

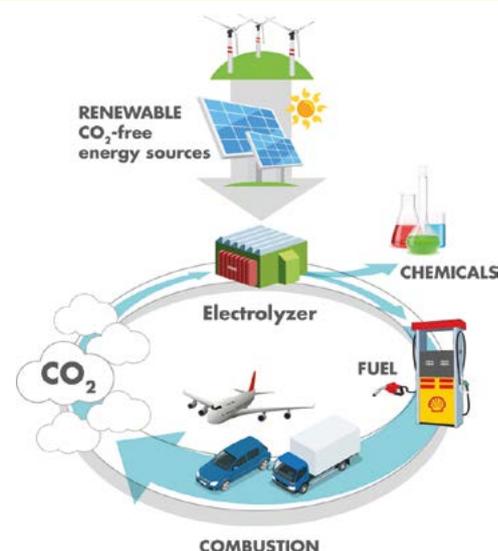
New Energies

Renewable Energy: Solar Fuel Innovations



CONTEXT

Developments in solar and wind power are playing a growing part in lowering the cost of electricity. However, electrification of the energy system is challenging as electricity is relatively difficult to store. The vision of Solar Fuels is to convert solar energy into molecules for use in liquid fuel engines without adding CO₂ to the atmosphere. The objective is to provide a near-term CO₂ neutral fuel for today with longer term benefits of supplying difficult to transition fuels as Jet fuel. H₂ is considered to be well positioned as a link between electrical supply and the various demand sectors. H₂ can also serve as the building block to synthesize liquid fuels which are much needed in commercial and air transport, as well as for chemicals.



WHAT WE ARE LOOKING FOR

We seek proposals that can demonstrate and bring to “proof-of-concept” novel approaches to convert solar energy into electrons and/or molecules for use in liquid fuel engines without overall net addition of CO₂ to the atmosphere. For doing so, stretch solutions are needed to be able to combine renewable H₂ generation with environmental CO₂ capture to generate renewable hydrocarbons. Proposals can also address parts of the challenge and or requirements.

Typically, technologies with a TRL 2-5 (as per [API 17N](#)) are the best candidates for this call. Please provide a clear description on how you will reach your “Proof of Concept”.

TOPICS OF INTEREST

- Conversion of sunlight into renewable electrons or renewable energy carriers.
- “Environmental” CO₂ capture as hydrocarbon feedstock.
- (Photo)-electrochemical conversion of H₂ and CO₂ into hydrocarbons.

TOPICS NOT OF INTEREST

- Biomass gasification processes.
- Biomass fermentation processes.
- Carbon capture and sequestration (CCS).

Ideal proposals are early stage technology and/or from companies working to derisk technology and/or business models. The GameChanger program offers non-dilutive pre-seed/seed funding, subject matter expertise, and connections to assist with industry understanding and uptake.

WE APPLY THE FOLLOWING CRITERIA FOR CONSIDERATION:

1. Novel – Is the idea fundamentally different and unproven?
2. Valuable – Could the idea create substantial new value if it works?
3. Doable – Is there a plan to prove the concept quickly and affordably?
4. Relevant (Why Shell?) – Is the idea relevant to the future of energy?

Any information submitted as part of the process must contain only NON CONFIDENTIAL data and information at this stage.

The funding opportunity will be in the range USD 150,000 – 300,000 to progress a “proof of concept” in a phased approach over a period of no more than 12 months. Further development may be supported and or facilitated by Shell depending on the overall outcome of the initial award.

For questions contact GameChanger-Challenge@shell.com