SIMULATION FOR HYDROGEN FUEL COMBUSTION ENGINES - FLUIDS DYNAMICS AND STRUCTURAL MECHANICS

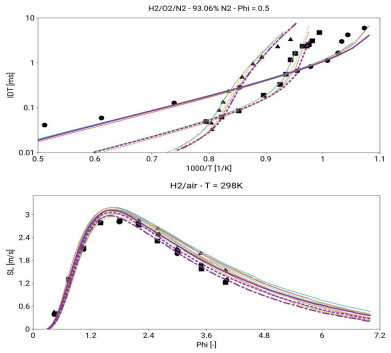
REALIS

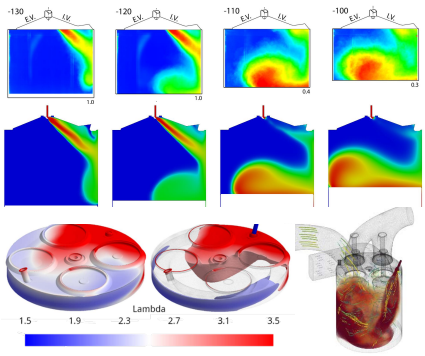
- Fluids and structural analysis with system design for hydrogen combustion
- Shorter development time, lower costs, fewer physical prototypes
- Wide range of simulation tools from concept to detailed design

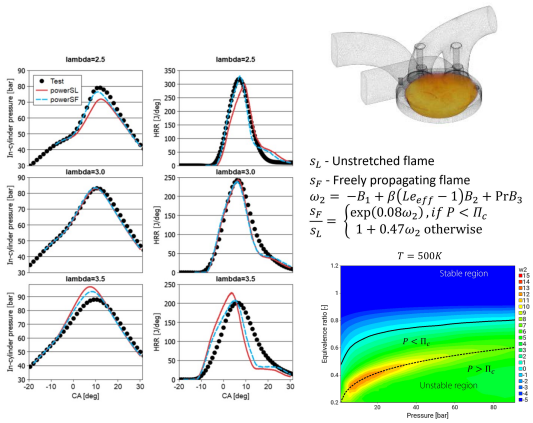
VECTIS WAVE FEARGE

3D CFD advanced injection and combustion modelling for hydrogen

- Complete toolchain for accurate simulation of combustion phenomena in all engine types
- Specific models for lean unstable hydrogen combustion





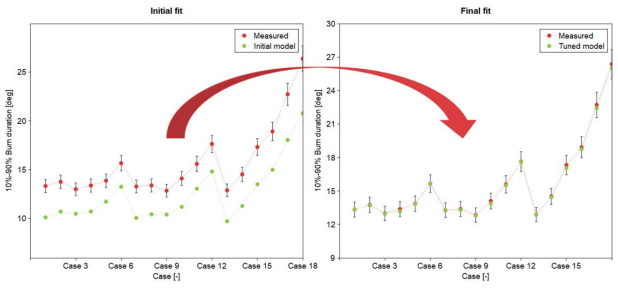


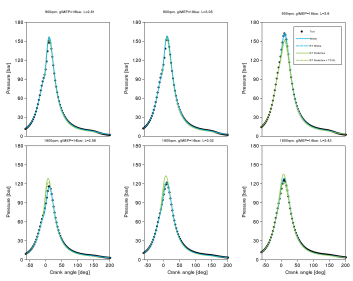
Kinetics | Mixing | Combustion

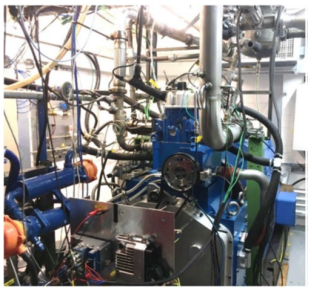
1D CFD lean hydrogen combustion

- Surrogate optimisation applied to model calibration for complex combustion phenomena
- Predictive models for lean hydrogen accounting for thermo-diffusive instability in conventional and real-time applications

Combustion and turbulence modelling

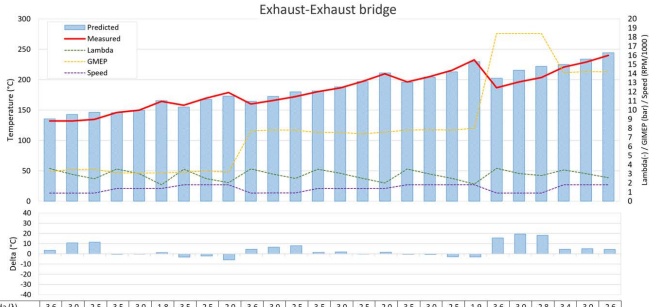




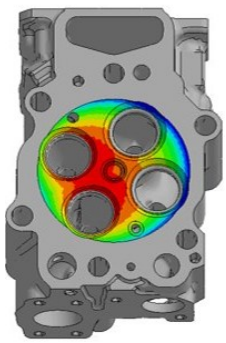


FE thermal analysis for hydrogen combustion

- Fast, accurate calculation of thermal boundary conditions for hydrogen engines



Lambda (λ)	3.6	3.0	2.5	3.5	3.0	1.8	3.5	2.5	2.0	3.6	3.0	2.5	3.5	3.0	2.5	2.0	3.5	3.0	2.5	1.9	3.6	3.0	2.8	3.4	3.0	2.6
Speed [rev/min]	900			1400			1800			900			1400				1800				900			1800		
GIMEP [bar]	3.5			3.1			3.1			7.8			7.5				7.8				18.4			14.2		
Load	Low load									Part load											High load					



Acknowledgements

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Accelerating Possibilities

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