

# **Pitot Tubes Calibration and System Integration of Automated 3D Traverse Stage with the Wind Tunnel**

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Smokestack emissions are one of the main pollution sources and already become a global challenge. Owing to the unstable flow conditions, complex gas compositions and selection of suitable instrumentation, stack flow measurements have drawn much attention. 3D pitot tubes can be used for three-dimensional swirl flow measurements in the smokestack and could provide more detailed flow information. To provide 3D pitot tube calibration service, automated traverse stage design integrated with wind tunnel system is necessary in order to decrease the operation time and labours. Accordingly, CMS started to design an automated 3D traverse system and integrated with the wind tunnel for 3D pitot tubes calibration. The design has been proved to be feasible to operate in the wind tunnel and is able to change the pitch and yaw angle from -40 degrees to 40 degrees and -180 degrees to 180 degrees, respectively.

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