



FUEL CONSUMPTION AND POLLUTANT EMISSIONS REDUCTION FOR DIESEL ENGINES BY RECOVERY OF WASTED ENERGY

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Abstract

The recovery of wasted energy is an important technique to reduce pollution and its global warming effects which are more pronounced associated in the last time with human activities. The internal combustion engines extensively used as power and transport equipments are responsible for a major part of this pollution. In the last decades a lot of research activity was dedicated to improving efficiency by fuel consumption reduction and wasted energy recovery. In this sense the concept of thermal engine insulation has been for many years subject of intense researches dealing with the decrease of the heat transferred to the combustion chamber surroundings looking this way for thermal efficiency increasing. A lot of these efforts led but to controversial results. The increase in thermal efficiency expected to result from lowering the heat lost to the chamber walls was not always confirmed by experiments. The aim of this work-in-progress is to bring a contribution to understanding the existing synergies which have to be considered when promoting the energy recovery process from the exhaust and cooling systems potentialities of the internal combustion engines. In this sense it appears not so effective to apply combustion chamber walls heat insulation with the major objective of increasing engine efficiency and effective power; it seems however to be as more justified solution applying partial thermal insulation of the turbocharger and developing some energy recovery systems. Simulations performed with dedicated codes for thermodynamic engines analysis reveal the existing potentiality of energy recovery from the exhaust gases.