

SUPPLEMENTARY MATERIAL

Table S1. Operational expenses of all studied settings in EUR/m³, including cost estimation based on energy futures for 2024.

Trial 1 (42h)	Citric	NaOCl	Energy2020	Modules	Total	Total (Energy 2024)
Setting 1	0.014	0.010	0.005	0.012	0.041	0.045
Setting 2	0.012	0.009	0.003	0.011	0.035	0.038
Setting 3	0.014	0.010	0.004	0.012	0.041	0.045
Setting 4	0.012	0.009	0.003	0.010	0.035	0.038
Setting 5	0.009	0.007	0.004	0.008	0.027	0.031
Setting 6	0.008	0.006	0.003	0.007	0.025	0.027
Setting 7	0.009	0.007	0.004	0.008	0.027	0.030
Setting 8	0.008	0.006	0.003	0.007	0.024	0.026
Trial 2 (42h)	Citric	NaOCl	Energy2020	Modules	Total	Total (Energy 2024)
Setting 1	0.015	0.011	0.005	0.013	0.044	0.049
Setting 2	0.013	0.009	0.004	0.011	0.037	0.040
Setting 3	0.015	0.011	0.005	0.013	0.043	0.048
Setting 4	0.013	0.010	0.004	0.011	0.038	0.041
Setting 5	0.011	0.008	0.005	0.010	0.034	0.038
Setting 6	0.010	0.008	0.004	0.012	0.034	0.037
Trial 1 (24h)	Citric	NaOCl	Energy2020	Modules	Total	Total (Energy 2024)
Setting 1	0.024	0.017	0.005	0.012	0.058	0.062
Setting 2	0.021	0.015	0.003	0.010	0.050	0.053
Setting 3	0.024	0.018	0.004	0.012	0.058	0.062
Setting 4	0.021	0.015	0.003	0.010	0.050	0.053
Setting 5	0.015	0.011	0.004	0.007	0.037	0.041
Setting 6	0.014	0.010	0.003	0.007	0.034	0.037
Setting 7	0.015	0.011	0.004	0.007	0.037	0.040
Trial 2 (24h)	Citric	NaOCl	Energy2020	Modules	Total	Total (Energy 2024)
Setting 1	0.026	0.019	0.005	0.013	0.063	0.067
Setting 2	0.022	0.016	0.004	0.011	0.053	0.056
Setting 3	0.026	0.019	0.005	0.013	0.062	0.067
Setting 4	0.023	0.016	0.004	0.011	0.053	0.057
Setting 5	0.019	0.014	0.005	0.009	0.047	0.052
Setting 6	0.018	0.013	0.003	0.009	0.043	0.046

Table S2. GHG emissions estimation for every operational setting (CO₂-eq./m³).

Trial 1 (42h)	Citric acid	NaOCl	Electricity	Modules	Wastewater treatment	Full NaOCl impact	Half NaOCl impact
						Total	
Setting 1	7.37	13.25	6.23	2.00	2.85	31.71	25.08
Setting 2	6.46	11.62	4.40	2.00	1.92	26.40	20.59
Setting 3	7.32	13.16	5.92	2.00	2.77	31.17	24.59
Setting 4	6.37	11.45	4.21	2.00	1.87	25.90	20.17
Setting 5	4.81	8.64	5.03	2.00	2.06	22.54	18.22
Setting 6	4.41	7.93	3.87	2.00	1.33	19.54	15.57
Setting 7	4.69	8.43	4.77	2.00	1.94	21.82	17.61
Setting 8	4.25	7.64	3.70	2.00	1.25	18.84	15.02

Trial 2 (42h)	Citric acid	NaOCl	Electricity	Modules	Wastewater treatment	Full NaOCl impact	Half NaOCl impact
						Total	
Setting 1	7.87	14.14	6.90	3.00	2.99	34.90	27.83
Setting 2	6.75	12.14	4.84	3.00	1.96	28.68	22.62
Setting 3	7.79	14.00	6.59	3.00	2.97	34.35	27.35
Setting 4	6.93	12.45	4.75	3.00	2.00	29.13	22.91
Setting 5	5.94	10.68	6.05	3.00	2.43	28.11	22.77
Setting 6	5.48	9.85	4.62	3.00	1.65	24.60	19.68

Trial 1 (24h)	Citric acid	NaOCl	Electricity	Modules	Wastewater treatment	Full NaOCl impact	Half NaOCl impact
						Total	
Setting 1	12.57	22.60	6.11	2.00	2.80	46.08	34.78
Setting 2	11.01	19.79	4.33	2.00	1.88	39.01	29.11
Setting 3	12.65	22.74	5.87	2.00	2.74	45.99	34.62
Setting 4	10.98	19.74	4.18	2.00	1.85	38.75	28.88
Setting 5	7.95	14.30	4.87	2.00	1.97	31.09	23.94
Setting 6	7.36	13.23	3.79	2.00	1.28	27.66	21.04
Setting 7	7.82	14.05	4.64	2.00	1.86	30.37	23.34
Setting 8	7.13	12.81	3.63	2.00	1.20	26.77	20.37

Trial 2 (24h)	Citric acid	NaOCl	Electricity	Modules	Wastewater treatment	Full NaOCl impact	Half NaOCl impact
						Total	
Setting 1	13.58	24.41	6.84	3.00	2.96	50.79	38.58
Setting 2	11.66	20.96	4.80	3.00	1.94	42.36	31.88
Setting 3	13.50	24.28	6.55	3.00	2.95	50.28	38.14
Setting 4	11.77	21.16	4.68	3.00	1.95	42.56	31.98
Setting 5	10.15	18.25	5.96	3.00	2.39	39.76	30.63
Setting 6	9.32	16.76	4.56	3.00	1.61	35.24	26.87