

ABSTRACT

In our thesis, we look at what effect a change in the opening pressure of the injector has on the composition of fatty acids in biodiesel. In a second stage, we also want to investigate the influence of this on the emission of particulate matter.

We were able to carry out this research by running test cycles on a generator in which particulate matter, nitrogen monoxide and nitrogen dioxide were measured. We did this for eight biofuels, seven of which had fatty acid additives.

We determined that at a fixed pressure, a high presence of long fatty acid chains, especially methyl linolenate and methyl linoleate, has a positive effect on emissions.

At a variable pressure, however, we found that the perfect balance of fatty acid concentrations is very difficult to achieve. This is due to the fact that the particulate matter emission strongly depends on the opening pressure, but also because the reaction of the fatty acids strongly depends on the opening pressure.