Other Meetings & Events attended by VC

- Combustion TCP Task Leaders Meeting & ExCo Meeting held virtually in August of 2020. 45 to 55 participants attended daily.

TCP Contributions to IEA Activities and Analysis

- The Combustion TCP project on transitioning to "H2-rich fuels" was selected by CERT as one of five submissions for promotion in the first round of this IEA "Today in the lab, tomorrow in energy" initiative. A second TCP submission on Optimization of fuels and engines to boost efficiency and performance was also recently published on the IEA website.
- The TCP provided input to several IEA efforts and reviewed related IEA documents (e.g., ETP2020, GEVO2020, TCEP, the GFEI report, and discussions on the compatibility of biofuels and marine engines.

Collaboration among TCPs

- The TCP participated in the December 2020 ETSAP workshop and presented information on the scope and activities of the Combustion TCP overall and the Systems Analysis Task, and the performance of advanced fuels in end-use sectors. Potential areas of collaboration with ETSAP were discussed.
- System analysis links established with AMF and ETSAP

Individual TCP Highlights 2020

Clean and Efficient Combustion

Main Messages:

- There is a need for "real world" vehicle life cycle analyses that account for the adoption of new technologies on carbon emissions as a function of time to better understand short-to-intermediate term policy impacts.
- Quickly reducing GHG by electrification is limited not only by technology, but also by slow vehicle fleet turnover time. Faster reductions may be achieved by substituting fossil fuels with sustainable, renewable drop-in fuels.
- Renewable chemical energy carriers (such as hydrogen), which allow for long-term energy storage relative to batteries and thermal energy storage, show considerable potential for addressing growing seasonal energy imbalances in electric grids.

Achievements:

- Building upon a U.S. DOE EIA analysis to understand the overall effects of various light-duty vehicle technologies on the fleet, the need for both electrification and increased ICE efficiency to meet 2050 light-duty CO_2 reduction targets was demonstrated.
- Two pre-competitive projects jointly funded by the German Research Association for Combustion Engines and the Swiss Federal Office of Energy were successfully completed. One showed the potential for using direct injection of natural gas in high-efficiency compression ignition engines. The other resulted in better engine modeling capabilities for use in developing higher efficiency engines.

Dissemination:

- Combustion TCP visibility in the scientific community continues with extensive technical/scientific publications of TCP research in peer reviewed journals and presentations at conferences.
- The TCP website has been fully updated. TLM presentations are now posted. Public access is now granted to information describing our meetings and presentation/discussion topics.