

Proven Technologies
Reliable Solutions
Water and Wastewater Treatment Equipment Specialists



MAI 오리피스 경사판

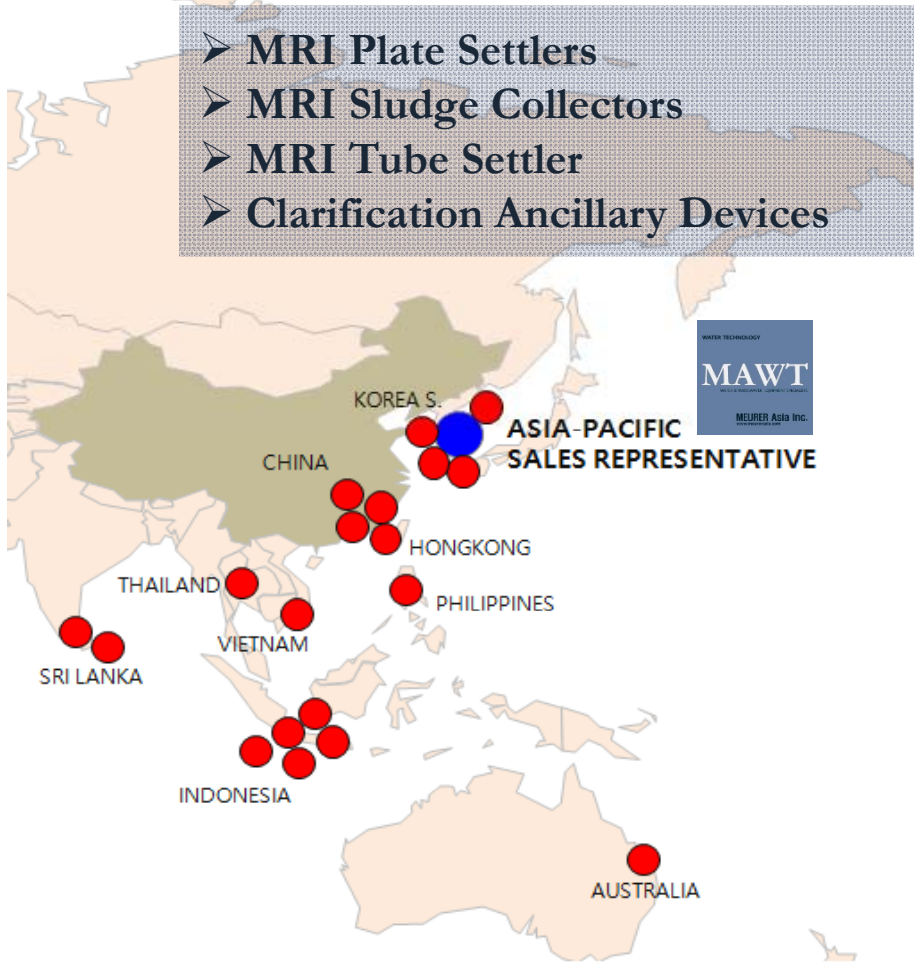
기술소개



뮤리아시아주식회사



- MRI Plate Settlers
- MRI Sludge Collectors
- MRI Tube Settler
- Clarification Ancillary Devices



Licensors

회사명칭	MEURER RESEARCH INC.
소재지	6270 Joyce Dr. Golden CO U.S.A
설립년도	1976
사업분야	침전기계설비 기술개발, 설계, 제작, 납품
홈페이지	www.meurerresearch.com

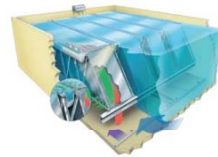
Asia Pacific Sales Representative

회사명칭	뮤러아시아 주식회사
소재지	본사 / 경기도 안양시 동안구 관양동 1307-37 관양두산벤처다임 #903 인천공장 / 인천광역시 서구 가좌동 574-37
설립년도	2004
사업종목	환경기계 무역, 도소매, 제조, 서비스, 컨설팅
홈페이지	www.meurerasia.com

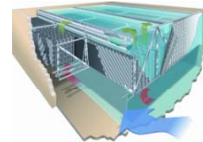
YOUR CLARIFICATION SPECIALISTS

상향류식 경사판

- ✓ 금속 (304SS, 316SS)
- ✓ 비금속 (ABS)

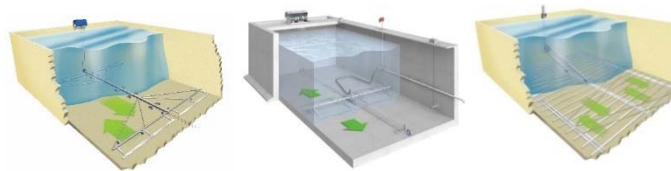


상향류식 비금속 경사판 설비



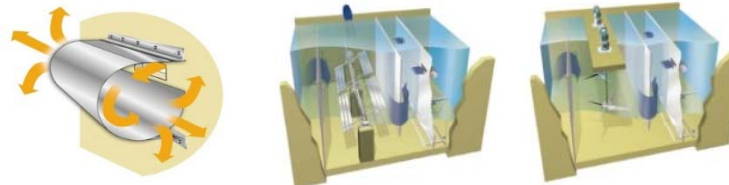
슬러지 수집기

- ✓ Hoseless Cable-Vac™
- ✓ Hosed-Trac™ Cable
- ✓ Ultra-Scraper™



CLARIFIER ANCILLARY DEVICES

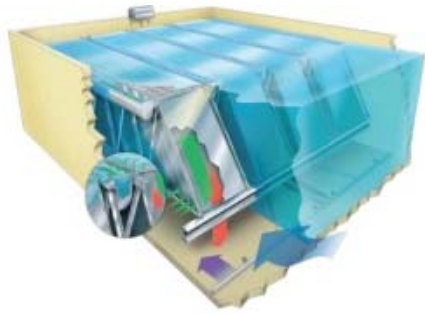
- ✓ Troughs / Baffles / Diffusers
- ✓ Mixers / Agitators
- ✓ Flow Equalization Devices



MRI 상향류식 경사판 모듈



400+ Plants Worldwide



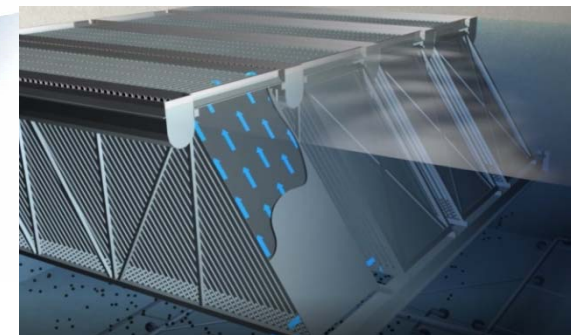
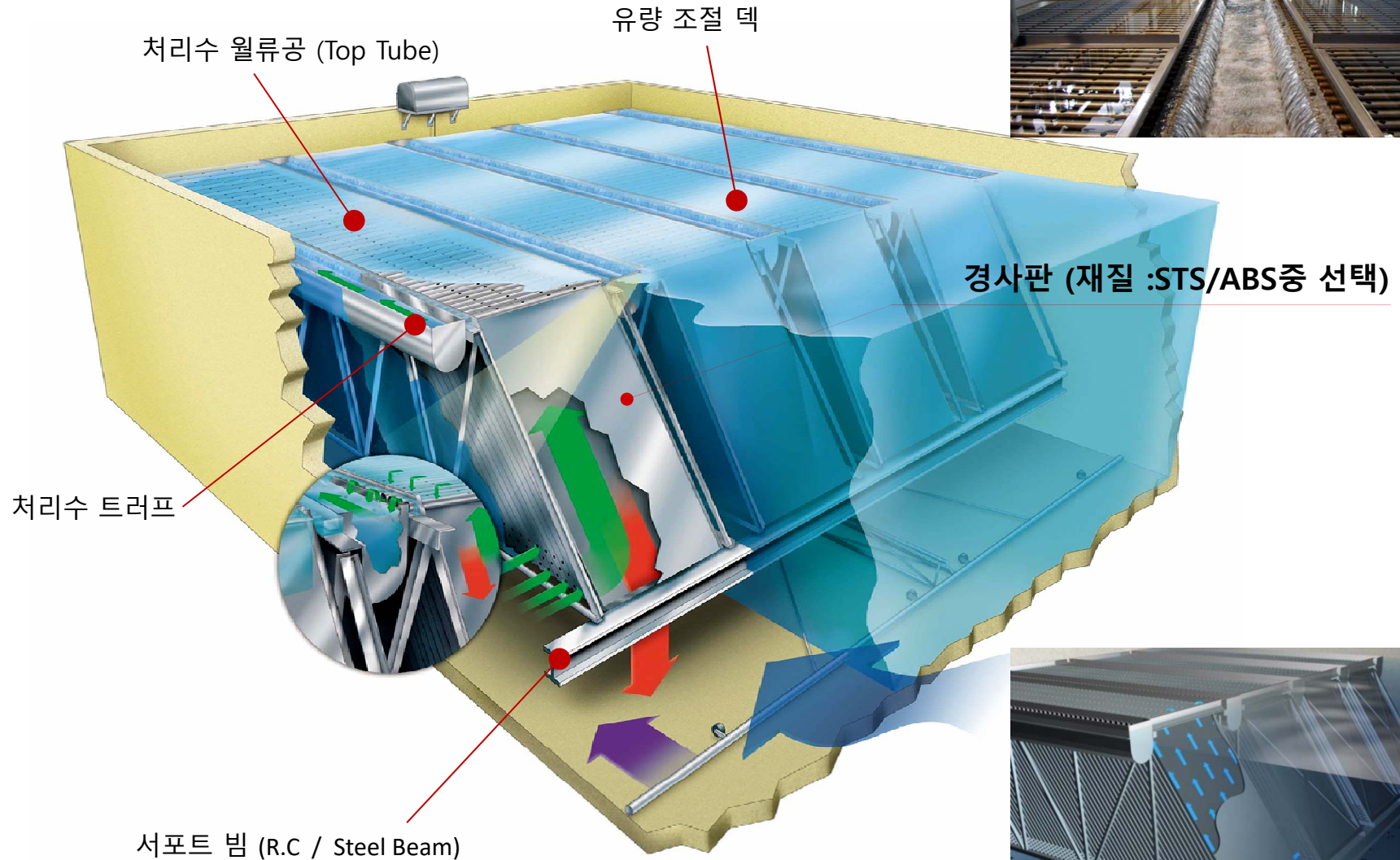
MRI 상향류식 경사판



MRI PLATE SETTLER

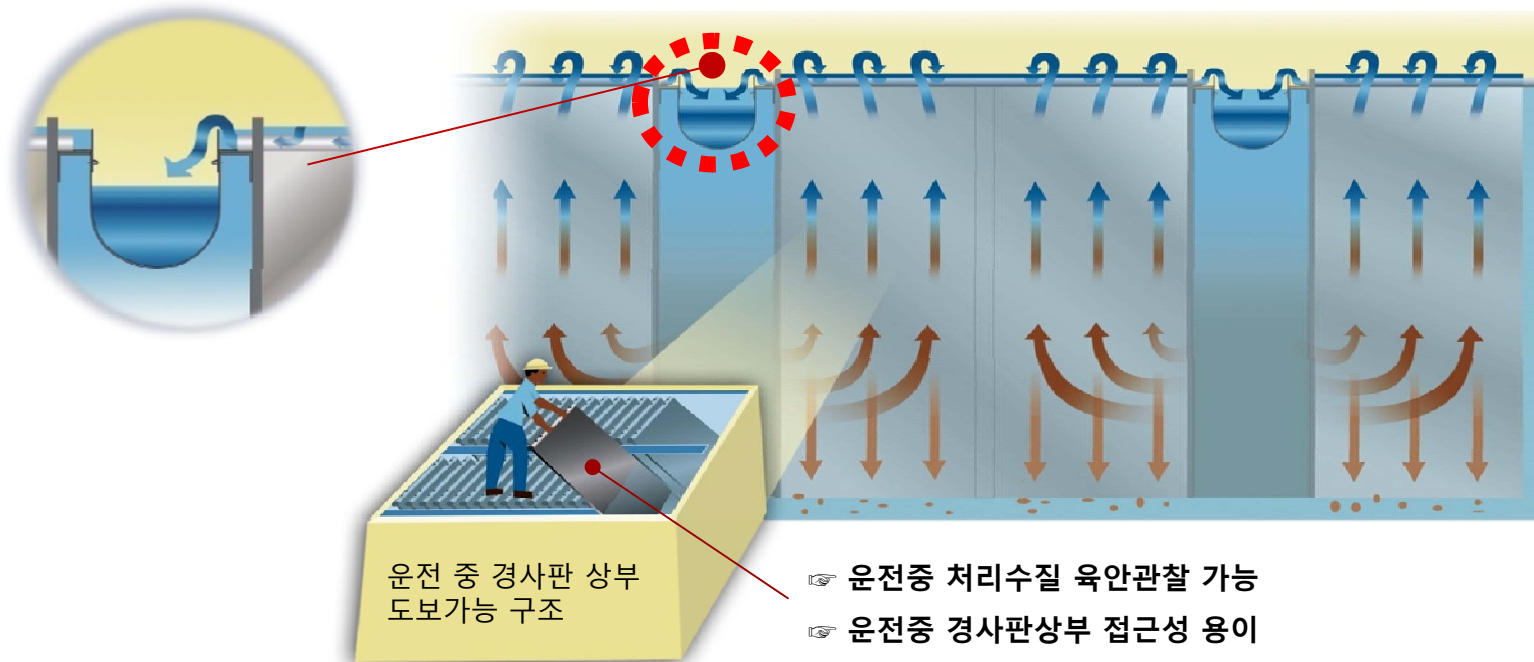
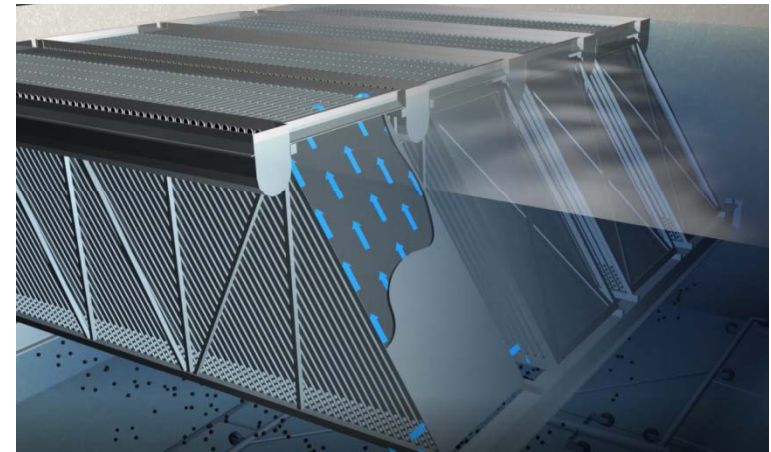
Dedicated to Clean Environment

경사판 설비 외형도



FLOW PATH

경사판 상부 오리피스 월류방식을 채택하여
수리적 설계 최적화 및 정밀한 유량배분기능 실현



운전 중 경사판 상부
도보가능 구조

- ☞ 운전중 처리수질 육안관찰 가능
- ☞ 운전중 경사판상부 접근성 용이
(경사판상부 월류수심 10~20mm 내외)

MRI PLATE SETTLER

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FLOW PATH



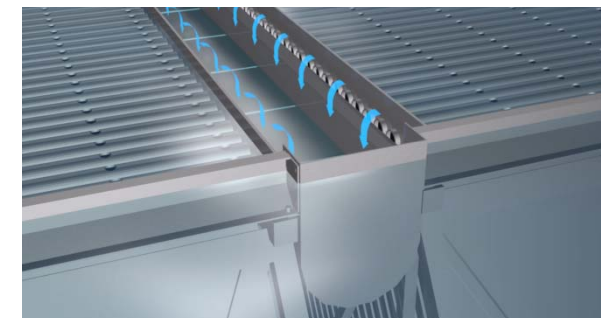
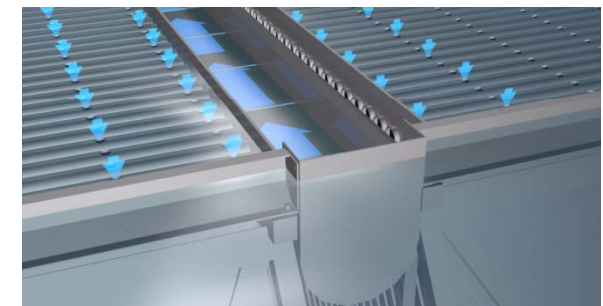
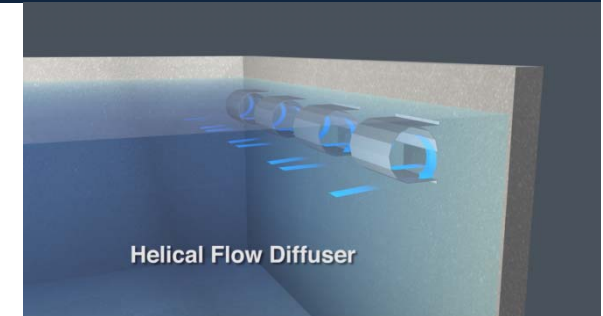
MRI PLATE SETTLER

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Dedicated to Clean Environment

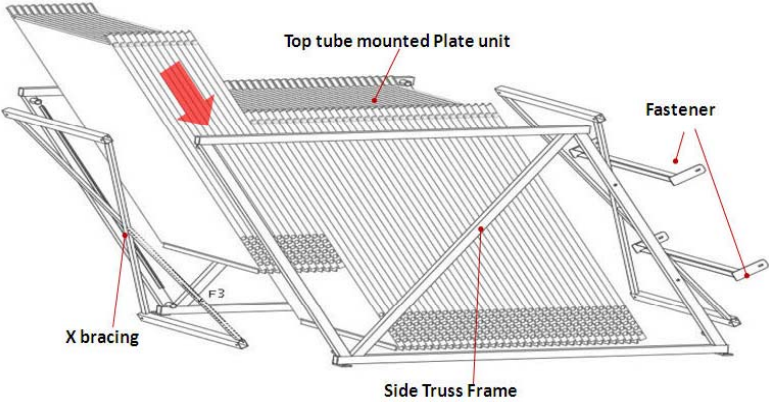
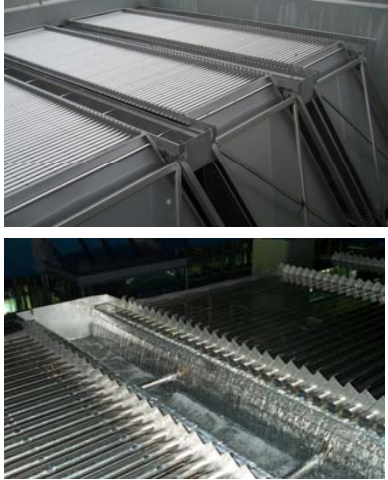
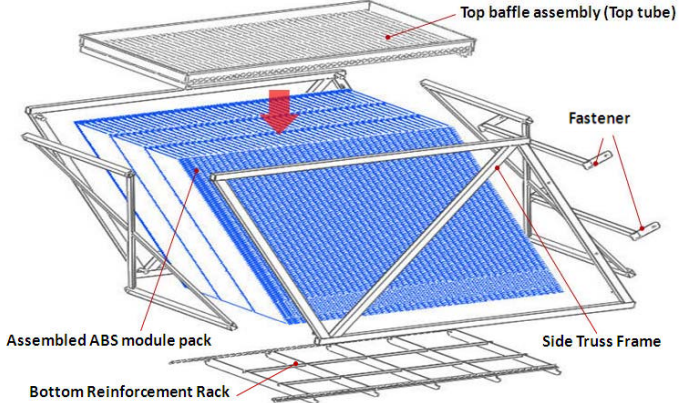

MRI 경사판 특징점



- ▶ 최소 설치면적으로 최대처리효과 실현
- ▶ 유체역학 설계에 의한 일체형 경사판 구조
- ▶ 정밀한 유량분배 기능을 가진 수리적 구조
- ▶ 안정적인 처리수질 확보
- ▶ STS304/ABS 재질의 자유로운 선택
- ▶ 혁신적인 공사기간 단축 및 유지 관리 용이
- ▶ 운전중 경사판 상부 도보 가능
- ▶ 운전중 경사판 청소가 가능한 구조



재질 선택

MATERIAL	MRI LAMELLA PLATE	PHOTOS	SPECIFICATIONS
<p style="text-align: center;">STS (304/316)</p>			<p><input type="checkbox"/> MATERIAL (304/316/316L S.S) : 모듈 전체</p> <ul style="list-style-type: none"> - LAMELLA PLATE - TOP TUBE - FRAME & X-BRACINGS - TROUGHS & WEIRS - SUPPORT BEAM (OPTION)
<p style="text-align: center;">ABS</p>			<p><input type="checkbox"/> MATERIAL (ABS)</p> <ul style="list-style-type: none"> - LAMELLA PLATE - SPACER & CLIPs <p><input type="checkbox"/> MATERIAL (304/316/316L S.S)</p> <ul style="list-style-type: none"> - TOP TUBE - FRAME & X-BRACINGS - TROUGHS & WEIRS - SUPPORT BEAM (OPTION)

공장 제작



CNC punch 통한 경사판 제작



프레임과 서포트 용접



모듈 조립



해외 수출 시 컨테이너 적재



모듈 형태로 트럭 적재

현장 설치



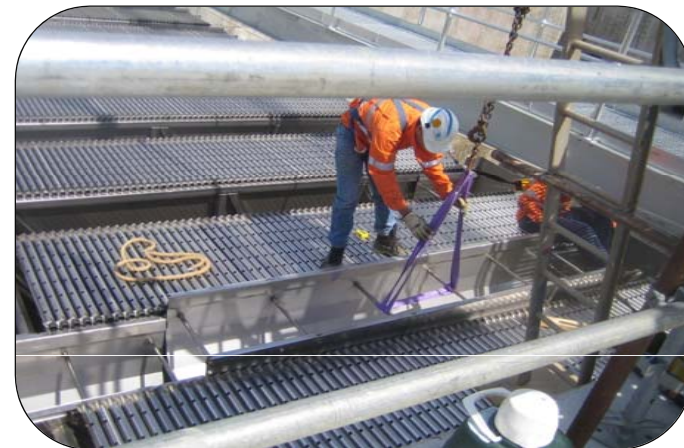
서포트 빔 설치 후 경사판 모듈 양중



경사판 모듈 서포트 빔 고정


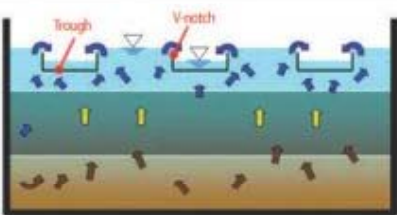
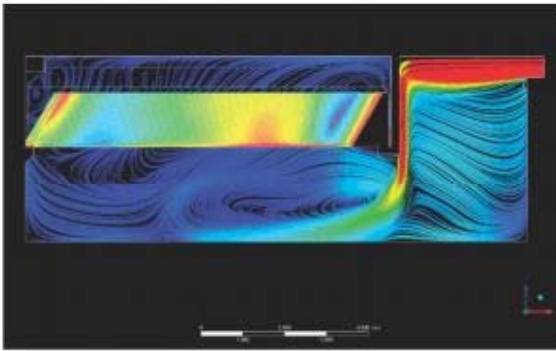

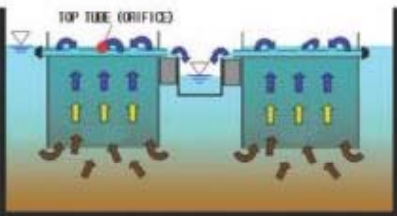
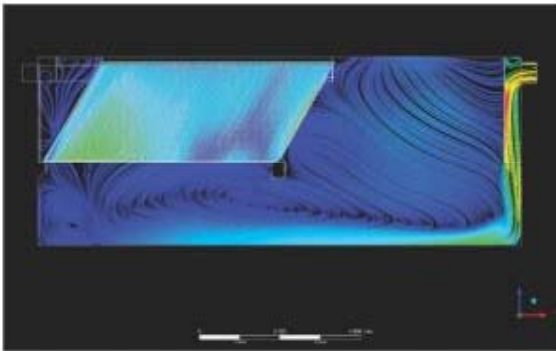


위어(Weir) 수평 조정 후 설치 완료



트러프(Trough) 설치

CFD 해석

	사진	설치 전면 개요도	CFD Simulation
기존의 침수식 경사판			
경사판 내부 유속 불안정			
유러아시아 경사판			
경사판 내부 균일한 유속 분포			

기술 비교

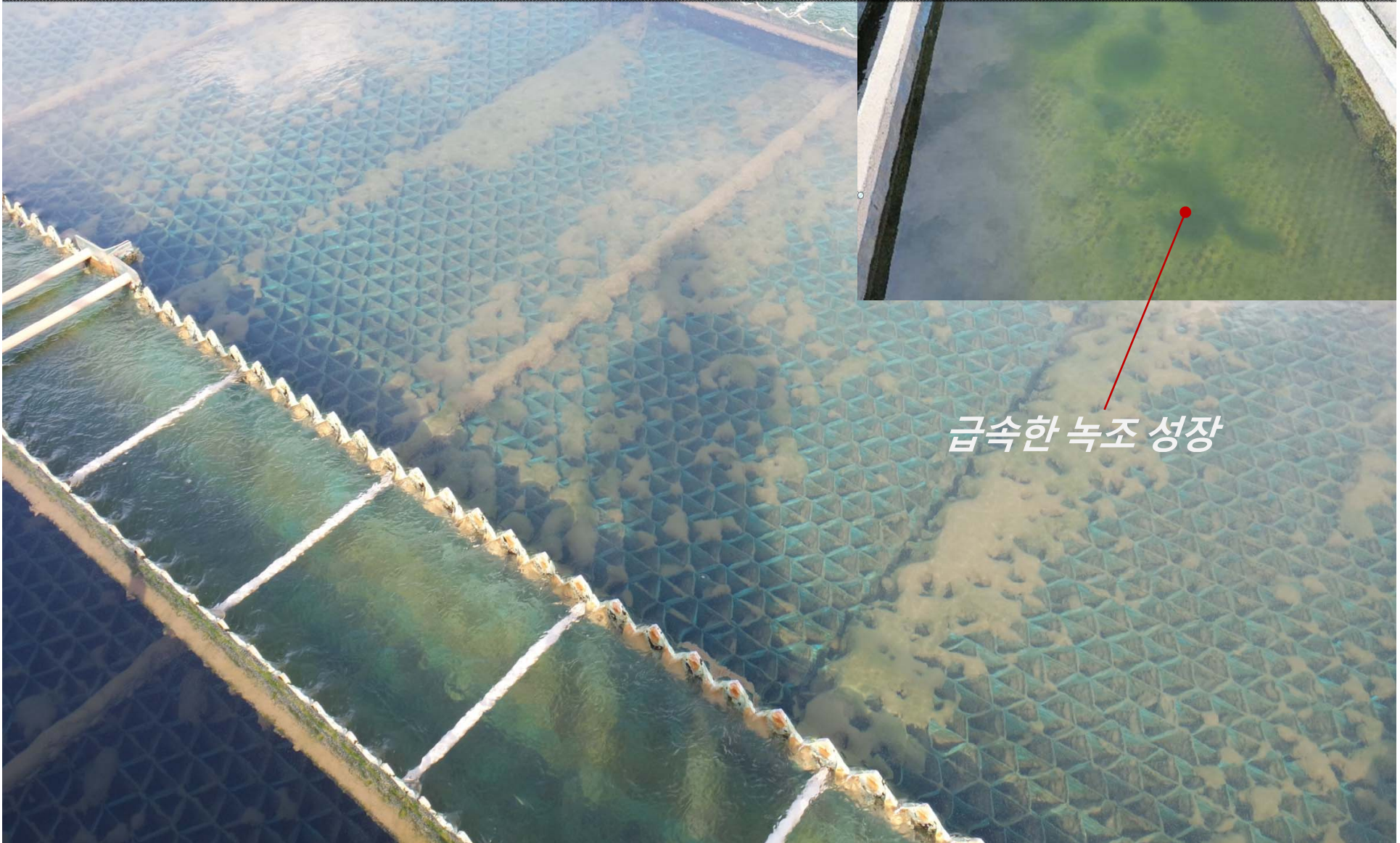


Description	Modular Type	Provides Even Flow Control	Can Be Viewed	Can Be Walked On	Can Be Removed
Submersible	YES	NO	NO	NO	NO
Top Tube Orifice	YES	YES	YES	YES	YES

MRI PLATE SETTLER

기술 비교

LAMELLA TUBE SETTLER (PVC)



급속한 녹조 성장

MRI PLATE SETTLER

기술 비교

CONVENTIONAL PLATE SETTLER (SUBMERSIBLE, 304SS MATERIAL)

1/3



MRI PLATE SETTLER

기술 비교

CONVENTIONAL PLATE SETTLER (SUBMERSIBLE, 304SS MATERIAL)

2/3



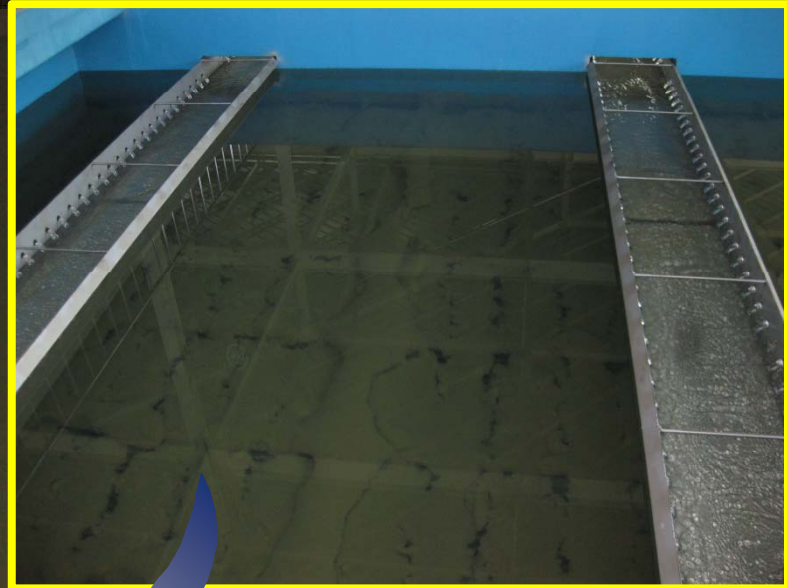
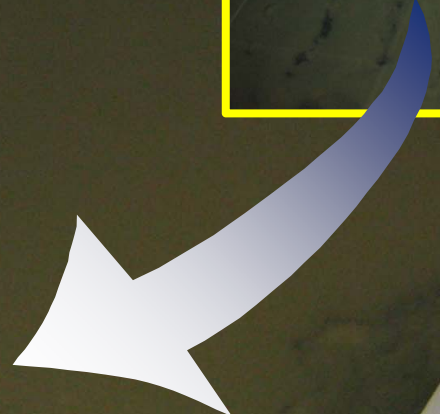
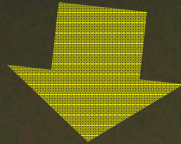
MRI PLATE SETTLER

기술 비교

CONVENTIONAL PLATE SETTLER (SUBMERSIBLE, 304SS MATERIAL)

3/3

수위 하향 및 슬러지 세척 필요



특장점

- ✓ 정확하고 균등한 유량 분배
- ✓ 튼튼한 플레이트 모듈
- ✓ No clogging
- ✓ 최소 설치면적
- ✓ 뛰어난 수질
- ✓ 운전중 경사판 상부 보도 및 청소 가능한 구조



수압을 통한 유량 분배

The image shows a long, narrow channel of a wastewater treatment plant. The channel is filled with water, and the water is being distributed across a series of parallel plates. The plates are arranged in a way that creates a series of small, cascading waterfalls. The water is clear and the plates are dark. The channel is bordered by concrete walls. A red dot is located on the left side of the channel, and a red line extends from it towards the center of the channel. The text '수압을 통한 유량 분배' is overlaid on the image in a white box.

MRI PLATE SETTLER

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특장점



고압 표면 세척 장치

The image shows a large industrial MRI Plate Settler. It consists of several parallel rectangular tanks with metal grates on the bottom. A high-pressure water spray system is installed along the top edge of the tanks, with a red dot and line pointing to one of the spray nozzles. The tanks are filled with water, and the grates are covered with a layer of dark sludge. The background shows a blue wall and a metal railing.

Automatic Top tube Cleaning Device

- Water pressure >2.0bar at Spray nozzle



프로젝트 대표실적 Reference

Municipal/Industrial Water treatment & Reuse

- Sedimentation
- Membrane pretreatment
- Backwash water reclaim & reuse

Municipal Wastewater treatment & Reuse

- Primary clarifier
- Secondary clarifier
- Tertiary clarifier
- Backwash waste reclaim & reuse
- Membrane pretreatment

Industrial Wastewater treatment & Reuse

- Primary clarifier
- Secondary clarifier
- Tertiary clarifier
- Backwash waste reclaim & reuse



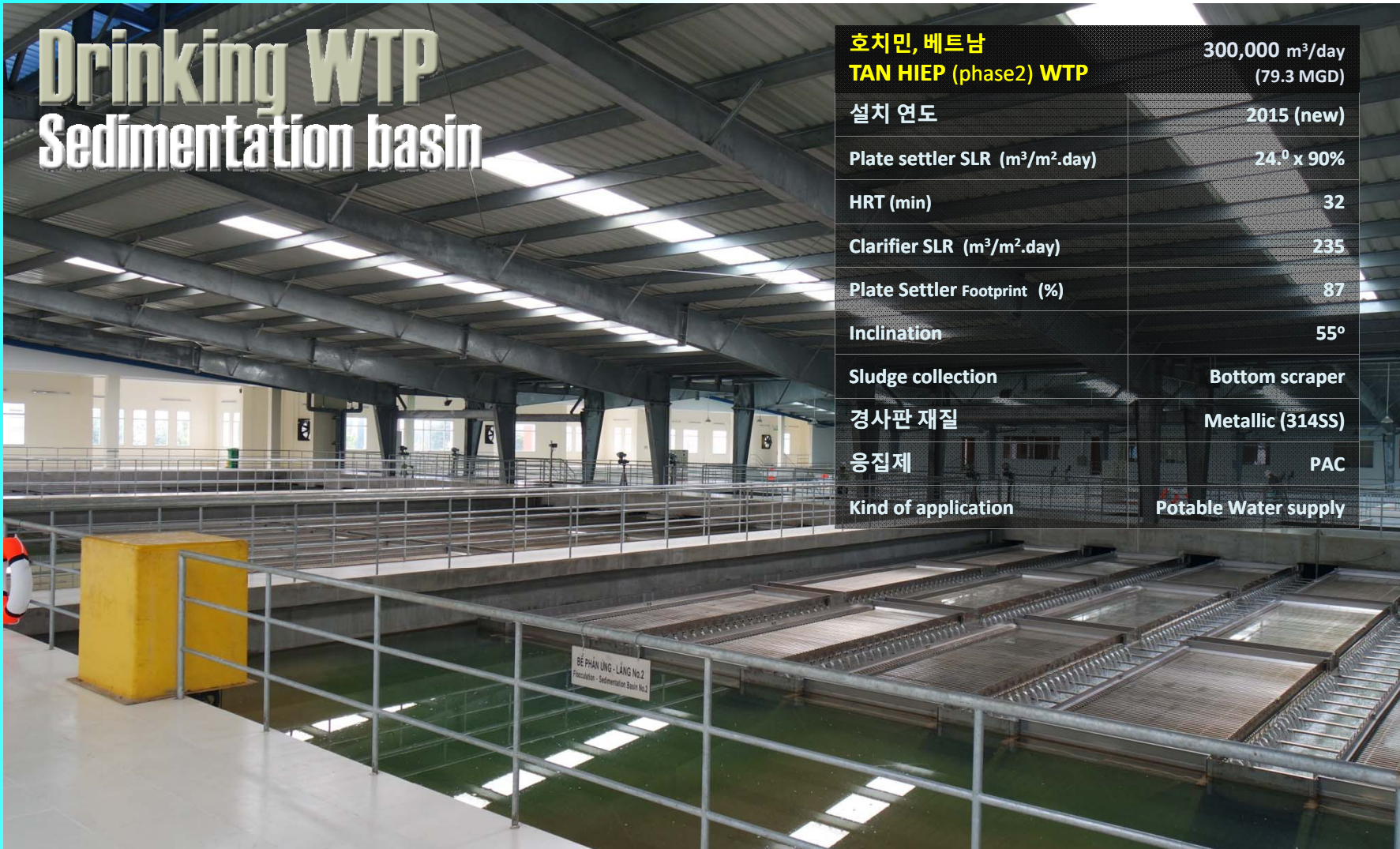
프로젝트 대표실적 Reference

DRINKING/INDUSTRIAL WATER TREATMENT PLANT

Municipal/Industrial Water treatment & Reuse

- Sedimentation
- Membrane pretreatment
- Backwash waste reclaim & reuse

프로젝트 실적



Drinking WTP
Sedimentation basin

호치민, 베트남 TAN HIEP (phase2) WTP	300,000 m³/day (79.3 MGD)
설치 연도	2015 (new)
Plate settler SLR (m³/m².day)	24.0 x 90%
HRT (min)	32
Clarifier SLR (m³/m².day)	235
Plate Settler Footprint (%)	87
Inclination	55°
Sludge collection	Bottom scraper
경사판 재질	Metallic (314SS)
응집제	PAC
Kind of application	Potable Water supply

BỂ PHÂN LƯNG - LƯNG No.2
Floculation - Sedimentation Basin No.2

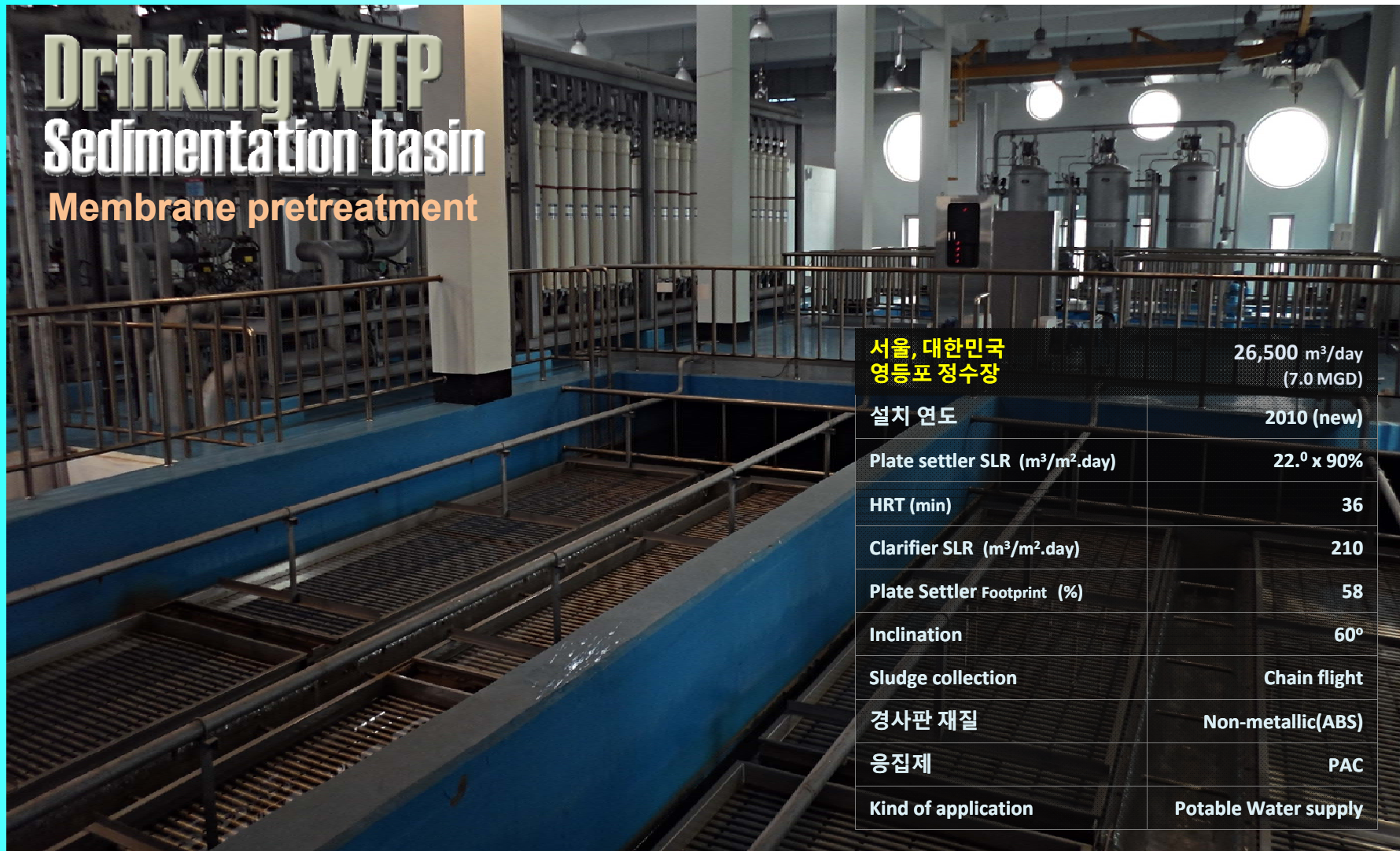
프로젝트 실적



TAN HIEP(PHASE 2) WTP – HO CHI MINH CITY, VIETNAM



프로젝트 실적



Drinking WTP
Sedimentation basin
Membrane pretreatment

서울, 대한민국 영등포 정수장	26,500 m ³ /day (7.0 MGD)
설치 연도	2010 (new)
Plate settler SLR (m ³ /m ² .day)	22.0 x 90%
HRT (min)	36
Clarifier SLR (m ³ /m ² .day)	210
Plate Settler Footprint (%)	58
Inclination	60°
Sludge collection	Chain flight
경사판 재질	Non-metallic(ABS)
응집제	PAC
Kind of application	Potable Water supply

프로젝트 실적

YEONGDEUNGPO WTP – SEOUL, KOREA REP.



프로젝트 실적



Industrial-Drinking WTP
Sedimentation basin

BEKASI Indonesia	31,500 m³/day
MM2100 WTP(Phase-3)	(8.3 MGD)
설치 연도	2013 (new)
Plate settler SLR (m ³ /m ² .day)	18.5 x 90%
HRT (min)	43
Clarifier SLR (m ³ /m ² .day)	133
Plate Settler Footprint (%)	76
Inclination	60°
Sludge collection	Hopper
경사판 재질	Non-metallic(ABS)
응집제	PAC+(polymer)
Kind of application	Industrial Water supply

프로젝트 실적



MM2100 (Phase 3) WTP –Bekasi, INDONESIA



프로젝트 실적



Drinking WTP
Sedimentation basin

JUIGALPA Nicaragua	25,500 m ³ /day (6.7 MGD)
JUIGALPA WTP	
설치 연도	2009 (new+expansion)
Plate settler SLR (m ³ /m ² .day)	20. ⁰ (18. ⁰) x 90%
HRT (min)	62 (107)
Clarifier SLR (m ³ /m ² .day)	111 (64)
Plate Settler Footprint (%)	75 (45)
Inclination	60°
Sludge collection	Hopper
경사판 재질	Non-metallic(ABS)
응집제	Alum
Kind of application	Potable Water supply

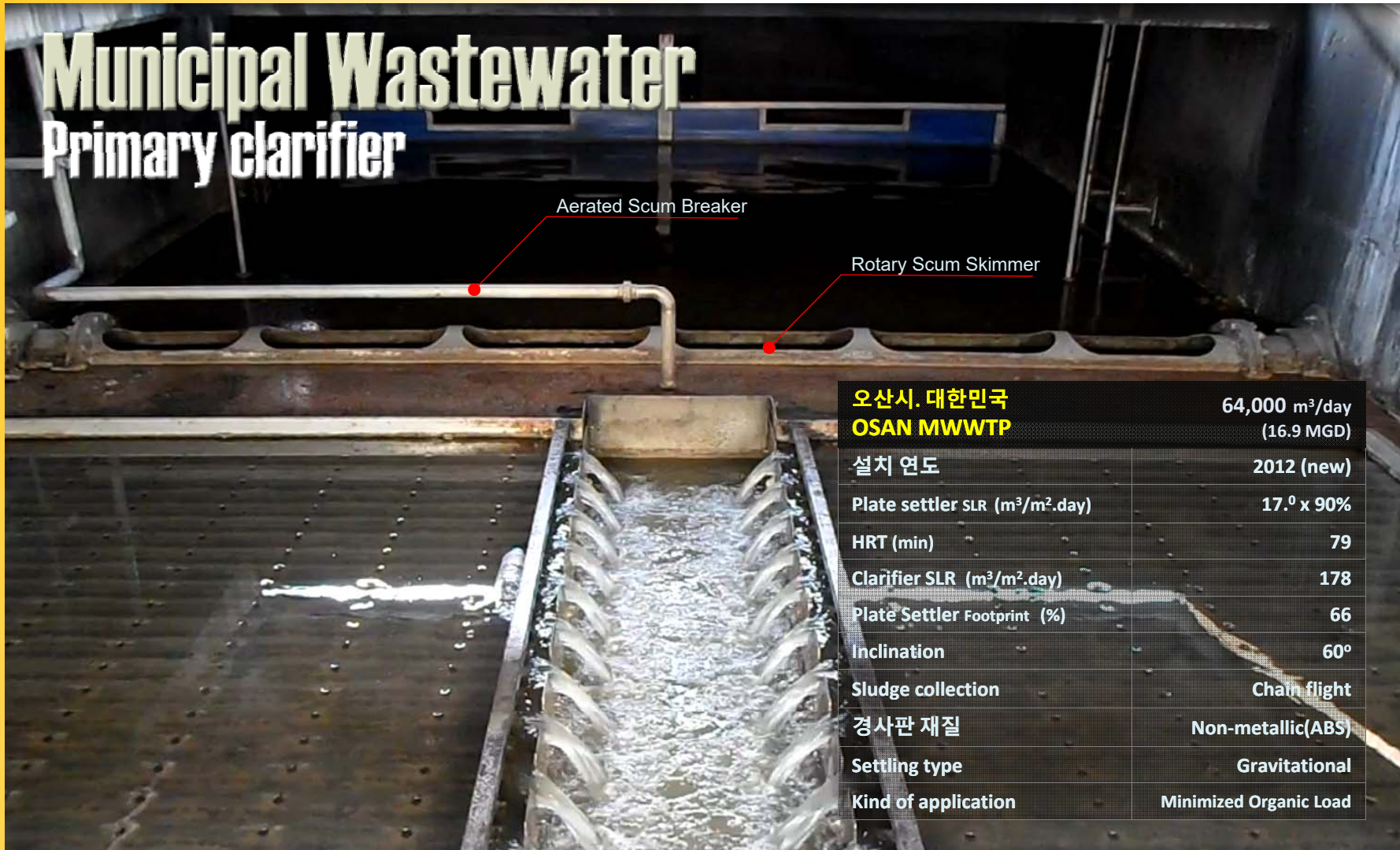
프로젝트 실적

MUNICIPAL WASTEWATER TREATMENT PLANT

Municipal Wastewater treatment & Reuse

- Primary clarifier
- Secondary clarifier
- Tertiary clarifier
- Backwash waste reclaim & reuse
- Membrane pretreatment

프로젝트 실적



**Municipal Wastewater
Primary clarifier**

Aerated Scum Breaker

Rotary Scum Skimmer

오산시. 대한민국 OSAN MWWTP	64,000 m³/day (16.9 MGD)
설치 연도	2012 (new)
Plate settler SLR (m ³ /m ² .day)	17.0 x 90%
HRT (min)	79
Clarifier SLR (m ³ /m ² .day)	178
Plate Settler Footprint (%)	66
Inclination	60°
Sludge collection	Chain flight
경사판 재질	Non-metallic(ABS)
Settling type	Gravitational
Kind of application	Minimized Organic Load

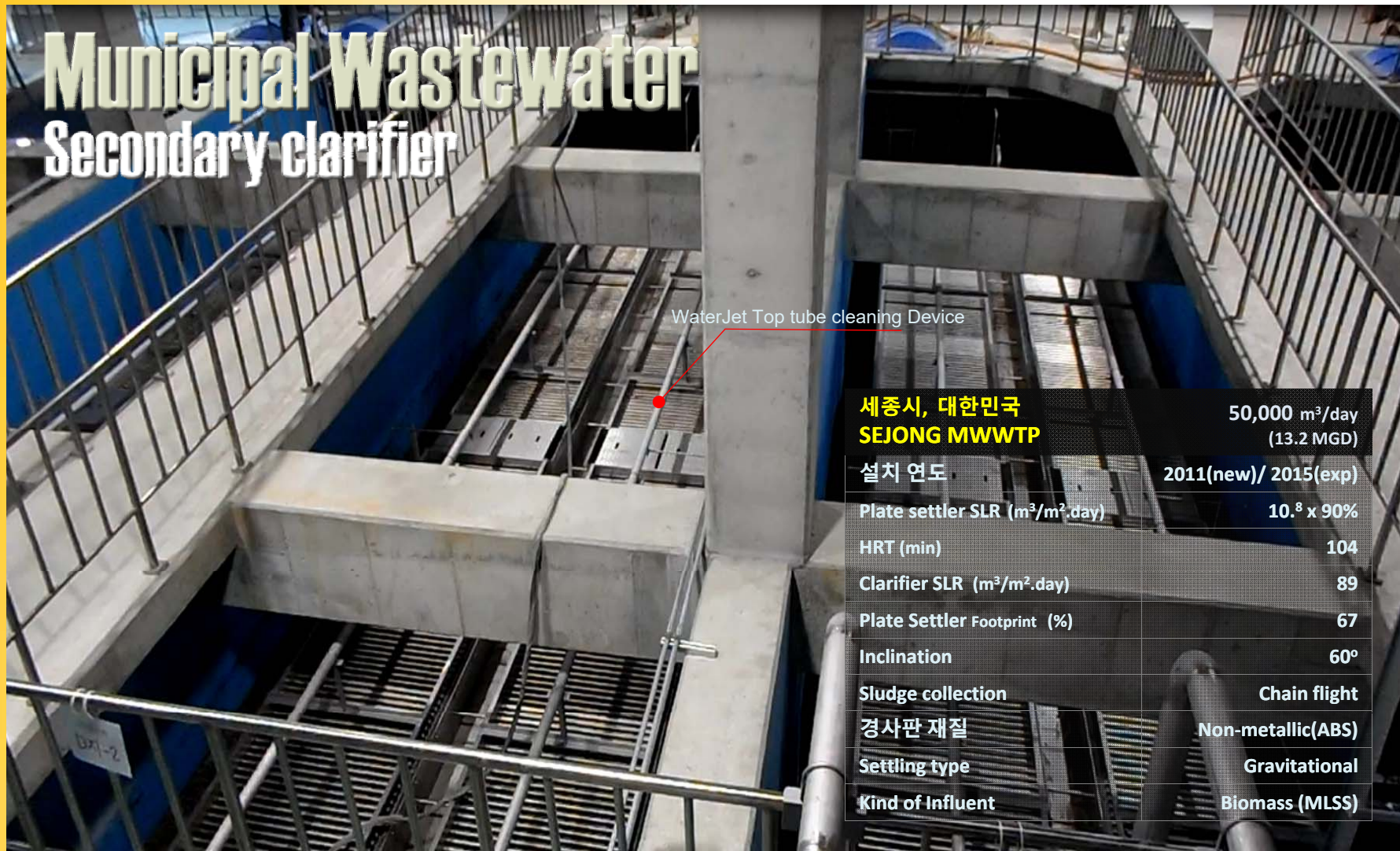
프로젝트 실적



OSAN MWWTP – Osan, KOREA Rep.



프로젝트 실적



Municipal Wastewater
- Secondary clarifier

WaterJet Top tube cleaning Device

세종시, 대한민국 SEJONG MWWTP	50,000 m ³ /day (13.2 MGD)
설치 연도	2011(new)/ 2015(exp)
Plate settler SLR (m ³ /m ² .day)	10. ⁸ x 90%
HRT (min)	104
Clarifier SLR (m ³ /m ² .day)	89
Plate Settler Footprint (%)	67
Inclination	60°
Sludge collection	Chain flight
경사판 재질	Non-metallic(ABS)
Settling type	Gravitational
Kind of Influent	Biomass (MLSS)

프로젝트 실적



Municipal Wastewater Secondary clarifier

HOSELESS CABLE-VAC Sludge collector

현종, 대한민국	23,000 m³/day
HYEONPOONG MWWTP	(6.1 MGD)
설치 연도	2008 (new)
Plate settler SLR (m ³ /m ² .day)	10. ⁸ x 90%
HRT (min)	94
Clarifier SLR (m ³ /m ² .day)	64
Plate Settler Footprint (%)	45
Inclination	60°
Sludge collection	Chain flight
경사판 재질	Non-metallic(ABS)
Settling type	Gravitational
Kind of Influent	Biomass (MLSS)

프로젝트 실적



Municipal Wastewater Tertiary clarifier

FRP domed cover (for Sun light protection)

청주시 대한민국 CHEONGJOO MWWTP	280,000 m ³ /day (74.4 MGD)
설치 연도	2011 (new)
Plate settler SLR (m ³ /m ² .day)	18.0 x 90%
HRT (min)	33
Clarifier SLR (m ³ /m ² .day)	219
Plate Settler Footprint (%)	86
Inclination	60°
Sludge collection	Chain flight
경사판 재질	Non-metallic(ABS)
응집제	PAC + Polymer
Kind of application	Post Phosphate Removal

프로젝트 실적



Municipal Wastewater Tertiary clarifier

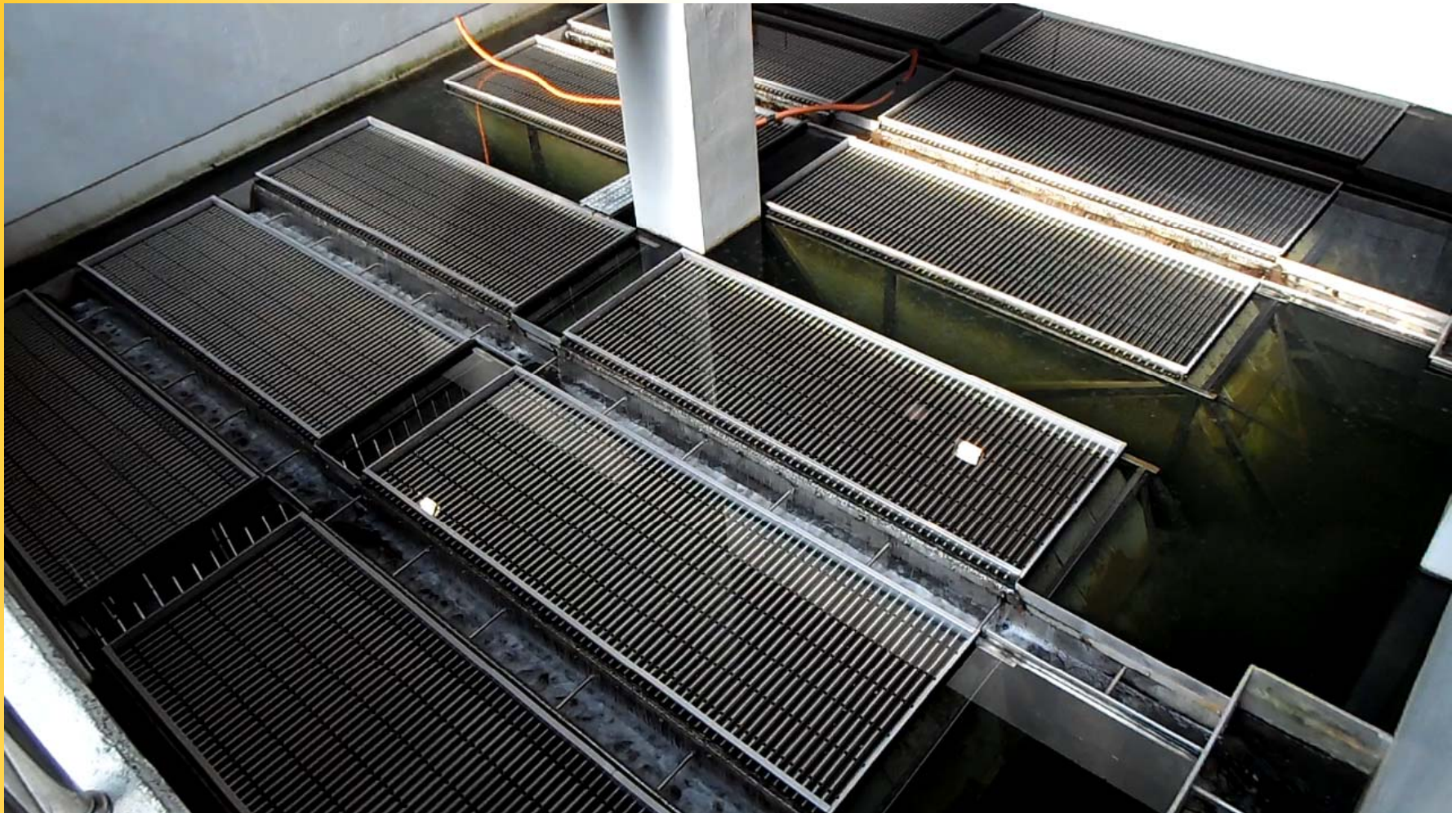
수원시 대한민국. SEOHOCHON MWWTP	47,000 m ³ /day (12.4 MGD)
설치 연도	2010 (new)
Plate settler SLR (m ³ /m ² .day)	18.0 x 90%
HRT (min)	46
Clarifier SLR (m ³ /m ² .day)	157
Plate Settler Footprint (%)	85
Inclination	60°
Sludge collection	Hoseless Cable-Vac
경사판 재질	Non-metallic(ABS)
응집제	PAC + Polymer
Kind of application	Post Phosphate Removal

HOSELESS CABLE-VAC Bottom scraper

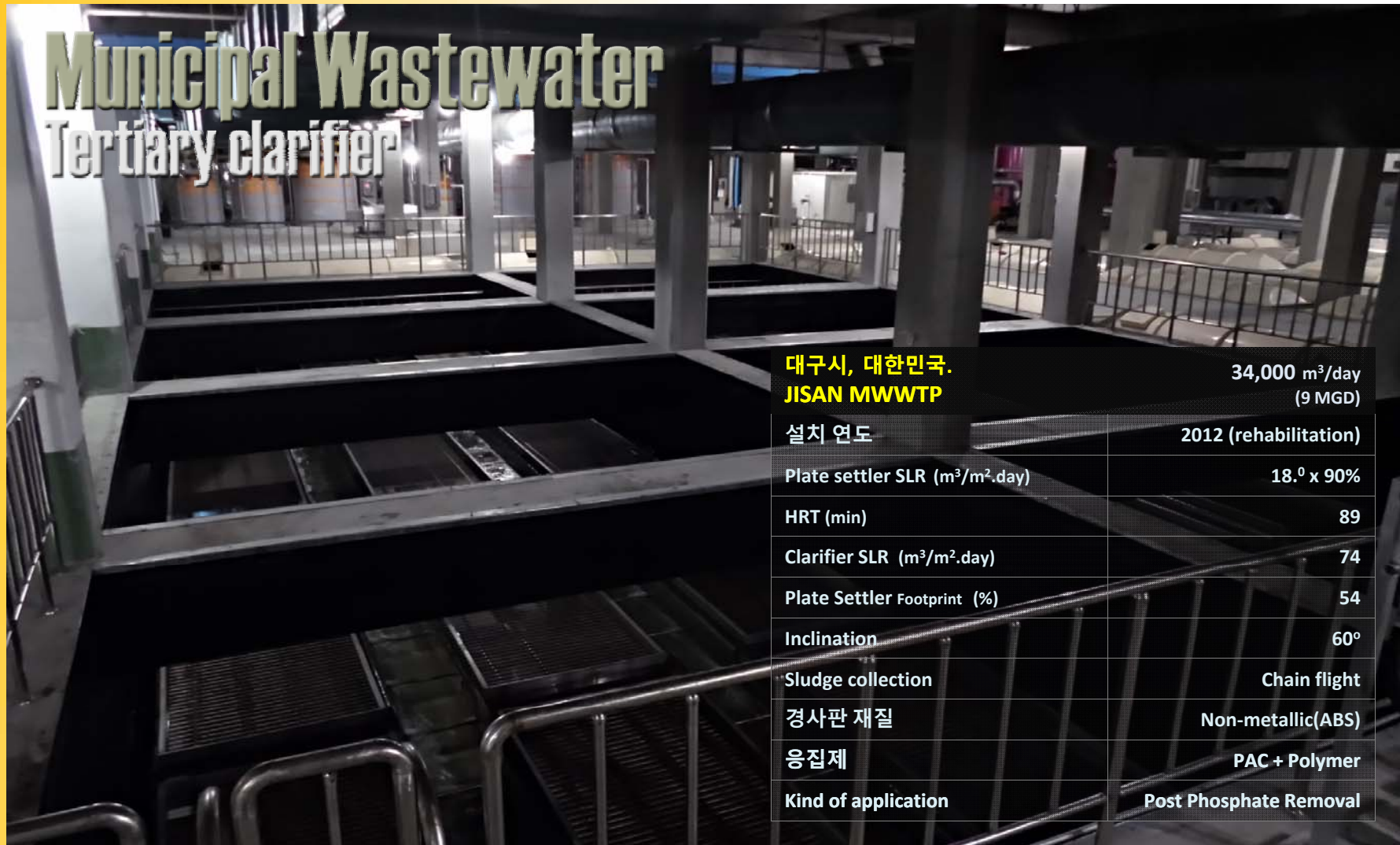
프로젝트 실적



SEOHOCHEON MWWTP – SUWON, KOREA Rep.



프로젝트 실적



Municipal Wastewater
Tertiary clarifier

대구시, 대한민국. JISAN MWWTP	34,000 m³/day (9 MGD)
설치 연도	2012 (rehabilitation)
Plate settler SLR (m ³ /m ² .day)	18.0 x 90%
HRT (min)	89
Clarifier SLR (m ³ /m ² .day)	74
Plate Settler Footprint (%)	54
Inclination	60°
Sludge collection	Chain flight
경사판 재질	Non-metallic(ABS)
응집제	PAC + Polymer
Kind of application	Post Phosphate Removal

프로젝트 실적

INDUSTRIAL WASTEWATER TREATMENT PLANT

Industrial Wastewater treatment & Reuse

- Primary clarifier
- Secondary clarifier
- Tertiary clarifier
- Backwash waste reclaim & reuse

프로젝트 실적



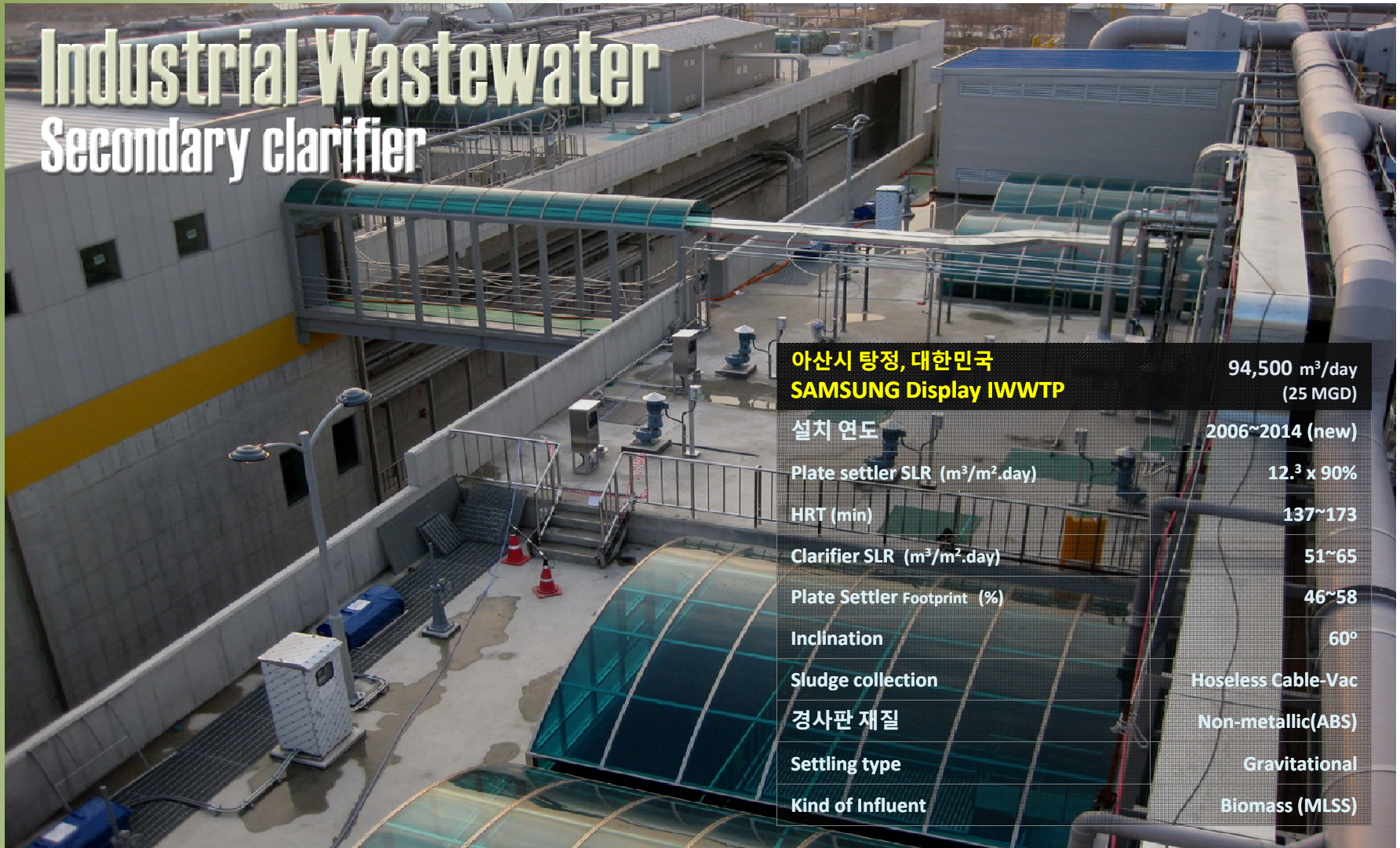
**Industrial Wastewater
Primary clarifier**

연천, 대한민국 CHEONGSAN IWWTP	19,000 m ³ /day (5.0 MGD)
설치 연도	2013
Plate settler SLR (m ³ /m ² .day)	18. ⁰ x 90% (new)
HRT (min)	29. ²
Clarifier SLR (m ³ /m ² .day)	247
Plate Settler Footprint, (%)	67
Inclination	60°
Sludge collection	Chain flight
경사판 재질	Non-metallic(ABS)
응집제	Ferric Chloride + Polymer
Kind of application	W.W Pretreatment

프로젝트 실적



Industrial Wastewater Secondary clarifier



아산시 탕정, 대한민국	94,500 m ³ /day (25 MGD)
SAMSUNG Display IWWTP	
설치 연도	2006~2014 (new)
Plate settler SLR (m ³ /m ² .day)	12.3 x 90%
HRT (min)	137~173
Clarifier SLR (m ³ /m ² .day)	51~65
Plate Settler Footprint (%)	46~58
Inclination	60°
Sludge collection	Hoseless Cable-Vac
경사판 재질	Non-metallic(ABS)
Settling type	Gravitational
Kind of Influent	Biomass (MLSS)

프로젝트 실적



프로젝트 실적



Industrial Wastewater Secondary clarifier

TOP TUBE TYPE
EVEN FLOW CONTROL DEVICE

아산시 탕정, 대한민국	20,500 m ³ /day (5.4 MGD)
SAMSUNG Display(ph-7) IWWTP	
설치 연도	2014 (new)
Plate settler SLR (m ³ /m ² .day)	15.0 x 80%
HRT (min)	109
Clarifier SLR (m ³ /m ² .day)	71
Plate Settler Footprint (%)	92
Inclination	60°
Sludge collection	Circular(Turn-Table)
경사판 재질	Non-metallic(ABS)
Settling type	Gravitational
Kind of Influent	Biomass (MLSS)

프로젝트 실적



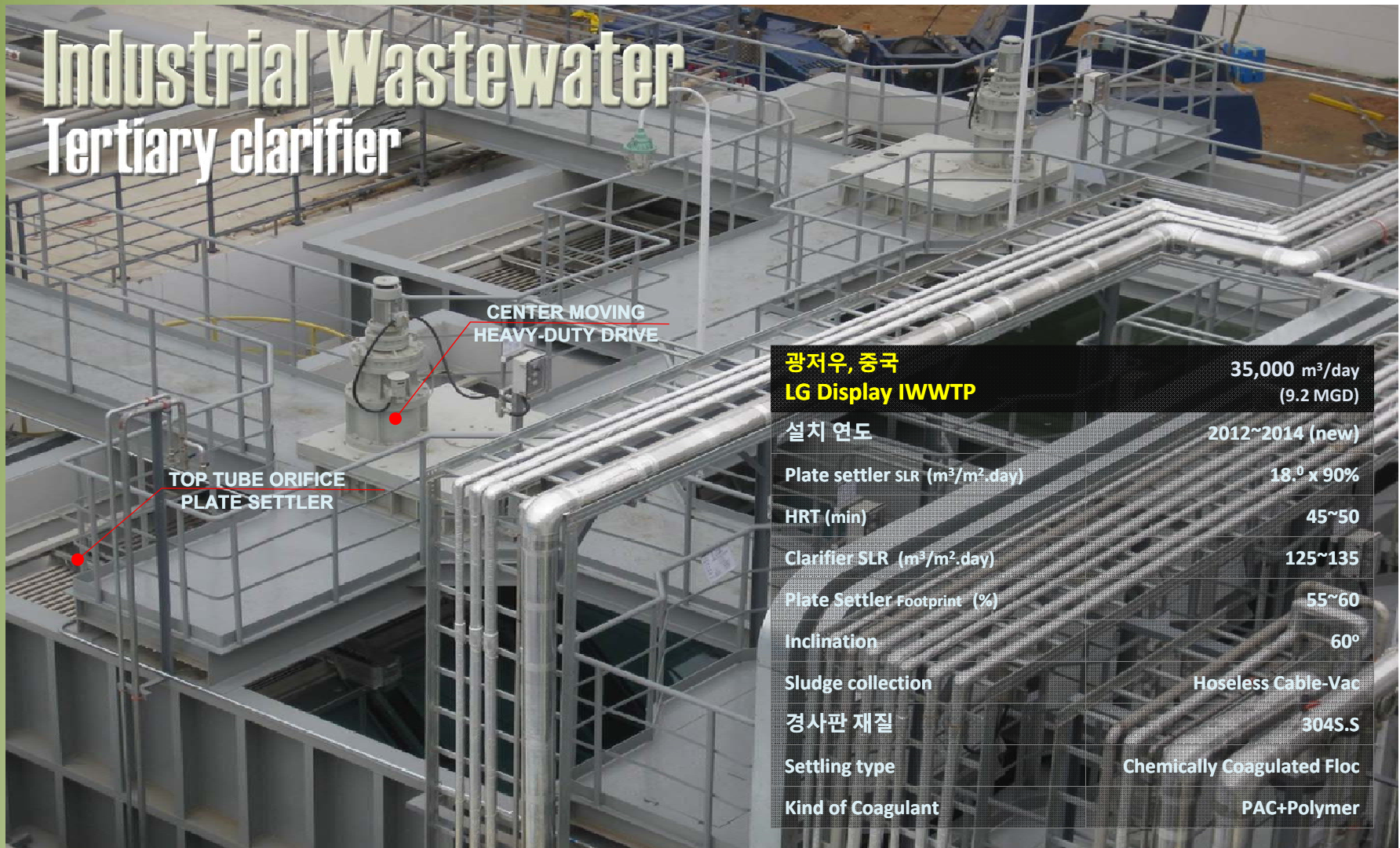
Industrial Wastewater Tertiary clarifier

HOSELESS CABLE-VAC BOTTOM SCRAPER

HOSELESS CABLE-VAC HEAVY-DUTY DRIVE

대산, 대한민국.	6,800 m³/day
LG Chemical IWWTP	(1.8 MGD)
설치 연도	2011 (process optimization)
Plate settler SLR (m ³ /m ² .day)	18.0 x 80%
HRT (min)	89
Clarifier SLR (m ³ /m ² .day)	76
Plate Settler Footprint (%)	55
Inclination	60°
Sludge collection	Hoseless Cable-Vac
경사판 재질	Non-metallic(ABS)
응집제	Ferric Chloride+Polymer
Kind of application	AOP(Post Organic Removal)

프로젝트 실적



광저우, 중국 LG Display IWWTP	35,000 m ³ /day (9.2 MGD)
설치 연도	2012~2014 (new)
Plate settler SLR (m ³ /m ² .day)	18.0 x 90%
HRT (min)	45~50
Clarifier SLR (m ³ /m ² .day)	125~135
Plate Settler Footprint (%)	55~60
Inclination	60°
Sludge collection	Hoseless Cable-Vac
경사판 재질	304S.S
Settling type	Chemically Coagulated Floc
Kind of Coagulant	PAC+Polymer

프로젝트 실적



LG Display IWWTP – GUANGZHOU, CHINA

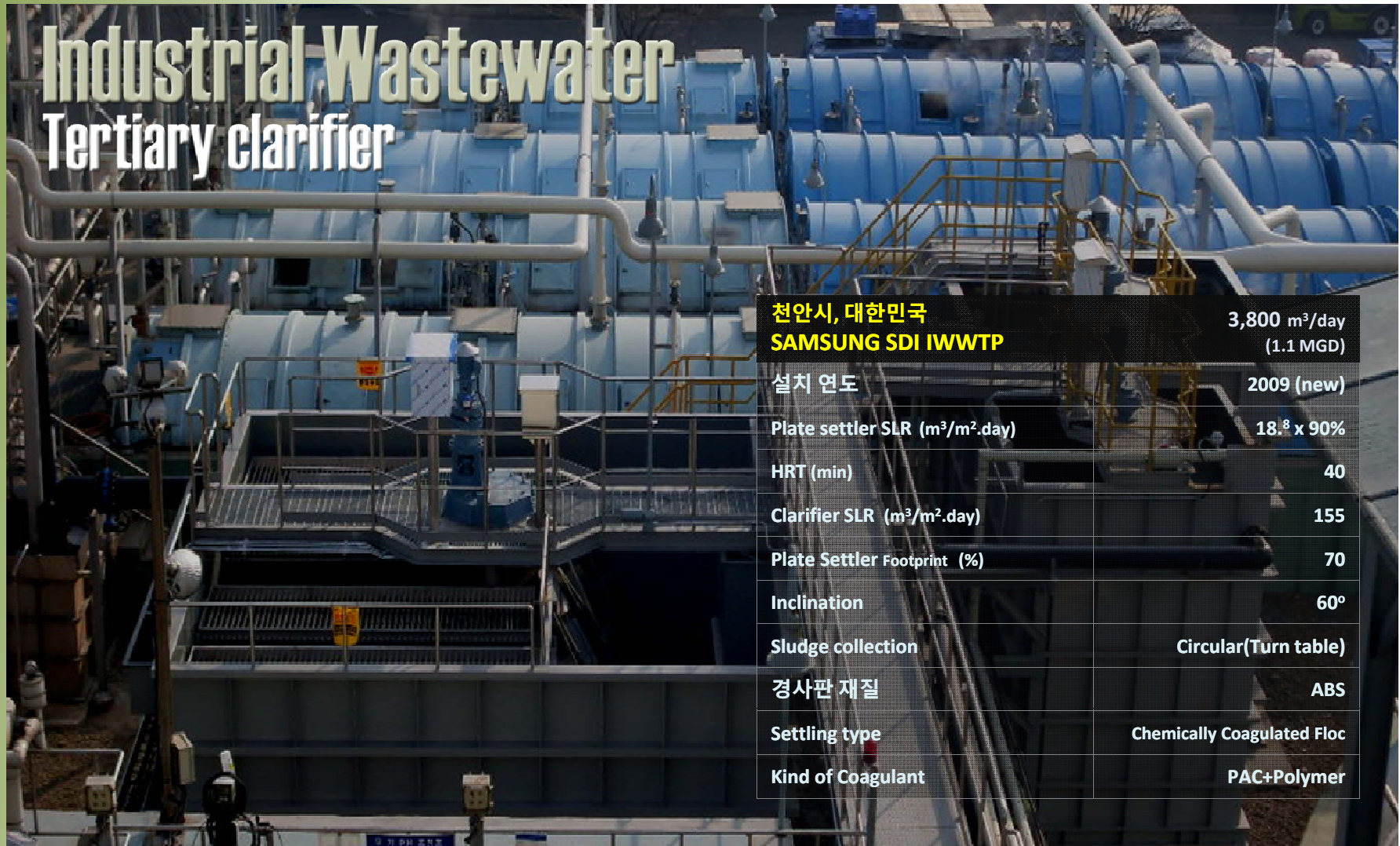


프로젝트 실적



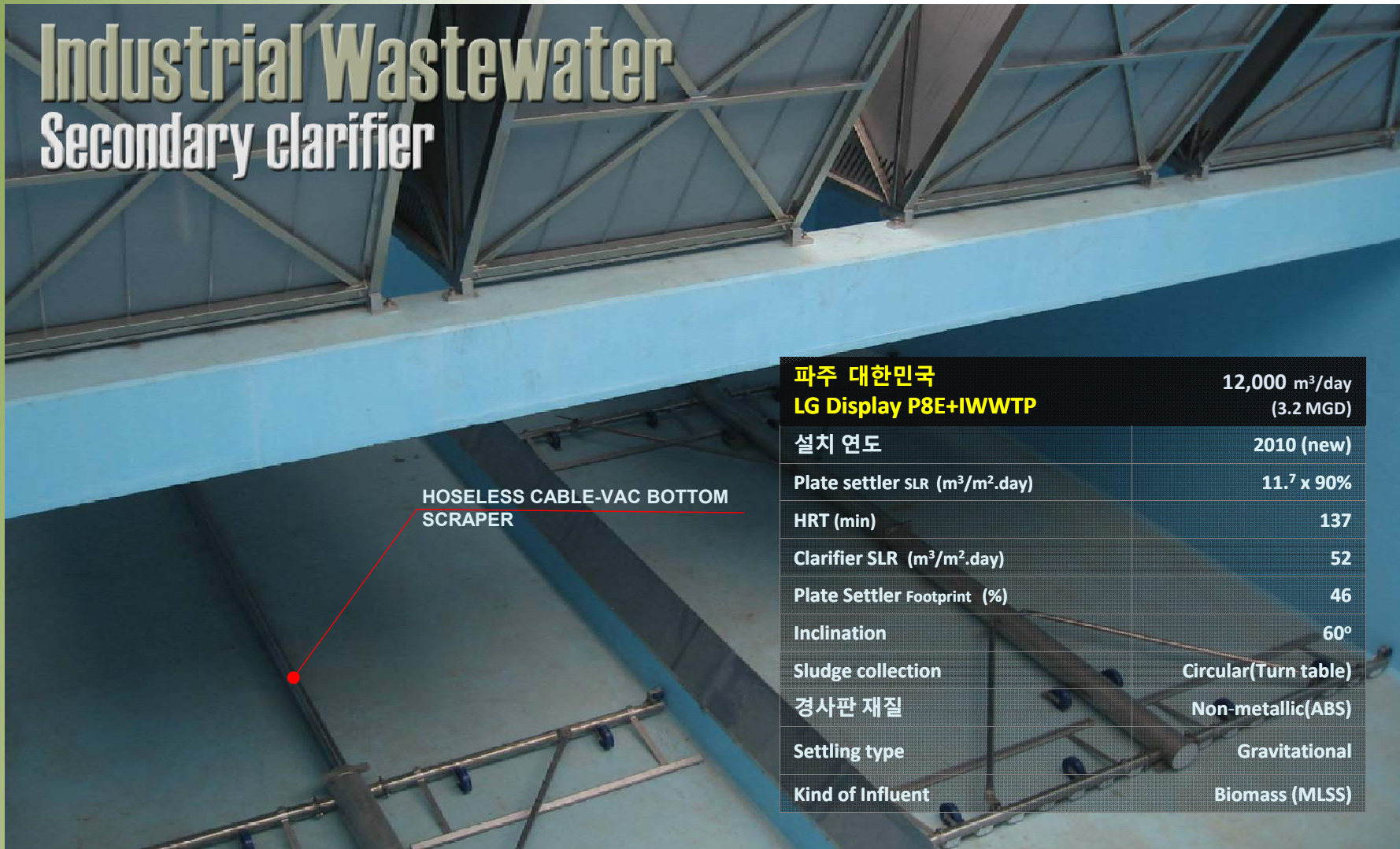
여주시, 대한민국	31,000 m ³ /day (8.2 MGD)
JUNGHEUNG IWWTP	
설치 연도	2008/2010 (new+exp.)
Plate settler SLR (m ³ /m ² .day)	18.8 x 90%
HRT (min)	45
Clarifier SLR (m ³ /m ² .day)	135
Plate Settler Footprint (%)	65
Inclination	60°
Sludge collection	Hoseless Cable-Vac
경사판 재질	Exp(ABS) new(304SS)
Settling type	Chemically Coagulated Floc
Kind of Coagulant	PAC+Polymer

프로젝트 실적



천안시, 대한민국	3,800 m³/day (1.1 MGD)
SAMSUNG SDI IWWT	
설치 연도	2009 (new)
Plate settler SLR (m ³ /m ² .day)	18.8 x 90%
HRT (min)	40
Clarifier SLR (m ³ /m ² .day)	155
Plate Settler Footprint (%)	70
Inclination	60°
Sludge collection	Circular(Turn table)
경사판 재질	ABS
Settling type	Chemically Coagulated Floc
Kind of Coagulant	PAC+Polymer

프로젝트 실적



Industrial Wastewater Secondary clarifier

HOSELESS CABLE-VAC BOTTOM
SCRAPER

파주 대한민국 LG Display P8E+IWWTP	12,000 m³/day (3.2 MGD)
설치 연도	2010 (new)
Plate settler SLR (m ³ /m ² .day)	11.7 x 90%
HRT (min)	137
Clarifier SLR (m ³ /m ² .day)	52
Plate Settler Footprint (%)	46
Inclination	60°
Sludge collection	Circular(Turn table)
경사판 재질	Non-metallic(ABS)
Settling type	Gravitational
Kind of Influent	Biomass (MLSS)

대용량 프로젝트 실적 리스트 (>300 MLD)

Plant name (Location)	Capacity	YEAR constructed	Status
TANHIEP WTP (New, phase-2) - Ho Chi Minh, Vietnam	300 MLD	2015	Under Operation
RICHMOND WTP (Renovation) - Richmond, VA USA	530 MLD	2015~2018	Under Operation (In processing)
CENTRAL VALLEY WTP (New) - Central valley, UT USA	454 MLD	2013	Under Operation
WYLLE WTP (New) - Wylie, TX USA	310 MLD	2013	Under Operation
WYCKOFF COBB WTP (New) - Marietta, MA USA	341 MLD	2011	Under Operation
YORK WATER WTP (New, phase-2) - York, PA USA	318 MLD	2010	Under Operation
MIRAMAR WTP (New) - San Diego, CA USA	832 MLD	2008	Under Operation
CANAL RD WTP (New) - Elizabeth town, NJ USA	303 MLD	2008	Under Operation
WYOMING WTP (New) - Wyoming, MI USA	341 MLD	2008	Under Operation
ANTELOPE VALLEY WATER WTP (New) - Palmdale, CA USA	311 MLD	2008	Under Operation



MRI PLATE SETTLER

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Dedicated to Clean Environment

대용량 프로젝트 실적



ANTELOPE VALLEY WTP (New) 311 MLD
Palmdale, CA USA

2008

Under Operation

MRI PLATE SETTLER

51

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대용량 프로젝트 실적

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JERSEY CITY WTP (New) 90 MLD
Jersey, NJ USA

2008

Under Operation

MRI PLATE SETTLER

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대용량 프로젝트 실적



WYOMING WTP (Renovation) 340 MLD
Wyoming, MI USA

2008

Under Operation

MRI PLATE SETTLER

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대용량 프로젝트 실적



CENTRAL VALLEY WTP (New) 454 MLD
Central Valley, UT USA

2013

Under Operation

MRI PLATE SETTLER

54

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대용량 프로젝트 실적



BUNDAMBA WTP (New) 153 MLD
Bundarbo, AUSTRALIA

2010

Under Operation

MRI PLATE SETTLER

55

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대용량 프로젝트 실적

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MIRAMAR WTP (New) 832 MLD
San Diego, CA USA

2008

Under Operation

MRI PLATE SETTLER

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대용량 프로젝트 실적



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MIRAMAR WTP (New) 832 MLD
San Diego, CA USA

2008

Under Operation



 10710 Scripps Lake Dr, San Diego, CA 92131 |
 sandiego.gov

STATS FOR INCLINED PLATES

Plant:	Miramar Water Treatment Plant San Diego, CA
Engineer:	Brown & Caldwell CDM Engineers MWH Engineers (on site)
Contractor:	Western Summit Constructors
Flow	220 mgd
Process:	Sedimentation with inclined plate settlers followed by granular Filtration
Coagulants:	Polymer & Ferric Chloride
Raw Water Source:	Miramar Lake
No. of Basins:	4
No. of Plates:	13,824
No. of Plate Packs:	128
Plate Material:	T-316L Stainless Steel
Effluent Quality:	Under 2 ntu

MIRAMAR WTP (New) 832 MLD
San Diego, CA USA

2008

Under Operation

Thank You!



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