

## 双燃料发动机燃烧噪声特性及影响因素分析

汤东 沈飞 来超峰 罗福强

江苏大学

关键词: 双燃料发动机 生物质气 燃烧 噪声 气缸压力频谱

摘要: 从时域和频域两方面综合评价双燃料发动机的燃烧噪声, 分析转速、负荷、供油提前角以及生物质气替代率等因素对燃烧噪声的影响, 并与柴油机的相关数据进行比较, 结果表明: 在 $21^{\circ}$  CA供油提前角时, 转速对整个频率范围内气缸压力级的影响较小, 在相同转速下随负荷的增加, 生物质气替代率下降, 燃烧总声压级普遍增大; 而当供油提前角增大至 $24^{\circ}$  CA时, 两种机型的气缸压力级频谱曲线变化强烈, 转速的增大使其在高频范围内呈振荡式发展, 负荷的增加使其在低、中频范围内增大。The combustion noise of a biogas and diesel dual-fuel engine is evaluated by time region and frequency region comprehensively. The effects of engine rotate speed, engine load, the advance angles of fuel supply and the biogas replacement rate on the combustion noise were analyzed. The result shows that the total combustion sound pressure level is less affected by the engine rotate speed at  $21^{\circ}$  CA BTDC (crankshaft angle before top dead center). The combustion sound pressure level increases with the increasing of the engine load at the same engine rotate speed. The cylinder pressures of the two types of engines change markedly when the fuel supply advance angle increases to  $24^{\circ}$  CA BTDC. The increasing of engine rotate speed results in the oscillation of the cylinder pressure at high frequencies, and the cylinder pressure increases with the increasing of engine load at low and middle frequencies.

[查看全文](#) (请使用Adobe Acrobat 6.0版本浏览) [返回首页](#)

[引用本文](#)