

Fueling the Future

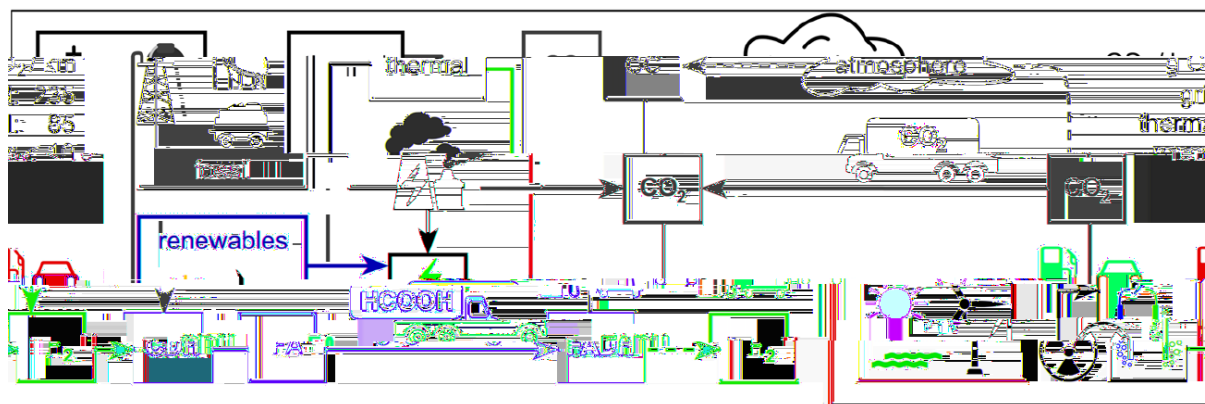
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Abstract

The estimated world population of 8.0 billion people consumed ~15.2 Gtoe of energy (at an average rate of 20.1 TW). Globally, the burning of carbon-based fossil fuels supplies over 80% of the energy demand, and hence the prospering industrial societies are responsible for the observed increase in carbon dioxide levels from preindustrial 280 ppm to over 420 ppm measured last year. The constantly increasing atmospheric CO₂ concentration is highly likely to result in global warming, sea level rise, and ocean acidification. To reduce the environmental footprint of modern societies and address the limitations of fossil recourses, the projected increase in global energy demand must go along with the implementation of low-carbon energy production and carrier systems. In this presentation, the current energy status and future options will be discussed and compared. It will then be concluded by introducing our research efforts in utilizing formic acid as a low-carbon hydrogen/energy carrier and e-fuel.



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