

CERAMIC MATRIX COMPOSITES AT GE AVIATION

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General Electric Aviation (GEA) is the world's leader in aircraft engine production. For more than a half century, GE has been at the forefront of developing advanced materials for turbine applications, including the recent certification of Ceramic Matrix Composites (CMC's) on the LEAP engine. The introduction of SiC/SiC CMC materials into hot section components provides a significant increase in fuel efficiency. These propulsion system benefits are being realized as a result of significant technology development progress over the past 20 years. During this time, GE has taken CMCs from the lab to robust, cost-effective manufacturing. GE Aviation already has CMC manufacturing facilities in Newark, Delaware and an advanced composite component factory near Asheville, North Carolina. In addition, GE is currently building-out a ceramics raw material production facility in Huntsville, AL. These manufacturing capabilities will enable high production volumes of CMC materials and components required to support industry needs. Key aspects of CMC technology maturation and industrialization at GE Aviation will be discussed in this Paper, including component testing, data analytics, process modeling, manufacturing scale-up, and production readiness.