Future Fuels and Steps For Emission Control in Aero World

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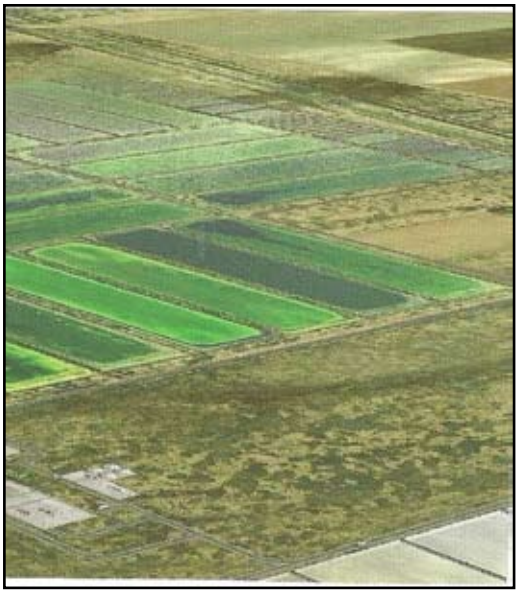
Abstract
The targets to be met by the year 2020 are clearly defined:aircraft are expected to emit 50% less carbon dioxides and 80% less oxides of nitrogen (NOX) as compared with year 2000 levels, if we are to believe many odf the major airline,it ia only a matter of time before biofuels are widely used in air transport , test flights have already proved that there is a number of viable alternatives to kerosene, among them ethanol, synthetic kerosens from plants, and hydrozen, but it remains to be seen which particular raw materials and indeed which process will ultimately prevail and be used to manufacturing non farsil fuels the GTF burns an impressive 15%less fuel and is only half as loud as conventional engines.

Keywords
KEROSENE, EMISSION, ALGAE, BIOFUELS

I. Introduction

Power from algae many airlines around the globe has announced its plans to start using biofuels for scheduled its plans to start using biofuels for scheduled commercial flights in the near future, all are hoping that testing of alternatives to kerosene over a longer period of time will provide reliable data regarding the feasability of using such fuels on scheduled services [1].

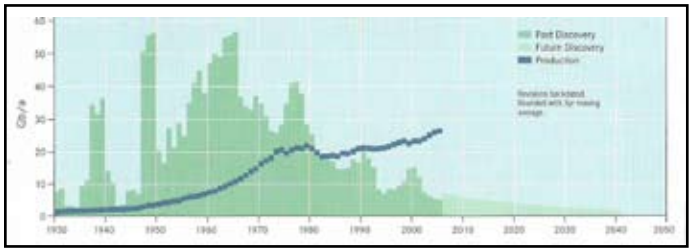


Algae farms

Bio fuels are a hot topic, not only because crude oil resorvers are limited, demands for lower co_2 emissions and greater sustain ability overall are forcing the aviation industry to act using a blend of conventional kerosens and fuels derived either from biological feedstock or natural gas [2].

There are many tests carried out to technically run aircraft on synthetic fuels, that the fuels not obtained by refining crude oil has been tested successfully.

The synthetic fuels are similar to kerosene as possible in terms of physical properties such as freezing and boiling points, viscosity and energy density, they should behave just like kerosene ,it must also be possible to mix them with standard jet fuel in any ratio.



Fuel mixtures containing up to 50 percent synthetic kerosene alongside kerosene derived from crude oil, aero engine may will be able to run on a wide range of alternative fuels.[3]

Cool to liquid(CTL)or gas to liquid (GTL)fuels could undoubtedly help alleviate dependence on crude oil and make sure that a certain security of supply is maintained for future generation from the point of view of sustainability this solution are anything but optimal, not least because the fischer-tropsch (FT) synthesis used for the purpose which was developed in Germany as early as in 1925 is relatively energy intensive if a renewable source is used instead of coal or gas (biomass to liquid or BTL) why ? because carbon dioxide that is produced in an engine during combustion has previously been taken out of the atmosphere by the plants used to make the fuel suitable materials include wood wastes,corn, straw or algae to name but a few [4].

It is possible to produce oil from certain types of algae that can be concerted by a catalytic reaction with hydrogen into a hydrocarbon compound that is similar to kerosene, hydrogenated vegetable oil (NVO) this process use less energy than the FT synthesis , HVOS can also be produced from plants such as oil plants , jatropha or cameline.however,not all the resulting oils exhibit the carbon chain length range that is typical of kerosene palm oil for eg.would be more appropriate as a substitute for diseal [5].

II. Kerosene

Chemically speaking a mixture of several combustible liquid hydro carbon compounds is a middle distillate fuel derived from petroleum. Depending on the specific type, it freezes at temperatures between -60 C and -40 C and boils above 175 C. The two main types currently used in commercial aviation are jet A1 (VS) [6] and jet A (rest of the world), the military generally

uses the variant JP8. There is additional specification for flights particularly cold regions of the world.

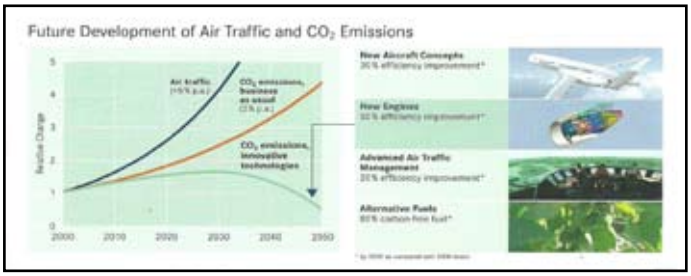
Sustainable Fuel – The emissions of the greenhouse gas Carbon Dioxide (CO_2) were reduced by 1,471 metric tons. The total consumption of the bio kerosene mix mounted to 1,556 metric ton approved far use on aircraft only if mixed half and half with regular jet A-1. [7]

The six –month test of biofuel on regular domestic flights was conducted .the use of bio synthetic fuel promises to achieving the ambitious target set by the international air transport [8].

Which is to half CO_2 emissions cools caused by air traffic by 2050 compared with 2005 the primary aim is to gain experience in the use of bio fuel on aircraft and engine and collect long term data [9].

Biofuels reduce harmful emissions because the CO_2 released when the fuel is burnt has previously been extracted from the atmosphere through photosynthesis during biomass growth.

Enhanced engine efficiency is a key factor in achieving cleaner skills because engine burn fuel [10].



III. Results & Discussion

- Kerosene may be derived not only from hydrogenated vegetable oils .but from biowaste generated by agricultural and forestry, using the fischer tripsch process despite the amount of energy it needs, the next step is to find optimum solutions for large scale production since synthetic fuels will only establish themselves if they can be brought onto the market it competitive prices ,the energy density of this alcohol is significantly lower than that of kerosene or gasoline, bio diesel unsuitable for use in commercial airliners because of its relatively high freezing point [11].

Hydrozen is not really a viable alternative, one thing,is completely unrealistic to imagine is that a commercial airline could be powered by solar energy collected during flight [12].

- Flight velocity and pressure ratio into a theoretical engine model and them compare the parameters calculated using this model with actual measurement value [13].

Using hydrogenated vegetable oil(HVO) made from 80% jatropha oil from Indonesia 5% slaughter house waste from Finland [14] 15% jatropha oil from Indonesia.

Although bio kerosene is currently more expensive than farsil fuels, this will change in the medium term as production volume .increases and assuming the cost of kerosene remains at its current high level.

Bio fuels are expected to play a significant role their share in overall global air transport fuels being estimated at between 30 and 85 % by that time.

Question are still unanswered the most important one being how to produce enough biomass from sustainable sources without competing with the production of food and without damaging or destroying vast stretches of hand.

IV. Conclusion

as we fanthom each and every step to emission control in aero world, but there is lot of work is still to be done in future fuels and steps for emission control in aero world

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