

## **Development of Green On-Board Inert Gas Generation System (GOBIGGS™)**

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The need for “inerting” the center wing tank (CWT) for commercial aircrafts has been well established through the experience of military aircraft inerting systems and a systematic study at industry, various laboratories and FAA technology center.

These studies have clearly indicated the need to reduce and maintain the oxygen level below 10 to 12% in the fuel tank to prevent any spontaneous combustion of fuel vapor. Based on these studies, in 2006, FAA had published the notice of proposed rule making (NPRM) requiring certain existing and future aircrafts to reduce the flammability of center wing tanks (CWTs).

The state-of-the-art On-Board Inert Gas Generation System (OBIGGS) suitable for flammability reduction uses the bleed air which is passed through hollow fiber membrane system to remove oxygen and supply the nitrogen enriched air (NEA) to displace the flammable ullage from the CWT. Such a system poses several new concerns that may need further mitigation. Some of the major issues include: loss of efficiency due to the use of bleed air, displacement of large quantities un-burnt hydrocarbons from CWT to the outside air raising serious environmental concerns, and the weight and volume of the heavy system.

Phyre Technologies’ patent pending system called GOBBIGS™ shows a promise to mitigate the fuel tank flammability issue while providing a “green” or environmentally friendly solution that can be potentially lighter and smaller compared to the existing OBIGGS. The system consists of catalyst based ullage treatment system which produces inert gases. The presentation will include the fundamental principles of operation, rationale for the use of catalyst based system, design aspects of the system and results from preliminary testing at Phyre Technologies and FAA’s testing facilities at J. Hughes Technical Center.