Jet Noise Reduction by Downstream Fluidic Injection: Effect of Injection Pressure Ratio and Number of Injection Ports

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The main goal of this investigation is to assess the noise reduction using a non intrusive technique, namely laser Doppler anemometry (LDA). In the present study, the jet noise was measured using LDA in the acoustic field of the jet. The results were compared with those obtained in previous studies. The 3D acoustic field of the jet was also investigated using LDA. The data was analyzed using statistical methods to determine the best parameters for reducing the noise. Overall, the results showed that the noise was significantly reduced by the injection of fluid. The injection of fluid was found to be effective in reducing the noise in the near field, but not in the far field.

Nomenclature
- \( a \): acoustics
- \( b \): batch
- \( c \): center
- \( d \): data
- \( e \): effect
- \( f \): flow
- \( g \): geometry
- \( h \): head number
- \( i \): inset
- \( j \): jet number
- \( k \): kinetic energy
- \( l \): length
- \( m \): mass
- \( n \): number
- \( o \): oxygen
- \( p \): pressure
- \( q \): quantity
- \( r \): radius
- \( s \): speed
- \( t \): time
- \( u \): velocity
- \( v \): volume
- \( w \): width

Directionally-Targeted Jet Noise Suppression: Benefits of Asymmetric Downstream Fluidic Injection

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Noise Reduction for an Unheated Mach 0.9 Fluidic Injection

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Effect of rounding corners on optical resonances in single-mode sharp-cornered microresonators