

Table S1. Main physicochemical proprieties of the glassy carbon pellets as per the provider information used for packing the fixed bed of three-dimensional cathode in the electro-Fenton process.

Maximum service temperature	1000°C
Density	1.54 g/cm ³
Open porosity	0 %
Permeability coefficient	10-11 cm ² /s
Vickers hardness	340 HV
Specific electrical resistance at 30°C	50 Ω.μm

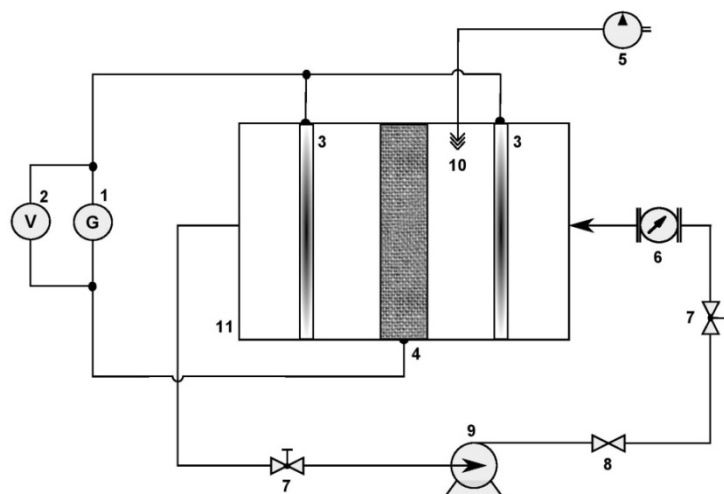


Figure S1. Electro-Fenton process at the lab scale: (1) Current supplier (2) Voltmeter (3) DSA anode (4) Three-dimensional cathode of fixed bed (5) Air pump (6) Flow meter (7) Valve (8) Sampling valve (9) Centrifugal pump (10) Air diffuser (11) Electrochemical reactor.

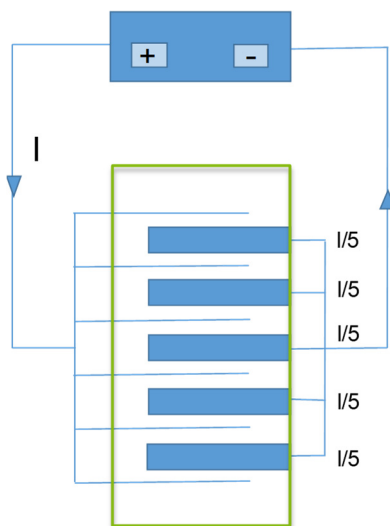


Figure S2. Scheme for the current intensity distribution between the 3D-cathodes in electro-Fenton process reactor at the semi-pilot scale.

Table S2. Energy consumption for the semi-pilot scale of electro-Fenton process for 1-h, 10 hrs and 24-hrs turnover at the optimized current and flow.

<i>Energy consumption</i>			
Treatment time (h)	1 hr	10 hrs	24 hrs
Circulation Pump		0.09 kW	
Energy consumption (kWh)	0.09	0.9	2.16
Energy cost (€)	0.01	0.10	0.24
Power (Air pump)		0.065 kW	
Energy consumption (kWh)	0.19	1.95	4.68
Energy cost (€)	0.02	0.21	0.52
I (A)		17.5 A	
U (V)		5.47 V	
Energy consumption (kWh)	0.1	0.96	2.31
Energy cost (€)	0.01	0.11	0.25
Total energy consumption (kWh)	0.04	0.42	1.01
Estimated direct treatment cost (€/m³)	0.72	1.09	1.68