

46ESS-06: Start Up Systems for Aero Gas Turbines

JASON RUBIE

Aero Gas Turbines are very complex systems. In order to cause them to transit from a state of being shut off to a state of operation, an equally complex system must support the engine in order to allow it to start up. The two primary functions of the start-up system are the initial physical excitation of the turbo machinery and the ignition of the combustion process. The start-up system must be able to rotate the engine's turbo machinery to generate adequate airflow needed to facilitate the combustion process and then initiate ignition at the precise moment. Each of the two primary functions can be accomplished by many different types of sub-systems. The start-up system also requires integrated electronics to synchronize all of the subsystems' functions and to detect faults. This report will detail several of the combinations of sub-systems and highlight advantages and disadvantages of each. A brief description of the start-up system for a McDonnell Douglas DC-10 will be highlighted as a working example of a start-up system.