

## **ATS** Aircraft Towing Systems

# We still move aircraft the same way as 100 years ago!





### Under their own power!!



# What if we could move aircraft differently?



- Safer
- Smarter
- Faster
- Cheaper
- Save Fuel
- Decrease Emissions
- Reduce Noise
- Increase Airport Capacity



# What is Aircraft Towing System?







### Channel



**Fully Automated Software** 





Pullcar



Innovation that could change <u>every</u> airport in the world!

## **ATS Video**

### **Benefits**

#### Safer Aircraft Movements

- Declutters Gate Areas
- Reduces Collisions
- Environmental Reduces Harmful Emissions
- Saves Fuel
- Decreases Noise Around Airports
- Operates in All Weather
   Conditions Ice, Snow, Fog
- Improves Airport Throughput
- Extends Engine & Component Life
- Less Stress on Airframes



#### Safer Airports – Reduces Collisions

- One Collision Everyday in the World!
- Negative impact to daily operations of airport, airlines & passengers
- Collisions cause huge financial losses:

### \$50B Annually!



### **ATS simplifies airport ground operations**



Current operations require <u>3-4</u> <u>people</u> & <u>tug</u> for every aircraft

## Significant Fuel & Emissions Savings!!

Aircraft engines are **powered off** after entering ATS system Aircraft engines are **not required** until run-up time before take-off Aircraft engines **burn approx. 35 liters** (9 gallons) of fuel per minute







### Example: Frankfort Airport

Average Taxi Time: 16 minutes (US 16-27 minutes) Average Fuel burned during taxi: 9 gals or 35 liters per minute Movements per year: 500,000 500,000 movements x 16 min x 9 gal (fuel) = 74M gallons or 280M liters Cost: 74M gallons x \$4.50 = **\$333M USD** 500,000 movements x \$8.85 (electrical cost per movement) = **\$4.4M Net Fuel Savings: \$328.6M** 

Emissions: carbon-dioxide (CO2) & nitrous oxides (NOx) CO2 emissions generate 20 lbs. per gallon of fuel burned NOx produce at rate .5% of CO2 rates
74M gallons x 20 lbs = 148M lbs (67M kg) of CO2 saved
148M lbs x 20% = 29M lbs (13M kg) of NOx saved



### Three Configurations In Three Sizes

- Three Configurations
  - Pushback Only Gate Operations
  - Point-to-Point Ferry System
  - Full Airport Configuration
- Three Sizes
  - Small Regional Jet & Business Jets
  - Medium Single Aisle (737/A320) to Regional Jets
  - Large Wide Body (747/A380) to Regional Jets







### Competition

#### Taxibot

- Israel Aerospace Industries
   49% Government Owned
- Requires Driver
- Causes Additional Taxiway Traffic
- Batteries Only Last 8 hours
- Slows Down Operations



#### WheelTug

- Requires FAA Aircraft Recertification
- Requires Aircraft Mod
- Requires Pilot Training
- Adds Weight to Aircraft tradeoff either range or payload

AIRCRAFT TOWING SYSTEMS

Traction Issues in Bad Weather
 – nose wheel only carries 15%
 or less of total aircraft weight



### **Patents**



### Patents in most major countries!

- ► USA
- China
- Russia
- Australia
- Japan
- Brazil
- India
- Plus European Union



#### The Director of the United States Patent and Trademark Office

Hay received an application for a patent for a new and useful insention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

#### Therefore, this

#### United States Patent

Grants to the personally having title to this patent the right to exclude others from making, using, offering for sale, or selling the investion throughout the United States of America or importing the investion into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(ait2) or (c)(1), subject to the payment of maintenance fees as provided by 33 U.S.C. 41(b). See the Maintenance Fee Notice on the Inside of the cover.

Michaelle K. Lea

Other star of the Daniel Mason Pair as and Proprietors (\$22.1)

### **Prototype – Ardmore Industrial Airpark**





#### Testing begins in less that 30 days!

### **Summary**

- > *ATS* will change the way we move aircraft!
  - Improves safety
  - Decreases emissions
  - Reduces noise
  - Optimizes ground traffic & Increases capacity
  - Lowers cost
  - ROI in less than two years
  - Several major airports very interested in ATS!
- Schedule next meeting with FAA

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### **ATS: Safer Tomorrows & Healthier Environments**

www.aircrafttowingsystems.com

