

Construction Wastewater Treatment System HKPC TechDive - Environment Technology 9 July 2020

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Water Pollution Control Ordinance (WPCO) in Hong Kong







Water Pollution Control Ordinance (WPCO) in Hong Kong



Effluent from construction sites normally discharges to storm drain, inland water, etc.

Parameters to be controlled	Discharge Guideline
рН	6 ~ 9
Suspended Solids	30 mg/L
Chemical Oxygen Demand	80 mg/L

and more





Sources of Wastewater

Wastewat constru activi	er from Iction ties	Truck / loader wa	Concrete cleaning ater		Site cleaning water		er	Groun collecte the con s	d water ed inside struction ite
	Rain v	water	Water dust r	sp rei	oray for moval	Sewa toile	age (t and wast	includes l kitchen tes)	





Wastewater Characteristics Silty Water

Quantity

- Depends on uncovered areas, rain water amount, ground water amount and site work nature
- Range from 10m³/day to 100m³/hr

Quality

- Depends on work
- Contains a large amount of mud, sand, mortar, concreting agent, etc.
- Suspended solids concentration normally ranged from 100 -40,000 mg/L
- pH value can be as high as 13



Traditional Treatment Method

Collect wastewater from several low points of the site and treated by plain sedimentation tanks

Some of the construction sites may add gravity sand filter to increase the solids removal efficiency

Not effective due to

- Poor design of sedimentation tank
- Insufficient hydraulic retention time (HRT)
- Difficulties in separating those silt-clay from wastewater effectively even for long HRT



Appropriate Treatment Method

Apply effective chemical agent to enhance sedimentation

Use tilted plates sedimentation tank to increase sedimentation efficiency, thereby minimising the size of the system



AquaSed Wastewater Treatment System Developed by HKPC



Tackle the highly turbid wastewater discharged from the construction site

Employ advanced proportional dosing technology to adjust the effluent pH value

Fully automatic



AquaSed Wastewater Treatment System **Developed by HKPC**



The preliminary sedimentation pit is to...

- Settle the large and heavy solids
- Reduce the loading of the AquaSed and chemical consumption

Fully automatic

- To be turned on automatically when wastewater is pumped into the system
- Automatic operations, including mixer, chemical dosing and even the discharge of concentrated sludge from the bottom of the sedimentation tank

Your operator only needs to...

- Re-fill the chemical
- Monitor the treatment performance









Four standard models to suit different inflow rate and different sizes of construction site

Model No.	Capacity	Dimensions
AS-10	10m³/hr	2.1 X 2.1 X 3.2 m
AS-20	20m³/hr	2.3 X 3.3 X 3.3 m
AS-40	40m ³ /hr	2.3 X 5.2 X 3.6 m
AS-80	80m³/hr	2.3 X 7.5 X 3.7 m







Influent SS concentration (mg/L)	Effluent SS concentration (mg/L)	Sludge SS concentration (mg/L)	Removal Efficiency (%)
210	9	3,300	95.71
1,800	10	43,000	99.44
15,000	13	120,000	99.91
40,000	12	120,000	99.97





AquaSed Treatment Process



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Before







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Wastewater Samples

AquaSed Professional Recognitions Wastewater Treatment System **Developed by HKPC**



COOO HONG KONG AWARDS FOR INDUSTRY CMA CERTIFICATE OF MERIT IN MACHINERY AND EQUIPMENT DESIGN This certificate has been awarded to			特予證書以資素	為設計優秀之產	HKPC-AquaSed	香港生產力促進	廠商會機器	2000 香港工
HKPC-AquaSed of Environmental Management Division Hong Kong Productivity Council for its outstanding design	主席 伊如	會長行しれ	德文	Han	一污水處理系統	進局環境管理部之	及設備設計優異證書	業獎

CMA Certificate of Merit in Machinery and Equipment Design in the 2000 Hong Kong Awards for Industry

THE REGISTRY OF PATENTS SINGAPORE THE PATENTS ACT. (CHAPTER 221) CERTIFICATE OF GRANT OF PATENT lance with section 35 of the Patents Act, it is hereby certified that a patent having the P-No. 94879 has been granted in respect an invention having the following particulars: INDEPENDENT TREATMENT SYSTEM FOR TREATING THE WASTE WATER OF THE CONSTRUCTION SITE WITH THE CHEMICAL Date of Filing 02 June 2001 Title of Invention 發明名積 Priority Data 2 June 2000 - PATENT APPLICATION NO. 00103362-0 (HONG KONG) KAM LAM TSANG; SIU WAI KENNY WON WING FAT CHAN; LAI SHING LEONG: YIU WA MA TECHNOLOGY HONG KONG PRODUCTIVITY COUNCIL HKPC BUILDING, 78 TAT CHEE AVENUE KOWLOON TONE 27 February 2004 Dated this 27th day of February 2004 Chiain Lu Lis /Ms Patents Registry Intellectual Property Department

CERTIFICATE OF GRANT OF PATENT 批予專利證明書 Patents Ordinance (Chapter 514) **廣利條例 (第514章)** SHORT-TERM PATENT 短期專利

I hereby certify that a short-term patent with the following particulars has this day been granted 茲證明下逃短期專利在今日批子:

Name and Address of Proprietor 專利所有人姓名或名稱及地址: HONG KONG PRODUCTIVITY COUNCIL, HKPC Building, 78 Tat Chee Avenue Kowloon Tong, Hong Kong 香港生產力促進局, 香港

Patent No.專利編號:HK1027254 Application No.申読編號: 00103366.0

INDEPENDENT TREATMENT SYSTEM FOR TREATING THE WASTE WATER OF THE CONSTRUCTION SITE WITH THE CHEMICAL COAGULATION 運用化學混凝技術處理建築工地廣水的場立系統

Term of Short-term Patent 短期專利有效期 Eight years commencing on 02.06.2000 申 02.06.2000 年起計 8 年



The Hong Kong Special Administrative Region 香港特別行政區知識產權署專利註冊處

Patents in Hong Kong, Mainland China, Singapore and Malaysia

EnviroWash Automatic Truck Wheel Washing Machine Developed by HKPC

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EnviroWash Automatic Truck Wheel Washing Machine Developed by HKPC

То...

livi∩g





EnviroWash Innovative Features
Automatic Truck Wheel Washing Machine
Developed by HKPC



Smart indication lamps

• Provide user friendly instruction of operation

Specially designed mechanical sensor

• Safeguard transit personnel from high pressure jet



EnviroWash Innovative Features
Automatic Truck Wheel Washing Machine
Developed by HKPC



Debris removal scrapper

• Can be installed on either side of the machine



Low water consumption

• Collect and reuse the cleaning water



Use of proprietary chemical in the coagulation unit

• Maintain good quality recycled clear water easily

EnviroWash Treatment Process













EnviroWash Treatment Process









Support different kinds of vehicles

living



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2001 HONG KONG AWARDS FOR INDUSTRY CMA CERTIFICATE OF MERIT IN MACHINERY AND EQUIPMENT DESIGN This certificate has been awarded to EnviroWash - Automatic Truck Wheel Washing Machine of Hong Kong Productivity Council and Waycorp Limited To its outstanding design	E R P & PR	● 五代 小和	特予證書以資表彰	為設計優秀之產品	EnviroWash -自動輸軩清洗機	香港生產力促進局及慧台有限公司之	廠商會機器及設備設計優異證書	2001 香港工業獎
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Patents in Hong Kong and Mainland China

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Hong Kong Productivity Council 香港生產力促進局

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