control head.

Where ClearAccess™ remote monitoring is installed, pressure transmitters continuously monitor the differential pressure across the carbon filter; the filter is automatically backwashed when the differential pressure set point is triggered.

Options – Hypochlorite Sterilisation



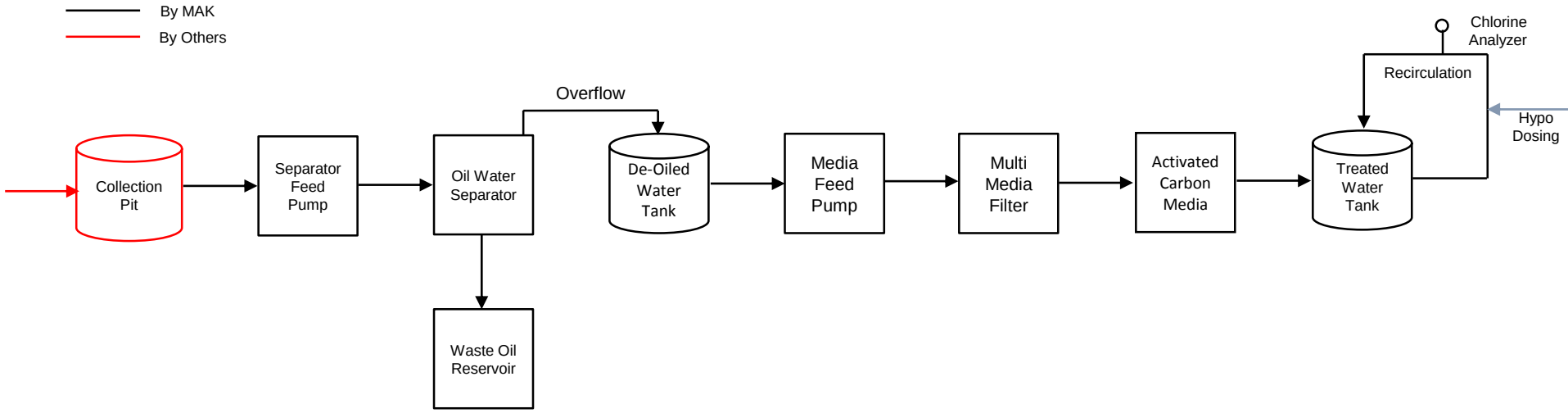
Flow Paced Hypochlorite Dosing

De-oiled and filtered water can be dosed with sodium hypochlorite to maintain a sterile water supply for reuse applications. The operator adjustable dose rate is set based on the permeate flow rate to achieve the desired free chlorine concentration in the treated water.

The hypochlorite storage tank is fitted with a low level switch for auto-shutdown and to alert the operator of a low level condition; the tank level should be checked regularly and topped up as required.

An ORP transmitter can be fitted downstream of the chlorine dosing to monitor free chlorine in the permeate water.

Options – Hypochlorite Sterilisation

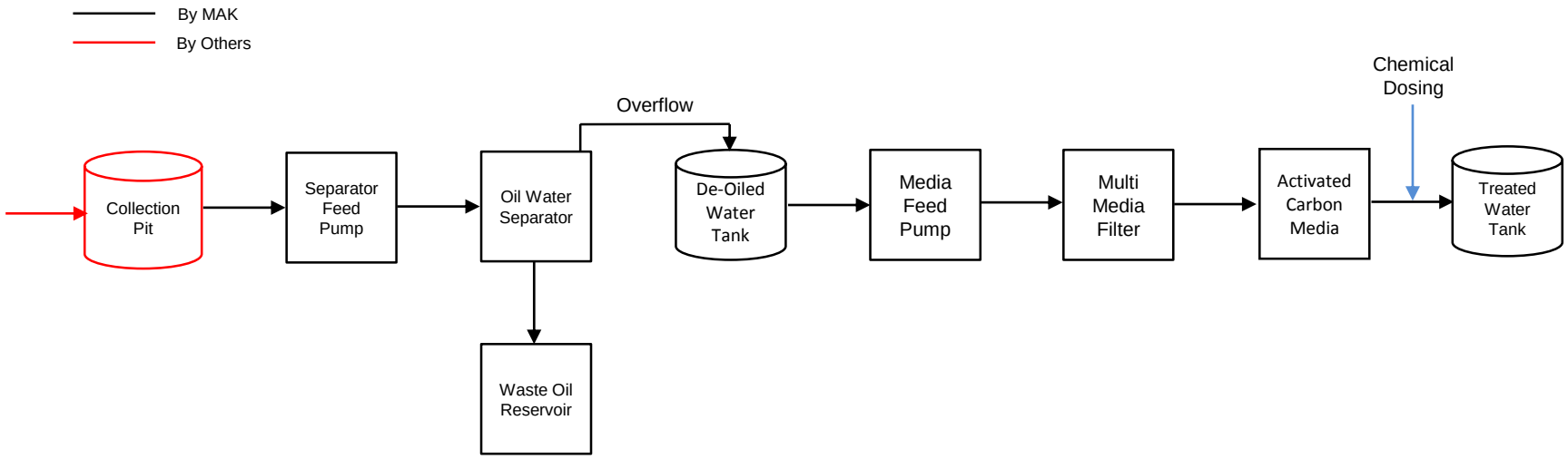


Automated (Residual Trim) Hypochlorite Dosing, with Recirculation & Monitoring

The recirculation pump circulates the contents of the storage water tank on a continuous basis; a chlorine analyser monitors the free residual chlorine, and the control system regulates the dosing of sodium hypochlorite as required to ensure correct free chlorine levels are maintained in the tank at all times. Alarms are generated by any abnormal readings.

The hypochlorite storage tank is fitted with a low level switch to alert the operator of a low level condition; the tank level should be checked regularly and topped up as required.

Options – Chemical Dosing



Chemical Dosing

Chemical dosing systems may be added as required to suit treated water quality requirements. Typical chemicals include acid and/or caustic for pH correction.

Depending on the application, chemical dosing rates are pre-set based on flow rate (flow paced), or automatically controlled by the PLC, based on online instrumentation such as a pH analyser downstream of the dose point.

All chemical storage tanks are fitted with a low level switch for auto-shutdown & to alert the operator of a low level condition; the tank levels should be checked regularly and topped up as required.

Project Experience

Project	Roy Hill Mine
Location	Pilbara, Western Australia
Date	2015
Scope	Design and construct 3 x CL15-OWS, commissioning & operator training
Capacity	10,000 L/h per system
Influent	Truck wash down
Treated Water	Treated for discharge to tailings dam
Features	High spec engineering and vendor data requirements Project specific preferred electrical equipment Skid mounted modular system for ease of installation Fitted with lighting for night time maintenance Double skinned tanks Waste oil transfer pump Self bunded oil storage tank with spill probe Australian engineering and manufacturing quality

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Project Experience

Project	APLNG
Location	Curtis Island
Date	2012
Scope	Design and Construct, Commissioning & Operator Training
Capacity	15,000 L/h
Influent	Equipment wash down
Treated Water	Discharge to tailings
Features	High spec engineering and vendor data requirements Project specific preferred electrical equipment Modular build for ease of installation BMS interface with clients PCS ClearAccess™ Remote monitoring

Project Experience

Project	GLNG
Location	Curtis Island
Date	2012
Scope	D&C, Commissioning & Operator Training
Capacity	15,000 L/h
Influent	Equipment wash down
Treated Water	Discharge to tailings dam
Features	MAK Standard (Data Sheet Product) BMS interface with clients PCS Australian engineering and manufacturing quality

Project Experience

Project	Ranger Mine
Location	Northern Territory
Date	2012
Scope	D&C, Commissioning & Operator Training
Capacity	75,000 L/h (3 x separators in parallel, each capable of 25,000 L/h)
Influent	Groundwater
Treated Water	Discharge to environment
Features	MAK Standard (Data Sheet Product) 3 systems connected in parallel offering redundancy. Australian engineering and manufacturing quality

Project Experience

Project	Granny Smith Mine
Location	Kalgoorlie, Western Australia
Date	2014
Scope	Design and construct, commissioning & operator training
Capacity	15,000 L/h
Influent	Vehicle wash down
Treated Water	Treated for discharge to tailings dam
Features	MAK Standard (Data Sheet Product) Activated Carbon Filtration Modular build for ease of installation Australian engineering and manufacturing quality

Project Experience

Project	Thunderbox Gold Mine
Location	Leinster , Western Australia
Date	2016
Scope	Design and construct, commissioning & operator training
Capacity	25,000 L/h
Influent	Vehicle wash bay
Treated Water	Treated for discharge to tailings dam
Features	MAK Standard (Data Sheet Product) Treated water tank with floating oil sensor Treated water transfer pump Australian engineering and manufacturing quality