

MAINTENANCE SERVICE

WATER/WASTEWATER TREATMENT SYSTEMS



WATER TREATMENT



WASTEWATER TREATMENT

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PART I

INTRODUCTION OF MAINTENANCE WORK FOR WATER/WASTEWATER TREATMENT SYSTEMS

BRIEF INTRODUCTION

CAMIX is company, specializing in maintenance for water & wastewater treatment systems.

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We are interesting in maintenance for water & wastewater treatment systems of:

- *Factories, enterprise, complex, production unit.*
- *Office building, apartment building, hotel, resort.*

With professional, whole-hearted working way, we hope that we will create a satisfaction to you & we also would like to serve you for a long time.

THE IMPORTANCE OF MAINTENANCE WORK

To keep the machine, equipment, production line working stable in long term, the maintenance work need to be done at interval as scheduled. But in fact, at several companies, this maintenance work is not well cared. Just as broken, the machine/equipment is repaired or replaced with new one. This late action cause consequences:

- The general producing condition is interrupted, caused by unpredictable problems. It push you to passive situation.
- The cost is normally so high as the repair/replacement is compulsory (no choice) and also due to the affection to other activities.

The professional maintenance will help you:

- Keep the machine/equipment working stable in long term, the longevity of machine/equipment is also longer.
- Control the working status of machine/equipment, problems are predictable. So repair/replacement is scheduled to keep the working status of machine/equipment unstopped.
- Reduce the cost for repair/replacement considerably because the machine/equipment is cared & acted on time.

SOME “WRONG” OPINION TO THE MAINTENANCE WORK

- Suppose that maintenance is not necessary for new machine/equipment.
- Suppose that maintenance is not necessary for old machine/equipment, let it runs until broken and repair/replacement is acted.
- Mistake maintenance work for repair.
- Suppose that maintenance is necessary for only machine/equipment, but not for technology.
- Suppose that maintenance is just attention to current working situation. But in fact, more than that, maintenance work allows us to control the working situation of machine/equipment in the past time, current time and also next time. So adjustment, repair/replacement of details are scheduled.
- Understanding of maintenance work is not adequate, but in fact, it is including:
 - Maintenance of technology, construction, mechanics, electricity & automation.
 - Maintenance of single machine/equipment, equipment complex or production line in which the machines/equipment are related.
- Suppose that the cost for maintenance is not necessary and feel sorry as have to pay for this kind of work monthly (Contrarily, ready to pay with bigger amount for overcoming the sudden problems and consider it is indispensable).

PROCEEDING METHOD

1. CAMIX will take a survey of the current working situation of your water/wastewater treatment systems, give out proposal for the repair/replacement work (if any) before signing of maintenance contract.
2. Making the maintenance document set, including:
 - a. A list of maintenance objects (technology, machine/equipment, electricity & automation).
 - b. Content & proceeding method of maintenance work for above listed items.
 - c. Frequency of maintenance.
 - d. Reporting forms after maintenance:
 - i. The result of maintenance work, measurement data...
 - ii. The prediction of incoming problems & propose the overcoming solution to the owner.
 - e. Price quotation for maintenance work.
3. Submission of maintenance document set to the client for consideration.
4. Discuss & finalize with client about the content & proceeding method of maintenance.
5. Signing maintenance contract.
6. CAMIX execute the maintenance work as signed contract.
7. Give out the ideas and also receive the ideas from client after each maintenance phase for the better next maintenance phase.
8. Contract liquidation after completion of maintenance stage (normally 1 year).
9. Meeting for summarizing & experience learning for both contractor & owner.
10. Contract discussion for the maintenance work for the next year.

PART II

MAINTENANCE WORK FOR THE WATER TREATMENT SYSTEM & WATER SUPPLY NETWORK

GENERAL

Water treatment & water supply network are including:

1. TECHNOLOGY PART:

- a. Mechanical/physical treatment technologies: filtration, sedimentation, mixture, pressure, stream-lining change...
- b. Chemical treatment technology: oxygenation, flocculation, pH correction, ion exchange, color/odour disposal, sterilization by UV light, ozone or chlorine, softening...
- c. Biological treatment technologies: anaerobic treatment, anoxic treatment, aerobic treatment, biological membrane...

2. CIVIL CONSTRUCTION PART:

- a. Deep well.
- b. Water storage tank, sedimentation/filtration tanks.
- c. Pump foundation, tank foundation...

3. MACHINE/EQUIPMENT & MECHANICAL STRUCTURES:

- a. Pump (submersible pump, horizontal centrifugal pump, booster pump, dosing pump...)
- b. Air compressor, dry-installed air blower, submersible air blower, air fan...
- c. Top entry mixer, submersible mixer...
- d. Oxygenation tower, sedimentation tower, filter tank, storage tank...
- e. UV light, ozone generator...

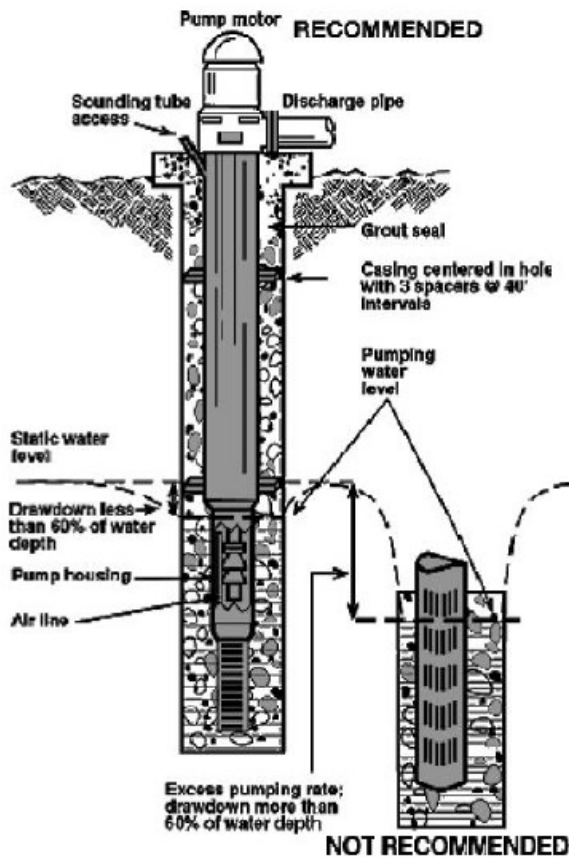
4. PIPES & VALVES:

- a. Stainless steel pipe, galvanised steel pipe, uPVC pipe, PE pipe, HDPE pipe...
- b. Pipe accessories: elbow, T, connector, support...
- c. Butterfly valve, ball valve, non-return valve, flow harmonized valve...
- d. Valve accessories: flange, connector, joint, bolt & nut...

5. ELECTRICITY & AUTOMATION PARTS:

- a. Electrical panel:
 - Circuit breaker (CB).
 - Relay, timer, contactor.
 - Contact switch, working status lamp.
- b. Electrical motor: 1 phase, 3 phases.
- c. Power electrical cable & wire, connection box, cable ladder, protection pipe...
- d. Automation:
 - PLC & automation.
 - Sensor & measurement unit.
 - Signal wire, contact head.

DEEP WELL



Technology maintenance:

Sand blowing removal, frequency: 1 time/year.

Construction maintenance:

Check the wall of deep well, cement fill, consolidation or repair if necessary.

Equipment maintenance:

Check the working status of pump: pressure, flow, vibration, noise... Adjust or replace details: bearing, joint... if necessary.

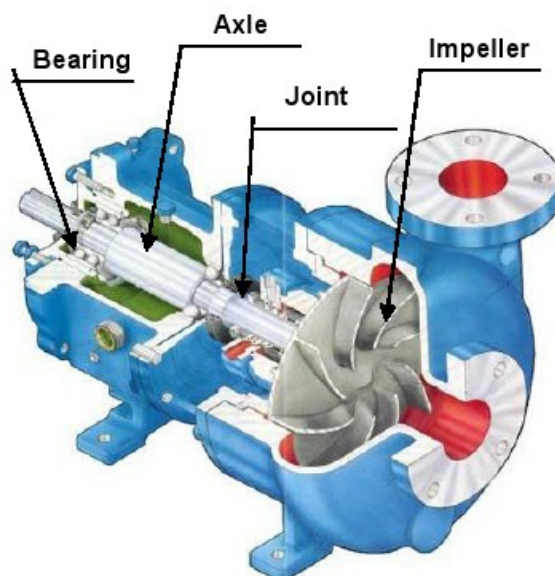
Pipe & valve maintenance:

Check the working status of filter pipe, suction pipe, head pipe, butterfly valve, non-return valve... Adjust or replace details if necessary.

Electricity & automation maintenance:

Check the working status of motor, electrical wire by measurement: voltage, current, resistance, insulation, water contact rod... Adjust or replace details or even rewind motor if necessary.

CENTRIFUGAL PUMP



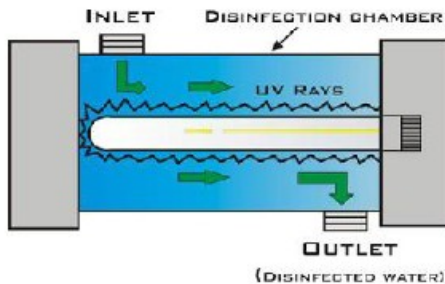
Mechanics maintenance:

Check the working status of pump: pressure, flow, vibration, noise... Adjust or replace details: bearing, joint, axle, impeller... if necessary.

Motor maintenance:

Check the working status of motor, electrical wire by measurement: voltage, current, resistance, insulation, water contact rod... Adjust or replace details or even rewind motor if necessary.

UV LIGHT



Technology maintenance:

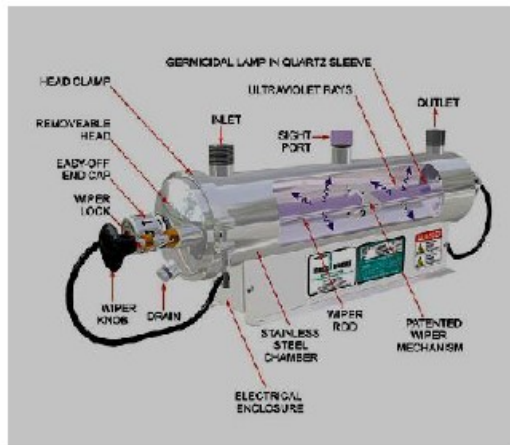
- Remove carbonate drag depositing on the lamp with frequency: 1 time/year.
- Test the biological norm of water sample to define the current quality of UV light.

Mechanics maintenance:

- Check the loosening at 2 fixing heads of UV light, tighten if necessary.
- Check the water tight of joints, tighten or replace if necessary.

Electrical maintenance:

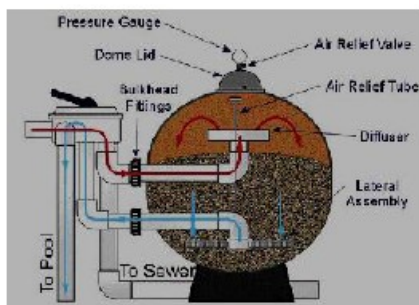
- Check the working status of ballast.
- Check the contact points, clean & tighten.
- Measure voltage of UV light, compare with the nominal voltage data.



SAND FILTER TANK

Technology maintenance:

- Backwash to recover the filtering efficiency of sand layer.
- Additional sand fill if necessary.
- Replace with new sand if the old sand layer can not be recovered.

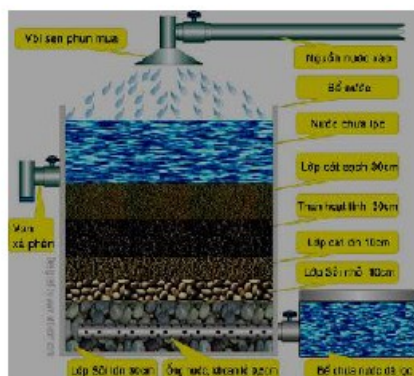


Mechanics maintenance:

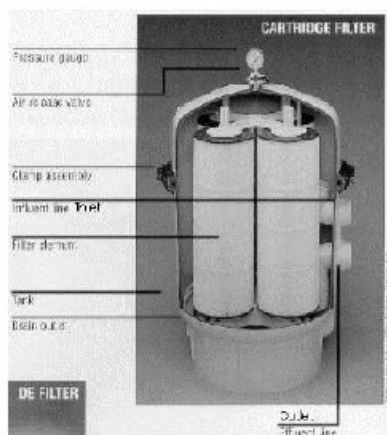
- Check the body, leg of filter tank, adjust for well balance, firmness if necessary.
- Check the flange of filter tank, tighten bolts/nuts if loosened.
- Check the safety valve, adjust or replace if necessary.
- Check the working status of pressure gauges, adjust or replace if necessary.

Pipe & valve maintenance:

- Check the working status of water inlet distribution pipe, water outlet collecting pipe... Adjust or replace if necessary.
- Check the working status of valves on inlet pipe, outlet pipe, air release valve, bottom valve... Adjust or replace if necessary.



CARTRIDGE FILTER TANK



Technology maintenance:

- Take out filter cores from the tanks, using high pressure water to remove dreg depositing on surface of filter cores, remounting for reuse. After several times of reuse, as the filter cores can not be recovered, the new ones must be applied.

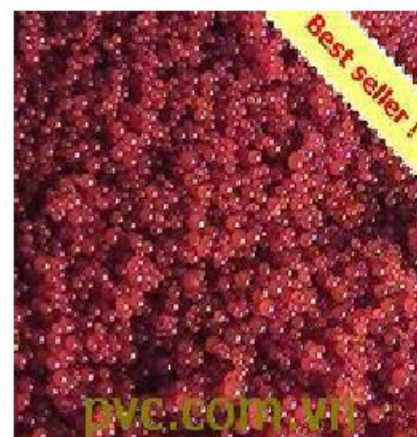
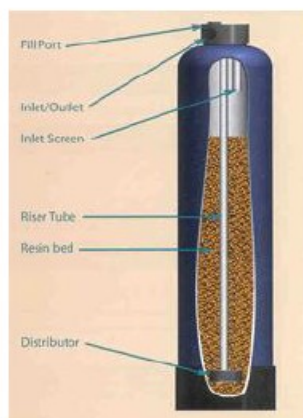
Mechanics maintenance:

- Check the body, leg of filter tank, adjust for well balance, firmness if necessary.
- Check the flange of filter tank, tighten bolts/nuts if loosened.
- Check the safety valve, adjust or replace if necessary.
- Check the working status of pressure gauges, adjust or replace if necessary.

Pipe & valve maintenance:

- Check the working status of water inlet distribution pipe, water outlet collecting pipe...Adjust or replace if necessary.
- Check the working status of valves on inlet pipe, outlet pipe, air release valve, bottom valve... Adjust or replace if necessary.

ION EXCHANGER



Technology maintenance:

- Use caustic soda to re-activate the ion exchanger.
- Filling ion exchanger in additional if necessary.
- Replace with new ion exchanger if the old particle can not be recovered.

Mechanics maintenance:

- Check the body, leg of ion exchanger tank, adjust for well balance, firmness if necessary.
- Check the flange of filter tank, tighten bolts/nuts if loosened.
- Check the safety valve, adjust or replace if necessary.
- Check the working status of pressure gauges, adjust or replace if necessary.

Pipe & valve maintenance:

- Check the working status of water inlet distribution pipe, water outlet collecting pipe... Adjust or replace if necessary.
- Check the working status of valves on inlet pipe, outlet pipe, air release valve, bottom valve... Adjust or replace if necessary.

AIR COMPRESSOR, AIR BLOWER



Technology maintenance:

- Taking out the air filter, use high pressure air to blow out the dust and re-mount air filter.
- Replace with new air filter if the old one can not be recovered.

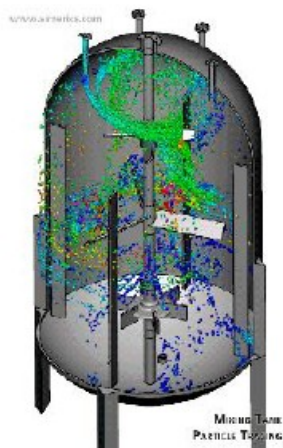
Mechanics maintenance:

- Check the working status of machine: pressure, flow-rate, vibration, noise... Adjust or replace details: bearing, joint, axle, impeller... if necessary.
- Check the tautness of belt, adjust if loosened.
- Change with new belt if the old one broken or get worse.
- Check the status of joint, seal. Fill oil in additional or change with new oil if necessary (normal frequency: 1 time/3 months).
- Check the safety valve, adjust or replace if necessary.
- Check the working status of pressure gauges, adjust or replace if necessary.

Motor maintenance:

- Check the working status of motor, electrical wire by measurement: voltage, current, resistance, insulation, water contact rod... Adjust or replace details or even rewind motor if necessary.

MIXING TANK



Mechanics maintenance:

- Check the body, leg of mixing tank, adjust for well balance, firmness if necessary.
- Check the flange of filter tank, tighten bolts/nuts if loosened.
- Check the status of mixing axle & propeller for looseness, deformation and adjust if necessary.

Gear-box maintenance:

- Check the working status of motor, electrical wire by measurement: voltage, current, resistance, insulation... Adjust or replace details or even rewind motor if necessary.
- Check the working status of joint, seal, bearing, gear... Adjust or replace if necessary. Check the oil level, fill more in additional or change with new one if necessary.

RO FILTER SYSTEM



Technology maintenance:

- Use aid solution to re-activate the fine filtration function of RO.
- Renew RO membrane if the old one has been reused for many times & can not be re-activated.
- Check the ratio of treated water and wasted water, adjust this ratio for suitability for longer life of RO.

Mechanics maintenance:

- Check the body, leg of RO tank, adjust for well balance, firmness if necessary.
- Check the flanges at 2 heads of RO column, tighten bolts/nuts if loosened.
- Check the safety valve, adjust or replace if necessary.
- Check the working status of pressure gauges, adjust or replace if necessary.

Pipe & valve maintenance:

- Check the working status of water inlet distribution pipe, water outlet collecting pipe, wasted water pipe...Adjust or replace if necessary.
- Check the working status of valves on inlet pipe, outlet pipe, air release valve, bottom valve... Adjust or replace if necessary.

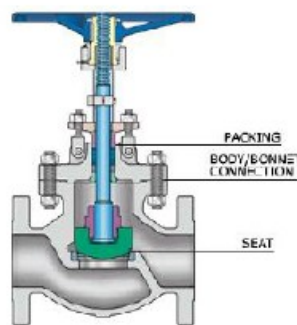
PIPES IN GENERAL



Pipe maintenance:

- Check the condition of pipes, connection points (T, elbow, flange...) for leak, adjust or renew if necessary.
- Check for the tightness, firmness of pipe supports, clamps. Adjust, re-tighten if necessary.

VALVES IN GENERAL



Valve maintenance:

- Check the working status of valves on inlet pipe, outlet pipe, air release valve, bottom valve... Adjust or replace if necessary.
- Check the working status of auto-valves (controlled by electro-magnetic or pressure air). Adjust or tighten if necessary.
- Check the fixing points of valve (flange, connector...), joint, seal for looseness, water leak. Adjust or tighten if necessary.

PART III

MAINTENANCE WORK FOR WASTEWATER TREATMENT SYSTEM & DRAIN SYSTEM

GENERAL

Wastewater treatment system & drain sewer network are including:

1. TECHNOLOGY PART:

- a. Mechanical/physical treatment technologies: filtration, sedimentation, mixture, pressure filtration, stream-lining change...
- b. Chemical treatment technology: equalization, pH correction, flocculation, color/odour disposal, sterilization by chlorine.
- c. Biological treatment technologies: anaerobic treatment, anoxic treatment, aerobic treatment, biological membrane...

2. CIVIL CONSTRUCTION PART:

- a. Oil/fat trap.
- b. Septic tank.
- c. Pump pit, equalization tank, pH correction tank, flocculation tank, pre-sedimentation tank, biological tank, post-sedimentation tank, disinfection tank, treated wastewater tank.

3. MACHINE/EQUIPMENT & MECHANICAL STRUCTURE:

- a. Screen basket, screen plate, static screen, rotary screen.
- b. Pumps (submersible pump, sludge pump, dry-installed centrifugal pump, screw pump, chemical dosing pump, high pressure pump...)
- c. Measurement equipment for pH, DO, Chlorine.
- d. Air compressor, dry-installed air blower, submersible air blower, cooling fan...
- e. Top entry mixer, submersible mixer...
- f. Absorbent tower for odour removal.

4. SEWER, PIPE, CHECK PIT FOR COLLECTION & DRAINAGE OF WASTEWATER

- a. Concrete sewer, PVC pipe for collection of wastewater to wastewater treatment system and also for drainage of treated wastewater to the common sewer.
- b. Check pits for examination & maintenance.

5. PIPES & VALVES IN THE INNER WASTEWATER TREATMENT SYSTEM

- a. Pipes of stainless steel, uPVC, PE, HDPE... in the inner of wastewater treatment system.
- b. The accessories for pipe mounting: elbow, T, connector...
- c. Pipe support, clamp, fixing bolt/nut...
- d. Butterfly valve, ball valve, non-return valve, flow harmonized valve...
- e. Valve accessories: flange, connector, joint, bolt & nut...

6. ELECTRICITY & AUTOMATION PARTS:

- a. Electrical panel:
 - Circuit breaker (CB).
 - Relay, timer, contactor.
 - Contact switch, working status lamp.
- b. Electrical motor: 1 phase, 3 phases.
- c. Power electrical cable & wire, connection box, cable ladder, protection pipe...
- d. Automation:
 - PLC & automation.
 - Sensor & measurement unit.
 - Signal wire, contact head.

PUMP PIT



Technology maintenance:

- Take out rubbish & suck out sludge periodically.
- Washing & cleaning.

Construction maintenance:

- Check the wall of deep well, cement fill, consolidation or repair if necessary.



Mechanical structure maintenance:

- Check the screen basket, screen plate for deformation, broken... adjust or repair if necessary.
- Check the guiding column, pooling chain for looseness, corrosion, deformation...adjust or repair if necessary.



Electricity & automation maintenance:

- Check the power/signal cable/wire for scratch, looseness... repair, tighten if necessary.
- Check the water level contactor for dirtiness, corrosion, broken... clean, repair or replace if necessary.

EQUALIZATION TANK

Technology maintenance:

- Take out rubbish & suck out sludge periodically.
- Washing & cleaning.

Construction maintenance:

- Check the wall of deep well, cement fill, consolidation or repair if necessary.

Mechanical structure maintenance:

- Check the guiding column, pooling chain for looseness, corrosion, deformation...adjust or repair if necessary.



AERATION TANK



Technology maintenance:

- Take out rubbish, dead biomass floating on the surface.
- Filtering the biological sludge & whole cleaning yearly.
- Measure the concentration of biological sludge, reduce or add more if necessary.
- Check the working status of biological sludge via: colour, sedimentation speed, flocculation... & adjust for suitability.
- Check the air diffuser disc for broken, obstruction... repair or replace if necessary.

Construction maintenance:

- Check the wall of tank, cement fill, consolidation or repair if necessary.

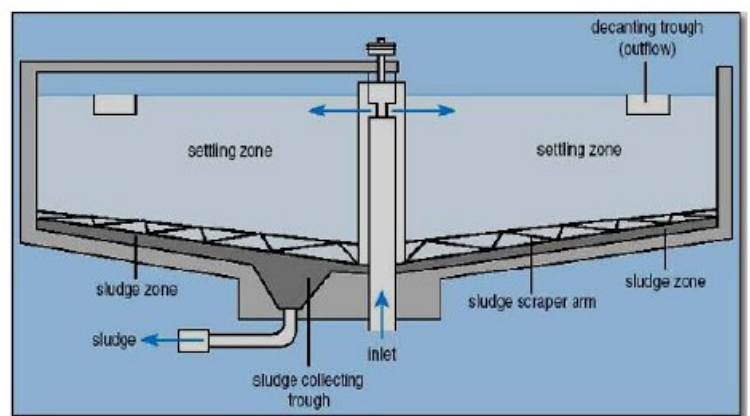
Mechanical structure maintenance:

- Check the air distribution pipe at the bottom of the tank for looseness, deformation... adjust, repair if necessary.

Electricity & automation maintenance:

- Check the power/signal cable/wire for scratch, looseness... repair, tighten if necessary.
- Check the DO contactor for dirtiness, corrosion, broken... clean, repair or replace if necessary.

SEDIMENTATION TANK



Technology maintenance:

- Take out rubbish, dead biomass floating on the surface.
- Cleaning the inlet distribution pipe & collection gutter.

Construction maintenance:

Check the wall of tank, cement fill, consolidation or repair if necessary.

Mechanical structure maintenance:

- Check the inlet distribution pipe for looseness, deformation, broken... adjust, repair if necessary.
- Check the V-shape gutter for leveling, adjust, repair or replace if necessary.
- Check the propeller for looseness, deformation, broken...adjust, repair if necessary.

Electricity & automation maintenance:

- Check the power/signal cable/wire for scratch, looseness... repair, tighten if necessary.
- Check the DO contactor for dirtiness, corrosion, broken... clean, repair or replace if necessary.

DISINFECTION TANK



Technology maintenance:

- Check the baffle plate for looseness, deformation... adjust, tighten or repair, replace if necessary.
- Measure the concentration of chlorine, adjust for suitability.
- Take a sample, analyze and compare with wastewater discharge standard.



Construction maintenance:

- Check the wall of tank, cement fill, consolidation or repair if necessary.

Electricity & automation maintenance:

- Check the power/signal cable/wire for scratch, looseness... repair, tighten if necessary.
- Check the chlorine contactor for dirtiness, corrosion, broken... clean, repair or replace if necessary.

SUBMERSIBLE PUMP



Mechanics maintenance:

- Take out the rubbish from pump housing, check the impeller for smooth rotation.
- Check the working status of pump: pressure, flow, vibration, noise... Adjust or replace details: bearing, joint, axle, impeller... if necessary.



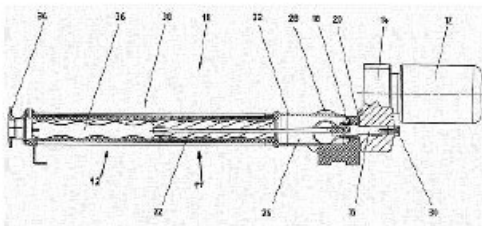
Motor maintenance:

- Check the working status of motor, electrical wire by measurement: voltage, current, resistance, insulation, water contact rod... Adjust or replace details or even rewind motor if necessary.

SLUDGE SCREW PUMP

Mechanics maintenance:

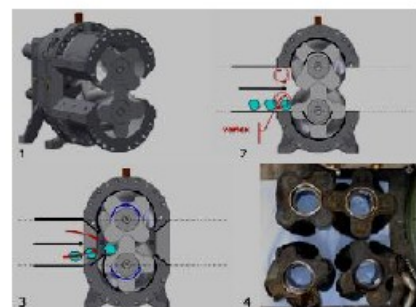
- Check the screw for scratch, obstruction, adjust if necessary.
- Check the working status of pump: pressure, flow, vibration, noise... Adjust or replace details: bearing, joint, axle, impeller... if necessary.
- Check the axle connector for looseness, broken... adjust, replace the rubber buffer if necessary.



Motor maintenance:

- Check the working status of motor, electrical wire by measurement: voltage, current, resistance, insulation, water contact rod... Adjust or replace details or even rewind motor if necessary.

AIR BLOWER



Technology maintenance:

- Taking out the air filter, use high pressure air to blow out the dust and re-mount air filter.
- Replace with new air filter if the old one can not be recovered.

Mechanics maintenance:

- Check the working status of machine: pressure, flow-rate, vibration, noise... Adjust or replace details: bearing, joint, axle, impeller... if necessary.
- Check the tautness of belt, adjust if loosened.
- Change with new belt if the old one broken or get worse.
- Check the status of joint, seal. Fill oil in additional or change with new oil if necessary (normal frequency: 1 time/3 months).
- Check the safety valve, adjust or replace if necessary.
- Check the working status of pressure gauges, adjust or replace if necessary.

Motor maintenance:

- Check the working status of motor, electrical wire by measurement: voltage, current, resistance, insulation, water contact rod... Adjust or replace details or even rewind motor if necessary.

CHEMICAL DOSING PUMP



Technology maintenance:

- Check & clean the filter set, suction hose of pump.
- Check the flow-rate of pump, adjust for suitability if necessary.



Mechanics maintenance:

- Check the working status of pump: pressure, flow, vibration, noise... Adjust or replace details: bearing, joint, axle, impeller... if necessary.
- Check the joint, add more oil or replace if necessary (period: 1 time/3 months).
- Check non-return valves of pump for obstruction, dirtiness... clearance & cleaning if necessary.

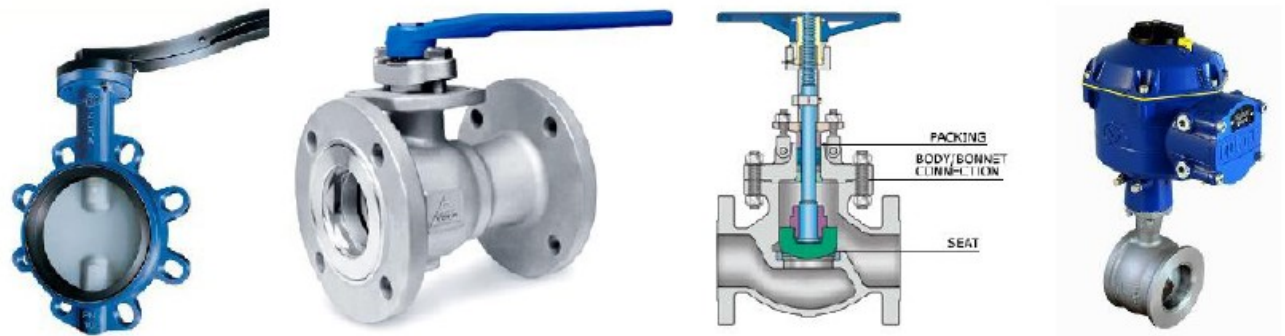
PIPES IN GENERAL



Pipe maintenance:

- Check the condition of pipes, connection points (T, elbow, flange...) for leak, adjust or renew if necessary.
- Check for the tightness, firmness of pipe supports, clamps. Adjust, re-tighten if necessary.

VALVES IN GENERAL



Valve maintenance:

- Check the working status of valves on inlet pipe, outlet pipe, air release valve, bottom valve... Adjust or replace if necessary.
- Check the working status of auto-valves (controlled by electro-magnetic or pressure air). Adjust or tighten if necessary.
- Check the fixing points of valve (flange, connector...), joint, seal for looseness, water leak. Adjust or tighten if necessary.

ELECTRICAL PANEL



Hardware maintenance:

- Cleaning inside & outside of ele.panel by using air compressor & vacuum cleaner.
- Check the working status of voltage gauge, current gauge – repair or replace if necessary.
- Check the contact switches, signal lamp – repair or replace if necessary.
- Check the working status of general CB & single CB - repair or replace if necessary.
- Check the contact points for corrosion, loosen or broken – cleaning, tightening or re-connecting if necessary.

AUTOMATION WITH PLC



Software maintenance (PLC):

- Cleaning PLC, ele.component by using air compressor, vacuum cleaner.
- Check the fault history recorded by PLC (if any), find out the reason & overcoming solution.
- Check all the setted data & measured figures, write down to the maintenance book.
- Resetting the working data (if necessary) for corresponding to a current working situation of the system.
- Resetting up the automation program if the old one is lost or wrong...
- Make a test for sure that the PLC & automation program still work well.
- Check the contact points of communication ports (I/O) – cleaning, tightening if necessary.

ELECTRIC WIRE & CABLE



Ele.wires & cable maintenance:

- Check the power/signal cable/wire for scratch, looseness... repair, tighten if necessary.
- Check the contact points of connection boxes for corrosion, loosen – cleaning & tightening if necessary.
- Check for the firmness, well balance of cable ladder, supports of cable ladder – adjust or repair if necessary.
- Cleaning electric wires/cables, cable ladder – repair, repaint if necessary.

PART IV

ANALYZATION OF WATER/WASTEWATER SAMPLES

ANALYZING SAMPLES OF WATER/WASTEWATER

The analyzing samples of water/wastewater is needed periodically to:

- Water before & after treatment.
- Wastewater before & after treatment.

In order to:

For the internality:

- Compare the quality of treated water/wastewater with the standard to know the treated level.
- Control the efficiency of water/wastewater treatment systems & having the action on time, such as: maintenance, adjustment, repairment, upgradation...

For the outside:

- Proclaiming the quality of treated water/wastewater to the public & consumers.
- Reporting to the concerning authorities, such as:
 - o Health department of the City and District.
 - o Environment department of the City and District.
 - o Epidemic prevention department, health centre.
 - o Environment police.
 - o

The treated water standards for:

- Food & foodstuff processing.
- Pharmaceutical production & injectable drug.
- Living.
- Bottling & purification.
- Boiler, cooling tower.
-

The treated wastewater standards for:

- Industry.
- Living.
- Hospital.
-

Sample taking method:

The sample taking method affect the test result, so the professional company is necessary for this action and the test result therefore will be true.

The sample taking concerns:

- The place to take sample.
- The frequency to take sample.
- The storage apparatus (dark glass bottle, PE can...).
- The retention time of sample.
-

The water/wastewater samples are analyzed at:

- Pasteur institute.
- Testing centres.
- Environmental institute.
-

WATER TEST RESULT

Institut Pasteur
VIỆN PASTEUR THÀNH PHỐ HỒ CHÍ MINH
180 Đường Pasteur, Quận 2 - Thành phố Hồ Chí Minh, Việt Nam
Điện thoại: (84.8) 5473940 - 5473938 - Fax: (84.8) 5473932

PHIẾU KẾT QUẢ KIỂM NGHIỆM

Số: 10079/07H
Ngày cấp: 9/7/2009

TEKHON-ABC: CÔNG TY TNHH DAO MINH X
Địa chỉ: Hồ Chí Minh - MTK ĐẠO MINH X
Ngày nhận mẫu: 09/07/2009
Thời gian lấy mẫu: 10/07/2009

KẾT QUẢ

TT	YÊU CẦU KIỂM NGHIỆM	KẾT QUẢ	ĐƠN VỊ	PHƯƠNG PHÁP KIỂM NGHIỆM	ĐƠN VỊ
1	BOD ₅ (mg/l)	0	mg/l	TUẦN 01/07/09	< 20
2	Yêu cầu (1)	0	mg/l	TUẦN 01/07/09	< 100
3	pH (°)	7.40		TUẦN 01/07/09	6.50 - 8.50
4	Yêu cầu (1)	Không phải		Các đơn vị	Không có mẫu
5	Độ cứng tổng (mg/l)	0.10	mg/L	TUẦN 01/07/09	< 100
6	Độ cứng tổng (1)	Không phải	mg/L	TUẦN 01/07/09	< 150
7	Yêu cầu (1)	Không phải	mg/L	TUẦN 01/07/09	< 100
8	Yêu cầu (1)	Không phải	mg/L	TUẦN 01/07/09	< 100
9	Độ cứng tổng (1)	20.0	mg/L	TUẦN 01/07/09	< 100
10	Độ cứng tổng (1)	Không phải	mg/L	TUẦN 01/07/09	< 100
11	Độ cứng tổng (1)	Không phải	mg/L	TUẦN 01/07/09	< 100
12	Độ cứng tổng (1)	Không phải	mg/L	TUẦN 01/07/09	< 100
13	Độ cứng tổng (1)	Không phải	mg/L	TUẦN 01/07/09	< 100

ĐƠN VỊ: Phòng phân tích và kiểm nghiệm
Kết quả chỉ có giá trị nếu mẫu được phân tích đúng theo quy định của pháp luật.

ĐƠN VỊ: Phòng phân tích và kiểm nghiệm
Kết quả chỉ có giá trị nếu mẫu được phân tích đúng theo quy định của pháp luật.

TP. Hồ Chí Minh ngày 9 tháng 7 năm 2009
Phòng phân tích và kiểm nghiệm

HLVGM/TTC004
Lần in lần đầu
Tang 1

Institut Pasteur
VIỆN PASTEUR THÀNH PHỐ HỒ CHÍ MINH
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PHIẾU KẾT QUẢ KIỂM NGHIỆM

Số: 10079/07H
Ngày cấp: 9/7/2009

TEKHON-ABC: CÔNG TY TNHH DAO MINH X
Địa chỉ: Hồ Chí Minh - MTK ĐẠO MINH X
Ngày nhận mẫu: 09/07/2009
Thời gian lấy mẫu: 10/07/2009

KẾT QUẢ

TT	YÊU CẦU KIỂM NGHIỆM	KẾT QUẢ	ĐƠN VỊ	PHƯƠNG PHÁP KIỂM NGHIỆM	ĐƠN VỊ
1	BOD ₅ (mg/l)	0	mg/l	TUẦN 01/07/09	< 20
2	Yêu cầu (1)	0	mg/l	TUẦN 01/07/09	< 100

ĐƠN VỊ: Phòng phân tích và kiểm nghiệm
Kết quả chỉ có giá trị nếu mẫu được phân tích đúng theo quy định của pháp luật.

ĐƠN VỊ: Phòng phân tích và kiểm nghiệm
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TP. Hồ Chí Minh ngày 9 tháng 7 năm 2009
Phòng phân tích và kiểm nghiệm

HLVGM/TTC004
Lần in lần đầu
Tang 1

WASTEWATER TEST RESULT

Institut Pasteur
VIỆN PASTEUR THÀNH PHỐ HỒ CHÍ MINH
180 Đường Pasteur, Quận 2 - Thành phố Hồ Chí Minh, Việt Nam
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PHIẾU KẾT QUẢ THỬ NGHIỆM

Số: 10079/07H
Ngày cấp: 9/7/2009

TEKHON-ABC: CÔNG TY TNHH DAO MINH X
Địa chỉ: Hồ Chí Minh - MTK ĐẠO MINH X
Ngày nhận mẫu: 09/07/2009
Thời gian lấy mẫu: 10/07/2009

KẾT QUẢ

STT	Chỉ tiêu thử nghiệm	Phương pháp thử	Kết quả
1	pH	USP/100/01/01	7.4
2	Độ cứng tổng (1)	APHA 2100B	0.10
3	Độ cứng tổng (1)	APHA 2100B	0.10
4	Độ cứng tổng (1)	APHA 2100B	0.10
5	Độ cứng tổng (1)	APHA 2100B	0.10
6	Độ cứng tổng (1)	APHA 2100B	0.10
7	Độ cứng tổng (1)	APHA 2100B	0.10
8	Độ cứng tổng (1)	APHA 2100B	0.10
9	Độ cứng tổng (1)	APHA 2100B	0.10
10	Độ cứng tổng (1)	APHA 2100B	0.10
11	Độ cứng tổng (1)	APHA 2100B	0.10
12	Độ cứng tổng (1)	APHA 2100B	0.10
13	Độ cứng tổng (1)	APHA 2100B	0.10
14	Độ cứng tổng (1)	APHA 2100B	0.10
15	Độ cứng tổng (1)	APHA 2100B	0.10

ĐƠN VỊ: Phòng phân tích và kiểm nghiệm
Kết quả chỉ có giá trị nếu mẫu được phân tích đúng theo quy định của pháp luật.

ĐƠN VỊ: Phòng phân tích và kiểm nghiệm
Kết quả chỉ có giá trị nếu mẫu được phân tích đúng theo quy định của pháp luật.

TP. Hồ Chí Minh ngày 9 tháng 7 năm 2009
Phòng phân tích và kiểm nghiệm

HLVGM/TTC004
Lần in lần đầu
Tang 1

Institut Pasteur
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PHIẾU KẾT QUẢ THỬ NGHIỆM

Số: 10079/07H
Ngày cấp: 9/7/2009

TEKHON-ABC: CÔNG TY TNHH DAO MINH X
Địa chỉ: Hồ Chí Minh - MTK ĐẠO MINH X
Ngày nhận mẫu: 09/07/2009
Thời gian lấy mẫu: 10/07/2009

KẾT QUẢ

STT	Chỉ tiêu thử nghiệm	Phương pháp thử	Kết quả
1	pH	USP/100/01/01	7.4
2	Độ cứng tổng (1)	APHA 2100B	0.10
3	Độ cứng tổng (1)	APHA 2100B	0.10
4	Độ cứng tổng (1)	APHA 2100B	0.10
5	Độ cứng tổng (1)	APHA 2100B	0.10
6	Độ cứng tổng (1)	APHA 2100B	0.10
7	Độ cứng tổng (1)	APHA 2100B	0.10
8	Độ cứng tổng (1)	APHA 2100B	0.10
9	Độ cứng tổng (1)	APHA 2100B	0.10
10	Độ cứng tổng (1)	APHA 2100B	0.10
11	Độ cứng tổng (1)	APHA 2100B	0.10
12	Độ cứng tổng (1)	APHA 2100B	0.10
13	Độ cứng tổng (1)	APHA 2100B	0.10
14	Độ cứng tổng (1)	APHA 2100B	0.10
15	Độ cứng tổng (1)	APHA 2100B	0.10

ĐƠN VỊ: Phòng phân tích và kiểm nghiệm
Kết quả chỉ có giá trị nếu mẫu được phân tích đúng theo quy định của pháp luật.

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Kết quả chỉ có giá trị nếu mẫu được phân tích đúng theo quy định của pháp luật.

TP. Hồ Chí Minh ngày 9 tháng 7 năm 2009
Phòng phân tích và kiểm nghiệm

HLVGM/TTC004
Lần in lần đầu
Tang 1

PART V

MATERIALS & EQUIPMENT SUPPLY

MATERIALS & EQUIPMENT SUPPLY



FILTER SAND



FILTER GRAVEL



PH INCREASING STONE



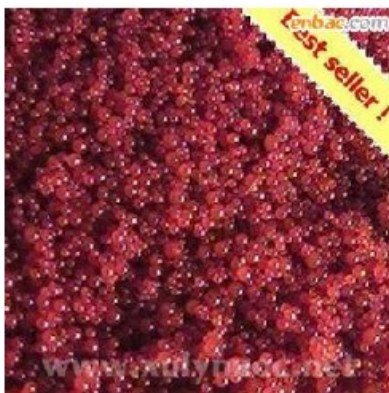
ACTIVATED CARBON



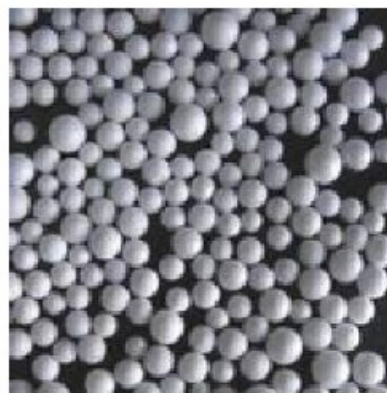
ANTHRACIT CARBON



CATION RESIN



ANION RESIN



FLOTATION FILTER SEED



SODA



ACID SOLUTION



PAC CHEMICALS



CHLORINE



FILTER CORES



UV LAMPS



BALLAST



RO MEMBRANE



SOLENOID VALVE



FLOW METER



AUTOMATIC VALVE



3 WAY VALVE



EJECTOR



I-ON EXCHANGER



MEMBRANE FOR AIR REMOVAL FROM WATER



PRESSURE CONTROLLED TANK



FILTER TANK BODY
MATERIAL: PVC



FILTER TANK BODY
MATERIAL: SS304



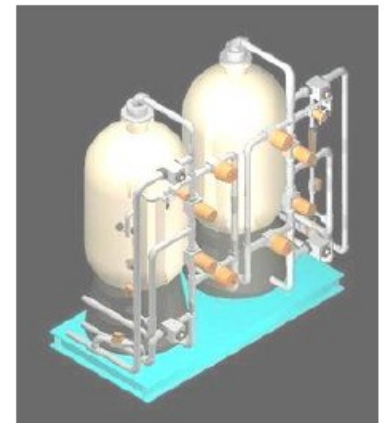
FILTER TANK BODY
MATERIAL: COMPOSITE



CARTRIDGE FILTER TANK



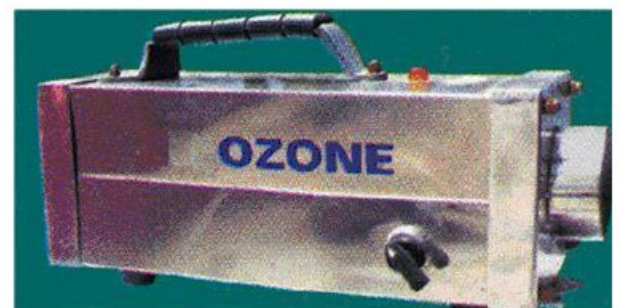
SAND FILTER TANK



I-ON EXCHANGING TANK



UV LIGHT



OZON GENERATOR



DEEP WELL PUMPS



CENTRIFUGAL PUMP



HIGH PRESSURE PUMP



RAW SCREEN



STATIC FINE SCREEN



ROTARY FINE SCREEN



WASTEWATER PUMP



SUBMERSIBLE MIXER



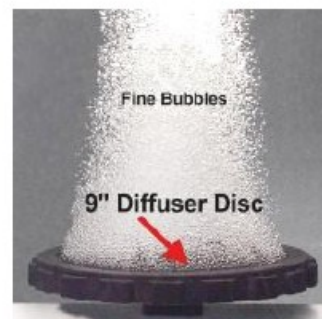
SURFACE AERATOR



EJECTOR



AIR BLOWER



AIR DIFFUSER



BELT FILTER PRESS



SLUDGE CENTRIFUGE



CHEMICAL DOSING PUMP