



DR. STEPHAN RENNINGER

CTO & CO-FOUNDER

► *technical lead, IP strategy, research & development*

About me

Dr.-Ing. Stephan Renninger is Co-Founder & CTO of Cyclize and the technical lead behind the company's plasma innovations for carbon-circular syngas. Before, he researched atmospheric-pressure glow discharge reactors and plasma power supplies at the University of Stuttgart's Institute for Photovoltaics, work that underpins Cyclize's technology roadmap.

Skills

- Plasma reactor & power-supply design (lab → prototype → pilot)
- Experimental design & data analysis
- Tech road-mapping for CO₂ splitting/CCU
- Inventor's mindset: relentless curiosity and solution focus; isn't deterred by dead ends, tests unconventional paths, iterates fast, and turns ambiguity into working prototypes

Education

- B.Sc., Sustainable Electrical Power Supply, University of Stuttgart
- M.Sc., Sustainable Electrical Power Supply, Univ. Stuttgart
- PhD (Dr.-Ing.), Univ. Stuttgart Institute for Photovoltaics (Workgroup: Electrical Energy Storage Systems) Focus: Atmospheric-pressure glow-discharge reactors/plasma power supplies for CO₂ splitting

Achievements

- Co-inventor on three invention disclosures, one of them being related to Cyclize's electrical plasma source
- Led development of Cyclize's plasma approach from university research to company scale-up
- Peer-reviewed record across high-efficiency CO₂ splitting and techno-economic assessments that guide scale-up decisions

Publication Short List

- Renninger, S., Sustainable Production of Carbon Monoxide by Direct Current Gas Discharge, Phd, 2023, University of Stuttgart.
- Kaufmann, S.J.; Bender, F.; Rößner, P.; Renninger, S.; Stein, J.; Seithümmer, V.; Chinnaraj, H.; Birke, K.P.; (2024) Techno-economic potential of plasma-based calcium looping for CO₂ capture and utilization in power-to-liquid plants, [Journal of CO₂ Utilization, Vol. 85](#), 102892.
- Kaufmann, S.J.; Rößner, P.; Renninger, S.; Lambarth, M.; et al. (2023) Techno-Economic Potential of Plasma-Based CO₂ Splitting in Power-to-Liquid Plants. [Appl. Sci. 13](#), 4839.
- Renninger, S., Stein, J., Lambarth, M., & Birke, K. P. (2022). An optimized reactor for CO₂ splitting in DC atmospheric pressure discharge. [Journal of CO₂ Utilization, 58](#), 101919.
- Renninger, S.; Rößner, P.; Stein, J.; Lambarth, M.; Birke, K.P. (2021) Towards High Efficiency CO₂ Utilization by Glow Discharge Plasma. [Process 9](#), 2063.
- Renninger, S., Lambarth, M., & Birke, K. P. (2020). High efficiency CO₂-splitting in atmospheric pressure glow discharge. [Journal of CO₂ Utilization, 42](#), 101322.