Optimizing EMS Transport
Operation & Safety

Thankfully many things HAVE evolved and gotten better.

Today's Ultra Modern Ambulance
Contains little to no fleet level monitoring and management capabilities.

Balance of concerns and risk during response and transport

- Response and transport time vs. Patient needs
- Stay-n-Play vs. Load-n-Go
- Clinical care provision vs. Medic safety
- Occupant safety/protection vs. Cost
- Public Safety vs. EMS

Theft of Emergency Vehicles continues to be a source of concern at the Department of Homeland Security as a delivery mechanism for WMD's.
Our Vision:
To seek out new and innovative solutions,
In Providing Total Safety Solutions for
Prehospital Emergency Care

Ferno Objectives:
Why and what are we trying to achieve?
• Patient Event Record + ACETECH Record = a Comprehensive
  Record of what happened during the EMS event.
• Create Passive Solutions to optimize EMS transport operation &
  safety.
• Improve safety on the ambulance by proactive actions in service
  and maintenance of the vehicle
• Offer increased value to the EMS operator with simplification in
  EMS operations
• Provide intelligent operations for cost effective operations

The Intelligence
Optimum fuel efficiency
Emergency start
High Idle
Vehicle location
Battery management
Anti-theft
Alerts and Reports
Reduced Emissions
Increased vehicle life
Reduce speeding
Medic chair position
Advanced systems monitoring

Automotive Technology Systems Research Ltd.
A Ferno Group Company

ACETECH Products

ACETECH ECU
CANbus Control Systems

ACETECH AVI
Tracking and Diagnostics

ASSET-ACE
RFID Asset Tracking

ECO-RUN

The ACETECH ADVANTAGE
Plug & play modular systems that seamlessly merge with
your vehicle’s onboard communications

ACETECH™ Electronic Control Unit (ECU) key features
Robust wide-ranging ECU utilizes J1939 CAN
bus control for all auxiliary systems
Incredibly powerful yet user friendly
configuration software
Exceptional Battery Management system
Anti Theft function built in
High Idle function built in
HS Flasher built in (multiple timers)
Ability to run Traffic Advisor
Sealed and easily decontaminated surface
Health & safety benefits
911 can be configured to remove speed limiter
or vehicle when pressed
Switch Panels can be indicators for RFID
Asset Tracking system
Switch Panels can be indicators for ECO Run System
ACETECH ECU Installation Example

Original Ambulance Manufacture installation design

Same Ambulance Mfg with ACETECH

ACETECH™ ECU

Exceptional Battery Management system

- Integrated battery monitoring system
- Multi-battery management incorporating multi-channel split charging system
- Integral auto load/load shedding arrangement
- Intelligent vehicle-emergency start
- Auto-Isolation Feature

ACETECH™ ECU - ARCHITECTURE

- Batteries
- AC Systems
- Siren
- Light bar
- Anti-lock brakes
- Airbags
- Traction Control
- Fuel/Air Mix
- Puls
- Auto Vehicle Informatics
- ECO system
- RFID System
- Ferno Medic Chair
- Ferno Patient Platform

ACETECH™ ELITE - ARCHITECTURE

- Batteries
- AC Systems
- Siren
- Light bar
- Anti-lock brakes
- Airbags
- Traction Control
- Fuel/Air Mix
- Puls
- Auto Vehicle Informatics
- ECO system
- RFID System
- Ferno Medic Chair
- Ferno Patient Platform

ACETECH™ Auto Vehicle Informatics (AVI) key features

- Vehicle Status
- Operational and Fleet Monitoring
- Integration with FM Software
- Asset management of vehicles and fleet
- Remote Vehicle Diagnostics
- Driver ID
- Real-time Monitoring
- ECO Run Monitoring
- Real-time Monitoring
THE ACETECH™ AVI advantage

- ACETECH™ AVI – Vehicle Informatics
  - Know where your vehicles are
  - Dispatch the closest, most appropriate unit
  - Improved productivity
  - Reduce fuel expense
  - Reduce carbon emissions
  - Reduce response times
  - Reduce risk (shorter response)
  - Fewer collisions
  - Reduced injuries
  - Plus: Panic/emergency button to alert to operations

OPERATIONAL BENEFITS

- Journey Reports
  - Feedback
- Hot Spot Areas
  - Activity of Fleet within those areas

Events Reports

- True Events Log Playback/Post crash review
  - Allows monitoring of specific Journeys

OPERATIONAL BENEFITS

- Over Speeding Reports – Without Red Lights/Siren activation

OPERATIONAL BENEFITS

- GEO-FENCE Capability
- Undirected Patrolling – Improve Efficiencies
- Monitor Unnecessary usage of vehicles outside a defined area/time.
Driver Behaviour

- Rotational Reports based on Mileage of Fleet
- Maintenance tasks scheduled
- Remote Reporting on OEM Vehicle or Auxiliary issues
- Fuel Monitoring / Emission reporting
- Automated scheduling of safety checks for vehicles
- Real Time Odometer readings exported to FM software
- Fuel Efficiency Comparisons between OEM vehicles
- Remote Vehicle Battery Monitoring and Alerts
- Remote Vehicle Diagnostic Error Codes

FLEET BENEFITS

- Real Time Odometer readings exported to FM software
- Fuel Efficiency Comparisons between OEM vehicles
- Remote Vehicle Battery Monitoring and Alerts
- Remote Vehicle Diagnostic Error Codes

FLEET Benefits

- Rotational features for optimization of fleet to reduce capital spend
- Scheduled Maintenance Tasks
  - e.g. Service due at an Odometer reading
  - or the OEM alert remotely transmitted
- Tasks such as Oil Filter, brake pad replacement etc.
- Remote Battery monitoring of EMS Fleet

ACETECH™ AVI Communication

- Vehicle Diagnostics information exported to Fleet Management Software
  - fuel efficiency for comparisons
  - EOBD error codes capturing ERS activation, ABS activation, Airbag deployment etc.
- System can link into other MDT units exporting information directly to database
  - GPS coordinates can be exported from AVI unit to MDT system or external database remotely
  - TETRA compatible

ACETECH – ASSET ACE: RFID Asset Tracking System

- Make sure your assets are on-board at all times
  - Assets never left at base
  - Assets never left at scene
  - Always organized

How good is an Emergency Vehicle without these assets?
RFID Asset Tracking – Summary
Integrates with ACETECH™ AVI to:
• Allows procurement and operations to get real time information on inventory levels held within vehicles/station
• Alert driver first hand with indicator on switch panel if he is about to leave scene/station without asset
• Location of asset left behind - recorded and stored

Ferno is about a “Total Safety Solution”
Ferno seeks to provide ecological and cost savings solutions.

ACETECH - ECO-RUN

ACETECH ECO-RUN Test

ROI Benefits

GREEN Benefit – Carbon Reductions

* Study completed on behalf of SECAMB (NHS UK) Mercedes Sprinter vehicles
* 1.1 litres burned per hour
ACETECH ECO-RUN Comparison

REPORT:
Outside temp. : 5 C

Patient Compartment temp: 20 C

Total time of test: 9 hrs

Total time when engine was running: 72 min

Total time when heater was running: 168 min

NORMAL mode

Average diesel consumption for engine: 9 L

Average diesel consumption for heater: 6.6 L

ECO-RUN mode

Average diesel consumption for engine: 1.2 L

Average diesel consumption for heater: 0.7 L

*) Average diesel consumption for heater is 0.25 lt per hour

REPORT:

Average diesel consumption for engine: 10.8 L

Average diesel consumption for heater: 1.9 L

Fuel reduction = $$ savings

• Assumption: In a 24 hour period the ECO-RUN system will be active for 2 hrs.
This equates to 4.4 liters of fuel saved per day per vehicle.

• Assumption: price paid per litre is $1
This equates to a saving of $4.40 per day per vehicle.

• Fleet size of 150 would see savings of $660 per day or $240,900 per annum.

• Fleet Life of 4 years would work out at $963,600 savings

Idle reduction = CO2 reduction

• Chevrolet 3500(Diesel) idling for 2 hrs without additional load will discharge 8.04 Kg of CO2 per day

• Chevrolet 3500(Diesel) idling for 2 hrs with additional load will discharge 9.8Kg of CO2 per day

• Fleet of 150 eliminating 2 hrs of engine idle time will reduce its carbon footprint by 1.4 Tons of Carbon per day or approx 536 Tons per annum

• Fleet life of 4 years would equate to a carbon saving of 2,146 Tons

Suggested Integration Improvements:

• Sensored seats & panels
• Equipment Battery Monitoring
• Therapeutic Hypothermia
• Drug lock box access & Temp control
• IV & Blanket Warmer box
• Cooler for hydration

The Future?

Until then…

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