

## **46ESS-71: Distributed Propulsion Systems**

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*The purpose of this paper is to highlight the working theories, evolution of technology, performance and future developments of distributed propulsion systems. The concept behind the distributed propulsion systems to fully integrate a propulsion system within the airframe such that the aircraft takes full harmonious benefits of coupling aerodynamics of the airframe and the propulsion thrust stream by distributing streams of thrust by use of many propulsors on the airframe. With the continuous evolution and maturity of the engines systems technologies, there is a requirement for a change in propulsion systems architecture to continue the trend rate in performance improvements. NASA has been on the forefront of investigating revolutionary distributed propulsion concepts to increase aircraft performance. New technology advances in materials, aircraft controls and structures are enabling a high degree of integrating propulsion system in aircraft design and the airframe – which is the whole concept behind the distributed propulsion. This paper reviews some of the early distributed propulsion concepts, current turboelectric distributed propulsion (TeDP) and future propulsion and power concepts being studied by NASA to reduce aircraft related fuel burn, emissions, and noise.*

*Keywords:*

*Performance, propulsion, technology, system, integration, electric, architecture*