

Journal of Physics: Conference Series 2016 vol.669 N1

---

## Mechanism of influence water vapor on combustion characteristics of propane-air mixture

Larionov V., Mitrofanov G., Sachovskii A., Kozar N.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### Abstract

The article discusses the results of an experimental study of the effect of water vapor at the flame temperature. Propane-butane mixture with air is burning on a modified Bunsen burner. Steam temperature was varied from 180 to 260 degrees. Combustion parameters changed by steam temperature and its proportion in the mixture with the fuel. The fuel-air mixture is burned in the excess air ratio of 0.1. It has been established that the injection of steam changes the characteristics of combustion fuel-air mixture and increase the combustion temperature. The concentration of CO in the combustion products is substantially reduced. Raising the temperature in the combustion zone is associated with increased enthalpy of the fuel by the added steam enthalpy. Reducing the concentration of CO is caused by decrease in the average temperature in the combustion zone by applying steam. Concentration of active hydrogen radicals and oxygen increases in the combustion zone. That has a positive effect on the process of combustion.

<http://dx.doi.org/10.1088/1742-6596/669/1/012041>

---