

TCP on Clean and Efficient Combustion (Combustion TCP)

The Combustion TCP provides a forum for interdisciplinary exchange and enables international collaborative research to advance the understanding of combustion processes to:

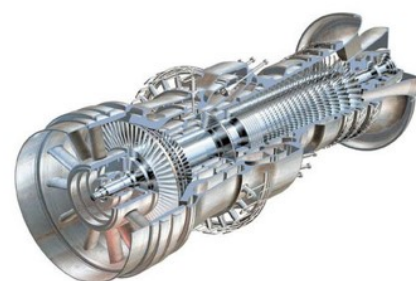
- Accelerate the development of combustion technologies that demonstrate reduced fuel consumption and have lower pollutant emissions in transportation, power generation, industry and buildings
- Generate, compile and disseminate independent information, expertise and knowledge related to combustion for the research community, industry, policy makers and society.

Main areas of work

- [Low temperature combustion engines](#)
- [Gas engines](#)
- [Gas turbines](#)
- [Solid fuels](#)
- Fundamental research on [fuel sprays](#), [soot formation](#) and [combustion chemistry](#)

Key activities and accomplishments (2017-2018)

- Fundamental combustion science advancements documented in peer-reviewed journals;
- Advanced computer-aided design capabilities to enable clean combustor design;
- Demonstration of low temperature combustion showing potential for 20-25% higher fuel efficiency with lower CO₂ and pollutant emissions than current fleet averages;
- Developed pathways to substantial CO₂ savings and ultra-low pollutant emissions from high fuel efficiency, lean-burn natural gas engines;
- Established gas turbine tolerance to H₂ addition in the fuel stream, promoting the transition to an H₂ energy economy.



Gas turbine burning renewable, low-carbon fuels will help us meet peak power demands for decades to come (image courtesy of the Combustion TCP)

Priorities and projects (2019 – 2020)

- Synthesising the science base needed to optimise combustion technologies for use of renewable fuels and minimal environmental impacts;
- Promoting sustainable, economically accessible energy solutions;
- NEW – systems analysis: placing the impact of advanced combustion and renewable fuels in the broader context of other low-carbon solutions;
- NEW – exhaust aftertreatment: examining how closer collaboration between aftertreatment and combustion engineers can alleviate design constraints on both sides.

Multilateral collaborations

- Current collaboration on heavy duty vehicle performance evaluation with the TCP on Advanced Motor Fuels (AMF TCP)
- Interest in further collaboration with the AMF TCP and Bioenergy TCP, as well as in transportation energy systems analysis with the Energy Technology Systems Analysis Programme (ETSAP TCP) and Hybrid and Electric Vehicles TCPs

Membership



Finland



France



Germany



Japan



Korea



Norway



Spain



Sweden



Switzerland



United Kingdom



United States

Why should your organisation become a member of the Combustion TCP?

Clean, efficient, cost-effective combustion technologies are key elements of a reliable and sustainable, low-carbon energy system. The Combustion TCP provides a forum for exchange and collaborative research to advance the understanding of combustion processes, and to generate independent information, expertise and knowledge to the wider research community, industry, policy makers, and society.

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