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The logo features the word "fly" in a light blue, lowercase, sans-serif font. Below it, the word "VILM" is written in a large, bold, white, uppercase, sans-serif font. A stylized graphic of five golden-brown, curved, feather-like shapes is positioned between the two words, appearing to emerge from the right side of "fly" and curve upwards and to the right.

# VLM Airlines

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## The Operation of a Regional Domestic & European Short-Haul Airline

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North West Public Transport Users Forum - 3 October 2007

[www.flyvlm.com](http://www.flyvlm.com)



# VLM Airlines



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# VLM Airlines : The Business Travellers' International Airline

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- § Flanders' International Airline
- § Linking regions of Benelux to the UK's regions
- § Bringing people together, building partnerships
- § Founded : 1992
- § Profitable every year for last 10 years

# Business Travel Niche : The Day and Short-Stay Return Market

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- § Making the Most of Valuable Business Resources
- § Minimising Away Nights, Maximising Time Usage
- § Reducing wastage  
through unnecessary Room Nights
- § Meetings, Consultations, Negotiations
- § Conferences
- § Interface
- § Professional Representation
- § Finance

# The provision of Fast Links targeted at Business Travellers

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Wherever Time Matters for :

- § Professionals
- § Governments
- § Decision-Takers + Decision-Influencers
- § An alternative to Slower modes of Transport
- § A niche business-focused market,  
instead of encouraging mass market leisure travel
- § In Europe,  
heavy users of Public Transport airport access

# Using Economic, Fast-turnaround, Environmentally-Efficient Aircraft

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- § Fokker F-50 : One Make, One Model, One Type
- § PropJet : Economy of Operation
- § Economy of Consumption
- § Minimisation of Environmental Effect
- § Fly Lower : 14,000ft vs 26,000ft
- § Take-off and Land Quicker
- § Taxi Less, Turnaround Faster

# Using Economic, Fast-turnaround, Environmentally-Efficient Aircraft

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- § 50-seater :
  - enables VLM to fly fuller
  - target 80% Load Factor
  - minimise fuel usage per pax
- § High-frequency Flying Programme :
  - minimises time on-the-ground, including :
    - generator support
    - airport congestion
- § Self-reliant aircraft operation :
  - does not use tractor push-back or tow,
  - mobile steps, coaches or support vehicles

## Access via convenient Departure & Arrivals Airports

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- § Convenient for Customer Access and Business Destinations
- § Served by Fast and Well-integrated Public Transport Links
- § Faster Ground Handling : Check-in, Security, Baggage.

## Selection of VLM-appropriate Airports

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- § Highly-efficient  
Passenger Handling Facilities and Systems
- § Encouragement of Usage of Public Transport :  
Promotion, Web, Partnerships
- § Discouragement of Private Car and Taxi Access
- § VLM is Belgium-based
- § Stringent EU Operational + Environmental Policies

# London City

120 Flights per day

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- § VLM is the No 1 Airline : 30% of Flights.
- § The Hub of our Operations
- § The only Airport within London
- § Community Intrusion  
minimised by Flying Programme + Local Support
- § Direct within-airport access  
to Docklands Light Railway >> London Transport
- § Far less environmental + social impact  
than other London airports
- § Concentrates on cost-benefit Business Travel

# Antwerp

5 per day to London, 2 per day to Manchester

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- § VLM's Home Base
- § Fast low-cost high-frequency Bus links to Antwerp and Benelux Rail System
- § Convenient alternative to Brussels for much of Belgium
- § Known as 'Belgium North'
- § Unintrusive Service and Support Base : provides key local hi-tech Employment

# Brussels

4 per day to London

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- § Major links with London
- § Direct within-airport access  
to Belgium + International High-Speed Rail
- § Alternative to high-cost high-subsidy  
high-energy-use Eurostar

# Rotterdam

7 per day to London, 2 per day to Manchester

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- § Convenient alternative to Major Airport Amsterdam for much of Netherlands
- § Direct access to Heart of key European business and industrial region
- § Fast low-cost high-frequency Bus links to Rotterdam and Benelux Rail System

# Amsterdam

9 per day to London

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- § Major European Hub,  
with onward links to the World
- § Major investment in Runways :  
plenty of Capacity for growth
- § Direct within-airport access  
to Netherlands + International High-Speed Rail

# Luxembourg

4 per day to London, 2 per day to Manchester

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- § Major European Geopolitical, Legislative + Financial Centre
- § Fast low-cost high-frequency Bus links to Luxembourg and Benelux Rail System

**Manchester**                      7 per day to London,  
2 to Antwerp + Rotterdam + Luxembourg

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- § Major international business, professional, Government and financial centre
- § Direct within-airport access to Manchester and UK InterCity Rail
- § Objective :  
to work with MAN +TOCs  
to partnership regional rail links

# Links with Longer-Haul International Air Routes

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- § Providing swift and integrated access to wider range of destinations
- § Making maximum use of existing airport facilities and runways : Amsterdam, Brussels
- § Reducing need for airport expansion in SE England
  - Linking London business community to international hubs at Amsterdam + Brussels
  - Linking to the world via Amsterdam and Brussels
  - Linking via Manchester from Antwerp + Rotterdam + Luxembourg

# Development of Business Facilities at Airports

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- § Making the most of existing Airports
- § Development of Accommodation, Meeting and Support Facilities
- § Maximising face-to-face rendezvous, without increasing surrounding-areas congestion
- § Maximising usage of existing facilities

# Provision of Competition to Monopoly InterCity + International Rail Operators

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- § Provision of Lower-Cost alternatives to increasingly higher-cost Rail Travel
- § Balance to heavyweight Subsidy model of UK rail business
- § WCML :
  - £10 billion for West Coast Upgrade
  - Ongoing Annual Subsidy throughout Franchise
- § Negligible payback to The Public

# Importance of Integrated Public Transport to Domestic & European Short-Haul Airlines

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- § 'Door to Door via an Airport near you'
- § The importance of avoiding personal-space car travel and taxi travel to and from airports
- § Personal expectations from VLM's European passengers
- § Does Delivery match Expectation ?
- § The social Challenges in the UK
- § The local investment Challenges
- § Appreciation of Social + Business Benefit

# The need to provide fully-integrated economic bus + rail links

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- § From and to where people live
- § From to where people work

# VLM Airlines :

## What is important to Business Travellers

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- § The importance of 'single ticket' facilities, covering all stages of public transport operation
- § The importance of integrated Timetables, minimising waiting and transfer timings.
- § The importance of easy 'individual with baggage' access from surface transport links to airport check-in and baggage handover

# VLM Airlines :

## What concerns Business Travellers

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- § Inefficiency in operation and appeal of current inter-airport public transport, linking public access transport to check-in and facilities
- § The 5-Minute Rule
- § Shortcomings in offering 'airport access' integrated surface transport within single cost of airline tickets.
- § The need to minimise time spent travelling, if we are to maximise usage of public transport access

# VLM Airlines :

## Marketing to Business Travellers

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- § The case for integrating and cross-marketing rail, air and bus transport :
  - § Time-Saving
  - § Community Intrusion
  - § Congestion
  - § Comfort
  - § Environmental
- § Advertising, PR, Sales Promotion
- § The savings that can be delivered by integrated public transport access



# VLM Airlines

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## The Operation of a Regional Domestic & European Short-Haul Airline

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# Support Thoughts and Materials : Environmental Aspects of Domestic & European Short-Haul Airlines Operation

The misconceptions :

- § Age of Data
- § Selection of Aircraft used in Research
- § Definition of 'Domestic Airlines' : USA vs UK
- § Radiative Forcing : Myth of Magnifier Effect
- § Defra Confirmation of need to review/update data
- § Defra acceptance that PropJets are significantly more enviro-acceptable than Jets
- § Emissions Comparisons per passenger : Propjets vs InterCity rail

# Support Thoughts and Materials : Environmental Aspects of Domestic & European Short-Haul Airlines Operation

- § PropJets vs Jets : Underlining PropJets as the short-haul option for the 21st Century :
  - § Environmental Emissions
  - § Economy per pax
  - § Noise Footprint :
    - On the Ground
    - In the Air
    - On Approach and Landing
- § Jet and PropJet Powerplant Developments : Performance Improvements over recent years

# Support Thoughts and Materials : Environmental Aspects of Domestic & European Short-Haul Airlines Operation

The carbon footprint of Rail :

- § Infrastructure Construction :  
Lines, Signalling, Tunnels, Stations,  
Support Facilities
- § Train Operation :  
Fuel, Maintenance, Multi-Start Journeys
- § Infrastructure Operation :  
Stations, Support Services, Maintenance
- § Infrastructure Operation :  
Track, Signalling  
Tunnels (Maintenance + Ventilation)

# Support Thoughts and Materials : Environmental Aspects of Domestic & European Short-Haul Airlines Operation

- § The environmental case for maintaining Domestic & Short-Haul European Air routes alongside Rail
- § Reliable, trustworthy Data
- § Confirmed by DEFRA
- § Reflecting actual profile of passenger aviation in UK and Europe
- § Not based on old data from obsolete aircraft
- § A fair fact-based comparison
- § A Partnership to maximise benefit, minimise effect

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# VLM Airlines

## VLM Airlines flies greener

3<sup>rd</sup> October 2007

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# Greenhouse Gas facts & figures

- § Only 3% of all CO<sub>2</sub> production is man-made, 97% is generated by nature itself
- § Aviation represents 2%\* of this 3% or 0.06% of all CO<sub>2</sub> production
- § Forest fires represent 50% of all CO<sub>2</sub> production
- § Man-made deforestation of 34 million acres of forest/year represents 25% of CO<sub>2</sub> production
- § China is now the biggest CO<sub>2</sub> producer with about 20% of global CO<sub>2</sub> production, the USA being a close second

\* Source: IPCC or Intergovernmental Panel on Climate Change

# Greenhouse Gas facts & figures

- § The production of cement creates 4% of CO<sub>2</sub> production, far more than aviation
- § Power generation, which produces the electricity to power trains, produces 35% of CO<sub>2</sub> (this excludes diesel trains)
- § Industry is responsible for 23%, road traffic is responsible for 18%, shipping for 6% or aviation times 3\*

\* A recent study by the International Maritime Organisation, part of the UN, states that Shipping emits twice the amount of CO<sub>2</sub> of aviation.

# Greenhouse Gas facts & figures

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- § Methane is 21 times more powerful than CO<sub>2</sub> as a greenhouse gas
- § Animal agriculture is the number 1 source
- § Methane production has more than doubled since pre-industrial times, CO<sub>2</sub> only 31%
- § The worldwide annual production of methane by animal agriculture alone is 100 million tons. This equates to 2.1 bn tons of CO<sub>2</sub> or 3 times more than aviation.

# Greenhouse Gas facts & figures

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- § Methane induced warming, stimulates microbial decay of organic matter in wetlands (swamps, ricefields), which in turn is the primary natural source of methane

# Greenhouse Gas facts & figures

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- § The Belgian Royal Meteorological Institute in a recent study (July 2007) declared that water vapour is the most important greenhouse gas, far more important than CO<sub>2</sub>

# Greenhouse Gas facts & figures

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- § So there is a lot of pollution going on
- § A lot of pollution and emissions are not even mentioned in the whole debate or are not yet fully understood
- § The role of CO<sub>2</sub> is overstated by the environmentalists, for fear that people and industry may stop looking for ways to reduce their carbon footprint. Aviation is seen as an easy, high-profile target.
- § Nevertheless, something has to be done about CO<sub>2</sub>
- § There is a clear lack of objective data

# The role of individuals

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We as individuals each have an important role to play:

- § Taking the bicycle instead of the car
- § Buy more fuel efficient, smaller cars
- § Our choice of materials (less wood)
- § Insulation of our homes
- § Efficient heating of our homes
- § Our choice of food (less meat)

# Emissions & The Environment

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- § Key emissions from air travel are claimed to be CO<sub>2</sub> and NO<sub>x</sub>.
- § Rail in the UK claims short-haul air is 4 times more polluting, Lobby Groups claim extra '2.7x' Radiative Forcing
- § Result: Media claim short-haul air 10x more
- § This is simply inaccurate
- § Turboprop or 'Propjet' short-haul less than 2x more polluting, and often less than 50% higher
- § VLM's type of short-haul aviation is being wrongly criticised, and discouraged.

# Emissions: The Fiction

- § Basis for emissions estimates is the CRG Table created by AEA, and confirmed by DEFRA (The UK Department for Environment, Food and Rural Affairs):  
<http://reports.eea.europa.eu/EMEP/CORINAIR4/en/page002.htm>
- § Aircraft featured include:  
BAC-111, B707, Caravelle, Tupolev 154 and Concorde
- § 'Domestic Aviation' is defined by this as:  
Airbus 320, B727, B737-400, DC-9, MD-80.
- § No Turboprops in 'Domestic': only old-tech jets
- § DEFRA admit turboprops were 'not considered in formulating these figures'

# Emissions: The Facts

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§ DEFRA confirm in writing:

§ Propjet (e.g. Dash 8 Q400) = 135g CO<sub>2</sub> per pax km based on 65% load factor

§ Rail (eg Virgin) = 60.2gCO<sub>2</sub> per pax km, but no loadfactor has been specified

§ In this case, rail is 56% less polluting than air

# Emissions: The Interpretation

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- § DEFRA accept that domestic air travel provides far less than 4x rail emissions
- § DEFRA accept that there may be cases where domestic aviation is no more polluting than rail
- § 'Radiative Forcing' does not apply to short-haul and turboprop aviation, as it depends on contrails
- § Criticism of domestic and short-haul aviation on environmental grounds is unfounded

# Aviation facts & figures

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- § Aviation causes 2% of the manmade CO<sub>2</sub> emissions yet it supports 8% of the world economy
- § Today's aircraft consume about 3.5 ltr/100km over long distances, similar to small car, but 6 times the speed
- § Aviation pays for its own infrastructure, pays taxes and is not subsidised
- § If we cleared the skies of aircraft tomorrow, it would only reduce man-made CO<sub>2</sub> emissions by 2%, whereas if we cut vehicle use by only 25%, CO<sub>2</sub> emissions would reduce by 4.5%

Source: IATA

# Aviation facts & figures

- § Air Transport pays entirely for its infrastructure, over 30 bn € per year
- § Every air journey contributes 4.6 to 8.4 €
- § Every rail journey is subsidised 2.4 to 7.4 € and costs the UK taxpayer 2.1 billion € annually (according to DfT, subsidies actually averaged 4.5 billion £ or 6.7 billion € in recent years)
- § High speed rail track costs 69 Million € per km
- § Per passenger-kilometre, air transport uses less than 1% of the land required for the entire transport network in the EU

Source: IATA

# Trains are heavily subsidised

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- § With the subsidies of UK Rail for 1 year, VLM airlines could buy 500 brand new Bombardier Q400 turboprop aircraft, every year
- § =300.000 passengers per day, or 90 million passengers per year with cheaper fares than on the train
- § AND we pay for all the infrastructure ourselves
- § AND we pay taxes to the Government

# Regional Transport: Rail

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- § Virgin has received massive no-interest 'subsidy' for reconstruction of WCML: up to £10 billion
- § Virgin receives ongoing subsidies, renegotiated in 2006
- § Virgin has not delivered planned payback
- § Virgin claims low pollution levels, yet does not quantify infrastructure construction or power generation pollution
- § Virgin is nowhere as green as is claimed

# Regional Transport: Rail

- § Virgin WCML is becoming monopoly supplier, Rail is using 'environment' to eliminate competition
- § Road alternatives are increasingly infeasible
- § Virgin WCML has higher pricing than air:  
Peak Return : First = £315, Standard = £213  
Bargain Fares not relevant to business travellers
- § Virgin WCML told Transport Select Committee:  
"We will maintain high fares policy"
- § A rail monopoly is not in the NorthWest region's interests, region needs choice, and needs value

# Trains and noise

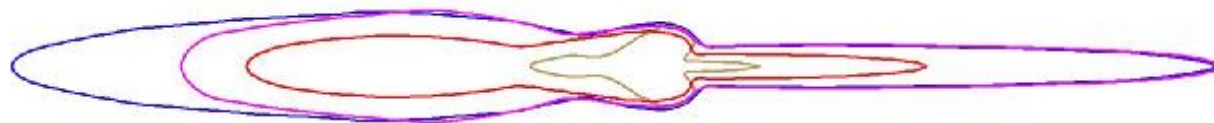
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- § An aircraft has a small noise “footprint”
- § A high speed train creates a disturbance all the way from its origin to its destination
- § Population disturbed: 7% of people in Europe live around airports, 14% around rail tracks, 79% along roads

# The F50 is ultra-quiet

Verhoudingen footprints binnen INM ( contour van 1 landing en 1 vertrek op fictieve baan)

-  A319
-  EMB170
-  Dash8-300 / FK50
-  AVRO / Regional Jet ( RJ)



# Trains and pollution

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- § We are told trains run on 'clean' electricity
- § In the UK only about 25% of electricity is generated by zero emissions nuclear power\*
- § In the UK only 4.2% of electricity is generated by renewable energy sources (2005 figures)
- § So over 70% is generated by power plants running on fossil fuels like oil and (even more polluting) coal
- § These types of power plants represent 35% of all CO2 production worldwide, or 13 times more than aviation

\* Source: The Royal Society

# Trains and pollution

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- § In the UK, only 40% of railtracks are electrified
- § This is the lowest of any European country
- § On 60% of tracks, Diesel trains have to be used
- § Even on certain electrified tracks, Diesel trains have to be used because certain sections are not electrified
- § Diesel trains are very heavy polluters to the point where it would be better to put people in 4x4's and let them drive because the CO2 production would still be less than such trains

Source: Rail Industry Study by Roger Kemp, Professor of Engineering at Lancaster University

# Trains and pollution

- § The most modern diesel train, the Virgin Voyager, emits 112 gram CO<sub>2</sub> per passenger per km, considering an average load factor of 33%
- § This is almost double the number stated by DEFRA (60.2 gram CO<sub>2</sub> per passenger per km national average of diesel & electric trains)
- § A Fokker 50 at a 60% load factor emits 152.6 gram CO<sub>2</sub> per passenger per km, therefore the Virgin Voyager emits only 27% less than a Fokker 50

Source: Rail Industry Study by Roger Kemp, Professor of Engineering at Lancaster University

# Trains and pollution

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- § Some trains on rural lines, such as the Diesel Sprinter are less efficient than 4x4's because they are often almost empty
- § Large 4x4's like a Range Rover or a Porsche Cayenne on average emit 300 to 400 gram CO2 per km
- § “If ten or fewer people travel on a Sprinter, it would be less environmentally damaging to give them each a Landrover Freelander and tell them to drive”

Source: Rail Industry Study by Roger Kemp, Professor of Engineering at Lancaster University

# Aviation & taxes

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- § In the UK, APD was created as an environmental tax
- § APD was doubled in February 2007
- § The increase in APD generates 1.5 bn€
- § The total APD generates 3 bn €
- § Regretfully, this money will not be spent on the environment

# Thermodynamics

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- § Jet engines perform best at high altitude
- § They perform better when they stay at this altitude as long as possible
- § Any aircraft engine pollutes most in take-off where the most thrust is generated
- § The descent phase is also not as efficient as cruise altitude
- § Before the time they have reached cruising altitude they already have to start their descent

# Jets on short haul

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- § Jets are far more polluting on short distances than turboprops
- § Wide body jets like the 767 or long haul jets like the 757 are even worse on short distances
- § Jets are not designed for flights under 1.5 hours. They perform best on longer flights where they can stay for a prolonged time at their optimal thermodynamic cruising altitude

# The greenest short haul aircraft

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- § Turboprops have always been more efficient on short flights of up to 500 km
- § Because they fly lower, at lower speed
- § They reach their optimal cruising altitude much faster and therefore fly in the most efficient way for a substantial part of the flight

# Propjets: The Green Alternative

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- § Turboprops were pushed to the background by the advent of the 50 seater jets in the early 1990'
- § The turboprop technology has improved over the years
- § In the last two years, under pressure from high oil prices and growing environmental pressures, Turboprops are witnessing a revival

# The Unducted Fan

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- § There was substantial research into the Un Ducted Fan or UDF in the 1980's
- § It is in fact just an improved version of the turboprop with a higher speed propeller
- § This idea was resurfaced again by Easyjet as a marketing gimmick but this idea is in fact almost 30 years old

# The UDF revisited 30 years on



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# The greenest short haul aircraft

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- § The VLM Airlines Fokker 50, much like the Bombardier Dash 8 or the ATR is an ideal aircraft for short haul flights
- § It produces up to 6 times less emissions per LTO cycle compared to other short haul aircraft
- § Compared to an F50, an Airbus 320 or Boeing 737 produce between 38 and 67% more CO2 per LTO cycle

# The greenest short haul aircraft

	N° of passengers	CO <sub>2</sub> emissions(*) per LTO(**) cycle (ton)
<i>Fokker 50</i>	50	0.4
Embraer ERJ 145	50	0.8
AVRO RJ 70/85/100 / BAe 146	92	1.4
Airbus A319	124	1.9
Airbus A320	150	2.0
Airbus A321	186	2.4
Boeing 737-700	126	2.0
Boeing 737-800	162	2.1

(\*) Milieu Monitor report, Taakgroep Verkeer & Vervoer, 13 Feb. '04 and Pratt & Whitney Canada Inc. Turbine engine emissions data

(\*\*) Landing-Take off Cycle, as used by ICAO and by EPA in the United States

# The greenest short haul aircraft

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- § Flybe claims 11.5 kg CO<sub>2</sub>/seat/LTO cycle on its eco label Q400, The F50 performs 44% better with 8kg CO<sub>2</sub>/seat/LTO cycle
- § The Fuel consumption of an F50 is 3.24 litre/100km/pax or far less than a small economy car when the aircraft is full
- § This is 5.4 litre/100km/pax at 60% LF, still as good as a small economy car but 5 times as fast

# The greenest shorthaul aircraft

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- § According to data from Fokker and Pratt & Whitney, the F50 emits 91,6 gram CO<sub>2</sub>/seat/km, less than the smallest economy car (e.g. A Smart For Two)
- § At 80% load factor this is 114,6 gram CO<sub>2</sub>/pax/km
- § At 60% load factor this is 152.66 gram CO<sub>2</sub>/pax/km, less than a VW Golf with the smallest petrol engine

# A lack of objective data

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- § There is a clear lack of objective and scientific data
- § Incorrect data are used by environmentalists and by the trains
- § Eurostar and Virgin Rail handsomely talk about 'aircraft' in general and do not make the distinction between jets and the more efficient turboprops

# A lack of objective data

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- § There is a mass hysteria out there about CO2 while CO2 is not even the biggest problem
- § In the aviation-bashing debate, the turboprop voice has not been heard
- § This has to change

# Political & stakeholder support

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- § VLM Airlines calls for political support to ensure short haul flights are differentiated in favour of Turboprops
- § Other stakeholders, such as airports, aviation organisations and authorities have an important role to play

# Media support

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- § The media have an important role to play to bring a balanced view about pollution in general and aviation in particular
- § There is a clear lack of verifiable scientific data, there is a lot of unfounded nonsense circulating
- § A 'witch hunt' against aviation has to be avoided

# Other actions VLM is taking

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- § VLM Airlines is 97% E-ticketing, no more paper tickets
- § We have a paper recycling program in place
- § E-mails carry a message to make less paper prints
- § VLM Airlines has a comprehensive waste management program in place
- § VLM has its own Environmental coordinator who follows up on all national environmental law developments
- § VLM is considering putting solar power panels on the roof of its planned hangar complex

Thank You

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