ABSTRACT


The main objective of this thesis is to analyse diesel fuel qualities and their possible effect on engine output parameters. This is a topical issue because of widespread diesel engine start-up problems in cold periods in Estonia. The objects of the study were five winter diesel fuels. Different fuel qualities were measured in fuel testing laboratory. In addition, output parameters were measured in engine testing laboratory on diesel engine D-120. Furthermore, a new adjustable height engine sub-frame was designed.

The results of laboratory analysis show that only two of five tested diesel fuels conform to official standards. According to result analysis, engine output parameters are affected the most by diesel fuel fractional composition. The effect of diesel fuel qualities on engine output parameters should be analysed further.

The paper consists of seven chapters. Piston engines and fuels used in them are given in the first chapter. The second chapter analyses diesel fuel quality. Piston engine output parameters are pointed out in chapter three. Chapter four specifies the testing object and the testing methods. The results of the research are presented in chapter five. The sixth chapter explains safety features in engine testing laboratory. The last chapter presents the designed sub-frame.

Key words: Winter diesel fuel, diesel fuel quality properties, fuel standards, diesel engine D-120, engine testing, engine output parameters, comparing results.