

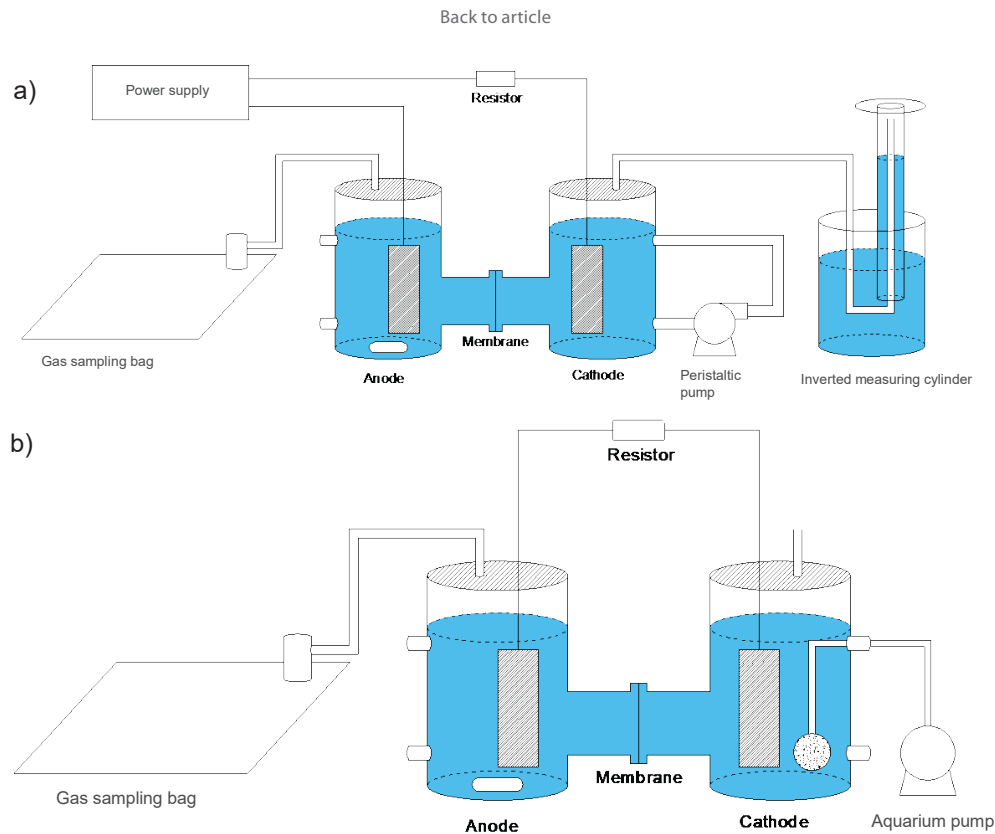


Fig. S1. Schematic diagram of: a) microbial electrolysis cells (MEC) and b) microbial fuel cells (MFC)

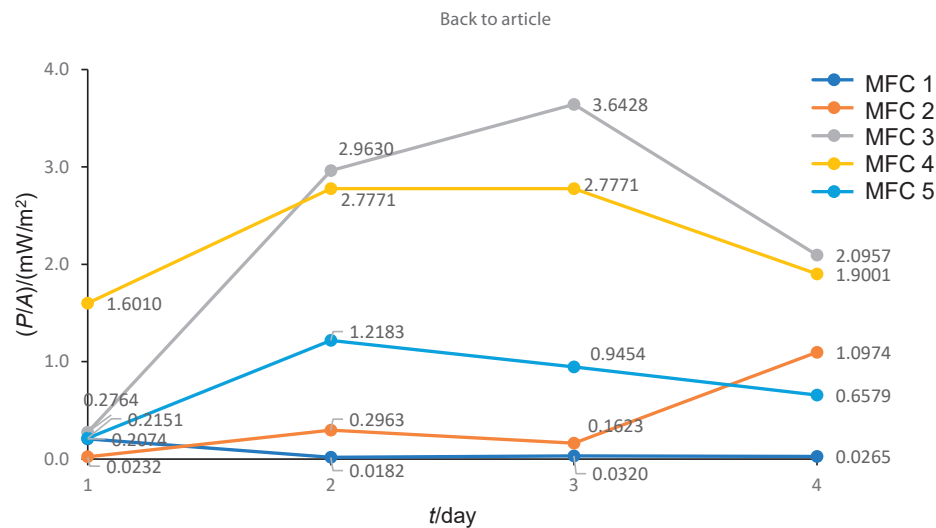


Fig. S2. Daily power production of microbial fuel cells (MFC)

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Table S1. ANOVA for the model of hydrogen production rate (Q) and chemical oxygen demand (COD) removal efficiency (η_{COD})

Source	Sum of squares	DF	Mean square	F-value	p-value
Q(H₂) (2FI model)					
Model	1227.14	3	409.05	201.00	<0.0001
A: COD as $\gamma(\text{O}_2)$	75.17	1	75.17	36.93	0.0017
B: V_{supplied}	327.02	1	327.02	160.69	<0.0001
AB	45.90	1	45.90	22.55	0.0051
Residual	10.18	5	2.04		
Lack-of-fit	10.18	1	10.18		
Pure error	0.0000	4	0.0000		
Total	1237.32	8			
η_{COD} (Linear model)					
Model	2803.80	2	1401.90	80.05	<0.0001
A: COD as $\gamma(\text{O}_2)$	2046.02	1	2046.02	116.84	<0.0001
B: V_{supplied}	366.26	1	366.26	20.92	0.0038
Residual	105.07	6	17.51		
Lack-of-fit	105.07	2	52.54		
Pure error	0.0000	4	0.0000		
Total	2908.87	8			

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Table S2. Microbial electrolysis cell optimised value from Design-Expert software

No.	Influent COD as $\gamma(\text{O}_2)$ /(mg/L)	V_{supplied}/V	Q(H ₂ production)/(mL/day)	$\eta_{\text{COD}}/\%$	Desirability
1	150.001	0.338	34.800	48.680	0.966
2	150.001	0.304	34.532	49.142	0.963
3	150.000	0.274	34.290	49.557	0.961
4	150.001	0.229	33.931	50.176	0.957
5	150.000	0.222	33.875	50.272	0.956
6	150.005	0.193	33.646	50.666	0.953
7	150.002	0.189	33.611	50.725	0.953
8	150.001	0.596	36.855	45.146	0.942
9	150.001	0.681	37.535	43.975	0.934
10	150.004	0.863	38.984	41.482	0.916
11	150.003	0.895	39.240	41.042	0.912