

CHEMIXER SYSTEM

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- ※ Patent Registered
- ※ Trademark Registered
- ※ Green Cert. Registered



WOONG SHIN E&T

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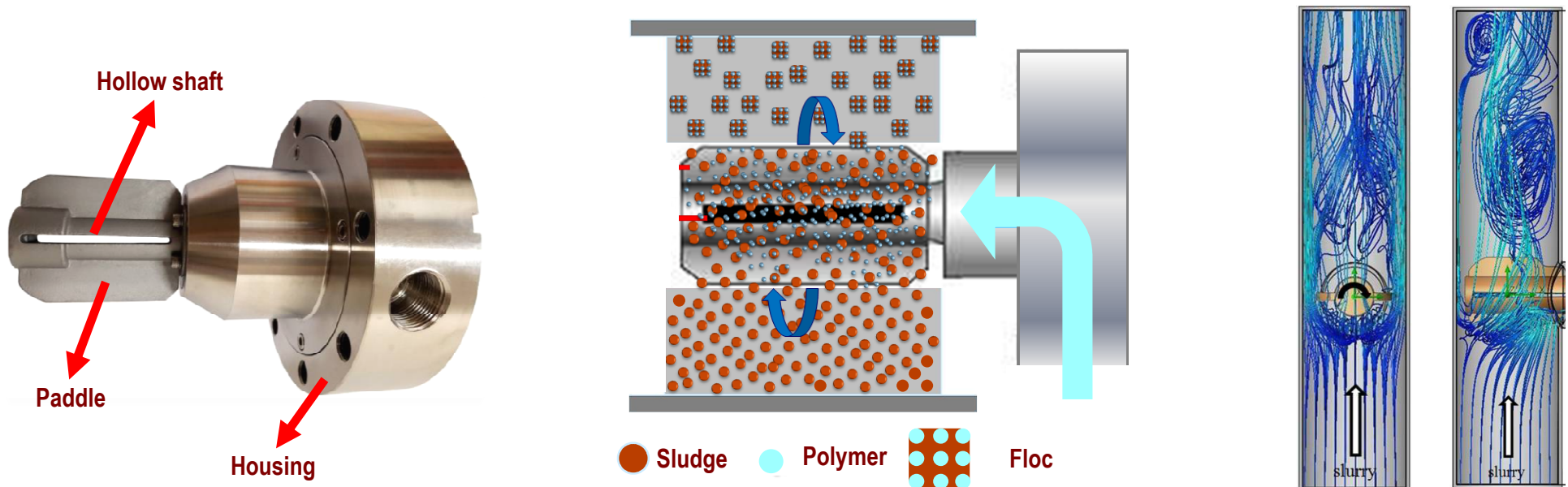
1. Company

Founded in 2004, Woong Shin E&T is a specialized manufacturer for an innovative sludge-polymer mixing system so called 'Inline-Mixer system' which is applicable for sludge dehydrator, thickener, D.A.F(Dissolved Air Flootation), etc. Compared to the conventional flocculation system, several effects by the Inline-Mixer system have been proved in Korea, Europe, Asia & North America and hundreds of inline-mixer system have been supplied in the world.

2. Features

To realize an optimal mixing for sludge and polymer, enough mixing energy must be adjusted to the mixing process. This is realized through the inline-mixer system which is rotary speed controlled optimally by a frequency converter depending on the sludge volume, TS%, VS%, properties or process. A hollow shaft with two paddles allows to inject polymer into the sludge strongly with thin film and generates very strong turbulence every 0.01~0.03 second. This unique system makes the floc stronger with much lower polymer consumption and leads to significant costs savings for the user compared to the conventional flocculation system

The advantages by the inline-mixer are such as reducing polymer consumption by 40%, increasing dry solid (DS%) by 4%, increasing sludge volume by 30%, reducing SS, BOD, COD, T-P, T-N in filtrate by 60%, reducing maintenance & operation cost of the applied process, etc.



3. Advantages

Process	Conventional flocculation system	Inline-Mixer system
Settling Pond (D.A.F)	Low SS removal efficiency	Higher SS removal efficiency with lower polymer consumption by min. 20%
Thickener (Drum, MD, Screw, GBT)	1) Surplus polymer consumption 2) Low dry solid content (DS%) 3) Low sludge volume → Increase electric power consumption 4) High SS, T-P, T-N, BOD, COD in filtrate	1) Lower polymer consumption by 40% (min. 20% guaranteed) 2) Higher dry solid content (DS%) by 4% (If necessary) 3) Higher sludge volume by 30% (If necessary) → Reducing the electric power consumption 4) Lower SS, T-P, T-N, BOD, COD in filtrate by 60% 5) Improved process stability
Digestion Pond	Due to low dry solid content (DS%) with surplus polymer 1) Insufficient digestion period 2) Low digestion rate 3) Small bio-gas volume 4) High organic content(VS%) in digested sludge 5) High digested sludge volume 6) Severe odor 7) Fossil energy may be necessary in winter season	Due to higher dry solid content (DS%) with lower polymer 1) Long digestion period 2) Higher digestion rate 3) Bigger bio-gas volume 4) Lower organic content(VS%) in digested sludge 5) Reducing digested sludge volume 6) Reducing odor 7) Reducing fossil energy in winter season
Dewatering (Belt Press, Screw Press, Rotary Press)	1) Surplus polymer consumption 2) Low cake dryness DS% 3) Low sludge volume → Increase electric power consumption 4) High SS, T-P, T-N, BOD, COD in filtrate	1) Lower polymer consumption by 40% (min. 20% guaranteed) 2) Higher cake dryness by 4% 3) Higher sludge volume by 30% (If necessary) → Reducing the electric power consumption 4) Lower SS, T-P, T-N, BOD, COD in filtrate by 40% 5) Improved process stability
Others	1) Long setting time of the main system 2) High load of site worker & the main system 3) High electricity cost for an aeration pond and poor discharged water quality due to the high SS, T-P, T-N, BOD, COD & residual polymer in filtrate 4) High carbon footprint	1) Reducing setting time of the main system by 80% 2) Lower load of site worker & the main system 3) Reducing electricity cost for an aeration pond and increasing discharged water quality due to the lower SS, T-P, T-N, BOD, COD & residual polymer in filtrate 4) Lower carbon footprint

4. Photos



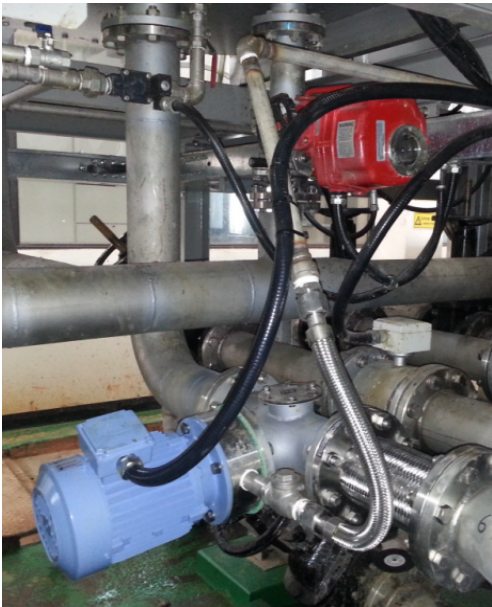
Belt Press (City WWTW)



MD Screw Press (Ind. complex WWTW)



Belt Press (Europe-City WWTW)



MD Screw Thickener (City WWTW)



D.A.F (Paper plant WWTW)



Drum Thickener (Europe-City WWTW)

5. Specification

			IM-100LS	IM-100HS	IM-150	IM-200
Capacity	Inlet Volume (Max)		80m ³ /hr	100m ³ /hr	150m ³ /hr	200m ³ /hr
	Polymer (Max)		8m ³ /hr	8m ³ /hr	10m ³ /hr	15m ³ /hr
Size / Weight	Inline-Mixer (w/o motor)	Size	Φ200mm x 243mmL	Φ200mm x 243mmL	Φ250mm x 273mmL	Φ300mm x 313mmL
		Weight	16kg	16kg	30kg	42kg
	Pipework Tee	Size	100A (4")	100A (4")	100A (5")	100A (6")
Motor	Power		1.5kW, 380~440V 3ph, 50/60Hz	2.2kW, 380~440V 3ph, 50/60Hz	3.7kW, 380~440V 3ph, 50/60Hz	5.5kW, 380~440V 3ph, 50/60Hz
	Speed		Max. 1750rpm	Max. 2200rpm	Max. 3000rpm	Max. 3000rpm
Material	Housing		STS304 (Option : 316)	STS304 (Option : 316)	STS304 (Option : 316)	STS304 (Option : 316)
	Shaft & Paddle		SSC13 (Option : SSC14)	SSC13 (Option : SSC14)	STS304 (Option : 316)	STS304 (Option : 316)
	Pipework Tee		SSC13+STS304 (Option : 316)	SSC13+STS304 (Option : 316)	SSC13+STS304 (Option : 316)	SSC13+STS304 (Option : 316)

※ The capacity shall be different according to the sludge properties, TS%, VS% or process.

※ We reserve the right of technical changes without prior notice.

6. References + ROI

WWTW	PROCESS	RESULTS				ROI
		Polymer saving	Dry Solid (DS%) increase	Flow rate increase	SS capture rate in filtrate	
Cheongju City	Belt Press	40%	1.5%	No change	No measurement	5~6 Months
Suwon City	Belt Press	32%	Same	20~25%	No measurement	9~10 Months
Daejeon Ind.	MD Screw Press	30%	2.5~3.0%	25~30%	No measurement	5~6 Months
Gimhae City	Belt Press	30%	2.0%	No change	40%	6~7 Months
Jinju City	MD Screw Thickener	35~40%	2.0%	20%	35~40%	-
Bucheon City	MD Screw Thickener	35~40%	1.5%	30%	30%	-
Seoul, Jungrang	Belt Press	25%	4.5~5.0%	No change	No measurement	3 Months
	Drum Thickener	30~35%	1.0~1.5%	No change	30%	-
Seoul, Seonam	Belt Press	35%	2.0%	No change	No measurement	3~4 Months
Busan, Suyoung	Belt Press	30%	2.0%	No change	No measurement	4~5 Months
Paju City	MD Screw Press	25~30%	3.5~4.0%	40%	30%	3~4 Months
Incheon, Seunggi	Belt Press	40~45%	Same	20%	No measurement	8~9 Month
Ansan City	Belt Press (1st)	35%	1.5%	No change	No measurement	5~6 Months
	Belt Press (2nd)	40%	1.8%	No change	No measurement	4~5 Months
	MD Screw Thickener	35%	1.5%	No change	45%	-
Suncheon City	Belt Press	35~40%	2.0%	No change	No measurement	4~5 Months
Gimhae City, Food Ww	Decanter	35%	5.0~5.5%	No change	No measurement	3 Months
Uijungbu City	Screw Press (Ishigaki)	25~30%	2.0%	15%	No measurement	4~5 Months
★ K-Water (Drinking)	Belt Press	30~35%	3.5%	20%	No measurement	Confidential
★ Japan	MD Screw Press (Amcon)	35~40%	3.0~3.5%	45%	30%	No information about the costs of polymer & cake disposal
★ Europe	Belt Press (Alfa Laval)	20%	2.0~2.5%	No change	No measurement	
	Drum Thickener (Huber)	45~50%	1.2%	10%	20~25%	
★ Canada	Rotary Press (Fournier)	8~9%	2.2%	34%	22%	

※ REMARK

- 1) ROI was based on the actual contract amount of inline-mixer system, the costs of polymer & cake disposal.
- 2) K-Water is the biggest water purification company in Korea and has supplied the dewatered cake to a brick company as the supplementary material with very low price.
- 3) No information about the costs of polymer & cake disposal in Japan, Europe and Canada.
- 4) The results in Canada, Rotary Press were based on the whole data during validation trial without specific concern of optimal operation. Therefore, the results must be much higher than the above if the operation had been done in optimum.

7. Certificates

특허증
CERTIFICATE OF PATENT

특허 제 10-1256852 호
Patent Number 제 10-2013-0028053 호

출원번호 제 10-2013-0028053 호
Application Number
출원일 2013년 03월 15일
Filing Date
등록일 2013년 04월 16일
Registration Date

발명의 명칭 Title of the Invention
박수배수 솔라지 할수용 원상탈수기 중입재 주입장치 및 할수 처리기 발명자

특허권자 Inventor
(주)웅진아이앤비(134511-0****)
경기도 용인시 기흥구 용백로 225-6, 812호 (충무)

발명자 Inventor
김문용

위의 발명은 「특허법」에 따라 특허등록원부에 등록되었음을 증명합니다.
This is to certify that, in accordance with the Patent Act, a patent for the invention has been registered at the Korean Intellectual Property Office.

2015년 09월 17일
특허청장
COMMISSIONER
KOREAN INTELLECTUAL PROPERTY OFFICE
최동국

특허증
CERTIFICATE OF PATENT

특허 제 10-1095872 호
Patent Number 제 10-2011-0083040 호

출원번호 제 10-2011-0083040 호
Application Number
출원일 2011년 08월 19일
Filing Date
등록일 2011년 12월 13일
Registration Date

발명의 명칭 Title of the Invention
수처리 및 항수시설에 사용되는 강한 난류형성이 용이한 막을 고속회전을 인라인식서 장치

특허권자 Inventor
유복시발원에 기재

발명자 Inventor
유복시발원에 기재

위의 발명은 「특허법」에 따라 특허등록원부에 등록되었음을 증명합니다.
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COMMISSIONER
KOREAN INTELLECTUAL PROPERTY OFFICE
최동국

실용신안등록증
CERTIFICATE OF UTILITY MODEL REGISTRATION

등록 제 20-0448398 호
Registration Number 제 20-2009-0014582 호

출원번호 제 20-2009-0014582 호
Application Number
출원일 2009년 11월 09일
Filing Date
등록일 2009년 04월 01일
Registration Date

고안의 명칭 Title of the Invention
솔라지 할수용 하중 부속 및 교환장치

실용신안권자 Owner of the Utility Model Right
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경기도 용인시 기흥구 용백로 225-6, 812호 (충무)

고안자 Inventor
김문용

위의 고안은 「실용신안법」에 따라 실용신안등록원부에 등록되었음을 증명합니다.
This is to certify that, in accordance with the Utility Model Act, a utility model for the device has been registered at the Korean Intellectual Property Office.

2015년 09월 17일
특허청장
COMMISSIONER
KOREAN INTELLECTUAL PROPERTY OFFICE
최동국

실용신안등록증
CERTIFICATE OF UTILITY MODEL REGISTRATION

등록 제 20-0439471 호
Registration Number 제 20-2007-0067927 호

출원번호 제 20-2007-0067927 호
Application Number
출원일 2007년 05월 15일
Filing Date
등록일 2008년 04월 04일
Registration Date

고안의 명칭 Title of the Invention
막을 자동주입 및 회환장치

실용신안권자 Owner of the Utility Model Right
(주)웅진아이앤비(134511-0****)
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고안자 Inventor
김문용

위의 고안은 「실용신안법」에 따라 실용신안등록원부에 등록되었음을 증명합니다.
This is to certify that, in accordance with the Utility Model Act, a utility model for the device has been registered at the Korean Intellectual Property Office.

2015년 09월 17일
특허청장
COMMISSIONER
KOREAN INTELLECTUAL PROPERTY OFFICE
최동국

상표등록증
CERTIFICATE OF TRADEMARK REGISTRATION

등록 제 40-0752626 호
Registration Number 제 40-2007-0015826 호

출원번호 제 40-2007-0015826 호
Application Number
출원일 2007년 07월 05일
Filing Date
등록일 2008년 07월 04일
Registration Date

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상표권 사용물 품 구분
제 07 품
화학물질(가제물 9인)

CHEMIXER

위의 표장은 「상표법」에 따라 상표등록원부에 등록되었음을 증명합니다.
This is to certify that, in accordance with the Trademark Act, a trademark has been registered at the Korean Intellectual Property Office.

2015년 09월 17일
특허청장
COMMISSIONER
KOREAN INTELLECTUAL PROPERTY OFFICE
최동국

녹색기술 인증서

인증번호 : 제 GT-10-00131 호
기 관 명 : (주)신진기술
대표자명 : 김 문 용
주 소 : 경기도 광주시 오로읍 양벌리 421-6
기술명칭 : 하폐수 처리용 응집제 사용 저감기술
분류번호 : T080205

『저탄소 녹색성장 기본법』 제32조 및
『녹색인증제 운영요령』 제27조에 의거하여
위의 기술을 녹색기술로 인증합니다.

인증일자 : 2010.10.28
유효기간 : 2012.10.28~2014.10.27

지식경제부장관