

Table 1 (SI). Composition of the medium used in the microbial electrolysis cells

Medium component	(g L ⁻¹)	Trace metal solution	(mg L ⁻¹)	Vitamin solution	(µg L ⁻¹)
KH ₂ PO ₄	0.1	Nitrilotriacetic acid	20.0	Biotin	20.0
NaCl	0.8	MnSO ₄ H ₂ O	10.0	Folic acid	20.0
NH ₄ Cl	1.0	Fe(SO ₄) ₂ (NH ₄) ₂ 6H ₂ O	8.0	Pyridoxine hydrochloride	100.0
MgCl ₂ 6H ₂ O	0.2	CoCl ₂ 6H ₂ O	2.0	Thiamine hydrochloride	50.0
KCl	0.1	ZnSO ₄ 7H ₂ O	0.002	Riboflavin	50.0
CaCl ₂ 2H ₂ O	0.02	CuCl ₂ 2H ₂ O	0.2	Nicotinic acid	50.0
C ₆ H ₁₃ NO ₄ S H ₂ O (MES)	1.95	NiCl ₂ 2H ₂ O	0.2	DL-calcium pantothenate	50.0
Cysteine HCl	0.4	Na ₂ MoO ₄ 2H ₂ O	0.2	Vitamin B12	1.0

Table 2 (SI). Inoculation procedure and operational conditions

	HT1	HT2	HT3	HT4
Inoculation time (d)	0	0	67	67
Inoculum source	AD	AD	HT1-2 + ferm. reactor (feed with H ₂ :CO ₂ ; 80:20)	HT1-2 + ferm. reactor (feed with H ₂ :CO ₂ ; 80:20)
Fixed potential, T ^o and agitation	-0.6 V vs SHE, 50 °C and 80 rpm			

AD: Anaerobic Digester

Table 3 (SI). Comparison between similar studies working at thermophilic conditions

T (°C)	Inoculum	E _{cat} (V vs. SHE)	Current density (A m ⁻²)	CE (%)	Production rate (mmol m ⁻² d ⁻¹)	Source
55	Thermophilic MFC	-0.8	1.28 ± 0.15	70	H ₂ 376.5 ± 73.4	9
50	<i>M. thermoautotrophica</i> (DSM 1974)	-0.3	2500 ^a	72 ± 4	CH ₃ COOH 3.48 ± 0.27	22
55	<i>M. thermoautotrophica</i> (DSM 7417)	-0.4	0.63	65	CH ₃ COOH 63.2 CH ₂ O ₂ 58.2	4
60	Anaerobic sludge	-0.8	4.94	97	CH ₃ COOH 160 CH ₄ 380	12
50	Anaerobic sludge	-0.6	5.50 (max) 2.25 ± 0.29	83 ± 3	CH ₃ COOH 468 H ₂ 4000	This study

^a µMe

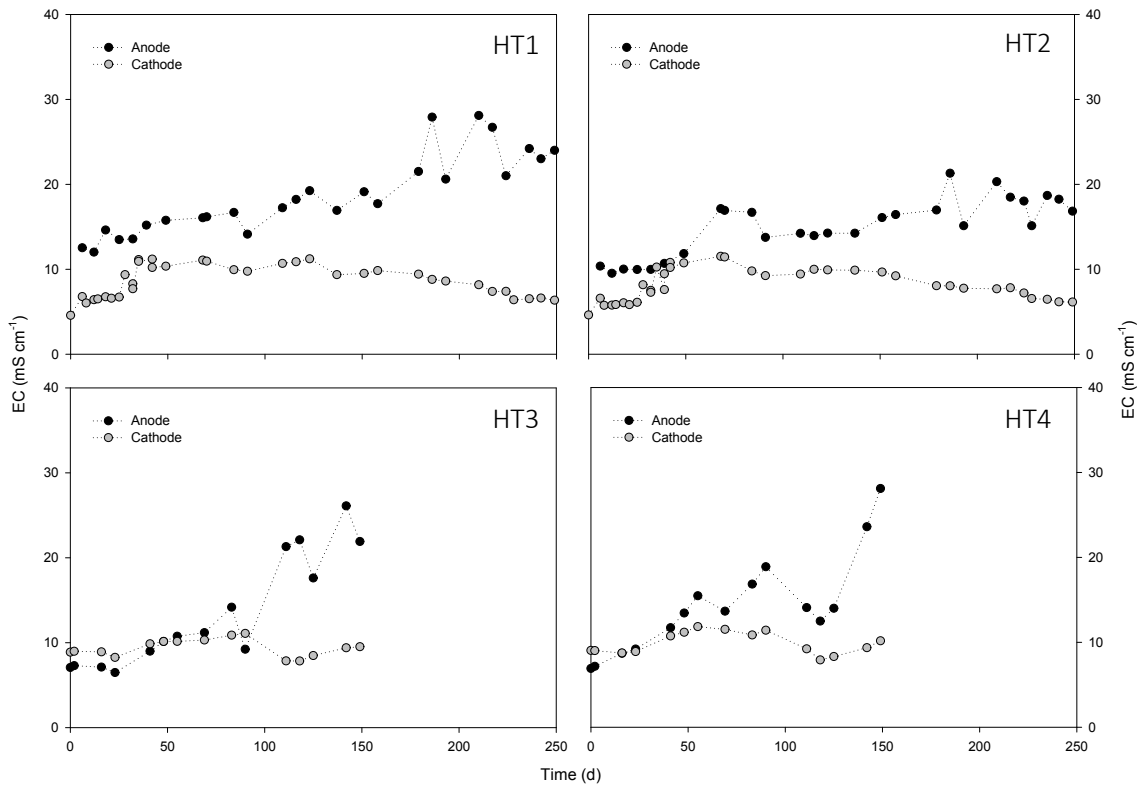


Figure 1 (SI). Electric conductivity evolution in the anodic and cathodic chambers of each reactor.

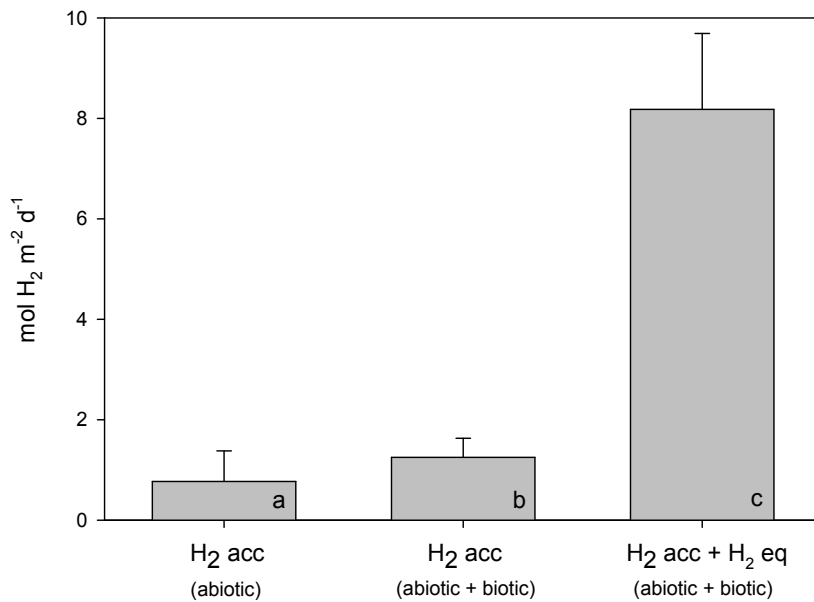


Figure 2 (SI). H_2 production rate comparison between abiotic and biotic systems. A distinction has been made between the H_2 accumulation (H_2 acc) in the gas plus liquid phases (a, b) and the H_2 equivalent (H_2 eq) produced regarding organics concentration in the liquid phase (c).

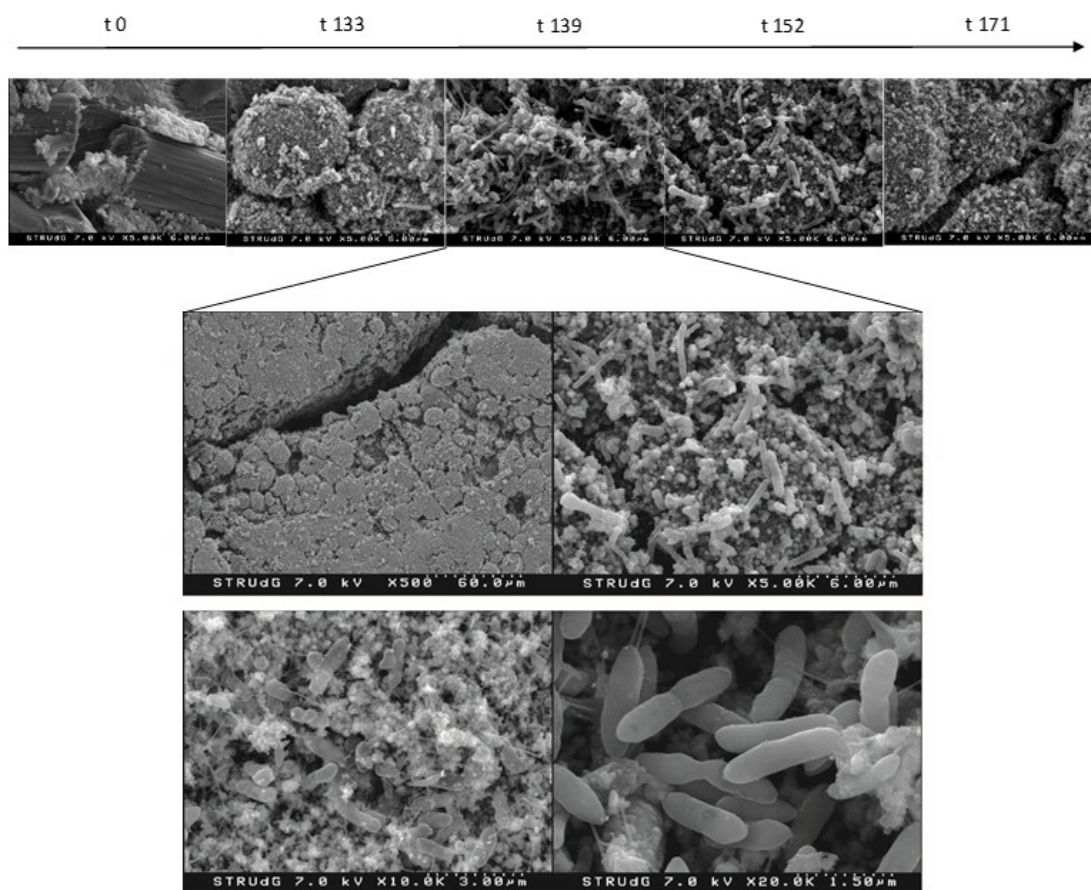


Figure 3 (SI). Scanning electron microscopy of micrographs derived from the four cathode biofilms. Images are seen at different magnifications (from 500 X to 20 000 X).