

# Three-component Particle Image Velocimetry in a Generic Can-type Gas Turbine Combustor

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## **Abstract:**

A stereoscopic particle image velocimetry (PIV) system was used to obtain the velocity field of a can-type combustor in the non-reacting condition. In order for these measurements to be taken, an optically accessible can-type forward flow combustor was manufactured. The combustor has a 10-vane swirler in the dome as well as a primary zone with six 9.5 mm holes, a secondary zone with eight 5 mm holes and a dilution zone with ten 11.8 mm holes. The two cooling rings have 30 and 50 x 1.2 mm holes and are placed between the three zones. The main flow features were captured such as the recirculation zones and jets. The more subtle features such as flow entering the swirler, entering the dilution holes from the annulus, and converging into smaller annuli around the secondary and dilution zones were also evident in some sections of the data. An unexpected flow recirculation was observed in the dilution zone. The departure of the flow from the recirculation regions to join the bulk flow in the dilution zone was also shown.