



RFID for Hazmat Transportation



RFID has been found to be a very powerful enabling technology to automate the real-time management of hazardous materials including usage, shipment by rail or truck, tracking and storage.

By Rail

According to the American Association of Railways, in the US, railroads transport 1.7 million carloads of hazmat each year. Dow Chemical is implementing a RFID system to help it locate railcars carrying hazardous chemicals. Of Dow's 26,000 railcars in North America, about 650 are carrying TIH chemicals. The company will now monitor in real time the status and location of its fleet of tank railcars that it uses to transport chemicals that pose a toxic inhalation hazard (TIH). The system employs EverSee2 transponders, which combine sensors, two-way satellite communications modem and GPS positioning. Information transmitted by the device is sent to the Asset Management software, enabling the chemical company to receive regular updates of the railcars' locations and alerts in the event that

something goes wrong. Dow can also share that data with any necessary agencies. Dow Chemical has multiple projects underway for tracking products and containers.

For truck transport

Each truckload of waste must be identified, weighed and tracked throughout the disposal process. By installing Active RFID tags on the trucks, identification is automatic and waste weight is accurately and efficiently logged into the integrated database that serves the entire project. Without a hands-free RFID system, truck drivers have to get out of the truck and manually key in their driver and truck identification number when entering the weight scales. Manual data entry is time consuming and error-prone. The FSN System is a web-based real-time locating and reporting system that provides real-time visibility of the hazardous materials (hazmat) in transit or in storage as well as location of the responsible personnel. This hazardous material transportation tracking system and solution incorporates patented RFID technologies and applications coupling with GPS-GPRS-SATCOM to enhance the unparalleled hazardous material transportation security. The Omnitrol edge appliance captures and store all transit and condition data to provide real-time visibility of the hazardous material. Real-time exceptions that may cause possible dangers to the goods, drivers or community will be reported in real-time with both phone and email message alerts to professionals in security, safety, health and environment to warn them of any changes with the hazmat chemicals.

Item Tags:

Each drum or item of hazardous or waste material is individually tagged with an active RFID tag. Explosive-proof tags are also optionally available. The active RFID tags are attached to the drum with pressure-sensitive adhesive or other mechanical fastener and magnetically attached if the drum is made of steel. Each drum has a unique ID and is linked to the active tag ID at the loading place. The active tag with a GPS feature communicates with the monitoring reader throughout the entire process. Tags can be selected with various sensing capabilities including time and temperature, chemicals, radioactivity, etc. Dow Corning achieved a 100% read rate when tracking chemicals stored in 55-gallon drums. Similarly, the EPA will begin testing the use of RFID to track hazardous waste as it moves between US and Mexico borders.



Personnel Badges (optional):

Each driver is given a RFID-enabled personnel badge that identifies him/her with the proximity to the monitoring reader from loading to delivery and return.

Monitor-Communicator:

Each carrier (trailer or container truck) is equipped with a monitoring reader that communicates with all of the active tags inside the container or trailer. The ID of the drums and the ID of the active tags are compared with the data initially loaded in the system. Any missing items will be noted in real-time. The temperature of the drum can also be monitored and exceptions such as exceeding allowable temperature (e.g. 70C) are reported in real-time.

Station-based Monitor-Communicator:

Each station such as factories, warehouses, receiving centers, and border custom control is equipped with a RTLS that communicates with a Monitor

Communicator. Status reports will automatically be sent when the trailer or container truck passes by the station at speeds up to 80 miles per hour. RTLS is linked to a central monitoring center via TCP/IP communication.



BENEFITS OF FSN HAZMAT TRANSPORTATION AND STORAGE MANAGEMENT SYSTEM AND SERVICES

FSN hazardous material transportation management solution represents a paradigm shift from accounting and attribution after accidents to preventive and corrective actions to safeguard hazmat supply chain that may mean life or death to the drivers, staff and loss in nearby community.

1. Real-time alerts via phone/text messaging and real-time web-based reporting of any exceptions for possible corrective actions by onsite drivers or staff for possible prevention of accidents, theft, spoilage, and other dangers.
2. 24/7 Real-Time, end-to-end visibility of conditions and locations of critical hazardous material supply chain via web-based data center with role-based access management.
3. Visibility includes:
 - True temperature by directly embedded with the hazardous material.
 - Temperature accuracy to 0.5°C at the content.
 - Temperature distribution of the hazardous contents with multiple tags to allow corrective actions due to local heating or freezing exposure.
 - Optional shock data and exceptions in all three directions.
 - Optional humidity conditions, radioactivity and chemical sensors.
 - Whenever, wherever, and for how long the hazmat trailer or container is open.
 - Whenever, wherever, and for how long any valves are monitored with special sensor-based RFID tag.
 - Where is the driver at all times.
 - Real-time locations of the hazmat container or trailer.
 - Intrusion detections and real-time alerts of the hazmat container and trailer box.
4. Additional inside RFID tags can be used to communicate any intrusion or exceptions to the outside RFID reader.

FALKEN Secure Networks(FSN)—Your partner for RFID automation

If you choose to pursue RFID implementation in your organization, here is the FALKEN Secure Networks commitment to you:

- FSN will provide solution architects to work with you to define system requirements for your particular installation. Multiple locations can be networked together for a central and real-time view and centralized management.
- FSN will do a RFID site survey to validate radio frequencies, tag types, system design and performance
- FSN will provide all necessary hardware and software to make the system work for you
- FSN will integrate the system with your existing enterprise management software
- FSN will provide documentation for the system, including operating procedures
- FSN will train your people
- FSN will provide warranty and continued system support

For RFID-enabled Document Tracking and Management, FALKEN Secure Networks (FSN) and partners bring together the right technologies to give you control over your files and make your office run more efficiently. Our automated and secure processes save time and labor, and prevent problems before they occur. With FSN ,you get the latest, non-proprietary secure RFID technology with the most powerful and flexible RFID file tracking software available.

Contact Us

FALKEN Secure Networks is a specialized System Integrator, RFID Solution Architect, and Value-Added Reseller with focused expertise in the RFID site survey, cost-effective design, and turn-key project implementation.

Contact FSN at sales@falkensecurenetworks.com



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