**Table 10.1 Comparison of optimum results at peak power output**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Fuel** | **Neat operation** | | **Methyl-ester** | **Vegetable oils** | | | | **Alcohols** | | | **Oxygenates** | | **Diesel blend** |
| **DIESEL** | **CNSO** | **CNSOME** | **CMPRO30** | **COT30** | **OPO30** | **COCO20** | **METH30** | **ETH30** | **BUT30** | **DEE30** | **DMC10** | **DIESEL30** |
| Brake thermal efficiency (%) | 30.14 | 23.1 | 25.7 | 29.1 | 27.43 | 28.9 | 27.3 | 25.2 | 27.2 | 28.4 | 29.68 | 25.4 | 27.93 |
| Heat release rate (J/deg CA) | 79.95 | 62.67 | 78.61 | 79.65 | 66.98 | 69.03 | 71.25 | 67.44 | 69.78 | 74.98 | 79.19 | 71.73 | 71.81 |
| Ignition delay (deg CA) | 7 | 12 | 11 | 8 | 11 | 9 | 6 | 16 | 14 | 13 | 6 | 11 | 9 |
| Max rate of pressure rise (MPa/deg CA) | 1.152 | 1.04 | 1.11 | 1.138 | 1.069 | 1.104 | 1.127 | 1.063 | 1.117 | 1.12 | 1.138 | 1.05 | 1.125 |
| Combustion duration  (deg CA) | 48 | 75 | 64 | 52 | 64 | 63 | 62 | 66 | 56 | 53 | 46 | 60 | 61 |
| CO emission (%) | 0.27 | 0.38 | 0.33 | 0.3 | 0.35 | 0.33 | 0.32 | 0.34 | 0.31 | 0.3 | 0.31 | 0.37 | 0.31 |
| HC emission (ppm) | 130 | 143 | 136 | 132 | 134 | 134 | 135 | 138 | 135 | 132 | 134 | 142 | 133 |
| NO emission (ppm) | 1118 | 963 | 1020 | 1080 | 1081 | 1044 | 1061 | 1022 | 1046 | 1085 | 1090 | 985 | 1077 |
| Smoke emission (BSU) | 3.8 | 4.76 | 4.22 | 3.96 | 4.42 | 4.37 | 4.27 | 4.12 | 4.01 | 3.91 | 4.01 | 4.32 | 4.27 |