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THE INVESTIGATION OF EXHAUST FLOW AND ENGINE
PERFORMANCE BY THE TYPE OF SILencers USED ON
INTERNAL COMBUSTION ENGINES



by

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ABSTRACT

The investigation is an attempt to estimate engine performance and environmental noise by a piezo-electric transducer placed near the exhaust outlet from the engine. By a simply fitted device much useful data can be obtained and analysed. To further aid the design of exhaust systems in general an electrical analogy is given.

The paper shows the importance of electronic instrumentation. The electronic instrumentation used is of a modern type and suggests many other possibilities for their use. The importance of a reference line is stressed and the difficulty of marking an atmospheric datum is overcome by a special valve adapter, exposing the transducer alternately to atmospheric pressure and the gas pressure to be measured.

An analysis is given of the performance and noise of a small two stroke engine using the above technique and recording the pressure variation on oscillograms photographed by a high speed camera. Oscillograms of various exhaust systems are arranged at varying speeds from which a comparison of the various arrangements can be made.

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NOTATION

TDC	=	Top dead centre
BDC	=	Bottom dead centre
BTDC	=	Before top dead centre
ATDC	=	After top dead centre
IPO	=	Inlet port opens
IPC	=	Inlet port closes
EPO	=	Exhaust port opens
EPC	=	Exhaust port closes
TPO	=	Transfer port opens
TPC	=	Transfer port closes