



Akiki Engineering Est.

Water & Steam Experts



1.1. Filtration Catalogue

October 7, 2010

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Commercial Sand Filter



Akiki Engineering Filtration Series Commercial Sand Filters are constructed based on efficient and economical method for reducing suspended method down to 40 microns in size on various feed water sources. Vessels are composed of fiberglass for maximum corrosion resistance to adapt to specific system requirements.

Akiki Engineering Filtration Series Commercial Sand Filter systems include one fiberglass vessel with one top-mount control valve and reverse osmosis cut-off switch. Duplex systems consist of two vessels and two control valves. Filter media is provided with each system. Duplex systems may be configured to backwash sequentially based on differential pressure.

Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications
- Wastewater Treatment
- Filtration process for industries
- Environmental monitoring of groundwater quality
- Waste-to-Energy incinerators

Features:

- Inlet/Outlet service connections of 1", 1-1/2", 2", or 3"
- Automatic built-in by-pass
- Self-adjusting backwash controller
- Non-clogging underdrain system

Operating Specifications:

- Pressure: 30-110 psig
- Water Temperature: 100F max
- Electric Rating: 220 VAC, 1, 50Hz, 10 watts

Options:

- Skid - mounted system are preplumbed and wired and include isolation valves on the inlet and outlet
- 7 day time clock
- Differential Pressure
- Separate source backwash
- ASME code stamped vessel

Commercial Carbon Filter



Akiki Engineering Filtration Series Commercial Carbon Filters constructed based on efficient and economical method for chlorine and organics removal from various feedwater sources. Fiberglass vessels provide maximum corrosion resistance and have a five year warranty. Motor driven brass or Noryl control valves are easily programmed to adapt to specific system requirements. Akiki Engineering Filtration Series Commercial Carbon Filter systems include one fiberglass vessel with one top-mount control valve and reverse osmosis cut-off switch. Duplex systems consist of two vessels and two control valves. Premium carbon with gravel support beds are provided with each system. Duplex systems may be configured to backwash sequentially based on differential pressure.

Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications
- Wastewater Treatment
- Filtration process for industries
- Environmental monitoring of groundwater quality
- Waste-to-Energy incinerators

Features:

- Inlet/Outlet service connections of 1", 1-1/2", 2", or 3"
- Automatic built-in by-pass
- Self-adjusting backwash controller
- Non-clogging underdrain system

Operating Specifications:

- Pressure: 30-110 psig
- Water Temperature: 100F max
- Electric Rating: 220 VAC, 1, 50Hz, 10 watts

Options:

- Skid - mounted system are preplumbed and wired and include isolation valves on the inlet and outlet
- 7 day time clock
- Differential Pressure
- Separate source backwash
- ASME code stamped vessel

Industrial Sand Filter



Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications
- Wastewater Treatment
- Filtration process for industries
- Environmental monitoring of groundwater quality
- Waste-to-Energy incinerators

Akiki Engineering Filtration Series Sand Filters constructed based on a cost-efficient and effective method for reducing suspended matter down to 40 microns in size on various feed water sources. Akiki Engineering Filtration Series sand units are composed of carbon steel vessels with a front-mounted control unit for ease of service. Backwash of the Akiki Engineering Filtration Series is controlled by a brass pilot stager. The stager directs hydraulic or pneumatic pressure to open or close the diaphragm valves. The stager is controlled by an adjustable backwash cycle timer. The diaphragm valve nest piping assembly contains a self-adjusting backwash flow control. Backwash is initiated on either time or differential pressure.

Akiki Engineering Filtration Series Sand Filters are engineered for 100 psig working pressure and tested at 150 psig. The carbon steel vessels are equipped with a top access port for media loading and 4"x6" hand hole(s) in the side shell. All vessels are painted for protection against corrosion.

Akiki Engineering Filtration Series Sand Filters include on carbon steel vessel complete with piping, valves, controller, one media layer and gravel support bed. Duplex systems include two carbon steel vessels with piping, valves, controller, media and gravel support bed.

Operating Specifications:

- Pressure: 30-110 psig
- Water Temperature: 100F max
- Electric Rating: 220 VAC, 1, 50Hz, 5 Amps

Options:

- Skid - mounted system are preplumbed and wired and include isolation valves on the inlet and outlet
- Carbon steel or PVC pipe
- 7-day time clock or differential pressure back wash initiation
- 220 V controller
- Separate source backwash with raw water fast rinse
- ASME tank

Industrial Carbon Filter



Akiki Engineering Filtration Series Carbon Filters constructed based on cost-efficient and effective method for reducing suspended matter down to 40 microns in size on various feed water sources. Akiki Engineering Filtration Series sand units are composed of carbon steel vessels with a front-mounted control unit for ease of service. Backwash of the Akiki Engineering Filtration Series is controlled by a brass pilot stager. The stager directs hydraulic or pneumatic pressure to open or close the diaphragm valves. The stager is controlled by an adjustable backwash cycle timer. The diaphragm valve nest piping assembly contains a self-adjusting backwash flow control. Backwash is initiated on either time or differential pressure.

Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications
- Wastewater Treatment
- Filtration process for industries
- Environmental monitoring of groundwater quality
- Waste-to-Energy incinerators

Akiki Engineering Filtration Series Carbon Filters are engineered for 100 psig working pressure and tested at 150 psig. The carbon steel vessels are equipped with a top access port for media loading and 4"x6" hand hole(s) in the side shell. All vessels are painted for protection against corrosion.

Akiki Engineering Filtration Series Carbon Filters include one carbon steel vessel complete with piping, valves, controller, one media layer and gravel support bed. Duplex systems include two carbon steel vessels with piping, valves, controller, media and gravel support bed.

Operating Specifications:

- Pressure: 30-110 psig
- Water Temperature: 100F max
- Electric Rating: 220 VAC, 1, 50Hz, 5 Amps

Options:

- Skid - mounted system are preplumbed and wired and include isolation valves on the inlet and outlet
- Carbon steel or PVC pipe
- 7-day time clock or differential pressure back wash initiation
- 220 V controller
- Separate source backwash with raw water fast rinse
- ASME tank



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1.2. Softening Catalogue

October 7, 2010

Contents

Commercial Water Softener 3
Industrial Water Softener 5

Commercial Water Softener



Akiki Engineering Filtration Series Commercial Softeners constructed based on efficient and economical method for removing feedwater hardness. Fiberglass vessels provide maximum corrosion-resistance and have a five-year warranty. Motor driven brass or Noryl control valves are easily programmed to adapt to specific system requirements. Polyethylene brine tanks, complete with support bed, are durable and corrosion resistant.

Filtration Series Commercial Softener Systems include one fiberglass vessel with a top-mount regeneration controller for 7-day automatic operation and regeneration.

High Capacity cation resin, gravel support bed and one brine tank with air check valve are included with each system.

Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications
- Water softening for swimming pools and industries
- Synthetic resin based or cement based products

Twin systems consist of

- Two vessels
- One meter
- One brine tank
- One top-mount control valve

Duplex systems consist of

- Two vessels
- One meter
- One brine tank
- Two top-mount control valve

Operating Specifications:

- Pressure: 30-110 psig
- Water Temperature: 100F max
- Electric Rating: 220 VAC, 1, 50Hz, 10 watts

Options:

- Skid - mounted system are preplumbed and wired and include isolation valves on the inlet and outlet
- 7 day time clock
- Volume initiated digital meter for totalized flow
- Volume initiated electromechanical timer controller
- Extra cam and switch for reverse osmosis cut-off
- ASME tank

Industrial Water Softener



Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications
- Water softening for swimming pools and industries
- Synthetic resin based or cement based products

Akiki Engineering Filtration Series Industrial Water Softeners reduce the hardness in feedwaters using ion exchange resin. The water softener vessel contains high quality cation resin in the sodium form that removes hardness.

These softeners are available in vessel diameters from 20" through 54" and include polyethylene or fiberglass brine tanks. They are composed of carbon steel vessels with a front-mounted control unit for ease of service. Their backwash is controlled by a brass pilot stager. The stager directs hydraulic or pneumatic pressure to open or close the diaphragm valves. The stager is controlled by an adjustable backwash cycle timer. The diaphragm valve nest piping assembly contains a self-adjusting backwash flow control. Backwash is initiated on either time or differential pressure.

Akiki Engineering Filtration Series Industrial Water Softeners are engineered for 100 psig working pressure and tested at 150 psig. The carbon steel vessels are equipped with a top access port for media loading and 4"x6" hole(s) in the side shell. All vessels are painted for protection against corrosion.

Akiki Engineering Filtration Series Industrial Water Softeners include one carbon steel vessel complete with piping, valves, controller, one media layer and gravel support bed. Duplex systems include two carbon steel vessels with piping, valves, hand controller, media and gravel support bed.

Brine Tank

- The virtually indestructible polyethylene rotationally cast brine tank is impervious to rust and corrosion. It is equipped with a heavy duty dust cover to prevent dust and dirt build up and keep corrosive brine fumes in the tank.

Operating Specifications:

- Capacities based on 15 Lbs. NaCl per cubic foot yielding 30 Kgrains per cubic foot.
- Actual capacity will depend on flow rate, TDS,Na: hardness ratio and other factors.

Options:

- ASME tank



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1.3. Media Catalogue

October 7, 2010

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Sand Media & Gravel Media



Sand Media

Akiki Engineering Filtration Series Media Sand, also known as 'Industrial sand', is obtained through a process of washing, drying and accurate grading of sand.

Akiki Engineering Filtration Series Media Sand is very uniform and meets tight gradations.

Gravel Media

Akiki Engineering Filtration Series Gravel Media are dredged and washed with water to remove organic impurities. The fine gravel can be dried to remove moisture.

Akiki Engineering Filtration Series Gravel Media meets these requirements: Specific gravity ≥ 2.5 , Acid solubility $\leq 5\%$, very low flats, elongates, organics and fractures.

Akiki Engineering Filtration Series Gravel Media, also known as 'Industrial Sand', is obtained through a process of washing, drying and accurate grading of sand.

Sand Media Applications:

- Slow and rapid filtration process for potable water production
- Water softening for potable water production
- Filtration process for swimming pools and industries
- Filters of water wells
- Environmental monitoring of groundwater quality
- Artificial grass sports surfaces
- Synthetic resin based or cement based products
- Refractory industry
- Foundries, trams/trains, aquaria and golf courts
- Waste-to-Energy incinerators

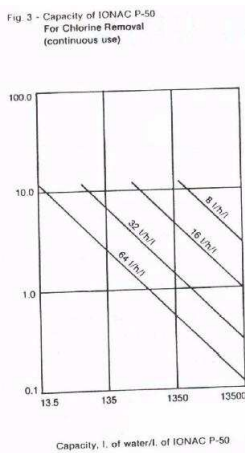
Sand Media Features:

- Our filter sand is 99 % silica
- Effective size (mm) : 0.45-0.55
- Typical Uniformity : 1.5
- Lowest Uniformity : 1.4
- Shape : Rounded/sub angular
- Color : white/off-white to yellow/brown
- Hardness : 7 (Mohs scale)

Gravel Media Features:

- Fine grade (inch.) : 3/16x10
- Fine grade (mm) : 2.0-4.8

Carbon Media, Granular Activated Carbon



Akiki Engineering Filtration Series Carbon Media is made from bituminous coal, carefully selected to produce the best possible activated carbon.

Akiki Engineering Filtration Series Carbon Media removes all the chlorine produced, as well as most other, tastes and odors. It ensures Quality Water, through its ability to absorb causatives and hold them in the activated carbon granules. The material is cleaned by backwashing, but eventually replacement can be required when its absorptive capacity is exhausted. The efficiency of taste and odor removal will depend on cleanliness of the activated carbon and therefore pretreatment should be used to remove suspended solids in excess of 15 ppm.

Applications:

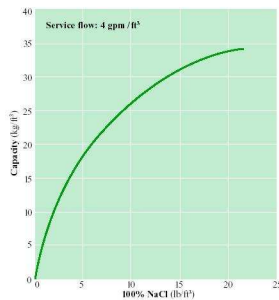
- Environmental monitoring of groundwater quality
- Waste-to-Energy incinerators
- Slow and rapid filtration process for potable water production
- Filtration process for industries
- Filters of water wells
- Artificial grass sports surfaces
- Synthetic resin based or cement based products
- Refractory industry
- Foundries, trams/trains, aquaria and golf courts

Features:

- Apparent density : 0.50-0.55 g/ml dry
- Min. for Backwash : 15 m/h
- Rising Space : 50-75 %
- Max. Service Flow Rate : 10m/h
- Min. Depth : 60 cm

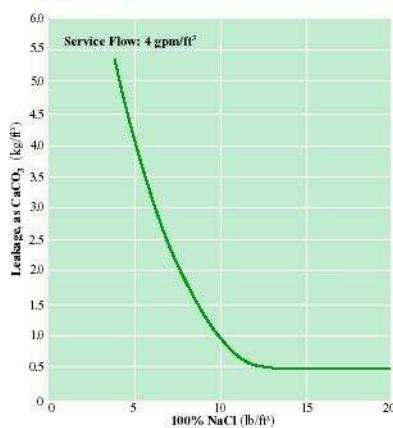
Resin Media, Sodium Softening Strong Acid Cation

Figure 1 Capacity Data



Capacity is based upon a TDS of 400 ppm and 20 grains of total hardness. As the TDS and/or total hardness increases, the capacity will decrease.

Figure 2 Leakage Data



Leakage is based upon a TDS of 400 ppm and 20 grains of total hardness. As the TDS and/or total hardness increases, so will the hardness leakage.

Akiki Engineering Filtration Series Resin Media is a bead-form, standard crosslinked polystyrene sulfonate cation exchange resin, possessing high cation exchange capacity, combined with excellent stability and operating characteristics. It contains a minimal amount of "fines" thus (-50 mesh) showing low pressure loss effects.

Akiki Engineering Filtration Series Resin Media is manufactured without a solvent and it is treated to eliminate taste, odor and color throw; its primary application is in the softening of water, for household, municipal, and industrial use.

Operating Specifications:

- Max Temperature: 140C
- Min bed depth: 60 cm
- Operating flow rate: 24/l/h/l
- Regenerant: NaCl
- Max. Turbidity: 5 NTU
- Regenerant flow rate: 4/l/h/l
- Regenerant (% Conc.): 5-26 %
- Max. free chlorine: 1 mg/l

Applications:

- Synthetic resin based or cement based products
- Water softening for potable water production
- Water softening for swimming pools and industries
- Filters of water wells
- Environmental monitoring of groundwater quality
- Artificial grass sports surfaces
- Refractory industry
- Foundries, trams/trains, aquaria and golf courts
- Waste-to-Energy incinerators

Features:

- Functional structure : R-SO₃-Na⁺
- PH range : 0-14
- Particle size : 0.4-1.2mm
- Form (ionic), as shipped : Na⁺
- Water retention : 45 % -47 %
- Copolymer : Styrene
- Active Group : Sulfonic
- Physical form : Bead form

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1.4. Reverse Osmosis Catalogue

October 7, 2010

Contents

Commercial AE 25 Series 3
Commercial AE 40 Series 5
Commercial AE 80 Series 7
Sea Water Series 9

Commercial AE 25 Series



Applications:

- Humidification
- Kidney Dialysis
- Animal Feed
- Hatcheries
- Greenhouses
- Wastewater Treatment
- Boiler Water
- Battery Water
- Semiconductor production
- Hemodialysis

Design Parameters

- Based upon feed water: SDI \leq 3, 1000 ppm TDS, pH 2-11 and temperature 380F to 950F.

Package Features

- 2.5" x 40" low-energy TFC membranes, FILMTEC LP-2540
- FRP membrane housing
- Vertical Centrifugal High Pressure Pump
- Polypropylene 5 - micron cartridge filter (1/2")
- 24 volt operation for all controls, switches, and solenoid valves
- SS 304 stainless steel skid
- Pretreatment lockout
- Low pressure switch
- Product & Concentrate flow meters
- Product TDS meter
- Automatic Concentrate flush
- Prefilter, Pump Discharge & Concentrate Pressure gauges
- Sample valves for each membrane housing
- Polypropylene face piping

Pretreatment Options:

- The RO feed water must be pretreated in order to prevent membrane damage and/or fouling. Proper pretreatment is essential for reliable operation of any RO system.
- Pretreatment requirements vary depending on the nature of the feed water. Pretreatment equipment is sold separately. The most common forms of pretreatment are Media Filter, Water Softener, Carbon Filter, Chemical Injection.
- Optional: Up to 80

Operating Specifications:

- Prefilter (5 micron cartridge): 10"
- Electrical Requirement: 380 V / 50 HZ / 3 pH

Commercial AE 40 Series



Applications:

- Humidification
- Kidney Dialysis
- Animal Feed
- Hatcheries
- Greenhouses
- Wastewater Treatment
- Boiler Water
- Battery Water
- Semiconductor production
- Hemodialysis

Design Parameters

- Based upon feed water: SDI \leq 3, 1000 ppm TDS, pH 8 and temperature 25C.

Package Features

- 4" x 40" low-energy TFC membranes, FILMTEC TW30 - 4040
- FRP Pressure Vessels
- Stainless Steel Panel
- Vertical Centrifugal High Pressure Pump
- Polypropylene 5 - micron cartridge filter (1")
- 24 volt operation for all controls, switches, and solenoid valves
- SS 304 stainless steel skid
- Pretreatment lockout
- Low pressure switch
- Product & Concentrate flow meters
- Product TDS meter
- Automatic Concentrate flush
- Prefilter, Pump Discharge & Concentrate Pressure gauges
- Sample valves for each membrane housing
- Polypropylene face piping

Pretreatment Options:

- The RO feed water must be pretreated in order to prevent membrane damage and/or fouling. Proper pretreatment is essential for reliable operation of any RO system.
- Pretreatment requirements vary depending on the nature of the feed water. Pretreatment equipment is sold separately. The most common forms of pretreatment are Media Filter, Water Softener, Carbon Filter, Chemical Injection.

Operating Specifications:

- Prefilter (5 micron cartridge): 20" BB
- Electrical Requirement: 380 V / 50 HZ / 3 pH

Commercial AE 80 Series



Pretreatment Options:

- The RO feed water must be pretreated in order to prevent membrane damage and/or fouling. Proper pretreatment is essential for reliable operation of any RO system.
- Pretreatment requirements vary depending on the nature of the feed water. Pretreatment equipment is sold separately. The most common forms of pretreatment are Media Filter, Water Softener, Carbon Filter, Chemical Injection.

Operating Specifications:

- Electrical Requirement: 380 V / 50 HZ / 3 pH

Applications:

- Humidification
- Kidney Dialysis
- Animal Feed
- Hatcheries
- Greenhouses
- Wastewater Treatment
- Boiler Water
- Battery Water
- Semiconductor production
- Hemodialysis

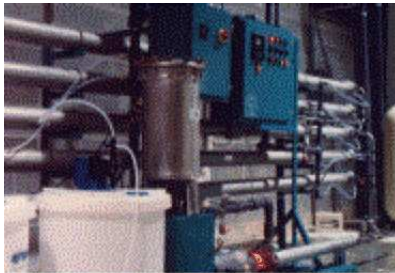
Design Parameters

- Based upon feed water: SDI \leq 3, 2000 ppm TDS, pH 4 - 11 and temperature 20C.

Package Features

- 8" x 40" low-energy TFC membranes, FILMTEC BW30LE - 4040
- FRP Pressure Vessels
- Stainless Steel Panel
- Vertical Centrifugal High Pressure Pump
- SS 304 housing 5 micron cartridge filter (1")
- 24 volt operation for all controls, switches, and solenoid valves
- SS 304 stainless steel skid
- Pretreatment lockout
- Low pressure switch
- Product & Concentrate flow meters
- Product TDS meter
- Automatic Concentrate flush
- Prefilter, Pump Discharge & Concentrate Pressure gauges
- Sample valves for each membrane housing
- Polypropylene face piping

Sea Water Series



35,000 gpd System With Level
Control and Pump Controls

Sea Water RO Systems are a reversal of the natural process of osmosis: a process by which a dilute, or lighter solution passes spontaneously through a semi-porous membrane into a more concentrated solution. For example, fresh water will flow through an osmotic membrane to mix with heavier brackish or sea water solution. In reverse osmosis, this process is reversed by applying external pressure to the saline solution, through the membrane into the pure water side if the external pressure applied to the saline solution exceeds the osmotic pressure.

Akiki Engineering Sea Water Commercial Reverse Osmosis are available with capacities ranging from 1 m³/day to 30 m³/day and from 70 m³/day to 420 m³/day. These systems can be ordered as completely assembled or unassembled.

Applications:

- Humidification
- Kidney Dialysis
- Animal Feed
- Hatcheries
- Greenhouses
- Wastewater Treatment
- Boiler Water
- Battery Water
- Semiconductor production
- Hemodialysis

Options:

- Feed and/or Product pH/ORP Controller
- R/O systems are designed with complete pretreatment units by Akiki Engineering
- System design for special applications
- Pre-treatment systems

Features:

- Stainless Steel Skid
- Pressure relief valve & pulsation dampener
- PVC coated stainless steel or cartridge filter housing
- Electric actuated butterfly valve
- Stainless steel high pressure piping
- PVC low pressure piping
- Sample valves for each membrane housing
- Low & high pressure switch
- Product & Concentrate flow meters
- Pressure gauges

Features:

- TFC spiral wound sea water membranes, 2.5" / 4" / 8" :Dx40" :L
- FRP membrane housing with 1000 psi max operating pressure
- Stainless steel globe valve on concentrated line for plunger type pumps and on concentrated and feed lines for centrifugal pumps
- Auto flushing system contains stainless, steel pump, polyethylene fresh water tank, level switches, automatic valves and skid
- Product conductivity controller
- Product TDS controller



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1.5. Disinfection Catalogue

October 7, 2010

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Chemical Dosing Pump



Akiki Engineering Disinfection Series Chemical Dosing Pump Metering Injectors are well suited to a variety of water and wastewater treatment applications. C-1500N Series feature Blue-Whites exclusive Heavy Duty Head with Bullet Cartridge Valves constructed of tough PVDF. Each valve has two ceramic checks double sealed with high grade Viton and TEE/P o-rings. The double ball valve design provides enhanced priming, and is exceptional for purging air and gas. The STANDARD c-1500N has a dial-type, top mounted output control. Deluxe units have a built-in percentage controller; both the stroke of the diaphragm and the controller can be adjusted.

Akiki Engineering units provide excellent accuracy when metering small amounts of chemical. They have a diaphragm 50 % smaller than Standard C-1500Ns. the MICRO-FEED option is available on either the standard or deluxe models. Whichever C-1500N unit you choose you know you'll be getting superior features, materials and performance.

Applications:

- Water treatment and conditioning
- Soap, wax and detergent injection
- Wastewater treatment
- Biocide feed
- Rural water systems
- Cooling tower and boiler water treatment
- Fertilizer and nutrient injection
- Swimming pool chlorination/ pH control
- Wherever a tough dependable injector is needed

Features:

- Superior pump head design
- Field serviceable
- All ball bearing gear motor for smooth, powerful operation plus, permanent lubrication
- Pump head design and material options
- Electronic and mechanical output controllers
- Quick adjusting output mechanisms
- Voltage options
- Efficient, dependable design- each unit factory tested
- Private labeling for volume purchasers
- 3/8" ODx" ID Tubing connections
- Backed by an excellent limited warranty and, a nationwide network of factory authorized warranty service centers

Operating Specifications:

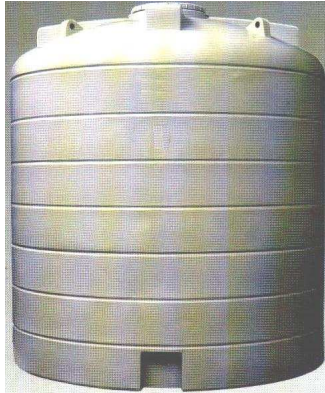
- Max. Working Pressure: 125 psig/8.6 bar (most models)
- Max. Fluid Temperature: 130 F/54 C
- Ambient Temp Range: 14 to 110 F/-10 to 43 C
- Max Viscosity: 1,000 Centipoise
- Max Suction Lift: 10 ft.Water
- Output Accuracy: +/- 10 % of maximum(water 0 psig, 5" suction lift)
- Turndown Ratio: 20:1
- Turndown Ratio: 400: 1 with optional 5 second or 60 second timer
- Duty Cycle: Continuous
- Enclosure: Acceptable for outdoor use. NEMA 3R (IP23)
- Power Requirement: Standard 115V/60Hz-45 Watts, Optional: 220V / 50Hz , 24V / 60Hz, 230V / 60Hz
- Amperage Draw: 115V / 60Hz starting 74, running 45
- Amperage Draw: 230V / 60Hz starting 36, running 21
- Amperage Draw: 24V /60Hz starting 3.4, running 2.0
- Amperage Draw: 220V/ 50Hz starting .31, running .19
- Dimensions: 9-1/16" Hx4-1/2" Wx5-3/4" D
- Shipping Weight: 8 lbs/ 3.64 kg
- Note: 220V / 50Hz units deliver approximately 20 % less output

Options:

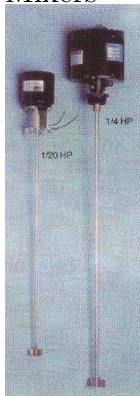
- Deluxe Models Feature Dual Control, Stroke length adjustment and Timer
- Additional options are available on demand.

Chemical Tank & Mixers

Chemical Tank



Mixers



Mixers

Akiki Engineering's Mixers are excellent for use with Akiki Engineering chemical feed systems in tanks up to 500 Liters, making them an essential accessory for many applications.

Mixers for larger tanks are available upon request of the customer.

Chemical Tank Applications:

- Corrosive and non corrosive chemical solutions
- Storage tank

Chemical Tank Features:

- Materials: Polyethylene (tank / cover)
- Stand: welded steel
- Tube guide: PVC
- Strong & Durable
- Hygienic
- Light Weight
- Maintenance Free
- Hermetically Sealed
- Weather Resistant
- Resistant to UV Light
- Resistant to Stress, Cracking, & Corrosion
- Provided With Inlet & Outlet Connections
- Available in white transparent or in grey opaque
- Inert against chemicals

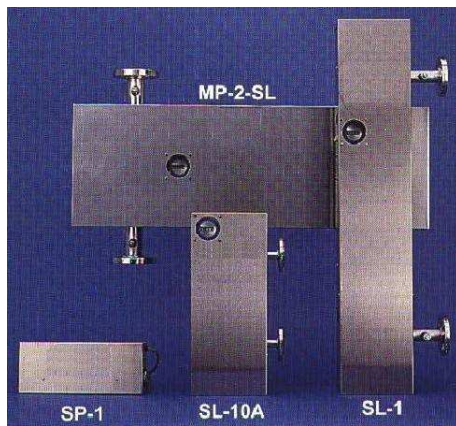
Mixers Features:

- Stainless steel shaft / impeller
- Bracket mount
- Mixer Motor: 1/3 hp
- Voltage: 115V / 60Hz , 230V/ 60Hz, 220V/ 50Hz

Chemical Tank Options:

- Graduated

UV Units - Low Flow



The Disinfection Series UV units provide compact design and economical ultra-violet treatment for low-flow applications, such as laboratory and medical facility water, pharmaceutical make-up processes, final electronic rinsing and recirculation loops, to name a few.

Akiki Engineering provides Disinfection Series UV units which produce little change in water temperature, even after prolonged periods of no water flow, making them ideal for such applications such as water for vending machines.

The Disinfection Series UV units may also be configured for TOC reduction or ozone destruction applications found in high purity or ultrapure water processes.

Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications

Features:

- UV intensity sensor is optional on some models
- Stainless steel that has been electropolished and passivated is available on some models
- Validated UV lamps are available on some models
- Quick lamp change-out time
- Compact design

Operating Specifications:

- Standard water temperature range 350F to 1000F (20C to 380C)
- Standard operating pressure up to 120 PSIG (8.3 bar)

Options:

- Temperature Safety Control
- High Pressure Model (Up To 150 PSIG)
- Sanitary Fittings
- Lamp Out Alert (LOA)
- UV optical sensor
- High Water Temperature Models (>100F/38C)
- Signal Conversion
- ARC Detection Circuit

UV Units - Indoor Use



The Disinfection Series UV units utilize a compact integrated design, incorporating both the UV treatment chamber and electrical cabinet base, where all electrical components and instrumentation are located. These compact one-piece UV units are engineered for indoor installations and controlled operating environments.

Akiki Engineering provides Disinfection Series UV units which are being used in laboratory, hospital, and hotel installations, as well as cosmetic, pharmaceutical, and semiconductor manufacturing processes to name a few water treatment applications.

UV disinfection flow rates for the eleven standard IU models range from 40 to 630 GPM (9.1 to 143.2 m³/hr), with TOC reduction and ozone destruction configuration also available.

Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications

Features:

- Stainless steel treatment chamber
- Stainless steel cabinet housing

Operating Specifications:

- Standard water temperature range 350F to 1000F (20C to 380C)
- Standard operating pressure up to 120 PSIG (8.3 bar)

Options:

- Temperature Safety Control
- High Pressure Model (Up To 150 PSIG)
- Sanitary Fittings
- Lamp Out Alert (LOA)
- Internal Finish
- Endplate-Mounted 360 UV Intensity Sensor
- 4-20 mA Output Signal

UV Units - T Series



Ultraviolet disinfection systems channel water past submerged lamps that emit lethal doses of UV energy, destroying any pathogens. The strength of a dose is a product of the UV light intensity and exposure time.

Not only is it safe and highly effective, UV does not change the taste, color, or odor in water. It simply removes the risk of illness caused by microbial contamination, making water safe to drink or use commercially.

When bacteria, viruses, and other microorganisms are exposed to germicidal UV light at a particular wavelength (243.7 nanometers), their reproductive capabilities are destroyed, which means that they are inactivated and no longer pose a threat to human health.

Applications:

- Drinking Water
- Ice-Making
- Car Wash Water Reclamation
- Rinse Waters
- Biomedical Applications
- Laboratory Applications
- Photography
- Pharmaceutical Production
- Water used in chemical processes
- Cosmetics
- Restaurants
- Metal Plating Applications

Features:

- **High Output UV Lamp:** The UV light is generated from a low-pressure, high-output lamp making it possible to treat a given amount of water with smaller, more efficient units.
- **A Unique Water Chamber Design:** AT Series' unique water chamber optimizes hydraulic performance and increases disinfection efficiency, thus maximizing exposure to the penetrating light and offering to treat flow up to 178 liters/minute
- **New Power Supply Technology:** Advances in electronic technologies have allowed the AT series power supply to withstand voltage fluctuations while ensuring continuous disinfection by maintaining lamp intensity.
- System that shows you how many months the lamp has been in use
- Audible/Visual Lamp Failure Alarm
- New UV Intensity Monitoring Device

Operating Specifications:

- Maximum Operating Pressure: 125 psi
- Control Module: 7x8x6 cm

Options:

- Solenoid Valve
- Flow restrictor
- Remote Options Cord



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1.6. Instrumentation Catalogue

October 7, 2010

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Cooling Tower Controller



Akiki Engineering Instrumentation Series Cooling Tower Controllers continuously protect cooling systems from the harmful effects of scaling, corrosion, and microbiological growth. They are designed using advanced microprocessor technology and the latest in surface mount assembly techniques. The result is amazing versatility in a compact, reasonably priced controller package. The units are simple to program using the clearly labeled keypad and the bright alphanumeric display. The distinctive receptacle cords make it easy to connect any electrical device being controlled.

Options:

- Conduit connections are available where hard wiring is preferred and is required for 220VAC service. The optional mounted flow assembly is used to interrupt the controllers outputs when there is less than 1 GPM of flow. A high pressure (250 PSI max) flow assembly is available for applications above 125 PSI.
- The selectable timer is an available option allowing chemicals to be dosed by percent, pulse with accumulator, percent post blow down, or a limit timer. An alarm output relay is available to provide an A/C output to an alarm device such as a strobe light or warning siren. Additionally, an alarm dry contact is also available to send an alarm signal to integral building management systems or other controls.
- Biological growth can be easily controlled using the optional 28-day biocide timer; this timer is available as a single, dual, or even triple biocide control. Applications where make up water conductivity varies may require the make up conductivity option. This allows for control of the towers based on cycles of concentration. Controllers that have pH control can also have the added feature of ORP control, allowing control or monitoring of your oxidizing chemicals. Programmable proportional 4-20mA outputs can be added to allow for control of metering pumps, or remote monitoring of system inputs.
- The serial line communication option can be ordered with or without an internal modem. These unique features allow for the user to monitor and change the system parameters directly or from a remote location.

Operating Specifications:

- Power Requirements: 90 - 250 VAC @ 50/60 Hz, 100 VA
- Control Output: Line Voltage @ 600 VA Per Relay (5 amps @ 120 VAC)
- Maximum Pressure of Standard Flow Assembly: 200 PSI @ 70 F, 125 PSI @ 125 F, 8.62 Bars @ 52 C
- Electronic Environment: 0 to 125 F, -17.8 to 52 C, 100 % Humidity

Features:

- A high resolution 10 bit A/D converter and adjustable analog sample sensitivity for greater accuracy from all sensor inputs.
- Control TDS, pH or ORP.
- Fully isolated differential inputs for all circuits help prevent the possibility of ground loops.
- Keypad activated hand/off/auto control of all relay outputs.
- Modular hardware and software for easy access and servicing.
- A prewired NEMA type 4X enclosure, High Impact Resistant PVC, for protection from harsh environments.
- Hi/Lo Alarm Indicator: Standard
- Standard pH Scale: 0-14 pH
- Standard Conductivity Scale: 0-500, 0-2000, 0-5000, 0-10000 and 0-20000 S/cm
- Standard ORP Scale: 0-1000 mV
- Front Panel H/O/A Control: Standard
- Timers: Programmable
- Accuracy - At point of measure excluding sensor: 1 %
- Differential: Programmable
- Standard Plumbing: Glass Filled Polypropylene (GFPPPL) Slip or Threaded

Flowmeters



Features:

- Well suited for closed pipe installation
- Easy-to-read dual scale (GPM/LPM) screen printed on both sides of the meter body
- Horizontal or vertical pipe installation
- One-piece machined acrylic meter body
- Corrosion resistant internal parts
- Durable, highly polished one-piece meter body
- Stainless Steel Floats and float guides
- Sturdy adapters with O-ring seals
- Bulkhead nuts attach directly to inside panel
- Separate mounting screws are not required
- Acceptable in direct sunlight applications

Options:

- Adjustable Flow Control Valve, which is easy to disassemble. No special tool required, ALL FIELD REPLACEABLE.

Operating Specifications:

- Temperature: 190F/88C @ 0 pressure or 200F/93C @ 0 pressure
- Pressure: 150 PSIG/10.3 Bar @ 70F/21C or 250 PSIG/17.2 Bar @ 70F/21C
- Full scale accuracy: 10 % or 5 %
- Meter Body Material: Acrylic or Machined Acrylic
- Adapter Material: Polypropylene
- Connection Type: Saddle
- O-rings: Viton
- Float Material: # 316 SS. Hastelloy or Teflon (low flow units)
- Max. Pressure Drop: 0 psi or 2 psi full scale

pH-ORP Monitor and Controller



Features:

- Display in C or in F
- Automatic Temperature Compensation (pH)
- Hold & Simulate Function
- Relay Options
- Dual Output Option Allows Temperature and pH Signal Transmission



Applications:

- Neutralization systems
- Heavy metals recovery
- Scrubber control
- Plating control
- Water quality monitoring
- Disinfecting

Operating Specifications:

- Each pH/ORP Sensor requires a preamplifier

Mini Controllers



Features:

- Alarm Contact
- LCD Display
- 2-Meter Cables

Applications:

- Neutralization systems
- Heavy metals recovery
- Scrubber control
- Plating control
- Water quality monitoring
- Disinfecting

Operating Specifications:

- pH meters' pH range is from 2 to 12

Options:

- Mini Controllers are 110/220V. Other voltages and models are available.
- Other Electrodes are also available.



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1.7. Pressurization Catalogue

October 7, 2010

Contents

Pressurization Unit, For Closed Circuits 3

Pressurization Unit, For Closed Circuits



The high specification twin pump pressurization unit is ideal for controlling and maintaining pressure in sealed heating and chilled water systems. The water in sealed systems expands on heating (increasing pressure) and contracts (reducing pressure) on cooling.

The continuously and automatically monitors system pressure and maintains it within set limits. On heating, if pressure reaches the upper limit, the pressure control valve (spill valve) discharges water to a covered atmospheric tank, the spill tank. Water enters the covered spill tank below surface level. This, and the generally high temperature of the water in the spill tank, tend to minimize oxygen uptake. On cooling as pressure falls the units pumps draw water from the spill tank into the system to maintain pressure. The unit also makes up water losses due to the small leaks, maintenance operations, vapour loss from glands etc. Low and high pressure volt free switches allow boiler or chiller safeguarding. A built-in accumulator vessel prevents excessive pumps starting. High and low level switches in the spill tank warn of fault situations and protect against pumps running dry.

Operating Specifications:

- Steel spill Tank with lid, internal ladder, level gauge, low level switch, make-up water float valve, drain connection, pump connection, spill valve connection and overflow BS 6281 A-type air gap with mesh, tundish & drain connection. Tank protected internally with high duty epoxy finish. Sized for full system expansion
- Twin pumps, each rated at 100 % system duty, cascade and auto-change-over operation
- Strainers to protect pumps, spill valve and pressure switches from dirt ingress
- Non-return valves on each pump outlet
- Pressure switches for pumps and spill valve control, high and low pressure warning and cut-outs (adjustable for pressure setting and differential)
- Accumulator vessel, sized to suit system power
- System pressure regulating valve, pressure gauge, and isolation ball valve
- IP 55 Control panel enclosure (see panel specification)
- Wiring between pumps, pressure switches, level switches, spill valve and control panel
- Carbon steel pipework
- Mild steel base
- All steel parts finished externally in blue gloss paint
- Pre-delivery testing of all units for soundness, function and electrical safety
- For applications outside the scope of standard range, for whatever reason, special units can be offered

Standard Performance Data

- Full load current: Dependant on unit selection
- Pump output pressure (Max): 3 BarG
- Permissible system temperatures: 0 to 99C
- Max system working pressure (after thermal expansion): 8 BarG

Standard Control Panel Specification

- IP 55 enclosure with lockable, hinged door
- Control circuit fuse for each pump 2 amp
- Door interlocked isolator
- DOL contactor complete with thermal overload protection for each pump
- Auto / Hand / Off pump control switch
- Pump 1 / Pump 2 / Auto-change lead pump select switch
- System reset button, Alarm circuit mute button (alarm extra)
- Indicating lights for: - Power On, high and low system pressure, pump run and trip
- Volt free contacts for high and low system pressure
- Pump Auto-change-over with each pump start or pump trip (when auto-change selected)
- Connections and control circuitry for low water pump cut-out switch (self-resetting) (switch extra)

Heating System & Installation Notes

- Venting: Provision must be made for venting all air from the heating system. Automatic air vents are suitable for LTHW systems operating at or below 95 deg.C. For MTHW systems any automatic air vents should be thermostatic to prevent flash steam emission.
- Connection Point: Connect the unit to the return pipe-work on the suction side of and near to the circulating pump. This minimizes unit size.
- Insulation: Do not insulate the unit or pipe-work to it.
- Water Make-Up: If a demineralised make-up water supply is being used, please consider also providing a stand-by raw water make-up supply.
- Alarms and Cut-Outs: The unit has Volt-Free-Contacts (OPEN circuit in fault condition). These must be linked to the boiler controls to cut out heat supply in the event of low or high pressure faults. The Volt-Free-Contacts should never be linked to the system circulating pumps.

Information we need about the heating system to make a selection

- Total System Water Content, including boilers (liters)
- Flow and Return Temperatures (° C)
- Maximum and Minimum System Pressures (at point of connection) (bar.g.)
- Maximum Boiler Power at any one time (kW)
- Electrical Supply Details (Voltage/Phases/Frequency)
- Our quotation will provide price availability, overall dimensions, weights and connection sizes. Further details are available on request.



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1.8. Degasification Catalogue

October 7, 2010

Contents

Degasifier System, AEDG model 3

Degasifier System, AEDG model



Degasifier System

The Degasification system specified under this section shall be a vertical cylindrical column of forced air system with PVC packing for removal of CO₂ and H₂S. The Degasifier System shall be a product of Akiki Engineering, a Company regularly engaged in the manufacture of Water Treatment Equipment. The Degasifier System shall be of the vertical type suitable for a flow rate of 20 GPM /SF.

The Degasifier System shall consist of Degasifier column(s), Piping, Valves, centrifugal Blower, Manhole, Packing, internal distribution, and an (optional) Storage tank.

Degasifier Column

- The column shall be with side shell height 450 cm and shall be constructed of mild steel, standard dished end shall be fitted to top side, all welds shall be continuous and uniform. A 28 x 38 cm Manhole complete with flange, cover gasket yoke, bolts and nuts shall be located at top and side of Degasifier column for sizes 100 cm diameter and larger. Smaller sizes shall be fitted with flanged hand holes.

Lining

- All interior wetted surfaces of column shall be commercially sand blasted after fabrication and the first coat of tank lining shall be applied within three hours to prevent oxidation of prepared surfaces.
- Column interior lining shall be epoxy tank coating and shall be applied to all wetted surfaces of the tank in two successive coats.
- External column painting shall be two coats of rust inhibitor.

Internal Distribution and Packing

- Column internal equipment shall include upper distribution system and air distribution system hydraulically balanced for proper operation.
- The packing shall be of PVC construction and shall be 4 inch in diameter and 4 inch in length, packed in the column uniformly at a total depth of 2.5 meters.

Blower

- A centrifugal Blower driven by electric motor shall be installed complete with flexible hose and adjustable valve.

Piping and Valves

- The Degasifier shall be provided with all face piping inlet, outlet, drain, overflow and air outlet.



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2.1. Bio-Chemicals Catalogue

October 7, 2010

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ADCD003, Powder for Degrading Organic Residues	4
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ALCD002, Liquid for Degrading Organic Residues



Areas of Applications:

- Restaurants and agroalimantar industries
- Sewer systems
- Drains and waste water pipes
- Grease trap applications
- WC surfaces
- All surfaces carrying organic deposits

Features:

- Rapid and in depth action thanks to the synergetic action of bacteria, enzymes and nutrients.
- Provides rapid start-up of grease traps.
- Allows grease traps to work better and longer with reduced service.
- Maintains lines clean and free flowing, controls odors and has a long shelf life.

Features:

- Stops foul odors and has a pleasant perfume
- Decomposes the grease deposits on the inner surfaces of waste water pipes and digests the organic matters

Properties

- Neutralizes the foul odors generated by anaerobic microorganisms
- Postpones the period of cleaning and degreasing of traps and connected piping
- Decomposes the grease deposits on the inner surfaces of waste water pipes
- Digests the organic matter

Composition

- Presentation: Liquid
- Smell: Pleasant
- Color: Light brown to light green
- Non-pathogenic microorganisms
- PH value in saturated solution: 5.5
- Case of 6 bottles x 1 liter
- Density: 1+/- 0.05

Packaging

- Powdered formulation
- 25 and 200 liters drums
- Case of 6 bottles x 1 liter
- Liquid in 5lt, 20lt and 30lt plastic packs and 200lt drums.

Safety

- Does not require any special precaution.

ADCDD003, Powder for Degrading Organic Residues



Features:

- Rapid and in depth action thanks to the synergetic action of bacteria, enzymes and nutrients.
- Provides rapid start-up of grease traps.
- Allows grease traps to work better and longer with reduced service.
- Maintains lines clean and free flowing, controls odors and has a long shelf life.

Features:

- Stop H₂S odor and protect the system from H₂S corrosion.

Properties

- Stops foul odors from grease traps
- Degrades the trapped grease starch and other organic substances
- Prevents blockings in waste water pipes

Composition

- Presentation: Micronised powder
- Smell: None
- Color: Off white
- PH value in saturated solution: 6.5-7.5
- Microorganisms with long lasting effect fixed on mineral supports
- Density: 0.9-1
- Granulometry: 160 microns

Packaging

- Powder in jars of 1kg and buckets of 5kg.

Safety

- Does not require any special precaution.

Areas of Applications:

- Waste pits, waste water pipes and sewer systems.
- Grease traps and pumping stations.

ALCD003, Odor Removal



Features:

- Immediate action thanks to its perfumed formulation.
- In depth action thanks to its microorganisms capable of digesting complex fat matters, grease, oils, cellulose, proteins and starch
- Dissolves and turns into liquid the organic fouling which would be responsible for blockages in the pipe
- Reduces or eliminates foul smells from pipes, traps and lines in all sanitary systems

Properties

- Neutralizes the foul odors generated by anaerobic microorganisms
- Postpones the period of cleaning and degreasing of traps and connected piping
- Decomposes the grease deposits on the inner surfaces of waste water pipes
- Digests the organic matter

Areas of Applications:

- Sanitary systems
- Septic Tanks
- Drains and Lines
- Refuse containers
- Hotels, restaurants, clinics, nursing homes, schools and colleges
- Waste water pipes
- WC surfaces

Composition

- Presentation: Liquid
- Smell: Pleasant
- Color: Light brown to light green
- Non-pathogenic microorganisms
- PH value in saturated solution: 5.5
- Case of 6 bottles x 1 liter
- Density: 1+/- 0.05

Packaging

- Powdered formulation
- 25 and 200 liters drums
- Case of 6 bottles x 1 liter
- Liquid in 5lt, 20lt and 30lt plastic packs and 200lt drums.

Safety

- Does not require any special precaution.

AU 509 & DC2000GL, Descaler & Abiosock

DC2000GL



AU 509



AU 509



AU 509 Applications:

- Descaling of toilet bowls, toilet systems
- Descaling of drain and lines
- Slow drains
- Sewer lines
- Lifting station
- Sewage treatment plant (collection system, sewage plant)

AU 509 Features:

- Immediate action due to its chemical composition
- Secondary action due to its micro-organisms capable of digesting fat, grease and oil found in toilets, drains and lines
- Avoid dismantling of drains and lines and other equipments when used either on a preventative or curative basis

AU 509 Packaging Features:

- Watersoluble sachets
- Cartons of 100 sachets (100 x 50g)

AU 509 Composition Features:

- Presentation: Powder formulation based on bacterial strains and enzymes
- Color: Light Grey
- Smell: None
- Specific Gravity: 1.2/1.3
- PH at 1 % : 1.5
- Completely soluble composition

DC2000GL Features:

- Contribute to a better working of sewer lines and treatment plants in maintaining biological equilibrium
- Avoid formation of grease deposits
- Allow control of odor in destroying odor causes
- Good stability and long shelf life

DC2000GL Packaging Features:

- Tissue sack based on microorganisms cultures.

DC2000GL Composition Features:

- Presentation: Sack containing microorganisms
- Smell: None
- Non-pathogenic microorganisms

AU 509 & DC2000GL Safety

- Does not require any special precaution.



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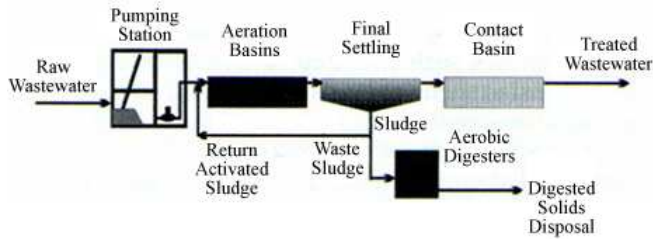
3.1. Wastewater Treatment Catalogue

October 7, 2010

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Rectangular Plant, Extended Aeration



This type of physical-biological process is effective in reducing the organic content of wastewater and accomplishes the major objective of BOD and suspended solids removal. The extended aeration activated - sludge process is commonly used to treat small wastewater plants from schools, subdivisions and villages. The purpose is to control the decomposition of the organic material in the presence of air with a minimum of time and provide an acceptable effluent. This type is furnished with hopper-type clarifier.

Options:

- The units may be concrete built in place or steel tank fabricated in factory.

Aeration Tank

- Continuous complete mixing is done by diffused air. Aeration period is 24 hr.

Clarifier or Settling Tank

- The liquid and solids flow into the clarifier through a submerged inlet pipe. The settled sludge is returned to the aeration tank to maintain a sufficient quantity of solids in the aeration system or to the sludge holding tank for the purpose of wasting when there is an excess amount of solids in the aeration tank.
- Disposal is done through a submersible pump located at the bottom of the hopper type tank.

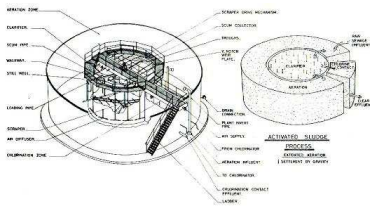
Sludge Holding Tank or Aerobic Digester

- Sludge is removed from the settling tank and discharged into the sludge holding tank. In this manner, the solids concentration in the aeration tank is controlled.

Chlorination Contact Tank

- The clear treated effluent from the clarifier (settling tank) flows into the chlorine contact chamber for final. Chlorine is fed continuously to the chlorine contact chamber. Applications of 8 to 15 mg/l provide adequate disinfection with a contact time of 30 min.

Circular Plant, Extended Aeration



This type of physical-biological process is effective in reducing the organic content of wastewater and accomplishes the major objective of BOD and suspended solids removal.

The circular extended aeration activated - sludge process is commonly used to treat large divisions, housing developments, hospitals, industries, schools, villages, hotels, camps, and food processing factories.

The purpose is to control the decomposition of the organic material in the presence of air with a minimum of time and provide an acceptable effluent.

The principal structure shall consist of two concentric steel tanks forming an inner chamber and outer annulus. The inner chamber shall be used as a clarifier or settling tank. The outer annulus shall be divided into compartments to form aeration chamber and chlorine contact chamber.

Aeration Tank

- Continuous complete mixing is done by diffused air. Aeration period is 24 hr.

Clarifier or Settling Tank

- The liquid and solids flow into the clarifier through a submerged inlet pipe. The settled sludge is returned to the aeration tank to maintain a sufficient quantity of solids in the aeration system or to the aerobic digestion tank for the purpose of wasting when there is an excess amount of solids in the aeration tank.
- Disposal is done through a submersible pump located at the bottom of the circular clarifier.

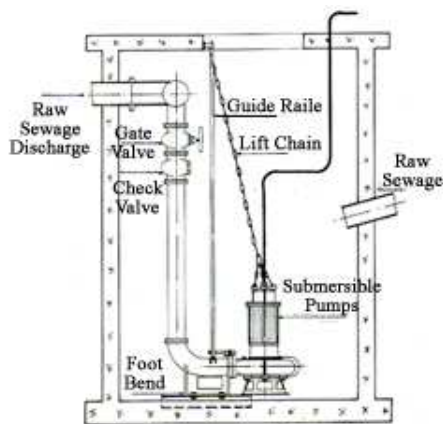
Aerobic Digester

- Sludge is removed from the settling tank and discharged into the sludge holding tank. In this manner, the solids concentration in the aeration tank is controlled.
- Sludge is removed from the settling tank and discharged into the aerobic digester. In this manner, the solids concentration in the aeration tank is controlled.

Chlorination Contact Tank

- The clear treated effluent from the clarifier (settling tank) flows into the chlorine contact chamber for final. Chlorine is fed continuously to the chlorine contact chamber. Applications of 8 to 15 mg/l provide adequate disinfection with a contact time of 30 min.

Lift Station



There shall be furnished and installed a complete AEE lift station unit with all equipments and accessories that may accomplish a pumping capacity as shown in the table.

The major items of equipments shall include: Tank steel structure or concrete, internal piping and valves, two non-clog centrifugal sewage pumps(one of which is for stand-by), float switches, and all other items required to provide a complete lift station as specified herein.

Test Options:

- The completed lift station shall be given a running test of the equipment where possible, to check for excessive vibration; for leaks in all piping; for correct operation of the control system; and of all auxiliary equipment. The station suction and discharge lines shall be connected to a reservoir and the station shall recirculate the water, simulating actual service conditions. The automatic control shall be adjusted under such operating conditions to start and stop the pumps at approximately the levels required by the job conditions.

Construction

- The lift station housing shall be constructed of carbon steel (fabricated in factory) or concrete (built in place) with specified length and width.
- The base and cover plates shall be constructed of steel plate to cover the lift station ends.
- The cover plate shall have a manhole to allow maintenance of the station. The station tank shall be structurally designed to withstand internal stress imposed by sewage level under normal operating conditions, and to withstand the hydrostatic pressure normally encountered in underground installations. A guide rail shall be installed vertically to permit removal of pumps for maintenance purposes.

Pumps

- There shall be furnished and installed a non-clog self-priming centrifugal submersible sewage equal pumps, specifically designed for handling raw, unscreened sewage.

Piping

- The station shall be furnished with all necessary interior pipes, fittings and valves.

Welding

- All steel structural members shall be joined by electrical arc welding with fillets of adequate section for the involved diameter. Such welds shall be continuous and water tight to exclude ground water. All inserts for pipes shall be welded inside and out. The suction and discharge lines shall be reinforced where they pass through the station walls with steel sleeves welded inside and out, or above grade for easier access. The space between the pipes and the steel sleeves shall be packed tight with expanding cement grout to prevent leakage.
- In operation, when liquid level reaches the lowest float switch, the holding contact is closed and the alternator is energized. Upon further rise of the liquid level in the lift station, the second float switch opens; the alternator will be de-energized, thus alternating the lead pump.
- If the level continues to rise with the lead pump in operation, a third float switch shall close. This will start the second or the lag pump. The lead and lag pumps shall then pump down to the level of the lowest float switch at which point both pumps shall stop.



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4.1. Closed System Catalogue

October 7, 2010

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Chemical Dosing Pots	5
Equipment For Closed Systems (2)	7

Chemical Products for Closed Systems

Treatment Benefit Features:

- Eliminates leakage caused by corroded pipes, joints, etc.
- Prolong the life of your equipment.
- Reduce maintenance cost.
- Maintain cooling and heating efficiencies

Pipe Cleaner: CCH 4200

- Liquid used to clean and flush loop containing dirty water and large amounts of rust and scale
- Remakes soluble the mineral deposit and disperse the none soluble particles
- You don't have to stop the installation, and on metallic surfaces, it has a passive action
- After the curative treatment, it is necessary to make a preventive treatment by using CVA 4110 (soft water) and biocide for microbiological control CFR 2260
- Dosage rate: 1 % to 5 % of system volume
- Package: can of 20kg

Anticorrosion & Antiscale: CVA 4110

- Liquid used for the control of corrosion in closed systems, chilled and hot water heating systems (soft water)
- Combination of corrosion inhibitors, scale inhibitors and a buffer (caustic soda)
- Dosage Rate: 118 g / m³ / OTAC
- Storage: Keep away from freezing area
- Package: Can of 20 and 200 kg, container of 1000 kg

Microbiological Control: CFR 2260

- Used as preservative, bactericide, microbiocide, odour controller, and anti-fouling agent
- Used when there is a sterilisation
- Dosage is function of contamination state of the treated circuit, seasons, temperatures
- Sterilisation: 200 to 300 ppm, Maintenance: 100 to 150 ppm
- Storage: Keep away from freezing point
- Package: Can of 20, 25 and 230 kg

Equipment For Closed Systems (1)

Controller



Controller

- Digital readout display
- Control inhibitor feeding based on make-up volume
- Conductivity / pH function: Sensor, set point, high/low alarm
- Set points and alarms (Conductivity, pH)
- Control biocide-feeding program
- Furnish one microprocessor per independent closed system.

Cold Water Meter



Cold Water Meter

- Provide a make-up water meter sized the same as the make-up line
- A water meter is to be hard wired into the microprocessor controller, registering and accumulating total gallons of make-up water.
- Furnish a make-up water meter per each independent closed system

Chemical Dosing Pots



Correct water treatment is essential for the corrosion protection of heating system. AEE Thermal products chemical dosing pots offer a safe and convenient way to introduce water treatment chemicals to the system.

General

Guidelines for installation and use are given below. However, the equipment and water treatment in use in any individual system may dilate variations so please consult your water treatment supplier to ensure best results.

Installation

Choose a location near a main pipe run or system header. Fasten the chemical dosing pot securely in place using the brackets provided. Pipe the drain away to a safe disposal point. Connect the system connections to the pipe or system header. To ensure that there will be a flow through the chemical dosing pot leave sufficient gap between the connection points to give a difference in dynamic pressure between them (1 meter apart should be enough). This will admit the water treatment gradually to the system water. Alternatively, connect between flow and return headers, which will admit the water treatment more quickly.

Each dosing pot is supplied as standard complete with the following Operating Specifications:

- System isolation valves
- Dosing valve
- Drain valve
- Air vent
- Funnel
- Blue gloss paint finish
- For full technical details see drawing No.

Features:

- Furnish a chemical dosing pot with suitable capacity (Liters) per each independent closed system.
- Other sizes are available

Use Caution

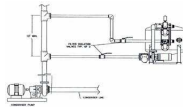
- The dosing pot contents may be hot. Take care, avoid scalding.
- On higher temperature systems the contents may be above atmospheric boiling point. Opening valves may cause a release of flash steam.
- Isolate the chemical dosing pot from the system by closing the two system ball valves.
- Slowly open the drain valve- caution-some water and flash steam may be emitted to the disposal point.
- Open the dosing valve, and the vent screw. The contents will now drain out.
- Close the drain valve
- Fill the chemical dosing pot the vent with the required amount of chemicals, diluted as necessary.
- Close the dosing valve and the vent screw.
- Open the system valves to allow system water through the unit.

Equipment For Closed Systems (2)

Chemical Feeding Equipment



Side Stream Filtration Unit



Chemical Feeding Equipment

- We provide positive displacement diaphragm chemical metering pump with the following properties:
- Fully adjustable speed and stroke settings over the entire operating range
- Furnish two chemical metering pumps per independent closed system. One pump for inhibitor feed and one pump for biocide.
- Polyethylene chemical feed tank is provided. Each tank shall have a drum level switch agitator, incorporated in it.
- Also locally made chemical tanks can be provided

Side Stream Filtration Unit

- Including sand filter, filter pump, strainer and controls, factory assembled, piped and wired mounted to steel skid.
- Complete with all accessories and electrical panel board.
- Other series are also available

Disinfection

- A new main after installation should be pressure tested, flushed to remove dirt or foreign matter, and disinfected with a minimum chlorine concentration of 50 mg/l.
- The chlorinated water should remain in the pipe for a minimum of 24 h then 200 mg at least 3 h.
- The chlorinated water should be flushed to waste by using potable water. Microbiological tests should then be conducted before placing the main in service.
- Tanks and reservoirs should be disinfected before being placed into service or following inspection and cleaning.



Akiki Engineering Est.

Water & Steam Experts



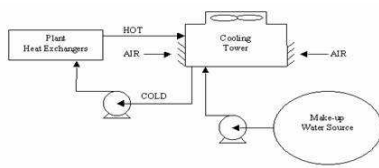
4.2. Cooling Tower Catalogue

October 7, 2010

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Cooling Tower Chemical Products



CFR 2260 & CFR 2210 has a quick killing action, stability and dispersancy action of slime deposits makes it the most effective against LEGIONELLA. Other advantages: little volatility, extended stability, minimum reaction with organic corrosion and scale inhibitors. Akiki Engineering uses an alternation between two biocides: CFR 2260 & CFR 2210

Treatment Benefit Features:

- Reduce maintenance cost and Prolong equipment life time
- Eliminate unscheduled shut down especially in hot season
- Reduce power cost, by maintaining deposit free surface of the heat exchangers

Pipe Cleaner: CCH 4200

- Liquid used to clean and flush loop containing dirty water and large amounts of rust and scale
- Remakes soluble the mineral deposit and disperse the none soluble particles
- You don't have to stop the installation, and on metallic surfaces, it has a passive action
- After the curative treatment, it is necessary to make a preventive treatment by using CVA 4110 (soft water) and biocide for microbiological control CFR 2260
- Dosage rate: 1 % to 5 % of system volume
- Package: can of 20kg

Anticorrosion & Antiscale: CFR 2110

- A multifunctional liquid scale and corrosion inhibitor
- Complexes the hardness ions of water to avoid precipitation, and protects from corrosion by building up a film on the metallic surface
- Maintains in suspension mineral particles
- Will improve the efficiency to control microbial growth.
- Dosage rate is proportional to make-up water: 50-100 g/m³ in circuit
- Package: Can of 20 and 200 kg, container of 1000 kg

Microbiological Control: CFR 2260

- Used as preservative, bactericide, microbiocide, odour controller, and anti-fouling agent
- Used when there is a sterilisation
- Dosage is function of contamination state of the treated circuit, seasons, temperatures
- Sterilisation: 200 to 300 ppm, Maintenance: 100 to 150 ppm
- Storage: Keep away from freezing point
- Package: Can of 20, 25 and 230 kg

Microbiological Control: CFR 2210

- An agent to fight the micro organism; active against iron bacterial, legionella, and algae.
- Dosage: 60 g/m³ of circuit; Storage: Keep away from freezing point
- Package: Can of 20 and 200 kg, container of 1000 kg

Cooling Towers Equipment(1)

Controller



Cold Water Meter



Solenoid Valve



Controller

- Digital readout display
- Control inhibitor feeding based on make-up volume
- Conductivity / pH function: Sensor, set point, high/low alarm
- Set points and alarms (Conductivity, pH)
- Control biocide-feeding program
- Furnish one microprocessor per independent closed system.

Cold Water Meter

- Provide a make-up water meter sized the same as the make-up line
- A water meter is to be hard wired into the microprocessor controller, registering and accumulating total gallons of make-up water.
- Furnish a make-up water meter per each independent closed system

Solenoid Valves

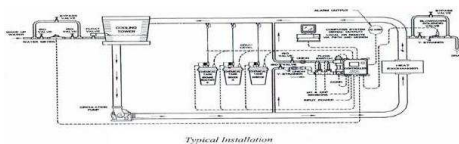
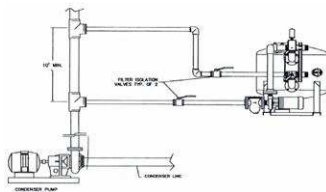
- Furnish a blowdown solenoid valve per independent tower water system.
- Blowdown valve is controlled by conductivity.
- When conductivity measured by the sensor becomes above the set point, a signal will initiate the solenoid valve to open and blow down is in progress.
- When conductivity measured by the sensor becomes below the set point, a signal will initiate the solenoid valve to close and blow down is stopped.
- Valve options: Normally closed
- Body & cap material: Cast iron
- Internal parts: Brass, stainless steel

Cooling Towers Equipment(2)

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