

# AFM® Activated Filter Media References

## Pre-filtration prior to membranes

Country	Year	Project	Size (m3/hr)	Application	Water Source	AFM Volume (tons)	Case Study
Korea	2006	LG Chem Naju	150	Pre-filtration prior to RO	Surface water	30	
Korea	2009	Suwan Energy Gwangju	30	Pre-filtration prior to RO	Ground water	3	
Korea	2009	Bjenergy Busan	30	Pre-filtration prior to RO	Ground water	3	
Korea	2010	Smotor Pyeongtaek	50	Pre-filtration prior to RO	Surface water	5	
Bangladesh	2014	Square Pharmaceuticals	60	Pre-filtration prior to RO	Ground water		X
Bahrain	2015	Port Manama		Pre-filtration prior to RO	Seawater		
Greece - Mykonos	2015	PARAGA BEACH AE-SCORPIOS SW5.000	120	Sea water RO	Sea water	2.1	
Greece - Trikala	2015	Trikala Landfill Leachate WW6.000	200	Pre-filtration prior to RO	Landfill Leachates after SBR	2.125	
Korea	2015	POSCO GW plant	10	Pre-filtration of F/O System	Effluent from WW		
China	2016	Budweiser		Pre-filtration prior to RO	Municipal water		
India	2016	Rayomond Denim Textile		Pre-filtration prior to RO	Surface water		
Ireland	2016	Guinness/DIAGO, Dublin	300	Pre-filtration prior to RO	Ground water		
Korea	2016	LG Chem NJ plant	80	Pre-filtration of BWRO	Brackish water		
Korea	2016	LG Chem YS plant	135	Pre-filtration of 2B3T System	Surface water		
Greece - Almopia	2017	Almopia Landfill Leachate LW1.300	45	Pre-filtration prior to RO	Landfill Leachates	1	
Greece - Crete	2017	CRETA FARM - UF WW17000 & BW4.000	400	Wastewater UF-RO	Industrial Waste water	3.225	
Greece - Trikala	2017	Trikala Landfill Leachate WW6.001	200	Pre-filtration prior to RO	Landfill Leachates after SBR	1.375	
Greece- Euboea	2017	G.P CONSTRUCTIONS - BW2.000	50	Brackish Water RO	Brackish water	0.6	
India	2017	Kellogg Mumbai		Pre-filtration prior to RO	Surface water	1.5	
India	2017	Coalgate Palmolive Goa		Pre-filtration prior to RO	Surface water		
Ireland	2017	Jameson Whiskey/Riccard Pernod, Ballymoun	100	Pre-filtration prior to RO	Multiple water sources		
Ireland	2017	Slane Castle Distillery, Meath	100	Pre-filtration prior to RO	Multiple water sources		
South Africa	2017	Proxa		Pre-filtration prior to RO	Seawater		
South Africa	2017	WCSA		Pre-filtration prior to RO	Seawater		
Taiwan	2017	Kinmen Desalination Plant	500	Pre-filtration prior to RO	Seawater	67.5	
Taiwan	2017	PengHu Desalination Plant	500	Pre-filtration prior to RO	Seawater	28.75	
Taiwan	2017	Shiny Chemical Industrial Co. Ltd.	20	Pre-filtration of RO	Tap water	1	
Greece-Corinth	2018	MOTOR OIL HELLAS Refineries	2.9	Prefiltration for SWRO	Sea water	144	
South Africa	2018	Proxa		Pre-filtration prior to RO	Seawater		
Taiwan	2018	KTI		Pre-filtration prior to RO	Seawater		
Taiwan	2018	Ulphin Food Co. Ltd.	20	Pre-filtration of RO	Tap water	1	
Taiwan	2018	Container Desalination Plant	13	Pre-filtration of RO	Sea water	2	
Taiwan	2018	Matsu Desalination Plant	20	Pre-filtration of RO	Sea water	7.5	
Ghana-Takoradi	2018	AMANDI - POWER PROJECTS SANAYI TICARET	108	Sea water RO	Sea water	34	
Korea	2019	POSCO	3000	Pre-filtration prior to RO	Industrial process WW	1000	

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## Pre-filtration prior to membranes - China

Country	Year	Project	Size (m3/hr)	Application	Water Source	AFM Volume (tons)	Case Study	Comments
China	2018	山东四海水处理设备有限公司	150m³/h	Pre-RO	Surface Water	17	N/A	Running
China	2018	中国农业科学院农田灌溉研究所	30m³/h	Surface Water Filtration	Surface Water	2.5	N/A	Running
China	2018	郑州航空工业管理学院	2m³/h	Laboratory Use	Simulation Water	0.2	N/A	Running
China	2018	北京恒润创源科技有限公司	90m³/h	Pre-RO	Mine Well	12	N/A	Running
China	2018	北京信沃达科技有限公司	50m³/h	Aqua Culture	Circulation Water	5	N/A	Running
China	2018	太平洋水处理工程有限公司	10m³/h	WWT Reinnovation	Municiple WW	1.5	N/A	Commissionin
China	2018	环能德美科技股份有限公司北京公司	15m³/h	WWT Reinnovation	Municiple WW	2.2	N/A	Commissionin
China	2018	武汉润好水处理设备有限公司	40m³/h	Pre-RO	Surface Water	3.5	N/A	Running
China	2018	天津市亚伦物业服务有限公司	25m³/h	Fe/Mn/Arsenic/SS removal	Ground Water	3.5	N/A	Running
China	2018	泰州鸿昊环保科技有限公司	5m³/h	Organic/SS removal	Ground Water	0.8	N/A	Running
China	2018	北京诺白金科技发展有限公司	20m³/h	FE/Mn/Color/SS removal	Municiple Tapwater	2.3	N/A	Running
China	2018	阳泉郊区自来水公司	5m³/h	Mine well pre-treatment	Surface Water	0.3	N/A	Running
China	2018	北京润清源环境工程技术有限公司	1m³/h	Car Washing WWT	Car Washing WW	0.2	N/A	Commissionin
China	2018	北京瑞世环境技术有限公司	20m³/h	Kitchen WWT	Kitchen WW	2.1	N/A	Running
China	2018	北京六本元和环保技术有限公司	100m³/h	Steel Plant Discharge Water reus	Plant Discharge Water	32	N/A	Ordered

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## Ground water

Country	Year	Project	Size (m3/hr)	Application	Water Source	AFM Volume (tons)	Case Study
Costa Rica	2003	Gerber	65	Industrial Process Water	Ground water		X
Panama	2003	Chiquita	40	Industrial Process Water	Ground water		X
Korea	2009	Suwan Energy Gwangju	30	Pe-filtration prior to RO	Ground water	3	
Korea	2009	Bjenergy Busan	30	Pe-filtration prior to RO	Ground water	3	
Spain	2012	Herrerula & Carcaboso	25	Municipal Drinking Water	Ground water		X
Bangladesh	2014	Square Pharmaceuticals	60	Pre-filtration prior to RO	Ground water		
Ireland	2016	Williamstown WTP, Galway	27	Municipal Drinking Water	Ground water		
Bangladesh	2017	Dird Textile	300	Pre-filtration prior to water softening	Ground water		X
Ireland	2017	Guinness/DIAGO Dublin		Pre-filtration prior to RO	Ground water		
Ireland	2017	Jameson Whiskey/Riccard Pernod		Pre-filtration prior to RO	Ground water		
Korea	2017	SYK, JeonJu	200	Industrial make-up water	Ground water	40	
Korea	2017	LG, Yeosu	200	Industrial make-up water	Ground water	80	
Korea	2017	LG HWS, Paju	4200	Industrial make-up water	Ground water	1200	
Ireland	2017	Mountbellew WTP, Galway	60	Municipal Drinking Water	Ground water		
Korea	2018	Hannong Ulsan	200	Industrial make-up water	Ground water	40	
Taiwan	2018	Kimberly-Clark Taiwan	105	Fe/Mn removal	Ground water	3.7	
Taiwan	2018	Yi-Lan Kin-mian water purification plant	250	Fe/Mn removal	Ground water	44	
Taiwan	2018	Tainan backup water source development -	280	SS/Fe/Mn removal	Well water	100	
Taiwan	2018	Tainan backup water source development -	700	SS/Fe/Mn removal	Well water	200	

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## Surface water

Country	Year	Project	Size (m3/hr)	Application	Water Source	AFM Volume (tons)	Case Study
Korea	2006	Toray, Gumi	60	Industrial Make-up water	Surface Water	6	
Korea	2006	LG Chem Naju	150	Pre-filtration prior to RO	Surface water	30	
Korea	2010	Smotor Pyeongtaek	50	Pre-filtration prior to RO	Surface water	5	
Korea	2012	Toray, Gumi	100	Industrial Make-up water	Surface Water	10	
Korea	2012	SYIC, Gunsan	120	Industrial Make-up water	Surface Water	20	
Korea	2012	Samyang	180	Cooling Tower make-up water	Surface Water		X
Korea	2015	LG Chem, Yeosu	280	Industrial Make-up water	Surface Water	40	
Korea	2016	LG Chem NJ plant	80	Pre-filtration of BWRO	Surface water		
Korea	2016	LG Chem YS plant	135	Pre-filtration of 2B3T System	Surface water		
India	2016	Rayomond Denim Textile		Pre-filtration prior to RO	Surface water		
Ireland	2016	North East Roscommon Emergency Container plant	260	Municipal Drinking Water	Surface water		
Ireland	2017	Irish Water		Municipal Drinking Water	Surface Water	40	
India	2017	Kellogg Mumbai		Pre-filtration prior to RO	Surface water	1.5	
India	2017	Colgate Palmolive Goa		Pre-filtration prior to RO	Surface water		
India	2018	Pune Water Works		Municipal Drinking Water	Surface Water	120	
Indonesia	2018	Kota Bandung , textile plant	120	SS removal for process water supply	River water	18	
Taiwan	2018	Long-Tan lake purification	125	SS removal	Lake water	35	
Taiwan	2018	Kaohsiung Zuoying river purification	100	SS removal	River water	4	
Indonesia	2018	Kota Bandung , textile plant	300	SS removal for process water supply	River water	20	

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## Industrial waste water

Country	Year	Project	Size (m3/h)	Application	Water Source	AFM Volume (tons)	Case Study
UK	2003	Ford		Oil WWT	Industrial process WW		X
Taiwan	2016	Dragon Steel		Oil WWT	Industrial process WW		
USA	2016	Coil Chem		Frac water treatment	Industrial process WW		
Bangladesh	2017	Comfit		Textile WWT	Industrial process WW		
India	2017	Sudarshan Chemical Industries Limited	500	Chemical WWT	Industrial process WW		
India	2017	Ipca Laboratories Ltd, Mumbai		Chemical WWT	Industrial process WW	0.3	
India	2017	AARTI Industries Ltd Pharma, Mumbai		Chemical WWT	Industrial process WW	0.4	
Bangladesh	2017	Dird Textile	300	Textile WWT	Industrial process WW		X
China	2018	Shengli Oilfield		Oil WWT	Industrial process WW		X
Korea	2018	POSCO	50	Industrial WWT	Industrial process WW	20	
Korea	2018	Hannong Ulsan	200	Industrial make-up water	Industrial process WW	40	
China	2018	Central China	50	Industrial WWT	Industrial process WW	18	
Taiwan	2018	China Petrochemical Development Corp.	200	Industrial waste water tertiary t	Industrial waste water	15	
Taiwan	2018	Dragon steel Co Ltd.	640	Industrial waste water tertiary t	Industrial waste water	32	
Taiwan	2018	Formosa Plastic Corp. - PVC Plant	100	PVC waste water (with PVA) filt	Process waste water	20	
Taiwan	2018	China steel Group	500	SS , oil removal	Process waste water	23	
Taiwan	2018	China Petroleum Corp.	150	SS , oil removal	Process waste water	10	
Indonesia	2018	Kota Semarang , textile plant	120	SS removal	Textile waste water	13.6	
Korea	2019	POSCO	3000	Pre-filtration prior to RO	Industrial process WW	1000	

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## Municipal waste water

Country	Year	Project	Size (m3/day)	Application	Water Source	AFM Volume (tons)	Case Study
Israel	2002	Lachish R&D	120	Municipal tertiary WWT non-limited irrigation	Municipal secondary treated WW		
Costa Rica	2003	Papagayo	500	Municipal tertiary WWT dumping to a water source	Municipal secondary treated WW		
Israel	2004	Rafael Stage 1	720	Municipal tertiary WWT for irrigation	Municipal secondary treated WW		
UK	2005	Thames Water	300	Municipal tertiary WWT dumping to a water source	Municipal secondary treated WW		
Israel	2006	Middle East WWT	550	Municipal tertiary WWT non-limited irrigation	Municipal secondary treated WW		X
New Zealand	2009	Kaipara	480	Municipal tertiary WWT dumping to sea	Municipal secondary treated WW		X
Israel	2014	Rafael Stage 2	960	Municipal tertiary WWT for irrigation	Municipal secondary treated WW		
Taiwan	2016	Taichung Hsin Kong WWP	1600	Municipal tertiary WWT	Municipal secondary treated WW	2.9	
Israel	2016	Karmiel		Municipal tertiary WWT for irrigation	Municipal secondary treated WW		
South Africa	2016	Steyn	1020	Municipal tertiary WWT for irrigation	Municipal secondary treated WW		
Bangladesh	2017	Dird		Municipal tertiary WWT	Municipal secondary treated WW		
Taiwan	2017	Shin-Kong waste water plant	1800	Tertiary treatment	Municipal secondary treated WW		

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## Municipal drinking water

Country	Year	Project	Size (m3/hr)	Application	Water Source	AFM Volume (tons)	Case Study	Comment
Spain	2012	Herrerula & Carcaboso	25	Municipal Drinking Water	Ground water		X	
Ireland	2016	Williamstown WTP, Galway	27	Municipal Drinking Water	Ground water			Pressure Vessel
Ireland	2017	Mountbellew WTP, Galway	60	Municipal Drinking Water	Ground water			RGF
Ireland	2016	North East Roscommon Emergency Contain	260	Municipal Drinking Water	Surface water			Pressure Vessel
Ireland	2017	Irish Water		Municipal Drinking Water	Surface Water	40		Pressure Vessel
India	2018	Pune Water Works	5500	Municipal Drinking Water	Surface Water	96		RGF

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## Cooling towers

Country	Year	Project	Size (m3/hr)	Application	Water Source	AFM Volume (tons)	Case Study
Israel	2010	Solbar	80	Cooling Tower Side Stream Filtration	Cooling Water		X
Taiwan	2017	FCFC	20	Cooling Tower Side Stream Filtration	Cooling Water	1.5	
USA	2017	USDA HQ	30 GPM	Cooling Tower Side Stream Filtration	City Water Make-up		
Taiwan	2018	Formosa Asahi Spandex Co. I	150	CT side stream , SS removal	Cooling water	5	
Taiwan	2017	Formosa Chemicals & Fibre C	30	CT side stream , SS removal	Cooling water	1	
Taiwan	2017	MLD market	30	CT side stream , SS removal	Cooling water	1	
Hong Kong	2018	Not disclosed	150	Cooling Tower	Tap water	4.8	
Many cooling towers in Korea, Israel							



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## Landfill leachate

Country	Year	Project	Size (m3/day)	Application	Water Source	AFM Volume	Case Study
Scotland	2001	Sterling Landfill Site	500	Waste water polishing	Landfill Leachate		X
UK	2001	Arden Quarry	200	Waste water polishing	Landfill Leachate		
UK	2001	Binn	200	Waste water polishing	Landfill Leachate		
Scotland	2001	Levenseat	100	Waste water polishing	Landfill Leachate		
Scotland	2001	Battleby	30	Waste water polishing	Landfill Leachate		
Greece - Trikala	2015	Trikala Landfill Leachate \	200	RO PRETREATMENT	Landfill Leachates after SBR	2,125 kg	0
Greece - Trikala	2017	Trikala Landfill Leachate \	200	RO PRETREATMENT	Landfill Leachates after SBR	1,375 kg	0
Greece - Almopia	2017	Almopia Landfill Leachate	45	RO PRETREATMENT	Landfill Leachates	1,000 kg	0