UDC 621.43

Assessment of engine cycle performances with synthes gas fuel addition based on determining coefficients in chemistry kinetics law through treatment of combustion speed

Gorbunov A. V., Viarshyna H. A., Pilatau A.Y., Baranov V.Y., Nozhenko O.S., Kaptug A.Y.
Technological Institute of Aeronautics, Sao Jose dos Campos, SP Brazil,
Belarusian National Technical University, Minsk,
Volodymyr Dahl East-Ukrainian National University, Lugansk

A cardinal answer to the problem could be direct transforming exhaust hydrocarbon combustion gases videlicet their components into combustible components of synthesis gas and further their consumption directly into power engine cylinders.

On the basis of experimental researches carried out on a partial mode it was found that the total and specific fuel consumption by the same power down to 12%, with the use of conversed fuel to 6%.

Mathematical description of the workflow engine was carried out at the initial stage to the previously developed method of calculating the diesel engine. The addition of synthesis gas is homogeneous-diffusion process fuel combustion of diesel, which is dominated by this addition its homogeneous component.

The obtained syngas has less lower caloric efficiency than diesel fuel. Engine power is reduced up to 10% using by the obtained syngas as a fuel addition in the wide range 0…20 %. The value of lower caloric value is enough for carrying out combustion in cylinder on the particle and rising essential efficiency of the process more than 10%.

Being based on an analysis of the effectiveness of the recovery of exhaust gas in the exhaust system of the engine it can be concluded that in order to improve the energetic efficiency of the process it is useful to increase the degree of ionization potential required in the reaction zone through the creation of the electric fields in the plasma instead of raising the temperature of 200-300K.

УДК 621.43.05

Улучшение эффективности поршневых двигателей путем конверсии жидких моторных топлив

Орлов В.В.
Национальный транспортный университет
(г. Киев, Украина)

Каталитические процессы широкофракционного низкооктанового бензина проходят при температурах 560–800°С. Конверсия жидких топлив осуществляется в результате эндотермических реакций в присутствии час-