

## Carbon dioxide emissions

# The environmental debate

The airfreight industry is alarmed. It is suddenly being subjected to the same pressure as the road transport sector, which many citizens consider to be an abhorrent polluter of the environment. Airlines and aircraft manufacturers are turning primarily to new technologies and enhanced efficiency to demonstrate that they are engaged in protecting the environment. However, they should know from the experience of the road haulage sector that their adversaries cannot be won over by relatively emotionless argumentation, even if it is accompanied by strong facts.

Flying is cheaper than ever, and business in both the passenger and the freight segments is growing faster than in any other form of transport. The down side is the harm to the environment caused by each flight, although experts estimate that air traffic is responsible for only about 3% of the planet's greenhouse gas emissions.

Airlines such as Air France-KLM, British Airways and Lufthansa have been trying for years to increase the energy efficiency of their fleets and reduce carbon dioxide emissions and noise levels (by 50% over the last five years), by continually renewing their fleets and selecting the most suitable types of aircraft. They employ in-house teams to monitor and reduce the weight on board, which diminishes the amount of fuel required, and devise fuel-saving methods of landing and taking off.

### Many measures to attain the goal

In addition, airlines keep working to get government authorities to do a better job of managing flight paths and airport air traffic worldwide. Holding patterns cost enormous amounts of money and pollute the air. Trade in carbon dioxide certificates has been expressly welcomed by leading European airlines as part of a general strategy to reduce carbon dioxide emissions. Nevertheless, they also insist that emissions dealing must not be allowed to become a one-sided burden for European companies alone. They do not want an isolated solution only applicable to the EU.

Lufthansa Cargo director Carsten Spohr, during the recent Air Cargo Europe conference in Munich (Germany), spoke out again in favour of creating a central European air traffic control system. Such a centre would be able to di-



Brouhaha around the pollutants emitted by aircraft. Airlines have to rethink their approach.

rect all flights and ensure that they always take the path which consumes the least amount of fuel, he said. He was critical of the fact that this major European climate protection project has been on the EU member states' agenda for years, but is not progressing. A single European sky would cut 8-12% off the region's carbon dioxide emissions.

Air France-KLM has been advocating research and implementation of so-called green routes over the Atlantic, postulating particularly environment-friendly connections between Amsterdam (Netherlands) or Paris (France) and the USA.

### New ideas are imperative

Stefan Krauter, the managing shareholder of the Cargo Partner Group, argues for the deployment of a new generation of

high speed turbo props (HSTPs). He said that they are more economical than jets, particularly on short-haul flights, as they are more efficient than other steel propulsion units at slower speeds, and they consume 20% less fuel. One application of turbo prop technology has been in the A400M military transport aircraft, which reaches velocities of Mach 0.68 to 0.72. Airbus Industries has said that the units require 20% less fuel than the best turbofan motor and they also boast a higher payload and longer operating range. Construction of the first prototype is to start at the end of 2007, with serial production beginning in 2008.

However, kerosene consumption could be reduced by up to 15% more than

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achieved by the Airbus A400M, according to Krauter, by changing the shape of the rotary blades, using new types of coatings, and repositioning the motor. He is highly involved in technological innovation in this area and presented his new model in the run-up to the Paris Air Show at Le Bourget airport (France). The usual shape of the propeller has been changed. The points end far to the back. The compressor is bigger than usual, and it has been separated from the propeller. The mix of fuel is prepared under high pressure in its own compartment, from where it is pumped directly into the gas turbine.

The Cargo Partner chief's design places the propeller behind the motor. It does not pull the aircraft but pushes it, using the slower and heavier air under the wings. Krauter said that this would increase fuel efficiency by at least 15% compared to Airbus' A400M. The special way that the mix of fuel and air is prepared will also make it possible to use biofuels more efficiently.

#### Ideas for quick implementation

Virgin Atlantic Airways founder Richard Branson, together with the US aircraft manufacturer Boeing and the British engine manufacturer Pratt & Whitney, recently sent an aircraft across the Atlantic using a 50:50 mix of ethanol and kerosene.

In addition, the British multi-billionaire has called for another, easy-to-implement measure. «It must be possible to have aircraft towed to their starting positions on the runway and pulled to their parking slots after landing. This saves a lot of fuel compared with the aircraft having to taxi around the airport under its own power.» Such transfers are usu-

ally banned at airports, but the enthusiastic Branson hopes that this will soon change. «We could save 3 t of fuel per flight through this simple measure that we are currently testing in London (UK). This has a correspondingly positive effect on costs and the environment,» he explained to the Financial Times.

Branson is a founding member of the Copenhagen Climate Council. The joint initiative of scientists and entrepreneurs wants to exercise pressure to get the world to embrace a follow-up agreement to the Kyoto Climate Protocol in Copenhagen (Denmark) in 2009, which the USA, China and Australia would also sign.

Airbus has made a commitment to construct all aircraft on sale up to 2020 in such a way that they emit 50% less carbon dioxide and 80% less nitric oxide than their predecessors delivered in 2000.

#### Research is needed

A young research team from the German Aerospace Center, the University of Mainz (Germany) and the Max Planck Institute for Chemistry in Mainz, led by Christiane Vogt, has begun studying the influence of aircraft emissions on the atmosphere. «The aim is to support the development of environment-friendly air traffic,» Vogt said. «We want to gain a better understanding of the effect that air traffic has on the environment. Then we will be able to make suggestions for how to reduce aviation's effect on it – such as by changing the altitude of flight paths.» Other research in this direction is being carried out in other countries and on other continents. A veritable race has begun.

*Ursula Schmeling*

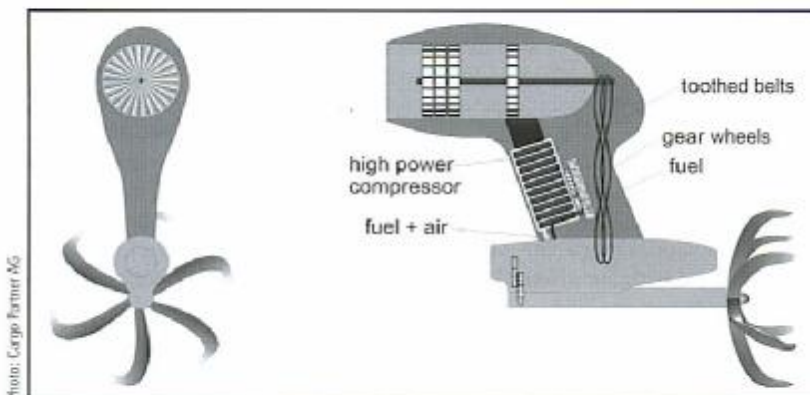


Photo: Cargo Partner AG

Cargo Partner boss Stefan Krauter has designed a new type of propulsion. The propeller is located behind the motor. The aircraft is not pulled in the ordinary way, but pushed.