Saving Aircraft Maintenance Costs on the Ramp

13. IATA MCC, Panama City

Jan Váňa, WheelTug plc
Aircraft Ramp Movement – No Tugs, No Jets
WheelTug®

Electronics

Motor & Drive

Control Panel
Development Challenges

• We started doing things the hard way... back in 2005

• Many aircraft interfaces, lots of logic

• As the system developed, we made it simpler and simpler

• Simplicity isn’t obvious, but it is powerful
Lessons Learned

• New aircraft are expensive
  - System must be a retrofit

• Permanent changes are hard
  - Must be removable

• Schedule disruptions are bad
  - Install in two overnights
  - MMEL exempt – no AOG issues

• Capital is scarce
  - System must be power-by-the-cycle
The Result

• WheelTug is easy to:
  Use – Install – Remove – Lease

• Optional TaxiCam provides excellent situational awareness for pilots

• Nose wheel design saves time
Biggest Pushback Cost: Wasted Time

Current Pushback Time Distribution
Ready for pushback to Taxi-Forward

- Average: 8 Minutes
- 98% Complete: 20 Minutes

WheelTug: one minute

Processes:
- Taxi Clearance
- Engine Start Procedures
- Ground Crew Clearance
- Pin Removal
- Communications Link Disconnection
- Pushback
- Pushback Clearance
- Collision Safety Margins
- Jet Blast Safety Margins
- Communications Hardware
- Towbar
- Pushback Tractor
- Tower Control
- Ramp Supervis.
- Wingwalkers
- Tug Driver
- Pilot

Ground, Equipment, Safety Factors:
- Personnel
Conventional Pushback

Lower maintenance and pushback tow costs and hassles.

WheelTug™ with TaxiCam™
No More of These

$170,000 ($100/flight – 1700 flights)
Savings Likelihood: High Certainty
Fuel Savings

- 8 minutes of taxi per flight
- 20 lbs/minute net fuel
- 160 lbs total savings
- 24 gallons
- $34/flight @ $1.42/gallon
- $57,800/year
The Value of Time

Operating Costs

$30/min
http://airlines.org/data/per-minute-cost-of-delays-to-u-s-airlines/
With adjusted fuel utilization costs

Utilization

$14/min
$3.6 million lease / 360 days / 12 block hours / 60 minutes

Passenger Time

$117/min
Assumes mixed high-speed travelers
Engine Wear

- Reduce engine vortices and FOD ingestion.
- Lower engine maintenance costs
- Improved in-flight engine efficiency, especially in sandy / dusty conditions
Break and Wheel Axle Wear

- Smooth taxi in stop-and-go queues for taxiing and de-icing
- Lower maintenance costs for carbon brakes
- Reduce wear on the NLG wheel axle
Entry Into Service

- 976 aircraft in backlog
- Lease agreements with agreed metrics
- MRO network under discussion
- Public demo after certification tests in 2018
- EIS in early 2019 for B737NG

22 airlines already signed up!
Making Tug-free and Jet-free Aircraft Movement a Reality