CONCEPT FOR MODELING AND OPTIMIZATION OF THE MIXTURE FORMATION USING GASOLINE DIRECT INJECTION IN COMPACT HIGH SPEED ENGINES

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PARTICULARITIES OF THE MIXTURE FORMATION BY GDI

STRATEGY TO CONTROL THE MIXTURE FORMATION

CHARACTERISTICS OF THE ADAPTED INJECTION SYSTEM

EXPERIMENTAL ANALYSIS OF THE FUEL SPRAY

METHOD FOR NUMERICAL SIMULATION OF STRATIFICATION

RESULTS INTERPRETATION AND CONCLUSIONS

TOPICS

INFLUENCE OF THE ENGINE SPEED

- TIME FOR MIXTURE FORMATION
- SMALL INFLUENCE ON SPRAY GEOMETRY (NO INFLUENCE ON DROPLET SIZE / VELOCITY)

INFLUENCE OF THE INJECTED QUANTITY

- FLOW VELOCITY
- SPRAY PENETRATION LENGTH
- VOLUME FRACTION OF THE MIXTURE
- FLOW DIRECTION

INFLUENCE OF THE INJECTION START TIMING

- 80° BTDC INTERACTION FUEL - PISTON SURFACE
- 130...160° BTDC INFLUENCE ON JET PENETRATION AND EXPANSION

COMBUSTION CHAMBER DESIGN

INJECTION SYSTEM

→ LOAD
SPEED
INJ. START
INJ. VOLUME

→

* FUEL SPRAY
* MIXTURE CLOUD
* INTERACTION CHAMBER DESIGN - INJ. PARAMETERS

TIME / SPACE RELATED

CONCLUSIONS