Influence of Mixture Formation on Injection and Combustion. Characteristics in a Compact GDI Engine

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- **PARTICULARITIES OF GDI APPLICATION TO COMPACT SMALL ENGINES**
  - *° THE ZWICKAU DIRECT INJECTION SYSTEMS*
  - *° NUMERICAL SIMULATION OF THE INJECTION SYSTEM*
- **NUMERICAL SIMULATION OF MIXTURE FORMATION**
  - *° SPRAY CHARACTERISTICS*
  - *° MIXTURE FORMATION*
- **NUMERICAL SIMULATION OF COMBUSTION**
- **ENGINE APPLICATION**
  - *° TEST RESULTS*
- **CONCLUSIONS**

Presentation Outline

- GDI APPLICATION TO FOUR-STROKE MOTORCYCLE ENGINE WITHOUT ADAPTATION POSSIBILITIES OF COMBUSTION CHAMBER IMPOSES HIGHER INJECTION SYSTEM ADAPTABILITY

- COMPLEX PARAMETER COMBINATIONS IMPOSE A MODULAR DEVELOPMENT STRATEGY BASED ON NUMERICAL MODELS

- INJECTION SYSTEM :
  -possibility to adapt the spray characteristics to the mixture formation and combustion requirements

- PROCESSES DURING INTERNAL MIXTURE FORMATION AND COMBUSTION:
  - combination of 1D - 3D models
  - modular calibration of the models for spray and combustion chamber

- FEED-BACK STRATEGY TO OPTIMIZE THE WHOLE DOMAIN OF PROCESSES – FROM THE INITIAL PRESSURE IN THE INJECTION SYSTEM UNTIL THE COMBUSTION AND FORMATION OF THE POLLUTANT EMISSIONS.

Conclusions