

TRACK 1: STRUCTURES AND MECHANICAL SYSTEMS
“EFFECT OF SPRAY ANGLE ON COLD SPRAY COATING PROPERTIES”

BY
 DR KOH PAK KENG, ASSOC PROFESSOR NG HEONG WAH,
 ASSOC PROFESSOR PHILIP CHEANG, MR KELVIN LOKE
 ECK PTE LTD

ABSTRACT

Preliminary study demonstrates the technical viability of the cold spray process as an alternate repair method to address corrosion and erosion issues for aircraft components. However, being a relatively new coating process, the effect of spray angle on the properties of the coating needs to be better understood. As aircraft components that are cold sprayed usually come in complex shapes and sizes, it is difficult to ensure that the spray angle is consistently normal to the surface of the component. As such, the effect of the spray angle on the microhardness, tensile adhesion strength, and microstructure was examined. Results indicated that the effect of off-normal spraying has minimal impact on tensile adhesion strength and a positive effect on the microhardness of the coating. Furthermore, the relative coating efficiency of the cold spray process at various spray angles was also evaluated. Significant detrimental impact on the relative coating deposition efficiency was observed for spray angles smaller than 60°.

BIOGRAPHY OF SPEAKER


Dr. Koh Pak Keng is the Chief Technology Officer of ECK Pte Ltd and oversees the development of technology and its adoption. Prior to that, he was the Head of Programme for Aerospace Cluster in Singapore University of Social Sciences (previously SIM University), design engineer for General Electric Aircraft Engines and the general manager for ADCT Technologies Pte Ltd. He graduated from Nanyang Technology University with a PhD in the area of cold spray research.