

Abstract submittal for

*ASA Multidisciplinary Research Symposium 2016 “Emerging Technologies: Innovation in the Applied Sciences and Arts”*

### **Technological Advances of Diesel Engines within the Aviation Industry**

The first diesel engine was invented by Rudolph Diesel in France in 1897 with his engine patent being approved in 1898. His diesel engine was the first engine in history that used a fuel that could be ignited without using a spark. Diesel engines are more fuel efficient, more reliable and they require less maintenance when compared to reciprocating and turboshaft engines currently being used within the aviation industry.. The biggest disadvantage of the diesel engine is that they are typically larger and heavier when compared to an equally powered engine commonly used in today's general aviation fixed wing aircraft and light helicopters.

Within the last couple of decades there have been immense technological improvements relative to the diesel engine. In the United States, a couple of fixed wing aircraft manufacturers have received the necessary FAA approval to produce and sell aircraft with the diesel engine only as optionally installed equipment while there are other manufacturers waiting for the FAA's approval. Several aircraft manufacturers are pursuing an engine diesel that will allow it to be installed on a production basis.

European countries have been the front runners when it comes to developing new diesel engine technology within the aviation industry and were to first to have a certified engine design within the general aviation market. In many areas of Europe it is becoming difficult to find aviation gasoline with the lead additive and it is also very costly as compared to the associated cost in the United States.

With the increased focus on incorporating diesel engine technology into our general aviation and light helicopter aircraft, our aviation maintenance technician schools will need to increase the amount of attention provided to the operation, maintenance and repair of diesel engines into their curriculum.

It is becoming clear that the use of diesel engines will continue to make their presence known within the aviation industry. They will primarily be installed on smaller fixed wing aircraft and helicopters currently using reciprocating and turboshaft engines. As our technology continues to improve, the weight of the diesel engine will become lighter, it will have a cleaner exhaust and it will also become a more popular choice.