

AVIATION CO₂ REDUCTIONS



STOCKTAKING SEMINAR
TECHNOLOGY · OPERATIONS · SUSTAINABLE AVIATION FUELS



Ground Operations

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GMR - DELHI INTERNATIONAL AIRPORT LIMITED (DIAL)

NUMBERS 2019-20



67 Million
Passengers



464 Thousand
ATMs



56 International
Airlines



10 Domestic
Airlines



76 International
Destinations



73 Domestic
Destinations

- **First Carbon Neutral Airport in the Asia Pacific** Region under ACI Airport Carbon Accreditation Program
- Certified Green Building Infrastructures & **Targeted Capacity of Operation 110MPPA**
- **Renewable Energy** Usage & 7.84 Captive Soar PV Installation at Airport



CLIMATE CHANGE OBJECTIVES

- **Reduce GHG emissions from Airport functions**
- **Maximize environmental performance by use of Green Infrastructures, Renewable Energy Sources & Energy Efficiency & Conservation programs**
- **Implement Mitigation and Adaptation strategies**

Mitigation Measures

Environment & Energy Management	ISO 14001, ISO 50001
Airport Carbon Accreditation	Level3+ (since 2016)
Renewable Energy Program	7.84 MW, Open Access
Operational Efficiency Measures	A-CDM, Albatros
Lower Emission Systems & Processes	TAXIBOT, BME, FHS, EV
Water Management	16.6 MLD ZLD STP, RWHS

Adaptation Measures

Green Infrastructure Program	LEED, IGBC, LEED ARC, PEER
Water Security Planning	WATSCAN
Water Management	16.6 MLD ZLD STP, RWHS
Capacity Building	LEEDOAI, Training
Community engagement	Water Security Planning



TAXIBOT JOURNEY AT IGIA

TaxiBot is a semi-autonomous vehicle that enables airplane taxiing without engines running, controlled by the pilot and without shortening NLG life time.

**AIRLINES
ON BOARD**



CO₂ reductions per flight

85%

On an average it reduces 200-240 L ATF/taxiing/aircraft



Level of finance required

Based on Business Model



Timeframe

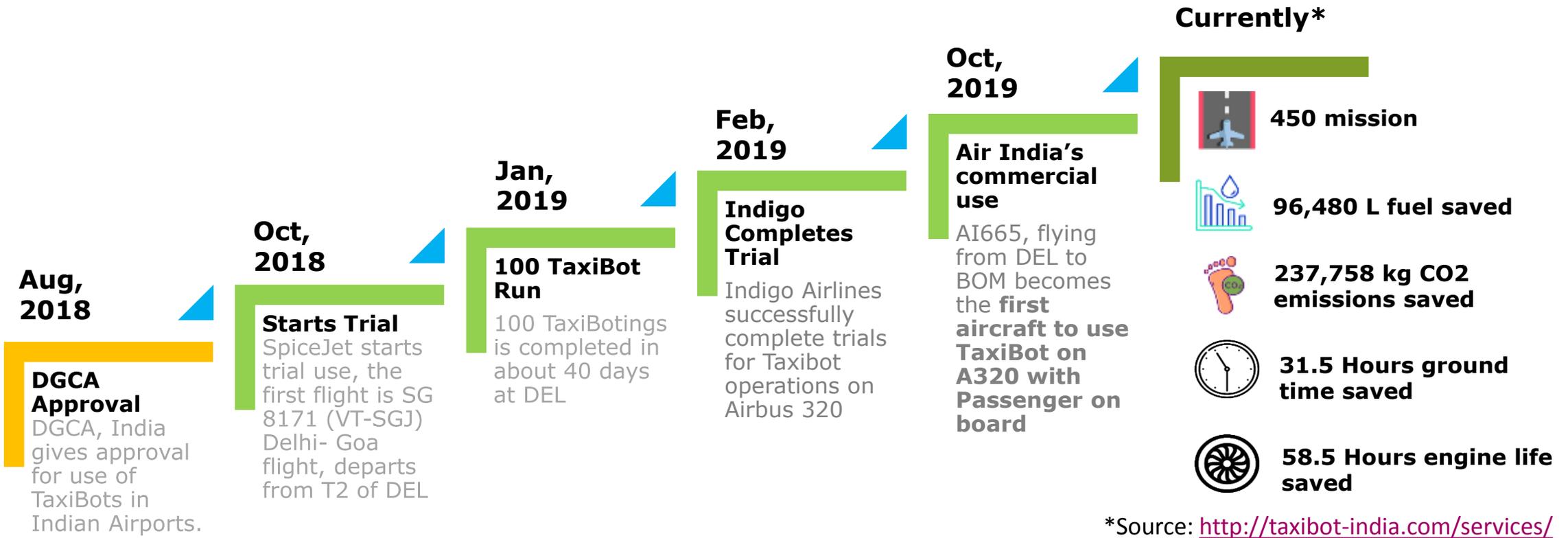
2 Months (for Testing and Operation)



Main challenges

Stakeholders alignment to adapting to changed procedures

TAXIBOT JOURNEY AT IGIA



Benefits

Environment Friendly

Significant reduction of greenhouse gases and noise

FOD Prevention

Reduced opportunity for Foreign Object Damage (FOD)

Savings All Around

Dramatic reduction in fuel usage during taxi phase.

Efficient Throughput

Increased operational efficiency



TAXIBOT MILESTONES AT DELHI AIRPORT

First time in the world AIRBUS Aircraft of a Passenger Airline Performed TaxiBotting Operations.



First time in the world BOEING Aircraft of a Passenger Airline Performed TaxiBotting Operations with B737 – NG Family of Aircrafts



CLIMATE CHANGE MITIGATION & ADOPTION FOCUS

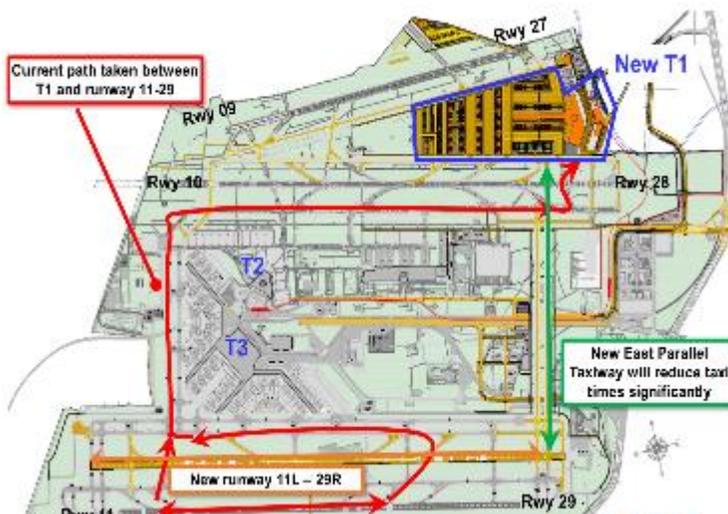
DIAL is planning to upgrade its Airport Carbon Accreditation to "Level 4+"

- Commitment to **long term absolute GHG reduction**
- **Emission trajectory till 2030**
- Airport wise carbon management targets
- Stakeholder Partnership Programs
- **Enhanced use of RE & Offset Programs**

LEED Certified Terminal 1



DIAL is also constructing Eastern Cross Taxi Way as part of Phase 3A expansion



Environmental Benefit-

- ❑ **The ECT will reduce taxi time by 20 minutes (On an average) for any aircraft movement from RW 29 to Terminal 1.**
- ❑ **Fuel saving per taxi- 175 kg**
- ❑ **Emission saving per day, (assuming 20% flight uses the ECT out of 1350 ATM)- 150 tCO2**
- ❑ **Per year saving- 55,000 tCO2**
- ❑ **Equivalent to 55 Lakhs Trees**

Use of BME in Terminal 1



THANK YOU

