Electric Trucking and Automation

Northwestern University Transportation Center – Business Advisory Council

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Ruan Transportation
VP of Fleet Services
James Cade
Ruan Introduction

+ Founded in 1932 by John Ruan in Des Moines, IA
+ National footprint with 270+ Operating Centers
+ Primary industries: Retail, Grocery, Industrial Gases, Dairy, Manufacturing, Food Processing, Chemicals & Metals
+ 3,700+ Class 8 tractors / 8,000+ trailers / 5,100 employees
+ #40 2017 Industry ranking by Transport Topics “Top 100”
+ Sustainability
  • 3x Excellence Award recipient – EPA Smartway Partner
  • Member of DOE National Clean Fleets Partnership
  • Heavy Duty Trucking “Top 50 Green Fleets” award winner
  • Named annually to Food Logistics’ “Top Green Provider” list
  • Named annually to Inbound Logistics’ “Green Supply Chain Partner” list
  • Designated Carbon Disclosure Project (CDP) “Manager Level” in 2017
  • Member of CA SB1383 Subgroup #2 (Fostering Markets for Digester Projects)
Alternative Energy Interest
+ Ruan’s asset business model is based on dedicated contract transportation
+ Multi-year contracts – very predictable energy consumption
  • Very predictable routes and/or routes under 250 miles one-way
  • Much of our volume is not weight sensitive (i.e. not at 80,000 lbs.)
  • Annual miles generally around 100K or more per tractor

Compressed Natural Gas Fleet (CNG and RNG)
+ Over 90 million miles with CNG equipment to date
+ CNG Fleet at a glance
  • 84 CNG 12L tractors
  • 40 RNG 12L tractors (Fair Oaks Farms)
+ Fleet domiciles: Iowa, Indiana, Minnesota, Texas, Wisconsin
Alternative Fuels / Energy – Ruan Experience

+ Equipment
  - Higher acquisition cost than diesel powered equipment
  - Heavier than diesel powered equipment
  - Higher downtime than diesel powered equipment

+ Operational Impact
  - Lower payloads
  - Increased driver training
  - Fueling complexity
  - Increased investment in infrastructure

+ Maintenance
  - More maintenance intensive than diesel
  - Reduced maintenance intervals (routine maintenance and inspections)
  - Increased technician training
Electrification Application

+ Yard trucks – for in-yard trailer shuttling
  - Vehicles are available, and demand seems strong
  - Grants are available
+ Future: On-board electrification – elimination of parasitic load to significantly reduce diesel consumption – 48 volt systems
  - Electrification of all gear and belt driven accessories (alternators, power steering, AC systems)
+ Future: Electric powertrains in class-8 vehicles
+ Ruan has Five Tesla class-8 electric semis on order
  - “Ruan has always been a leader in efficient transport and logistics, so it makes perfect sense to explore what these trucks could do for us and our customers,” James Cade, Vice President of Fleet Services
Regional All Electric Trucks

- Electric Standby Refrigeration Trailers
- Solar Powered Electric Refrigeration Units
Electrification Concerns

• Infrastructure
  – How long and where do I recharge my batteries?
  – What is the cost of a charging station?
  – What are the impacts of fast charge versus slow charge?

• Costs
  – How do the acquisition costs compare to diesel?
  – Are there operational savings to offset higher acquisition costs?
  – What is the cost of the electricity to recharge my batteries?
  – How long do batteries last?

• Range
  – How far can I go on a battery charge?
  – What impact does driver behavior have on range?

• Weight
  – Will battery weight impact my payload capacity?
  – Will weight distribution be affected?
There's a lot of automation that can happen that isn't a replacement of humans but of mind-numbing behavior.

-Stewart Butterfield