

TRANSPORT PHENOMENA & FLUID MECHANICS

分级进风燃烧室内旋流反应流的湍流特性

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摘要 This paper presents an experimental investigation of the turbulent reacting flow in a swirl combustor with staged air injection. The air injected into the combustor is composed of the primary swirling jet and the secondary non-swirling jet. A three dimension-laser particle dynamic analyzer (PDA) was employed to measure the instantaneous gas velocity. The probability density functions (PDF) for the instantaneous gas axial and tangential velocities at each measuring location, as well as the radial profiles of the root mean square of fluctuating gas axial and tangential velocities and the second-order moment for the fluctuating gas axial and tangential velocities are obtained. The measured results delineate the turbulence properties of the swirling reacting flow under the conditions of staged combustion.

关键词 [swirling reacting flow](#) [staged combustion](#) [turbulence characteristics](#)

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Turbulence Characteristics of Swirling Reacting Flow in a Combustor with Staged Air Injection

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Abstract This paper presents an experimental investigation of the turbulent reacting flow in a swirl combustor with staged air injection. The air injected into the combustor is composed of the primary swirling jet and the secondary non-swirling jet. A three dimension-laser particle dynamic analyzer (PDA) was employed to measure the instantaneous gas velocity. The probability density functions (PDF) for the instantaneous gas axial and tangential velocities at each measuring location, as well as the radial profiles of the root mean square of fluctuating gas axial and tangential velocities and the second-order moment for the fluctuating gas axial and tangential velocities are obtained. The measured results delineate the turbulence properties of the swirling reacting flow under the conditions of staged combustion.

Key words [swirling reacting flow](#); [staged combustion](#); [turbulence characteristics](#).

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