

AQUA-Q

Swedish company specialized on **Ozon (O₃) polishing system** to reduce Pharmaceutical residues & Pathogens in treated wastewater for safe re-use of water.

AQUATRACK[®] & AQUA-RENOVATE[™]



What is Ozon (O₃) Polishing?

- Technology to dissolve ozone gas in water, concentration measurable in ppm, under controlled conditions of mixing.
- Effective solution to treat pharmaceutical residues, Ecs & pathogens = Micro-pollutants
- Scalable process stage 1) Lab, 2) pilot, & 3) full scale cost-effective process



- 1) Manual Batch Lab set-up to evaluate treatability of water

2) On-line Ozone Polishing Pilot process

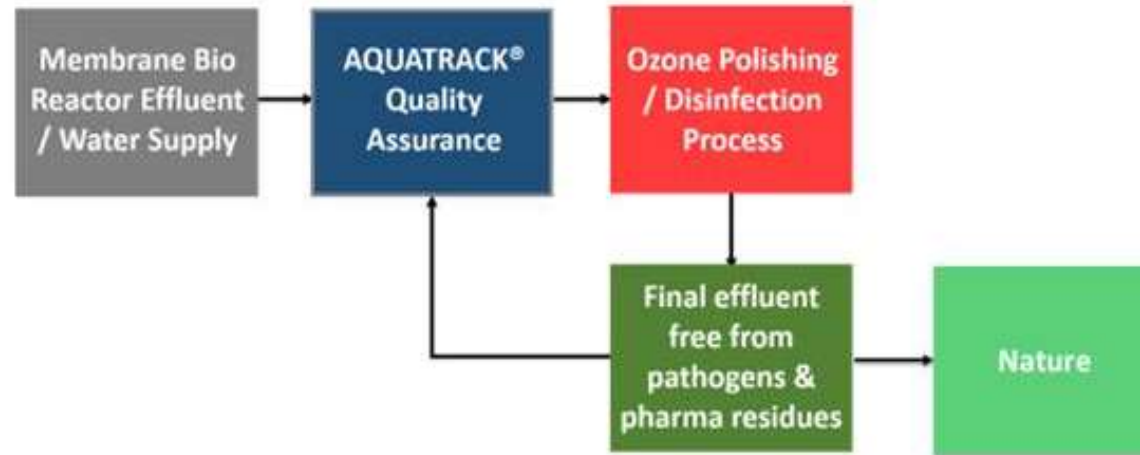
MBR effluent



AQUATRACK®



Online monitoring of MBR effluent – Sampling & Removal of Pathogens & Pharmaceutical residues, ECs



AQUA-RENOVATE™

Removal of pharmaceutical residual substances & pathogens from MBR process effluent

		Before ozone	After ozone
Substance	Mode of action	ng/L	ng/L
Diclofenac	Anti-inflammatories	601	<14
Furosemide	Diuretics	957	<11
Hydrochlorothiazide	Antihypertensives	1660	<2.8
Ibuprofen	Anti-inflammatories	71	<10
Naproxen	Anti-inflammatories	37	<4.6
Ramipril	Antihypertensives	<5.6	<5.6
Warfarin	Anticoagulants	6,9	<4.9
Atenolol	Antihypertensives	120	<3.7
Amlodipine	Antihypertensives	<3.6	<3.6
Bisoprolol	Antihypertensives	32	<5.2
Caffeine	Stimulant	17	<15
Carbamazepine	Sedatives	265	<2.1
Citalopram	Antidepressants	216	<6.5
Fluoxetine	Antidepressants	8,8	<6.0
Ketoprofen	Anti-inflammatories	68	<7.2
Metoprolol	Antihypertensives	585	<6.6
Oxazepam	Sedatives	402	6,6
Paracetamol	Anti-inflammatories	28	<11
Propranolol	Antihypertensives	68	<4.4
Ranitidine	Antibulcers	72	<21
Risperidone	Antipsychotic	<22	<22
Sertraline	Antidepressants	<6.5	<6.5
Simvastatin	Lipid-regulating	<8.3	<8.3
Terbutaline	Asthma medication	13	<2.4
Analysed at IVL Stockholm		(<) lowest quantifiable limit (LOQ, 5/N=10)	



Elimination of pharmaceutical residues

Elimination of bacteria

Samples	RT	30°C	37°C	Organic carbon (mg/l)	Color at 410 nm
Control	13*10 ²	16*10 ²	15*10 ²	12.5	0.008
Treated 1	0	0	0	10	0.005
Treated 2	0	0	0	10.5	0.004
Treated 3	0	0	0	10	0.005



MBR effluent

After ozone polishing – no pathogens & no pharmaceutical residues



Benefits of ozone polishing

- Clean & Safe water for re-use
- Quality control according to HACCP standard
- No chemicals, No emissions, Cost-effective

Government stringent legislation is required

Seek cooperation partner for pilot project with intention to commercialise

Contact: Sudhir Chowdhury, sudhir@aqu-q.se, www.aqua-q.se

