

# Combustion CI

## PLANNING GROUP 3

### COORDINATOR

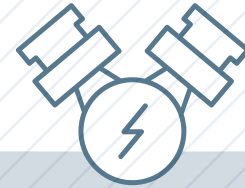
Dr. Christian Weiskirch,  
TRATON GROUP

### PROJECT MANAGEMENT

Ralf Thee, FVV

ENGINES

COMBUSTION CI



EFFICIENCY



EMISSIONS



BIOFUELS



SYNTHETIC  
FUELS



DEVELOPMENT  
TOOLS



DIGITALISATION  
AND AI

### RESEARCH PRIORITIES

Planning group 3, ›Combustion CI‹, is dedicated to the following topics:

Efficiency of the engine | Alternative fuels, hydrogen combustion | Artificial intelligence in development, big data and digitalisation

And tackles the following lines of research/focuses:

Combustion modelling/simulation | New/dual combustion processes, gas/dual-fuel engines | Fuel distribution and preparation, high-pressure injection / spray diagnostics | Variable valve control, air path | Coatings, additive manufacturing

### PUBLICATIONS

- **FVV PrimeMovers. Technologies. 06/2020:** A race against time: DME as an alternative Fuel for Compression-Ignition Engines
- **MTZ worldwide 05/2020:** Advanced and Future-oriented Research on Compression-ignition Engines
- **MTZ worldwide 03/2020:** Oxygenated Fuels in Compression Ignition Engines
- **MTZ worldwide 07-08/2019:** Modeling of the Combustion Process for a Dual-fuel Diesel System
- **FVV proceedings:** R587 | 2019 Spring Conference, R590 | 2019 Autumn Conference and R593 | 2020 Spring Conference

PG3  
DATABASE



THEMIS

## PG 3 | RESEARCH PROJECTS



NO	TITLE // FUNDING ORGANISATION // DURATION	PROJECT COORDINATOR
<b>Planned projects</b>		
<b>M1020</b>	Hydrogen Combustion and Comparison SI/CI Concepts	<b>Dr. Reza Rezaei, IAV</b>
<b>M1620</b>	AI Route Optimisation	<b>Dr. Markus Wenig, Winterthur Gas &amp; Diesel</b>
<b>M1919</b>	Diesel Engine Process Chain	<b>Dr. Wolfgang Bauer, MAN Truck &amp; Bus</b>
<b>M2219</b>	AI Integration into the Development Toolchain	<b>Amodio Palma, Winterthur Gas &amp; Diesel</b>
<b>M2619</b>	Stoichiometric Combustion Systems for CI Engines	<b>Dr. Werner Willems, Ford</b>
<b>M2818</b>	DME Fuel Properties	<b>Dr. Werner Willems, Ford</b>
<b>M3319</b>	CO <sub>2</sub> Reduction by Shorter Burn Duration	<b>Dr. Patrick Gastaldi, Aramco</b>
<b>Ongoing projects</b>		
<b>1275</b>	VVT for Diesel LNT Rich Purge // BMWi/AiF // 01-04-2017 to 31-07-2020	<b>Christine Burkhardt, EnginOS</b>
<b>1280</b>	Propeller Operation with Four-stroke Dual-fuel Engines II // FVV-EM // 01-09-2017 to 28-02-2021	<b>Dr. Philipp Henschen, MAN Energy Solutions</b>
<b>1284</b>	RCCI in Heavy Duty Engines // CORNET, FVV-EM, BMWi/AiF, FVV-EM // 01-08-2017 to 30-06-2020	<b>Dr. Ingo Mikulic, Shell</b>
<b>1310</b>	HC/CO Model // BMWi/AiF // 01-01-2018 to 31-07-2020	<b>Dr. Markus Wenig, Winterthur Gas &amp; Diesel</b>
<b>1320</b>	Spray Diagnostics of Future Diesel Fuels // FVV-EM // 01-02-2019 to 31-07-2020	<b>Dr. Uwe Leuteritz, Liebherr-Components</b>
<b>1318</b>	Air Insulation by Spray and Chamber Design, Burn Duration Reduction // FVV-EM // 01-07-2018 to 31-12-2021	<b>Dr. Patrick Gastaldi, Aramco</b>
<b>1338</b>	Water Injection on Diesel Engines // BMWi/AiF // 01-11-2018 to 31-10-2020	<b>Peter Bloch, Robert Bosch</b>
<b>1346</b>	Potentials of Airpath Variabilities for HD Gas Engines // FVV-EM // 01-01-2019 to 31-12-2021	<b>Dirk Weberskirch, MAN Truck &amp; Bus</b>
<b>1352</b>	Partially Premixed Diesel Combustion // CORNET, FVV-EM, BMWi/AiF // 01-01-2019 to 31-12-2020	<b>Dr. Simon Schneider, Mahle International</b>
<b>1368</b>	Innovative HD Combustion System Design // FVV-EM // 01-07-2019 to 28-02-2022	<b>Dr. Reza Rezaei, IAV</b>
<b>1403</b>	eSpray // CORNET // 01-06-2020 to 31-05-2022	<b>Dr. Uwe Leuteritz, Liebherr-Components</b>
<b>1405</b>	Closed-cycle Hydrogen CI Engine // FVV-EM // 01-09-2020 to 31-10-2021	<b>Dr. Markus Wenig, Winterthur Gas &amp; Diesel</b>
<b>1408</b>	Cold Start Emission Reduction // FVV-EM // 01-09-2020 to 28-02-2023	<b>Dr. Maximilian Brauer, IAV</b>

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<b>Completed projects</b>		
1005	XME Diesel // Collaborative research // 01-06-2015 to 31-03-2019	<b>Dr. Werner Willems, Ford</b>
1235	Modelling Emissions of Diesel Engine Combustion with Variable Valve Timing // FVV-EM // 01-08-2016 to 29-02-2020	<b>Matthias Diezemann, IAV</b>
1236	Gas-Diesel Combustion // FVV-EM // 01-10-2016 to 30-09-2019	<b>Dr. Michael Willmann, Woodward L'Orange</b>
1287	Diesel Combustion Chamber Insulation // FVV-EM, CORNET // 01-09-2017 to 29-02-2020	<b>Dr. Maximilian Brauer, IAV</b>