



Modern Transport and Environment

**ATR:
The Optimum
Choice
for a Friendly
Environment**

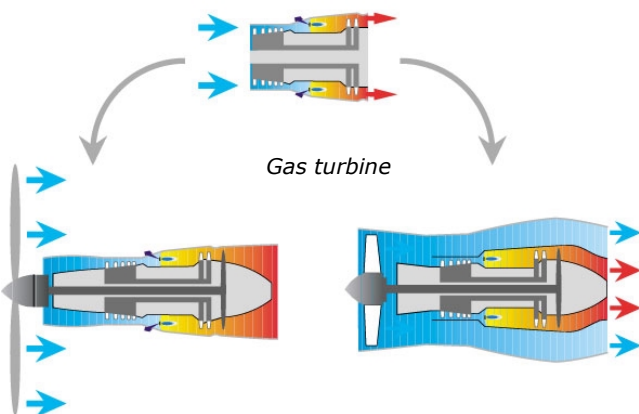
The regional aircraft: good neighbours

ATR: The optimum choice for a friendly environment

Regional aircraft are good neighbours for the environment. Modern regional turboprop and namely ATR aircraft meet both external noise and gaseous emission level regulatory requirements with ample margins.

- ▶ Regional aircraft operate at relatively low altitude, leaving the ozone layer unaffected and barely contributing to pollution of the upper atmosphere.
- ▶ Turboprops are highly efficient and tend to operate at lower speeds. In recognition of their low pollutant emission levels, turboprop aircraft remain unregulated and are not covered by ICAO Annex 16. They also have low OPR (Overall Pressure Ratio), 10-20:1 as against 20-40:1 for the large turbofans, and hence produce much more lower NOx levels.
- ▶ **ATR's short field capability, their optimum integration in air traffic flow, and their cumulative noise level margins to new potential regulations or airport restrictions, make them welcome visitors at the smaller city airports and regional hubs with minimal environmental impact.**
- ▶ Both turboprop and turbofan aircraft use exactly the same jet technology maximizing efficiency and reliability.

Turboprop/Jet: The same concept

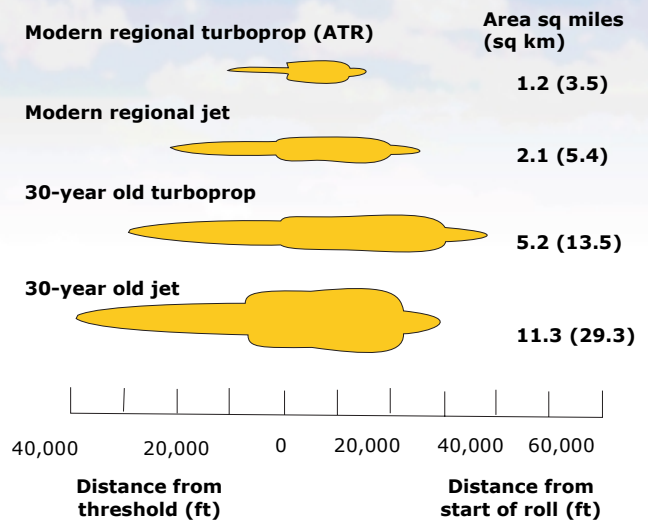


Movement comes from the large quantity of air forced backwards at low speed by the propellers

Movement mainly comes from the air forced backwards at high speed

The turboprop is more fuel efficient for a given thrust.

Comparative noise footprints - 90 EPNdB The benefits of the new technology



Thanks to the high technology 6-blade propeller system and efficient aerodynamics, the ATR -500 series is one of the quietest in the industry.



ATR: The optimum choice for a friendly environment.

ATR turboprop aircraft, recognized as the most fuel efficient aircraft in their category, maintain distinctive advantages with respect to other modes of transport such as road and rail, also in terms of pollutant emissions

Turboprop aircraft and ATR in particular can justify their view that they are already respecters of the environment and good neighbours for airlines and airport communities.

ATR stands out as a modern, comfortable and cost saving regional turboprop with the particular ecological advantage of safeguarding the environment.

ATR for a quieter environment

ATR -500 Series Noise Levels - Certified Figures

Point of measurement	ICAO and FAR 36	ATR 42-500 Certified levels	ATR 72-500 Certified levels
	EPNdB	EPNdB	EPNdB
	Chapter III limits	MTOW 18,600 kg	MTOW 22,000 kg
Take-off	89	76.6	79
Sideline	94	80.7	83.2
Approach	98	92.4	92.2
Global	281	249.7	254.4
Chapter IV limits (future)	271	-21.3	-16.6

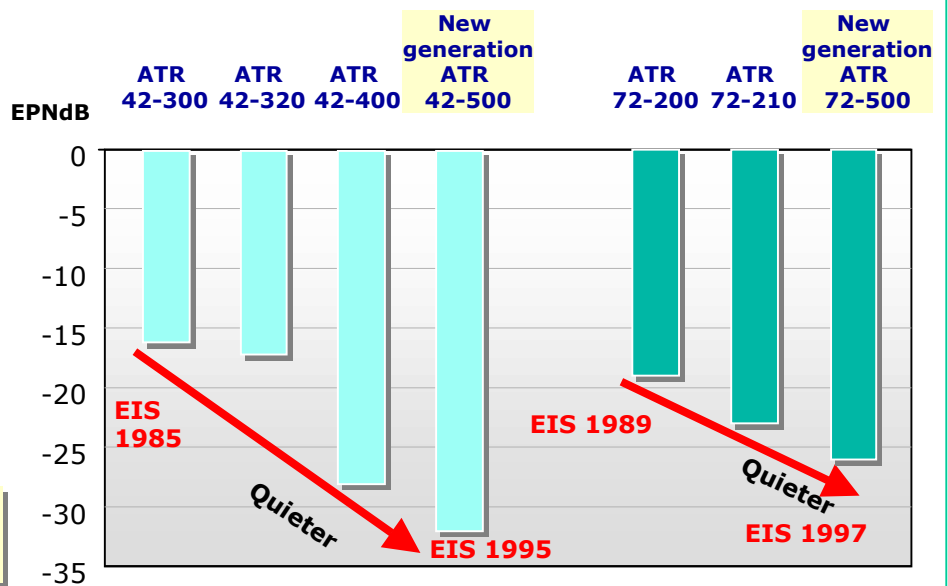
Source: ATR

ATR family, more and more environment friendly

Cumulative noise margin (EPNdB)

With 26.6 EPNdB (ATR 72-500) and 31.3 EPNdB (ATR 42-500) cumulative margin to Chapter III, and comfortable margins to future Chapter IV noise regulation, the ATR-500 series has the greatest latitude for even more stringent regulations on airport restrictions.

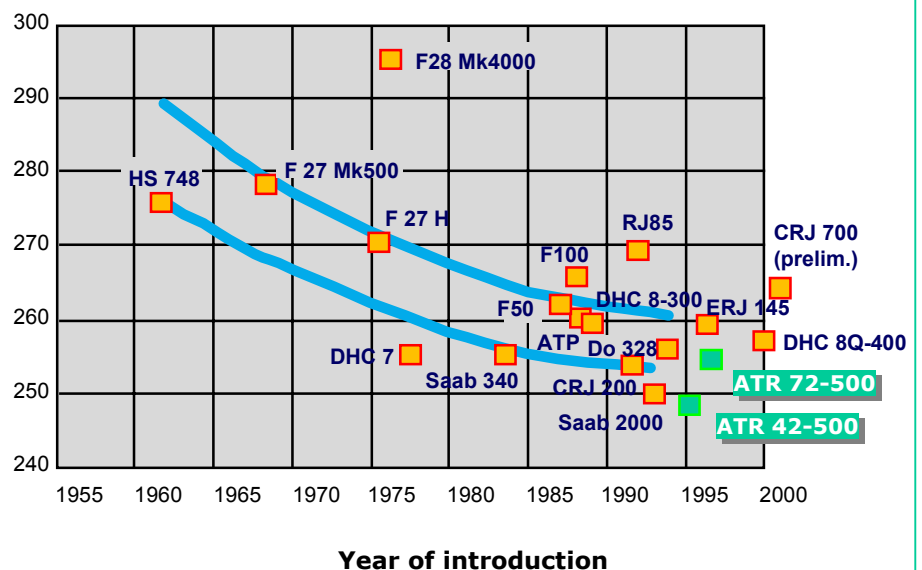
All ATR models will comply with even the most stringent stage IV noise recommendations.



EIS: Entry into Service

Source: ATR

Total perceived noise on flyover, sideline and approach (EPNdB)



ATR -500 series: the quietest neighbours in the sky!

Source: ERA (European Regional Airline Association)

ATR: the green turboprop of tomorrow

The ATR fuel efficiency: adapted powerplant

The proven level of low fuel consumption is a primary concern for airlines eager to lower cash operating cost and wishing to be environment friendly.

ATR aircraft are recognized as the most fuel efficient aircraft in their category, thanks also to high-tech engines and propeller efficiency. *Just for reference, an ATR 42 uses only as much fuel on a typical 200 Nm trip as a B747 uses in 10 minutes of taxiing!*

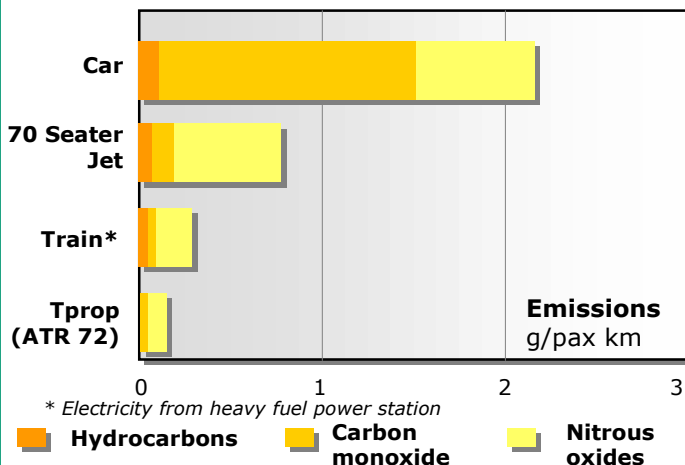
It appears evident that low levels of engine emissions are essentially driven by low fuel consumption.

On a 200 Nm sector, the ATR72-500 fuel consumption per passenger is up to 11% lower than a typical European car; the associated ATR gaseous emissions per pax in terms of CO (Carbon Monoxide) are 15 times less than a car and comparable to the train.

As far as the nitrous oxides are concerned, the ATR is 3 times less pollutant than a car and 40% less than a train. Moreover emissions of NOx (Nitrogen oxides) by new generation turboprops are at low altitude, well below the levels at which ozone depletion is a major concern.

Gaseous Emission Spectrum

200 NM (370 km) typical sector - 65% load factor

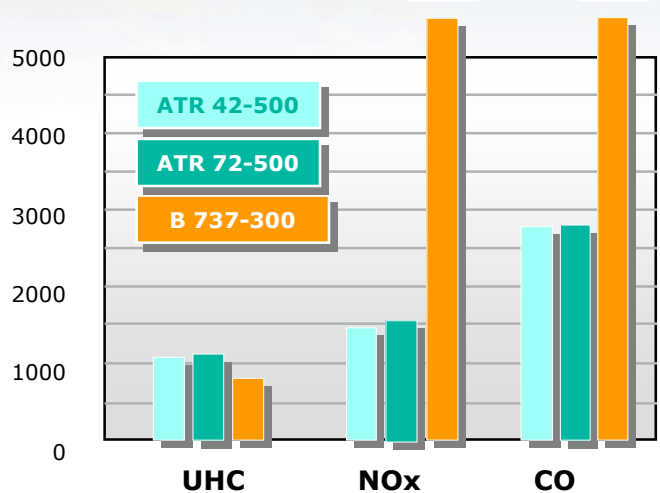


Turboprops: unmatched airfield performance 3,829 airports in the OAG data

Turboprops can access to 744 airports with a runway length between 1,000 and 1,500m
 98 in the US - 93 in Latin America - 76 in Canada -
 70 in Europe - 110 in Africa and Middle East -
 116 in Asia - 181 in Australasia
 Regional jets typically need runways of 1,600m.

Landing, take-off cycle Regional turboprops vs large jets

Gaseous Emissions (g/LTO cycle)



LTO cycle = ICAO reference

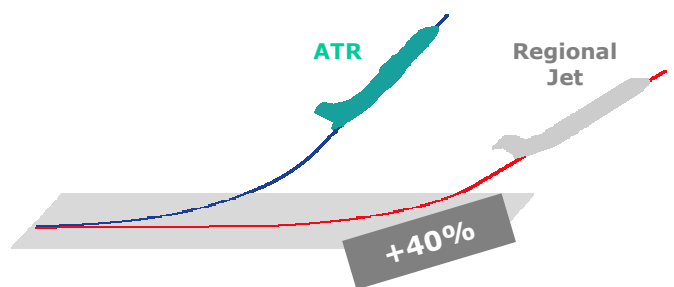
Sources : Pratt & Whitney Canada - ICAO

ATR: shortfield capability

- ▶ ATR is easily manoeuvrable and features short take-off and landing capability to meet operational requirements for unrestricted passenger loading.
- ▶ On a given standard mission, a 50-seater jet requires about 40% more take-off field length than the ATR on a typical mission with a full passenger payload.

Short Field Capability

50-Seater jet vs ATR take-off field length



- ▶ Thanks to their excellent landing and take-off performance, ATR aircraft are able to use the shorter runways set aside for commuter operations at many airport hubs.
- ▶ They contribute in this way to reduce air traffic congestion, decrease Airline fuel consumption and to reduce environmental impact.

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