Supporting Information

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$\rm CO_2$ Flow Electrolysis - Limiting Impact of Heat and Gas Evolution in the Electrolyte Gap on Current Density

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Figure S1 Validation of experimental GDE screening protocol: (a) Order of applied current density steps for both the chronological staircase screening protocol and the randomized-order experiment with shuffled current density loads, and (b) CO-Faraday efficiency recorded for GDEs tested in chronological and shuffled current density order (corresponding results to the protocols displayed in Fig. S1a).



Figure S2 System pressure evolution with increased current density loads on the GDE: (a) Operation at constant Λ and (b) Operation at a constant CO₂ feed flow rate of 282.5 NmL min⁻¹. p_{rel.-PG}: Relative pressure in the product gas stream, p_{rel.-CSG}: Relative pressure in the catholyte sweep gas stream.



Figure S3 Cell voltages (U_{cell}) and CO product-specific current densities (j_{CO}) during current density screenings with variation of electrolyte concentration and the use of electrolyte cooling jackets: (a) 1 M Electrolytes, no cooling; (b) 2 M Electrolytes, no cooling; (c) 3 M Electrolytes, no cooling; (d) 1 M Electrolytes, with cooling; (e) 2 M Electrolytes, with cooling; (f) 3 M Electrolytes, with cooling.



Figure S4 Catholyte pH at the entry and exit of the GDE flow cell during current density screenings with variation of electrolyte concentration and the use of electrolyte cooling jackets: (a) 1 M Electrolytes, no cooling; (b) 2 M Electrolytes, no cooling; (c) 3 M Electrolytes, no cooling; (d) 1 M Electrolytes, with cooling; (e) 2 M Electrolytes, with cooling; (f) 3 M Electrolytes, with cooling.