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FTi - Moving Technology Forwards

Interairport 09 Update

With ever increasing examples of climate change and the role of carbon emissions being muted as the cause, we are all having to make strides to reduce our carbon foot print. Consumers are placing increased pressure on companies to provide green solutions to previously accepted norms. Airports are not excluded; reference the recent "Airport Carbon Accreditation" scheme being the European airport industry's response.

"According to a report by the Intergovernmental Panel on Climate Change (2001), aviation contributes to 2% of global manmade CO_2 emissions. It is estimated that airport activities account for up to 5% of total aviation emissions".

The FT RAZER "Rechargeable Aircraft Zero Emission Refueller" is part of Fluid Transfer's drive to provide improved solutions to the aviation fuelling business. This new electric vehicle design benefits from a number of technological advances both in operating cost efficiency and environmental impact such as:

Zero exhaust pollution	The **FT RAZER** is the first Dispenser with completely zero emissions. That's 0% - NOx, SOx, CO and CO_2.
Zero noise pollution	Electrical drive transmissions are noted for their silent operation when travelling.
Reduced running costs	The potential cost saving from using off peak electricity against the ever increasing cost of diesel is of significant benefit.
Reduced maintenance costs	The vehicles transmission is reduced to one drive motor locked in a gear for forward and reverse motion. Fewer "moving" components results in reduced maintenance.
Higher operational availability	Fewer "moving" components results in improved operational availability.
No idling when fuelling	During fuelling operations the vehicles electrical transmission is isolated saving diesel costs and generating zero noise.
Simple operation	With one simplified gear for forward and reverse the drive is far less complex than a diesel equivalent.
Overnight charge	Plugging in the vehicle at the end of a shift there is the opportunity to take advantage of off peak electricity rates.
Reduced Carbon Footprint	All of the above features contribute to a reduced carbon footprint.

Further demonstrations of FTi's drive for improved fuelling solutions are:

FTi's Fueltronic™ fuelling control system is fitted to this **FT RAZER** design. The system has been in live trials for over six months and has been received with great enthusiasm. **Fueltronic™** integrates all the common fuelling vehicle functions into one **Primary Control Unit (PCU)**. This can be complimented with the **Fueltronic™ Cab Control Unit** providing live interlock status information on a LCD screen on the dashboard.

LAS's AVTROL™ / Opti-MIM™ fuel truck automation system is also fitted to the vehicle to automatically capture all meter readings and associated Point of Sale data at the fuel truck and wirelessly transmit that data to our **Opti-MIM™** fuel management software. **Opti-MIM™** software provides real time inventory reconciliation, truck sheets and reports by meter, tail number, truck ID, operator and fuel type.

FT RAZER "Rechargeable Aircraft Zero Emission Refueller"

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- Based on an Isuzu NKR85W chassis cab with diesel engine up to the gearbox bell housing, engine cooling and exhaust systems removed.
- Vehicle range is 20-25 miles on a full charge with a full recharge taking 5hrs. Opportunity charging is highly recommended though (plugging in the vehicle in when not in use i.e. lunch breaks).
- Battery life expectancy is up to 48 months.
- Operating cost is estimated at $37 per month including electricity costs. To this the operator is recommended to accrue $100 per month for battery replacement cost and labour to replace when needed.
- The vehicle incorporates the following electrical systems:
  - 24v vehicle electrics; for the brake assist vacuum pump, power steering motor and drive motor cooling motor.
  - 96v transmission system powered by 16 x 6v battery-packs supplying an electric drive motor locked in 2nd gear providing forward and reverse drive.
    (Note; the above systems are isolated when fuelling operations are being undertaken.)
- 24v fuelling control system electrics and vehicle peripherals
- 96v 3hp auxiliary electric motor driving an hydraulic pump (on demand):- to actuate the scissor lift, hose reel rewind and recovery tank emptying pump. Also to drive a pneumatic compressor for brakes and fuelling system controls.

Fueltronic™

FTi Fueltronic™ fuelling control system integrates all the functions commonly required on fuelling vehicles in one control unit, including: Interlock Monitor, Deadman Timer, Recovery Tank etc. With the option of the **Cab Control Unit (CCU),** the operator is provided with the real-time interlock status information on a Liquid Crystal Display (LCD).

The basic system is provided within **Primary Control Unit (PCU)** mounted on the top hamper and incorporates a comprehensive set of refuelling functions including:

- **16-Way Interlock Monitoring Unit**
- **Deadman Timer Unit**
- **Deadman Override Function**
- **Automatic Depressurisation Control**
- **Recovery Tank (Three Level Float) Control**
- **Fuel Meter Operational Status Control**
- **Product Tank High and Low Fuel Level Control**
- **Beacons and/or sirens.**

Primary Control Unit (PCU)

The **CCU** uses a LCD to provide operation and fuelling system status information for the operator mounted on the dashboard.

Cab Control Unit (CCU)

AVTROL™

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Liquid Automation Systems (sister company to FTi) is a leader in automated aviation fuel and glycol management and provides integrated hardware / software solutions and services for managing aviation fuels and de-icing fluids around the globe with operations in the US, UK, Australia, and Africa.

The **AVTROL™** Fuel Management System is relied upon by many prestigious Global FBO's to significantly improve management efficiency, customer service, accuracy and security of accounting by automating meter readings and associated transactional data at the refueler truck/farm and seamlessly interfacing that data directly into the FBO's line service and accounting software program.

LAS's AVTROL™ / **Opti-MIM™** fuel truck automation system is designed to automatically capture all meter readings, including Prist injection, and associated POS data at the fuel truck and wirelessly transmit that data to our **Opti-MIM™** fuel management software. **Opti-MIM™** software provides real time inventory reconciliation, truck sheets, and reports by meter, tail number, truck ID, operator and fuel type.

By automating this data capture and transfer, the FBO can:

- **Capture** credit card and account card details
- **Print** receipts in cab
- **Eliminate** meter reading errors and their associated costs
- **Eliminate** lost or illegible tickets
- **Eliminate** transposing errors up to the office POS
- **Eliminate** delays at the counter
- **Reduce** administrative burden/costs

Now, within seconds of a completed fuelling, the POS data will be uploaded and processed. This new capability eliminates the remaining opportunities for transposing errors and further improves customer service and administrative efficiency.

The **AVTROL™** Aviation system is compatible with any truck type and allows fuel providers to utilise this tool for improved operational performance regardless of fleet makeup. A similar system is available for refuelling of ground service equipment, ensuring fuel reconciliation across all the fleet from bulk storage to wingtip or vehicle tank.

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Fuelling Hamper

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Finally the fuelling system layout of this particular vehicle features a Fuelling Hamper equipment layout and flow rates tailored for servicing the low-cost airline narrow body jet market which has been well received in the market.

The vehicle benefits from:

- **Smaller hamper providing a wheelbase that is more manoeuvrable.**
- **Flow rates matched to aircraft fuelling rate and capacity**
  - Deck hose - to 1500 lpm
  - Reel hose - to 1000 lpm

(Based on a hydrant pressure of 8.6 bar and a test rig back pressure of 2.1 bar).

Fuelling system consists of:-

- 1x Ø63mm x 2.5m long deck hose.
- 1x Ø50mm x 30.0m long reel hose.
- 1x Ø75mm x 7.5m long intake hose.

Note: FTi fuelling system design permits "in-situ" hose pressure testing of the intake & delivery hoses to 20.0 bar (300 psi) without the need to remove hoses from the vehicle.

- I.P. approved filter monitor with air separator and return line to recovery tank incorporating "visi-flow" indicator.
- Twin capsule bulkmeter / Veeder Root EMR3 electronic head.
- Primary pressure control via a hose end pressure control coupling with fully compensating in-line secondary pressure control system using FTi venturi in the reel hose and deck hose circuit.
- Elevating fuelling deck 1m long x 2m wide max. Elevated floor height is 2.0m.
- Intake coupling with integral pressure control and deadman valve, retractable carriage and dust cap.
- Intake hose stowed around the perimeter of the vehicle on mechanical over centre easi-lifts and robust trolleys.
- Input coupler stowed in bucket type stowage located on the operating side of the vehicle.
- 50 litres fully-draining recovery tank with **optional** hydraulically auto-emptying system.
- Spring close type manual depressurising valve.
- Thermal system relief valve air-actuated by the PTO and deadman system.
- FTi Visual Check Fuel Sampler VCFS (backlit for night operations). Fuel samples taken from both upstream and downstream sides of the filter.
- Side mounted hop-up steps **optional**.

For further details on this or any other FTi products please contact our sales department on:

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