

Visualized Analysis of Diesel Combustion Under the High Boosting Engine Condition

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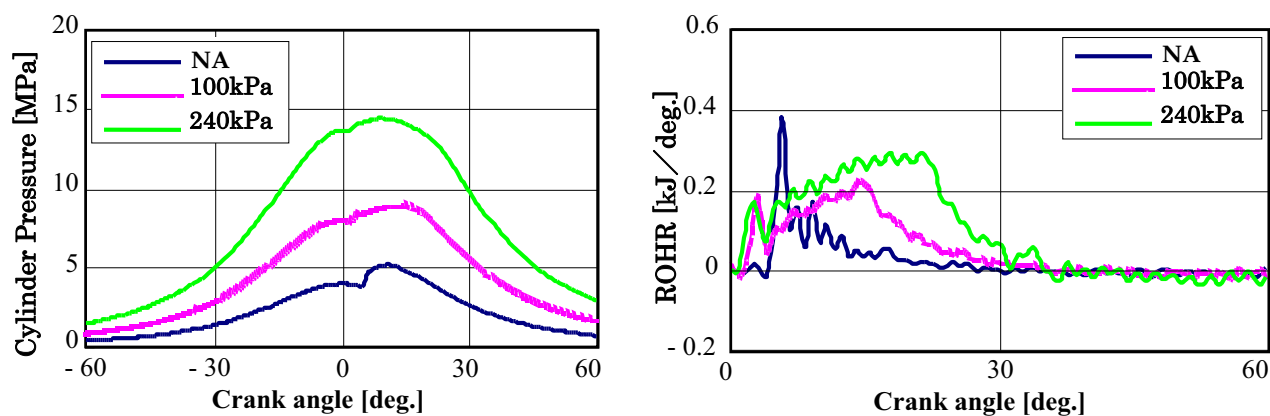


Fig. 1. Pressure curve and rate of heat release in diesel engine.

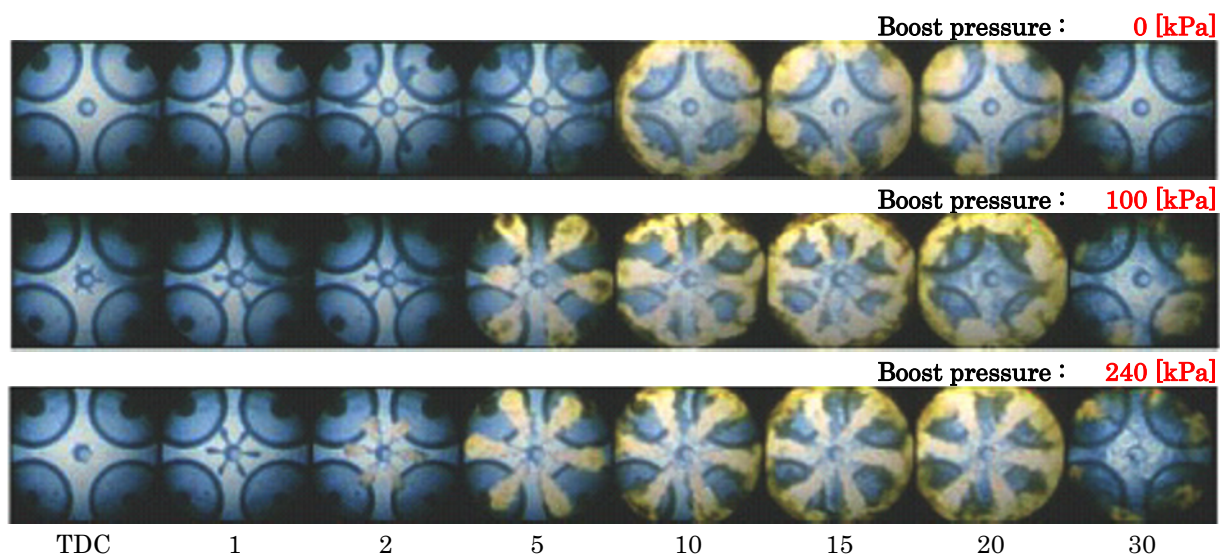


Fig. 2. High-speed photographs of diesel combustion ($P_{inj} = 100 \text{ MPa}$, $\lambda = 3.5$, $\epsilon = 16$, $N_e = 1000 \text{ rpm}$).

Experimental results of High boosting combustion

The pressure diagrams and the rates of heat release are shown in Fig. 1, when the boost pressure increased. Figure 2 shows the combustion photographs under the conditions, which are approximately 3.5 times intake air of NA engine, the air excess ratio $\lambda = 3.5$ constant, the nozzle specification 0.17×6 and the injection pressure $P_b = 100 \text{ MPa}$. The high boosting gives good combustion and high thermal efficiency. It is very difficult to take combustion photo in a diesel engine due to high cylinder pressure but we success in 15MPa such as high cylinder pressure.