demonstrates the effectiveness of DF combustion for soot reduction; on the other hand, no reliable data for the numerical model validation are available. However, it may be noticed from Figure 5 that the strong reduction of Soot emissions observed during experimental tests is properly predicted also by simulations.

6. CONCLUSIONS

A comprehensive experimental campaign, carried out on a light duty Diesel engine operating in standard and dual fuel mode, provided the basis for the calibration and validation of a CFD-3D dual fuel combustion model. In particular, four operating points are considered, keeping constant engine speed (3000 rpm) and load (bmep=12 bar): NG0 (corresponding to the standard Diesel mode), NG35, NG52 and NG75 (with a 35, 52 and 75 % of fuel energy provided by NG). For each case, in-cylinder pressure trace and exhaust gas concentrations (HC, CO_2, CO, NOx) are measured and the results are compared to the parameters yielded by the numerical model.

It is found that the calibrated KIVA model is able to predict very accurately the average cylinder pressure, as well as the dependence of exhaust gas composition on the NG rate. In terms of absolute values, the numerical accuracy on emissions is less good than on cylinder pressure and combustion rates; however, the calibrated model is sound enough to be safely used in the study of this type of dual fuel combustion

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