

Computational Fluid Dynamics

Fluid Flow, Combustion, Heat Transfer, Gas Mixing

EngSim uses *CONVERGE* CFD for fluid flow analysis and optimization of complex and wide-ranging engine and vehicle systems

Simulation Capabilities

Port and Combustion Chamber Optimization

- Steady port flow
- Gas exchange
- Combustion
- Emissions

Manifolds and General Flow

- Steady or transient
- Cyl-to-Cyl variation
- Flow distribution on CAT

Spray Modeling

- Port or direct injection
- Injector design
- Injector location, timing and spray targeting

Mixing

- Gaseous fuel mixing in ports and cylinder
- EGR distribution

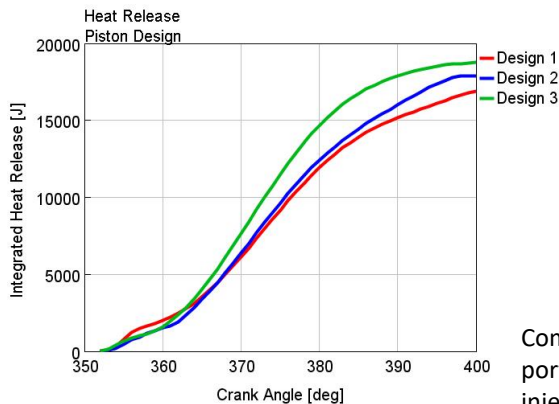
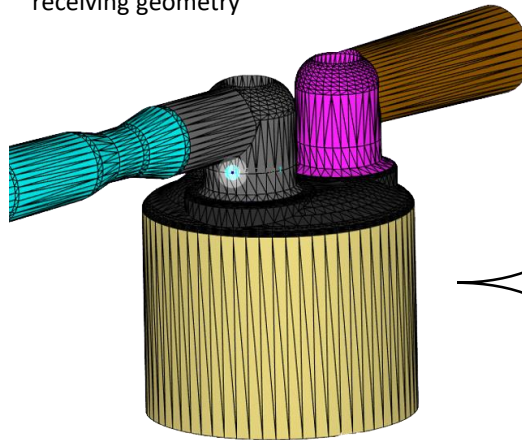
Coolant Flow Analysis

- Water flow distribution in heads and blocks
- Convection coefficient predictions

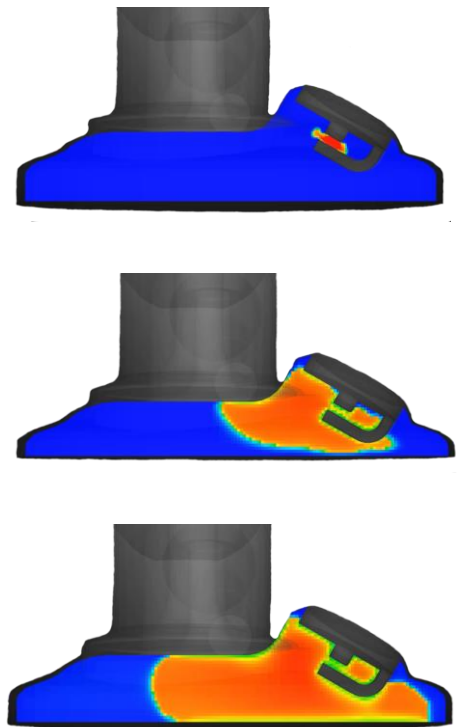
Coupling with GT-SUITE

- Transient flow
- Exchange of boundary conditions w/1D code

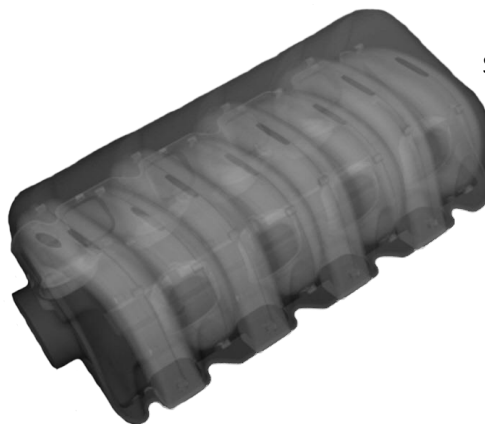
Models can be run within a few days of receiving geometry



Full cycle, moving mesh simulation of internal combustion engines



Combustion optimization studies looking into port shape, chamber design, piston shape, injector design, injector targeting, injection timing, spark location, etc.



Steady-flow optimization and development

