



MAN B&W Diesel

Hercules Task 2.2 Status and Progress, March 2005



General objective:

To develop numerical models for the formation of emissions
(mainly NO_x and soot)

Detailed objectives:

- Numerical description of in-cylinder flow
- Chemical description of combustion
- Integration of sub-models
- Validation with measurements
- Application to engine conditions



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Work completed first year

- Engine measurement database established covering > 1000 tests
- CFD model set up for both two- and four-stroke, including bug-fixes
- Investigation of model numerics
- CFD models adapted to realistic engine conditions and first preliminary results obtained
- Key problems identified and improvements partly implemented and partly initiated
- Chemical reactor model finalized and tested against small engine data



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Selected results

- Nozzle model implemented and compared against optical spray measurements.
- Real-gas effect correction model implemented into CFD model and tested
- Basic building stones for stochastic reactor model implemented and tested against small engine data

