Opportunities for Smart and Micro Systems in Commercial Aviation

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Microelectromechanical systems (MEMS), traditionally a technology associated with small electronics and automotive, is increasingly being adopted in aerospace applications. These lightweight and low power consuming devices can potentially be integrated into larger aerospace systems. This talk will showcase how MEMS-based sensor and actuators are being considered for significant applications such as aerodynamic controls, navigation, monitoring and surveillance, and structural health monitoring. Novel aerospace specific applications of this technology such as in lightning strike protection that are currently being explored will also be discussed. These opportunities for MEMS in aerospace need to overcome challenges associated with high cost of these devices, improved system integration and reliability.

Biography

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Dr. Pratyush Kumar

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Dr. Pratyush (Prat) Kumar is president of Boeing India and vice president of Boeing International, and he also serves as managing director of Boeing Defence India. Based in New Delhi, Dr. Kumar is Boeing's most senior in-country executive who integrates and advances Boeing's activities in India across its three business units: Boeing Commercial Airplanes (BCA), Boeing Global Services (BGS), and Boeing Defense, Space & Security (BDS).

Before joining Boeing in 2012, Dr. Kumar served in various leadership roles at General Electric (GE) for close to a decade in the United States and in India. He started his career as a consultant with McKinsey & Company in the U.S. In between McKinsey and GE, Dr. Kumar was an entrepreneur working at a U.S. MEMS design startup, Coventor, and founding a microfluidics-chip based biomedical device company, Cytonome.

Dr. Kumar is chairman of the American Chamber of Commerce, India (AmCham), chairman of the Federation of Indian Chambers of Commerce and Industry (FICCI) Aviation Committee, and a member of the executive council of the Aviation Cooperation Program (ACP) between India and the United States. He also serves on the board of Aerospace and Aviation Sector Skills Council and Confederation of Indian Industry (CII) Defense Committee.

Dr. Kumar earned a bachelor's degree in mechanical engineering from the Indian Institute of Technology Delhi (IIT-D) and a doctorate in materials engineering from the Massachusetts Institute of Technology (MIT), where he was also an Industry Collegium fellow supported by the Leaders for Manufacturing program.

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