



PRODUCT OVERVIEW PAF

water | wastewater | treatment | recycling

Overview



MAK Water's pH Adjustment – Flow (PAF) plants are designed to automatically adjust and maintain the pH level of pressurised raw water, prior to discharge to sewer/environment or reuse/recycling.

Dual chemical dosing pumps (alkali/acid) are available for when the raw water pH varies to allow for correction of both low and high pH raw water.

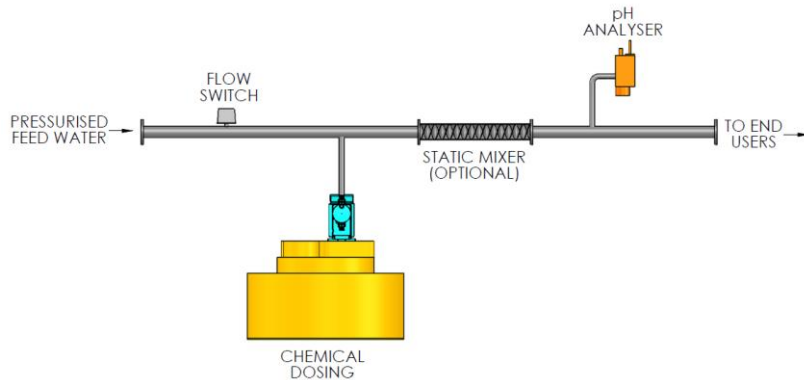
The MAK Advantage:

- High quality Australian designed and built systems
- Experienced team with >4,000 systems operating throughout Australia and internationally
- Nationwide service & maintenance capabilities
- Remote monitoring for expert process support
- Fully automated systems minimise operator attendance
- MAK standard designs for fast lead times
- Optimised designs to suit client's objectives
- Fully customisable to accommodate client specific engineering standards, vendor data requirements and site preferred electrical equipment
- Extensive hire fleet available for rapid deployment



MAK skid mounted pH Adjustment plant

Overview



The standard treatment process includes an inline pH analyser which monitors the pH level and a dosing pump to automatically dose liquid alkali/acid.

The system components are sized to suit the raw water flow rate and daily usage. Chemical storage tank(s) are provided with 110% bunding in compliance with AS1940-2004 (The storage and handling of flammable and combustible liquids).

Optional equipment upgrades include; a flow transmitter, a static mixer if required to improve mixing, duty standby dosing pumps, dual chemical dosing pumps (alkali/acid).

MAK PAF plants are available as skid mounted or containerised systems for easy deployment to remote locations.



The following table summarises typical raw water and treated water values:

Parameter	Unit	Raw Water (typical)	Treated Water (typical)
pH Level	pH	1 ~ 14	6 ~ 8 (pH neutral) or as required
Pressure	kPa	0 ~ 800 (pressurised feed)	-
Flow Rate	m ³ /hr	0 ~ 1,000	-
Temperature	°C	15 to 35	-

NOTE: MAK Water recommends a water analysis be carried out prior to detailed design.

Process Steps



Raw
Water →

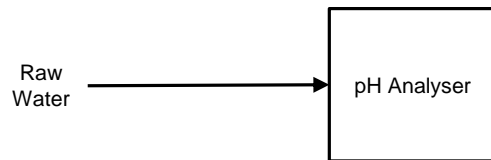
Pressurised Feed Water

Raw water enters the pipeline and treated water is discharged to sewer/environment or reuse/recycling.

The pipeline is fitted with a pressure switch; dosing is turned on/off depending on pressure. An option is provided for a flow transmitter which provides raw water flow measurement and flow paced dosing.

If required, MAK Water can provide a distribution pump and control system for distribution of treated water to end users.

Process Steps

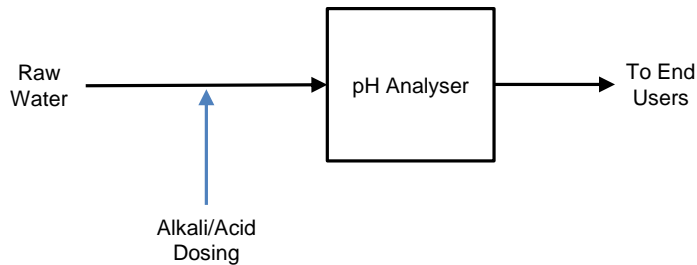


pH Monitoring

The inline pH analyser monitors the pH level and provides a feedback signal to the control system.

Where ClearAccess™ remote monitoring is installed, pH level data is continuously logged.

Process Steps



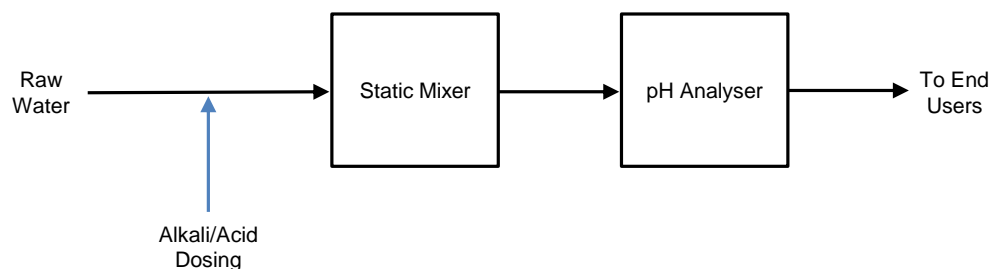
pH Adjustment

To adjust pH level up/down as required, liquid alkali/acid is dosed into the pipeline. The requirement for dosing is based on pH level, using the feedback signal from the pH analyser. The system will dose alkali/acid when the measured pH level is outside the programmed high/low set point and continue for as long as required to establish and maintain the pH level within the target range. A signal can be provided to prevent distribution of treated water when the pH level is out of range.

The chemical storage tank(s) are fitted with a low level switch for auto-shutdown & to alert the operator of a low level condition: the tank level should be checked regularly and topped up as required.

Where ClearAccess™ remote monitoring is installed, a level transmitter continuously monitors tank levels.

Options – Static Mixer



Static Mixer

Additional mixing of raw water and alkali/acid may be required in the treatment process. If required, an inline static mixer is installed in the pipeline after the dosing point to improve mixing.

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.

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, pressure and alarm conditions/status messages
- Password protected system with two login security levels

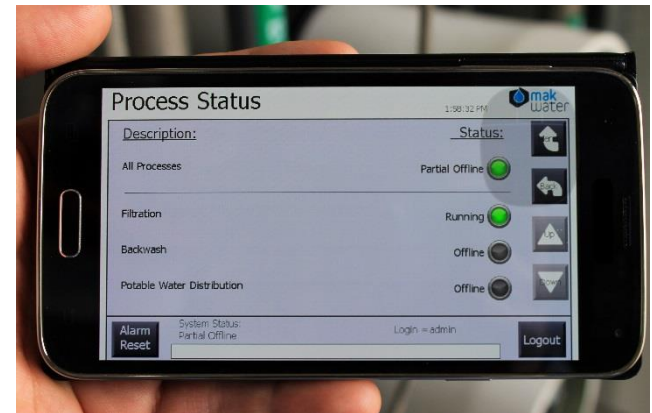
Inclusions:

- 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).



Process Support via ClearAccess™



ClearAccess™ from your Smart Phone or Tablet

Options – Containerised Plant



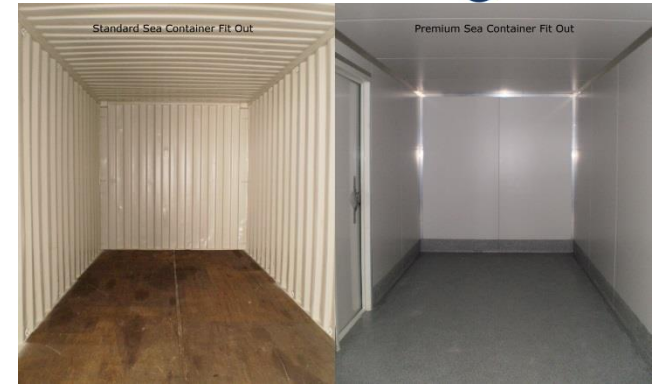
MAK SHS plants can be installed in ISO sea container for safe, fast deployment by sea, road and rail. Installing the plant inside a sea container is an ideal way to protect the plant and equipment from harsh operating conditions in remote sites. The durable construction assures the plant is able to be transported through rough terrain and perform to the design requirements on arrival at remote sites (plug and play operation).

Standard Inclusions:

- As new, freshly painted inside and out (high gloss enamel)
- Distribution board with separate circuits for lights & aircon
- Overhead internal lighting & reverse cycle air conditioning
- GPO's for maintenance work

Premium Container Fit Out Options:

- Chemically resistant, non-slip floor coverings
- Wall and ceiling insulation
- Personal access doors & windows
- Smoke detectors and alarming
- Safety shower & eyewash station with flow switch & lighting
- Winterisation for extreme climates (-40°C/-40°F)
- High spec/high build two-pack epoxy container painting



Standard 20' Container

Premium Fit Out
(insulation, floor coating
and access door)



Containerised WTP with access door, window and safety shower & eyewash station

Project Experience



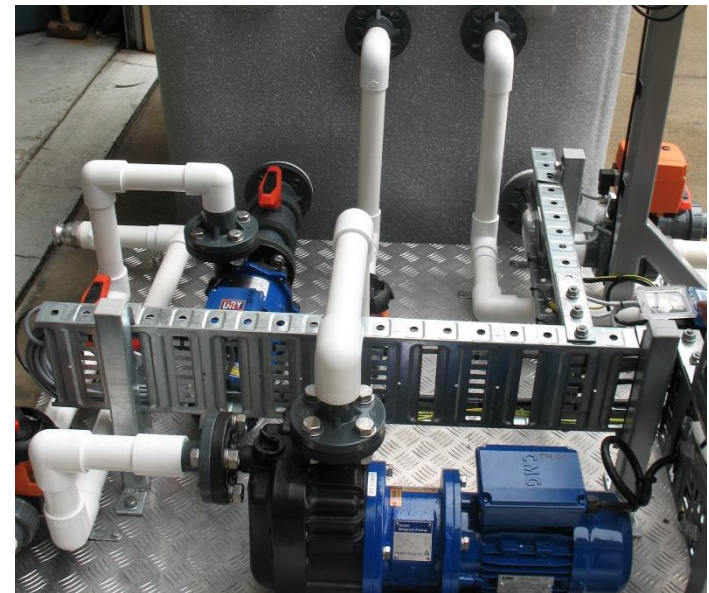
Project	Brisbane Airport Corporation (BAC) Custom pH Adjustment Plant
Location	Brisbane, QLD
Scope	D&C, commissioning & operator training
Capacity	1,000 L/hr
Raw Water	Wastewater from laboratory
Treated Water	Discharge to sewer
Features	<ul style="list-style-type: none"> pH neutralisation via alkali dosing pH and temperature monitoring Environmental and trade waste compliance Custom Fiberglass batching tank Containerised system for quick and easy site installation Fully automated PLC control system



Project Experience



Project	Newcrest Mining Custom pH Adjustment Plant
Location	Orange, NSW
Scope	D&C, commissioning & operator training
Capacity	800 L/hr
Raw Water	Wastewater from laboratory sinks
Treated Water	Discharge to sewer
Features	<ul style="list-style-type: none">pH neutralisation via alkali dosingpH and temperature monitoringFeed and recirculation pumpsEnvironmental and trade waste complianceLowest total operating cost – on site treatment rather than trucking waste off site for disposalCustom 1000L neutralisation tankSkid mounted system for quick and easy installationFully automated PLC control system



 **Clearmake**
a mak water company

Project Experience



Project	CS Energy – Callide Oxyfuel Project Custom pH Adjustment Plant
Location	Callide A Power Station Biloela, QLD
Scope	D&C, commissioning & operator training
Capacity	2,500 L/hr
Raw Water	Wastewater from pre cooling scrubber
Treated Water	Discharge to ash pit
Features	pH neutralisation via alkali dosing pH and temperature monitoring Environmental compliance Skid mounted system for quick and easy installation Fully automated PLC control system



Project Experience



Project	Genalysis Laboratory Services Custom pH Adjustment Plant
Location	Townsville, QLD
Scope	D&C, commissioning & operator training
Capacity	1,000 L/hr
Raw Water	Wastewater from laboratory sinks
Treated Water	Discharge to sewer
Features	<ul style="list-style-type: none">pH neutralisation via alkali dosingpH and temperature monitoringEnvironmental and trade waste complianceCustom 1000L neutralisation tank and 80L acid discharge tankSkid mounted system for quick and easy installationFully automated PLC control system



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