

## VEHICLE MONITORING SYSTEMS

### **Creating a Culture of Safety:**

One thing we have learned over the 12 years of producing electronic access and monitoring devices is that if management genuinely focuses on workplace safety to create a “culture of safety”---their employees will get the message that management genuinely cares about them.

This “culture of safety” attitude enforced by management actually boosts worker morale and increases productivity.

Access-Monitoring units like our devices help companies to create this “culture of safety” on their forklift fleet where accountable operators are inherently more safety conscious and careful. A safer workplace also means lower workman's compensation costs and less risk of exposure to potentially crippling liability costs.

**ELIMINATION OF KEYS:** Monitoring devices completely eliminate your ignition key.

The vehicle is started and stopped directly from START-STOP keys on the keypad utilizing relays on the ignition and start circuit. How much potential liability does your company have when the forklift keys are left in the lift? Lawyers will ask---“why was the key left in the machine for anyone to use”? Will your answer be---because everyone does that? Probably won't sound so good.

One customer remarked they love the system---but their supplier truck drivers hate it!! Why? They were “helping” the late shift lift drivers load trucks because they were understaffed, and the truck drivers wanted to speed things up so they could leave. Imagine the liability you have should one of the truck drivers get hurt or injure someone??

Besides the liability issue, how much time (lost productivity) does your staff loose each year replacing lost or broken keys or inserting new ignition switches? It's probably more than you imagine.

### **DRIVER ACCOUNTABILITY FOR DAMAGE + ABUSE:**

Since we first started producing forklift access monitoring systems in 1998, users commonly report damage reductions of 50% or more. The reason is simple----ACCOUNTABILITY.

For the first time abusive drivers can no longer get away with careless and reckless driving. Abusive driving causes millions of dollars of damage each year---and much can be prevented by installing systems that include speed and impact sensing.

After an impact, it records the intensity of impact events triggered by the device's accelerometers. To this is added speed, vehicle ID, operator name/ID and time/date. Intensity gives management an idea of the potential damage.

In addition, a 120 dB flashing siren alarm can sound that must be turned off by management. Some plants choose to shut down in X# seconds after impact. After shutdown, a manager can review the damage and discuss the situation with the operator. The supervisor can also access the impact data through the device's LCD screen.

PC software provides management with data and graphs on abuse and speeding incidents. This historical driving trends data and back up for retraining or release of abusive drivers. The elimination of hostile reckless operators with data and graphs provides additional significant reductions in damage with the "bad apples" gone.

In addition to the costs involved, less damage means less burden on your mechanics who must clean up the mess---the repair or replacement of damaged equipment, product, machinery and racking.

#### **TRAINED AND AUTHORIZED OPERATORS:**

OSHA regulation 1910.178(l)(6): "The employer shall certify that each operator has been trained and evaluated as required by this paragraph (l). The certification shall include the name of the operator, the date of the training, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation".

Security and training is rapidly becoming a major concern to industrial corporations and there is increasing government involvement in insuring operators are trained properly.

According to statistics compiled by (OSHA), nearly 100 deaths and 10,000 injuries occur every year in the USA as a result of forklift accidents. Vehicle monitoring devices keep unauthorized operators from even starting your equipment. The device is programmed to accept a trained operator's valid code or RFID card.

Did you also know that OSHA requires that an operator MUST be trained on each type of forklift and in every different application he is to operate? So if your operator is NOT trained on a particular style of forklift, his code/card is not programmed and he can't start that vehicle. If an operator is moved to a machine he is not trained on ---or a different application----he needs training to make that move.

#### **REFRESHER TRAINING:**

PC client server type software uses its driver database to give management a report on their drivers that are due for recurrent training (required every 3 years). Software shows which

operators are due recurrent training in just a week or 1-2 or 3 months---giving you time to plan for the training.

### **CODES vs RFID CARDS:**

Simple code--keypad inputs are easily seen and can be stolen by other drivers. Unless management is constantly “babysitting” these devices, stolen codes compromise the security of the system. RFID cards are usually the same card as driver uses for doors + time clock. His RFID card is unique to the individual and unlikely to be stolen or used by another.

### **PRE-SHIFT CHECKLIST:**

OSHA Regulations 1910.178(q)(7) reads: “Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily. Where industrial truck are used on a round the clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected.”

A vehicle monitoring device allows you to completely automate this checklist—inspection procedure---and add accountability to your operator for its proper completion. Different type lifts require completely different checklists and the device can be custom programmed to accept many different checklist items.

The checklist can be programmed to be required on every start, first start of the shift, once per week or once per month. The checklist must be completed in a pre-set time (in minutes) or the vehicle will shut down if not completed.

Each checklist event is recorded and time—date stamped. Management can review the event log to insure an operator does not “pencil whip” the procedure and he is accountable for its proper and complete completion.

An electronic access monitoring system actually makes life easier for your operator---he no longer has to worry about remembering to do the checklist or to keep control of the paperwork he has completed.

### **MAINTAINING DOCUMENTS AND LOGS:**

If you have a fleet of forklifts you are no doubt aware of the extreme hassle involved in storing them in “dog eared” and “coffee stained” paperwork---assuming you can read your operator’s handwriting. A vehicle monitoring unit holds the checklist log until it is transferred to the PC communication software.

Once transferred, the event log is stored to a SQL-type database where it can be accessed by interested parties within your company on your network.

What happens if there is an event prompting an OSHA inspection where written documentation of examinations (checklists) does not exist? Your company is at the mercy of what your employee(s) tell the OSHA investigator.

The employee(s) will be asked open ended questions about what they did from the time they started work until the time forklift operation began. If the OSHA investigator learns from the employee that a defect was noted during the examination, he will then look for written documentation that the defect was addressed properly before the forklift was allowed to return to service. You must provide this documentation or you are subject to fines and penalties.

OSHA 1910.178(q)(1) states: "Any power operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel." Access monitoring systems log all events that occur on the machine, so you have a clear, chronological record of all starts and stops, usage (hour meter), checklist items and others.

These electronically logged events can be easily accessed to prove your case to an OSHA inspector reviewing an incident or for your own purposes of analyzing your fleet.

#### **ABANDONED VEHICLE ACCOUNTABILITY:**

Ever wonder took a truck from your department and never brought it back? NO ONE KNOWS—RIGHT???. Who left the truck in the back of the plant last night on third shift? NO ONE KNOWS—RIGHT???. Who knocked off the dock door and left the forklift sitting there? NO ONE KNOWS---RIGHT?? NO MORE!

Event log shows who drove it there and when he got off the vehicle. No more running and hiding---accountability in action! How much time (productivity) does your operation loose to hunting down lost vehicles?

#### **EQUIPMENT UTILIZATION:**

Usage data even sheds more light on whether the forklift fleet is being utilized properly and maximized to its greatest potential. An hour meter alone does not shed light on peak vehicle needs (how many vehicles are used simultaneously at any given time). Usage data and graphs can expose varying peak usage needs of different departments or classes of equipment. Armed with data, management can more easily determine proper fleet size and utilization time trends.

Without this data, management can only rely on their historical experience which is subject to a lot of guesswork and assumptions as to the proper ratio of work volume to vehicle quantity. Without corroborating data, this guesswork usually ends up with a fleet with too many forklifts not utilized to their greatest potential.

## **MAINTENANCE SCHEDULING AND HOUR METER INFO:**

Access monitoring devices can schedule maintenance on individual machines by either hours or by date. The LCD screen warns the operator of impending maintenance due (by hours or days). At the end of the maintenance cycle, MAINTENANCE PAST DUE is shown on screen.

At the end of the pre-set grace period only a supervisor or mechanic can restart. The maintenance interval is easily reset on the screen. Hour meter information can be routinely transferred from the PC client server SQL database to a third party maintenance program. This seamless transfer of usage data provides existing maintenance software with important data for evaluating maintenance costs.

## **LEASE MAINTENANCE—TOTAL REPAIR CONTRACTS:**

Many forklift fleet owners have contracted with their equipment dealer to provide total preventative maintenance and repair. These contracts have many contentious issues of blame for extra billing for abuse repairs. Was the equipment abused or was this “normal” maintenance? Access monitoring systems protect both the user and dealer by first showing impacts that management can evaluate and second by simply significantly reducing the amount of contentious abuse damage incidents.

## **DRIVER ACCOUNTABILITY FOR SPEEDING:**

OSHA regulation 1910.178(n)(1) “All traffic regulations shall be observed, including authorized plant speed limits. A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times”. Speeding forklifts in a congested plant is big safety hazard. Regulating the speed limit of a forklift should be an important part of the environmental design of a safe workplace.

A 5,000# capacity forklift moving at 10 MPH carrying a 4000# load has the potential destructive force of 135,000 foot pounds of energy. This forklift has about the same force as a Cadillac Eldorado driving at 20 MPH---- actually more because there is NO impact absorbing bumper on the forklift.

In close calls a speeding operator cannot respond in time to prevent an accident. It will take a forklift about 1.3 feet for each MPH for a panic stop, another .75 sec to become aware of the hazard and another 1 sec for brakes to be applied. A forklift traveling 10MPH takes about 40 feet to stop. Since 40’ spacing in a congested warehouse is NOT practical----forklift speeds must be to prevent significant accidents.

The vehicle monitoring device LCD shows vehicle speed (in MPH or KPH) on the screen, it warns the operator when he exceeds the speed limit and sets off a 120dB flashing siren alarm if he continues to speed through the grace period. This event is recorded in the event log and provides data on abusive driving characteristics of their operators.

### **EQUIPMENT UNDER REPAIR---LOCK OUT:**

OSHA regulation 1910.178(p)(1) "If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition".

A mechanic can lock out the lift until it is repaired. No longer can the 3rd shift take the "red flag" off and use the equipment anyway. Night shift mechanics can electronically lock out a damaged machine -- so no one uses it and gets hurt. Once repairs are made, it's easy to re-enable locked out operators.

### **PREVENT CATESTROPHIC ENGINE FAILURE:**

An auxiliary input from the engine low oil pressure or high temperature can be connected to the device. When this input goes "high", a fault output; the device can be programmed to shut the engine down in X# of seconds---preventing expensive damage.

### **INSURE SEAT BELTS ARE USED:**

OSHA states that "employers are obligated to require operators of powered industrial trucks which are equipped with operator restraint devices or seat belts to use the devices" If your forklifts have seat belts and they are NOT used---- you are in violation.

Most access monitoring devices have an auxiliary input that can be connected to a seat belt that also has a switch providing an output as to whether the belt is buckled or not.

### **WIRELESS PROGRAMMING AND EVENT LOG DOWNLOADING:**

There are many ways to communicate with the vehicle monitoring device access monitoring device. Most basic is a simple serial port connection to a PC or laptop. Smaller fleets many times opt for the CYBERKEY digital data transfer key.

A supervisor visits each vehicle to extract the event log data to the key and he returns to the host PC to upload the data. Some smaller fleets also prefer our CYBERTOOTH option. This Bluetooth radio transmits the event log data to the waiting host PC or our USB Bluetooth equipped laptop.

CYBERWIRE Zigbee 2.4ghz radios provide "point to point" wireless connectivity. Data is transmitted either to a single host radio or to a network of IP configured Ethernet radios. With CYBERWIRE WiFi radios, each radio receives an IP address and data is exchanged through access points.

Text messages like “Return to loading dock” can be transmitted. Data is captured by the host PC housing the monitoring software and data is saved to the SQL server database where it can be used in other applications.

#### **EASY FIELD INSTALLATION:**

Vehicle monitoring device devices are designed to be easily field installed, typically in 2-3 hours. The forklift “doesn’t even know the device is on” and there is no interference with diagnostics. Large fleet users have a portion of their fleet nearing retirement. When retirement and replacement comes, the device is easily removed and remounted to the new lift.

#### **SUMMARY:**

Access monitoring systems provide an impressive return on investment---especially so in large fleet operations. Be sure to seriously consider OEM “neutral” devices that fit to any make or model forklift and maintains Your Company’s flexibility in choosing any lift truck supplier. Be sure you are not “tied” to that forklift OEM forever simply because of your choice of monitoring device.

Successful implementation of these devices will certainly “create a culture of safety” within your forklift fleet.

For more complete information on OSHA forklift directives, visit the following link:

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_id=2277&p\\_table=DIRECTIVES](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=2277&p_table=DIRECTIVES)

Forklift1 represents products designed for the safety of personnel and the efficiency of equipment use in the workplace. Contact Tom Courtney at 626-284-1826 or email [usaforklift@yahoo.com](mailto:usaforklift@yahoo.com).

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