

Conclusion

From all of the foregoing discussion, a summary could be made that performance of a two-stroke crankcase-scavenge engine is greatly affected by the arrangement of the exhaust system. The poor characteristic of short-circuiting of inlet charge to the exhaust can be cured, which results in a saving of fuel, by measuring the fuel consumption, power output, the same time with the investigation of the three pressure traces, a tuning of an exhaust system can be done very efficiently.

It appears that a good performance does not come with a low level of noise. In order to suppress this kind of disturbance a complex system of filters made in series should be used. In which case, an electrical analogy will prove to be very helpful in estimating the efficacy of a particular system of exhaust silencer.

A single pressure transducer of the piezo electric type, fitted to the exhaust system near to the exhaust outlet or manifold can give a great deal of information on engine performance, particularly with two-stroke engines and can also indicate the noise level to the environment. Such a transducer could estimate the frequency of noise and give a very good analysis when suitably calibrated.

Results from the experiment reveal that a gadanacy effect¹ exist in this type of engine. There were many moments in the scavenging period that the pressure in the exhaust system dropped below atmospheric after the exhaust port was uncovered in the free exhaust arrangement. This is a good proof of self-induction of charge in a high speed two-stroke engine.

Any further work that can be done consists of finding equivalent electrical circuits to many types of noise suppressing media in practical use and to test the actual effects of them on a test bed.

¹ Schweitzer. P.H., Scavenging of The Two-Stroke Cycle Diesel Engines, p. 152, Macmillan Company, New York, 1949.

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