



U.S. Department  
of Transportation

**Research and  
Special Programs  
Administration**

400 Seventh Street, S.W.  
Washington, D.C. 20590

MAY 11 2000

Mr. Richard B. Friedel  
Vice President  
EWA Technologies  
13873 Park Center Road  
Herndon, Virginia 20171

Ref. No. 00-0113

Dear Mr. Friedel:

Research and Special Programs Administrator Kelley Coyner asked me to respond to your letter concerning safety standards for the design and installation of electronic fuel registers and systems on liquefied petroleum gas (LPG) and refined petroleum delivery trucks.

The Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) include design and manufacturing requirements for cargo tank motor vehicles used to transport bulk shipments of hazardous materials, such as LPG and refined petroleum products. Cargo tank motor vehicle specifications are in Part 178 of the HMR. These cargo tank specifications include requirements for materials of construction; structural integrity; design pressure; valves; inlets and outlets; joints; bulkheads, baffles, and ring stiffeners; closures; overturn and collision protection; piping, hoses, and fittings; gauging devices; pumps and compressors; and emergency discharge control. The HMR do not specifically address electronic fuel registration systems on cargo tank motor vehicles. Such devices neither assure that lading remains in the cargo tank nor provide structural support to the cargo tank.

Requirements for wiring and electrical systems on commercial motor vehicles are in Part 393 of the Federal Motor Carrier Safety Regulations (FMCSR; 49 CFR Parts 390-397). DOT specification cargo tank motor vehicles must conform to the requirements in Part 393, which includes requirements for wiring specifications, wiring protection, grounds, battery installation, overload protection devices, detachable electrical connections, and installation. Generally, wiring must meet or exceed standards of the Society of Automotive Engineers (SAE) and must be installed so that connections are protected from weather, abrasion, road splash, grease, oil, fuel, and chafing. Further, wiring must be located so that it will not be charred, overheated, or enmeshed in moving parts.



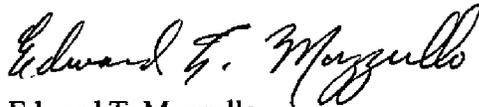
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You may wish to pursue your concern about electronic fuel registration systems with a private-sector consensus standards organization. SAE develops technical standards for cars, aircraft, trucks, off-highway equipment, engines, materials, manufacturing, and fuels. The National Fire Protection Association develops codes and standards concerning all areas of fire safety. The American National Standards Institute promotes development of national and international standards in all areas of industry, including electronics, safety and health, and telecommunications. The National Propane Gas Association, which is the national trade association representing the propane industry, may also be helpful. Its membership includes manufacturers of propane gas cylinders and tanks and propane transporters.

I hope this information is helpful. If you have further questions, please do not hesitate to contact this office.

Sincerely,

A handwritten signature in cursive script that reads "Edward T. Mazzullo".

Edward T. Mazzullo  
Director, Office of Hazardous  
Materials Standards



January 10, 2000

Ms. Kelley Coyner  
Administrator  
Research and Special  
Programs Administration  
400 7<sup>th</sup> Street, S.W.  
Washington, DC 20590

Good Morning:

I have tried for some time to find the office that is responsible for safety standards associated with the design and installation of electronic fuel registers and systems on LPG and refined petroleum delivery trucks. William Quade at DOT advised me to contact RSPA.

My company manufactures an electronic fuel registration system, with a mobile computer and printer in the cab, an electronic register mounted on top of the fuel meter (replacing the old mechanical register), and a valve as needed. Our system is certified intrinsically safe by Factory Mutual Research Corporation (FMRC) and the Canadian Standards Association (CSA).

I have been told by a number of people in the fuel business that an intrinsically safe electronic registration system like mine is overkill. These people tell me that the area on a fuel truck where the meter and hose are located is only a Class 1, Division II, hazardous area, although no one has shown me anything in writing to confirm that conjecture. Assuming this to be true for the time being, however, I am currently designing a variant of my electronic fuel management system to be certified for Class 1, Division II, by FMRC and CSA.

And that is the problem, for it seems that other companies that manufacture devices similar to mine do not see the necessity to build or install their systems to any safety standards, nor do they see the need for third party safety certification. They advertise their products as being "approved" for Class 1, Division II, or something similar to that, although their systems have not been certified by anyone. Further, I have seen these devices on fuel trucks, and I cannot believe they meet the standards for Class 1, Division II, both by their inherent design and by the manner in which they are installed.

These companies seem to believe that simply by using explosion proof housings, their systems meet the Class 1, Division II, safety standards. Actually, explosion proof

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housings are only one part of the solution. Furthermore, the housings these companies use are often modified in a manner that eliminates their explosion proof nature, and some I have seen installed on trucks are not UL-approved in the first place. Installation is another area in which the standards for Class 1, Division II, do not appear to be met. Power cables from the truck battery to the hazardous area are unprotected, and the manner in which the cables are connected into the explosion proof housings does not meet code.

I have both safety and business concerns regarding this issue. There is a safety problem here that is going unregulated, and it needs to be addressed on a national basis before the first truck explodes.

From the strictly business perspective, I am going to the effort and expense to do things right – to design my new system strictly to Class 1, Division II, safety standards and to have it formally certified by FMRC and CSA. It is infuriating to see the competition get away with skirting the safety issue entirely by simply declaring their systems to be safe without designing or installing the systems to any standard, nor going through a formal certification process.

To date, I have found no one in government or in the private sector, from truck builders to trade associations, who seems to care about this issue. Although truck-mounted electronic fuel registration systems are not new to the market, their use in the industry is increasing rapidly. There are at least four major manufacturers of these systems, and they each approach the design differently. I believe that the government may not have noticed this trend towards placing electronic systems on fuel delivery trucks, and the associated regulations and standards have not kept up. Therefore, I request that RSPA take this issue for action. Specifically:

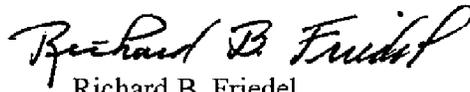
1. Define the appropriate hazardous area safety classification that should be applied to LPG and refined petroleum delivery trucks, from the battery to the area where the meter and hose are located.
2. Require companies that manufacture electronic fuel registration systems for these trucks to design and build their systems to meet this safety classification.
3. Require companies that manufacture electronic fuel registration systems to have them third party certified for safety.
4. Require electronic fuel registration systems to be installed on these trucks according to the defined safety classification.

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5. Require electronic fuel registration systems that have been installed on LPG and refined petroleum delivery trucks to be retrofitted to bring them up to the defined safety classification.

If you would like additional information or clarification, please contact me at 703/904-5008, or by e-mail: [rfriedel@ewa.com](mailto:rfriedel@ewa.com). I look forward to discussing this issue with RSPA.

Cordially,



Richard B. Friedel  
Vice President  
EWA Technologies