

斯特林发动机喷雾特性试验研究 Experimental Study on Fuel Spray Characteristics of Stirling Engine

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摘要: 采用高速摄影技术研究比较了不同背压下斯特林发动机的喷雾过程, 并分析了燃油流量、燃烧室背压以及喷嘴参数对斯特林发动机喷雾特性的影响。结果表明, 燃烧室背压对喷雾过程具有明显的影响; 随着流量的增大, 贯穿距离和喷雾锥角都增大, 但流量达到一定程度后, 喷雾锥角的增加趋势减缓; 随着燃烧室背压加大, 喷雾的贯穿距离增大, 喷雾锥角减小, 背压对喷雾具有压缩作用, 当背压增大到一定程度后, 它对喷雾锥角的影响程度降低; 相同流量工况下, 随喷嘴通道直径的减小, 喷雾的贯穿距离增大, 喷雾锥角减小。The formation processes of fuel spray of Stirling engine under different back pressure were investigated by using high-speed camera. And the influence of several parameters, such as back pressure in the combustion chamber, the flow-rate as well as the diameter of spiral channel, on the spray performance was analyzed. Results showed that: back pressure has great impact on the formation process of fuel spray; the fuel penetration and spray angle increase with the increase of fuel flow rate; the penetration increases and the spray angle decreases as the back pressure in the combustion chamber increases; at the same flow rate, with the increase of diameter of spiral channel, the penetration increases while the spray angle decreases.

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