

## Environment Saving and Efficiency of Diesel Heat-Insulated Combustion Chamber Using Semitransparent Ceramic Coatings

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**Abstract :** Long-term scientific forecasts confirm that diesel engines still will be the basis of the transport and stationary power in the near future. This is explained by their high efficiency and profitability compared to other types of heat engines. In the automotive industry carried basic researches are aimed at creating a new generation of diesel engines with reduced exhaust emissions (with stable performance) determining the minimum impact on the environment. The application of thermal barrier coatings (TBCs) and especially their modifications based on semitransparent ceramic materials allows solving this problem. For such researches, the preliminary stage of testing of physical characteristics materials and coatings especially with semitransparent properties the authors proposed experimental operating innovative radiative-and-convective cycling simulator. This setup contains original radiation sources (imitator) with tunable spectrum for modeling integral flux up to several MW/m<sup>2</sup>.

**Keywords :** environment saving, radiative and convective cycling simulator, semitransparent ceramic coatings, imitator radiant energy

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