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Spark plug-in Fiber LDV for turbulent intensity measurement of practical SI engine

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ABSTRACT

A compact fiber LDV has developed in order to measure turbulent intensity near the spark plug. An optical parameter of the FLDV was designed to have high data rate and spatial resolution without any consideration of seeding particles. The developed FLDV (Fig. 1) was installed in the casing which fits M14 instead of the conventional spark plug (Fig. 2). The measurements were carried out in a practical engine under motoring condition. The test engine is the production engine, no special treatment was added. (Fig. 3)

The measurement results demonstrate that turbulent intensity near the spark plug changed before/after TDC dramatically. The data rate was over 5kHz and cyclic variation of the engine operations were demonstrated.

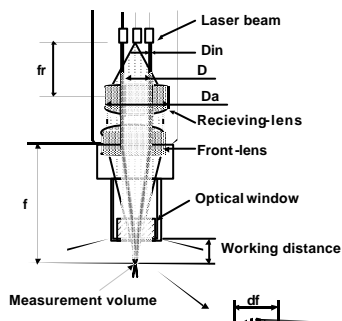


Fig. 1 Structure of the developed FLDV probe

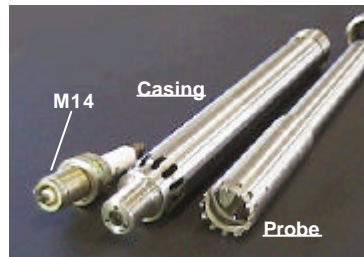


Fig. 2 Developed LDV probe and casing

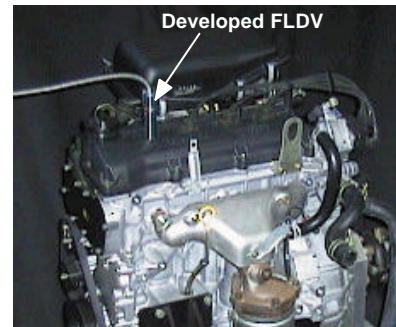


Fig. 3 LDV probe and test engine