

Forklift Safety and Monitoring Devices

Why you need them for your forklift fleet!



Presented by:

KEYTROLLER

Monitoring systems on forklifts instill in your operators a sense of responsibility and accountability for safety



- Employee knows the device is there and knows he will be accountable ----for the first time----for his abusive driving habits.
- Abusive operators either change their ways, get retrained, or relocated to a new job.
- Management has data to back up abuse

Management focus on operator safety and does **NOT** have to be a “*big brother*” mentality



- Operators get a message the company genuinely cares about their safety---improving moral.
- Monitoring units help to provide a “***culture of safety***” throughout your logistics operations where accountable operators are inherently more safety conscious and careful
- Safer workplaces are more stable and secure for all employees and improves morale, happy operators are more productive operators resulting in less absentees and more work accomplished

Are untrained and unauthorized drivers jumping on your equipment?



- **Employers need to ensure that only TRAINED and AUTHORIZED operators can use forklifts and like equipment**

OSHA has in place the Final Rule for Powered Industrial Truck Operator Training [29CFR 1910.178(l)], which became effective March 1, 1999. The standard requires operator training and licensing as well as periodic evaluations of operator performance. Source: CDC/NIOSH

How?

- An access/monitoring system insures the operator is trained. Each operator is given his own code or RFID identification card that gives him access to that vehicle.
- Upon entering his card/code, the device is enabled.
- OSHA requires that an operator **MUST** be trained on each type of vehicle and in every different application he is to operate. (sit down forklifts, stand up, reach trucks, turret trucks etc). So if your operator is **NOT** trained on a particular style of forklift, his code/card is not programmed and he can not operate that vehicle.



Do you have problems with keys? Lost, broken, forgotten?



NO MORE KEYS!!!

START— STOP engine/motor right from keypad!

**How much time is lost at your company with lost
and broken keys?**

RFID card enabling



RFID card, FOB or “DIME” sized wafer can be used to activate KEYTROLLER.
Wafers can be fixed to existing card, turning it into an RFID card.

Codes/cards are programmed from individual keypads or KEYSOFT PC software.

OSHA regulation 1910.178(l)(6) **Certification.** *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 evaluation, and the identity of the person(s) performing the training or evaluation.*

RFID card vs codes

- RFID cards are usually the same card as driver uses for doors + time clock
- RFID cards are unique to individual and unlikely stolen or used by another
- RFID cards are unique to operator and easily seen by supervisor
- Codes are easily seen and used (stolen) by other drivers
- Unless management is “baby sitting” the operation and code usage, stolen codes can go on indefinitely until there is an accident or problem
- If codes “get out” (stolen) and are abused, the security of the system is completely compromised



RFID card reader options

- Standard 125mhz card reader
- HID-Prox card reader
- HID i-Class card reader

Use your own company ID card to enable your forklifts---NO MORE KEYS!!



Authorized HID technology partner

http://www.hidglobal.com/partners/partner_detail.php?id=160



Not all drivers are the same--- so you have 4 types of code authorization

- Drivers codes On-Off only
Code expiration---alerts
management when recurrent
training is due for that operator
- Mechanic codes – On & Off +
Mechanic lockout
- Supervisor codes – On & Off,
over ride Mechanic lock out and
clear alarm
- 1 Programmer code – Full
Access and programming codes
IN/OUT from the keypad



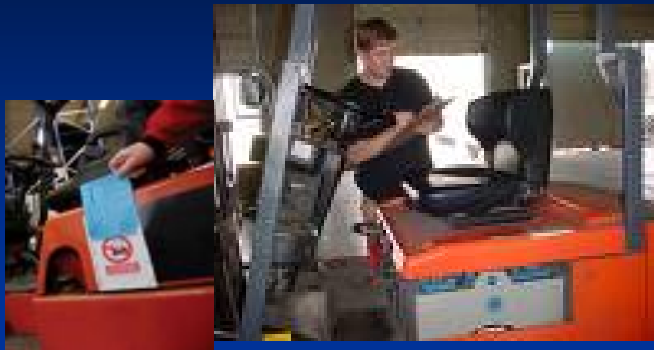
Code	Name	Type	Expiration Date
0001	Joe Flon	U	8/31/2008
✓ 0034	Jose Aviles	U	8/31/2008
✓ 0062	Joe Torres	U	8/31/2008
✓ 0074	Pedro Alamo	U	3/31/2009
✓ 0085	Don Leslie	U	8/31/2008
✓ 0145	Charla Koy	U	8/31/2008
✓ 0215	Ron Marshia	U	5/31/2009
✓ 0286	Roland Frechette	U	11/30/2008
✓ 0397	Curtis Boissonneault	U	
✓ 0543	Roger Masson	U	8/31/2008
✓ 0583	Dennis Cote	U	8/31/2008
✓ 0627	Paul Austras	U	
✓ 0761	Dy Nhar	U	8/31/2008
0795	Ang Ceun	U	7/31/2009
0865	Leo Hamel	S	
0927	Paul Boissonneault	U	
1004	Robinson Garcia	U	10/31/2008
1010	Fred Penney	U	9/30/2008
1011	Stephen Day	U	7/31/2010
1090	Jim Kane	U	8/31/2008
1123	Jay Loukes	S	6/13/2008
1124	Robert Sigman	U	8/31/2008
1126	Pete Campbell	U	8/31/2008
1210	Mike Cornelius	U	12/31/2008
1223	Nino Sanchez	U	8/31/2008
1228	Fred Boucher	U	8/31/2008

How are you scheduling your forklift training?

OSHA recurrent training requirements

- Refresher training in relevant topics shall be provided to operator when:
 - (A) The operator has been observed to operate the vehicle in an unsafe manner;
 - (B) The operator has been involved in an accident or near-miss incident;
 - (C) The operator has received an evaluation that reveals that the operator is not operating the truck safely;
 - (D) The operator is assigned to drive a different type of truck;
 - (E) A condition in the workplace changes in a manner that could affect safe operation of the truck.
- An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.
- KEYROLLER can alert you when each operators training is due as well as give you a logged records of impacts and speeding events to evaluate if additional training is required.

Are pre-shift checklists getting done?



- Before operating the forklift, drivers are required (by OSHA) to inspect vehicles for unsafe conditions
- Paper based checklists are prone to errors and hard to track historical trends. Electronic checklist database are electronically stored for easy reference in the future, by date, time, operator, machine, failures, etc.
- More effective and timely maintenance scheduling via checklist item failures and hour meter readings
- An accident will be investigated by an OSHA officer who will interview employees. If no records exist, you are at the mercy of the employee interview as to your level of compliance
- How well do you store your old checklists? Can you access them? Are you sure they are being done? Are operators accountable for not doing them?

OSHA Requirement for checklists before putting forklift into use

- The specific requirement is found in OSHA Reg: 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 trucks are used on a round-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected.”
- Exactly what components (checklist items) of their forklift trucks are customers supposed to tell their operators to examine? This seems clear enough to those of us in the forklift business, but how clear is this to the average, possibly non-technically inclined, customer? If customers seek clarification in the OSHA regulations, they may find that this resource is not much help in choosing items.



Maintaining Documents

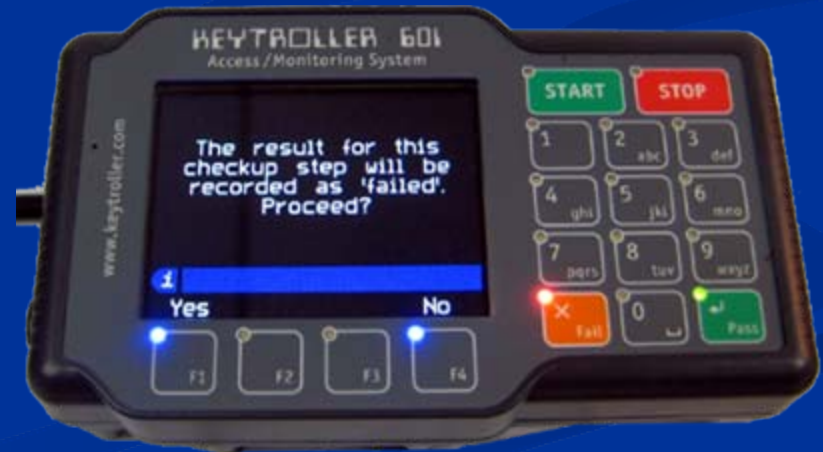
- What happens if there is an event prompting an OSHA inspection where written documentation of examinations does not exist? According to Stanford Thiergood, OSHA's duty officer on the date of contact and senior compliance officer, the customer is at the mercy of what their employee(s) tell the OSHA 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. The investigator will be listening for unsolicited information verifying verbally that a forklift examination occurred prior to its operation. If they get this verbal confirmation, that will be accepted as proper verification by the investigator. Thiergood went on to say that if he 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. 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.” His position for requiring written documentation is that any defect serious enough to take a forklift out of service should have a repair order of some type generated proving that the defect was corrected. One customer, who kept written documentation of its forklift examinations, told us that it was cited during an investigation for gaps in the printed documentation it kept on file.
 - This customer explained to the OSHA investigator that the gaps existed because the forklift wasn't used on the days where written documentation was missing. This inspector explained to the customer that since it kept written records of examinations, it should have kept written documentation on the days where the gaps existed to document that the forklift wasn't used.

Daily (per shift—per start), weekly, monthly?

- Exactly what components (checklist items) of their forklift trucks are customers supposed to tell their operators to examine? This seems clear enough to those of us in the forklift business, but how clear is this to the average, possibly non-technically inclined, customer? If customers seek clarification in the OSHA regulations, they may find that this resource is not much help in choosing items---it is really up to the employers discretion.
- **KEYTROLLER** allows you to schedule more mundane checklist items on a more realistic weekly or monthly schedule

“Flagged” critical checklist items

- If a “flagged” critical item is failed, warning will appear that vehicle will be locked out if failure was correct.
- Only programmer, supervisor or mechanic can re-enable the device to put it back in service or take it to service shop.
- Non-flagged items that are failed will only record the failed item in the log and not require supervisor interface



Forces operator to do pre-shift checklist--- Makes it easy on your operator!!

- Programmable time to complete checklist—or vehicle shuts down if operator does not complete checklist in allotted time.
- Driver can restart vehicle and complete checklist without supervisor interface
- All checklist items are time/date/operator/vehicle stamped providing “accountability” of the checklist tied to the operator



All forklifts are not the same, so you need a customized checklist!

- LCD version allows fully customized items
 - Inspection (checks) of some items are only necessary:
 - Every month
 - Every week
 - Every day
 - Every start
- Program in first start of each shift, or by operator
- Program in time to complete the checklist
- Program in shift times 1st, 2nd and 3rd as necessary
- Program in “Flagged” critical items that shut down vehicle if failed

The Checklist application window features a blue title bar and a close button. It includes an 'Enable' checkbox, a 'Last Checkout' field with date and time pickers, and a 'Timeout' field. A table lists checkouts with columns for Name, ID, and Scheduled. A 'Shifts' section has checkboxes and time pickers. Buttons for 'New', 'Remove', 'Edit', 'Read', 'Write', and 'Close' are present.

Name	ID	Scheduled
Overhead Guard	10	Monthly
Hydraulic Cylinders	11	Weekly
Mast Assembly	12	Daily
custom item #1	101	Every Shift

The Checkout ID List application window shows a table of IDs and meanings. A 'Checkout ID' dialog box is open, allowing for the creation or editing of an ID. The dialog includes an 'ID' dropdown and a 'Description' text field. A note at the bottom states that IDs below 100 are factory predefined and cannot be changed.

ID	Meaning
10	Overhead Guard
11	Hydraulic Cylinders
12	Mast Assembly
13	
14	
15	
16	
17	
18	
19	
20	

IDs below 100 are factory predefined and cannot be changed

Ever have abandoned vehicles in your plant?

- Ever wonder took a truck from your department and never brought it back?

NO ONE KNOWS!

- Who left the truck in the back lot last night on third shift?

NO ONE KNOWS!

- Who knocked off the dock door and left the forklift sitting there?

NO ONE KNOWS!

- **NO MORE!** Event log shows who drove it there and when he got off!

- If there is an impact, time—date—operator---vehicle---intensity and direction of impact



How are you scheduling your maintenance?



OSHA regulation 1910.178(q)(10) *Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease.*

See when maintenance is due right from LCD screen

- Shows date maintenance is due
- Show # of hours until maintenance is due
- If maintenance is NOT done and cleared by mechanic or supervisor, then vehicle will NOT start unless by mechanic or supervisor—or time/date reset through a computer, or Cyberwire connection
- Lock out insures unmaintained vehicles can NOT be started until repairs completed (once “grace period is exceeded--- vehicle will NOT start unless by supervisor, mechanic or programmer.



Do you have damage to rack, equipment + product?



- Abuse creates unsafe rack. Vertical uprights must be straightened, cut off, or replaced. Typically rack is unloaded to be repaired—an expensive and time consuming (and unfortunately common) operation.
- Either the facility is too big, there is not enough supervision---but NO ONE SAW the accident!! Or if they did, fellow operators simply do not report it.
- In most cases, management has a suspicion of the offending driver, they just can NOT pin it on him

Damage is caused by operators that are NOT accountable and later shifts that are NOT well supervised. Typically 80% of the damage is caused by 5—10% of the operators----NOW YOU KNOW WHO THEY ARE!!

Finally—Accountability for your operators!



**Most plants see at least a 50% reduction
in damage almost immediately!**

Typically justifying these devices within the first year of usage.

Lock out the vehicle after impact



- The device can be programmed to shut down the vehicle in X# of seconds after a damaging impact. This gives the operator time to remove the vehicle from an unsafe place. However, the vehicle is now in the vicinity of the accident---allowing a supervisor to discuss the incident with the driver and inspect the damage immediately.
- Device above warns the operator as it “times out” to the shut down. Beeping and showing the number of seconds (in this case 18 more seconds until shut down)
- Accountability at work!! You WILL weed out troublesome operators.

Reduce damage— create a “culture of safety”



- Data and graphs on abuse incident and damage costs provides back up for responsibility, retraining or release of abusive drivers
- Elimination of hostile—reckless operators with data log and graphs of impact accountability (intensity and direction logged)
- Significant reduction in damage—takes burdens off of mechanics to repair equipment, product, machinery and racking
- After impact device can be programmed to:
 - Shut down ignition (in seconds after impact)
 - Sound flashing siren alarm
 - Alarm can be programmed to shut off by: supervisor, programmer, mechanic, operator, all---by code or RFID card

Unsafe speeds in your plant?



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 Accountability

- Speeding forklifts in a congested plant is big safety hazard
- Regulating the speed limit of a forklifts should be an important part of the environmental design of a safe workplace
- A forklift moving fast—has tremendous momentum
- Momentum is the mass multiplied by velocity
- Mathematically it is: weight X speed X 1.5 = momentum



Momentum (stopping distance) of forklifts



- 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 can NOT 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.
- So a forklift traveling at 10MPH takes about 40 feet to stop. Since 40' spacing in a congested warehouse is NOT practical----forklift speeds must be reduced to safe levels to prevent significant accidents

Speed and speed limit shown



Grace period with warning and alarm

- “Grace” period set (typically 4-5 seconds)
- When operator begins to speed – beeps + warns him
- If operator speeds through “grace” period—120dB flashing siren alarm sounds
- After alarm sounds-- event is recorded in the event log ---making operator accountable

Alarm sounding---alerts others



- **Excessive Speed** – Set safe speed, light on dash flashes and beeps during a grace period settable in seconds when driver exceeds allowed speed, if he doesn't slow down, alarm sounds and remains on until speed is slowed down. Event is recorded and operator/time/date vehicle stamped.
- **Upon Abusive Impact** ---the alarm will sound and, if programmed, will shut down the lift – you can set time of shut down after impact. Most use 20+ seconds, to allow the driver to back off product or problem then it shuts down. The forklift will not be far from impact zone---damage can be reviewed by operator and supervisor. Device can only be re-enabled by Programmer, Supervisor or Mechanic code---event recorded.

Forklifts under repair? Still NOT being locked out?



Regardless if the Mechanic knows how to repair the problem or not he can lock out the equipment until help arrives. Night shift mechanics can lock out a damaged piece of equipment until the next day, so no one uses it and gets hurt.

OSHA regulation 1910.178(q)(1) ***Any power-operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.***

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.***

Do your operators leave equipment idling for long periods of time?



Allows for automatic shut off of the KEYROLLER (and engine) after operator leaves his seat (requires seat switch circuit). Engine driven forklifts can enjoy up to 25% increase in fuel economy!

OSHA regulation 1910.178(m)(5)(i) *When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set.*

Engine problems being ignored?



Connections for engine “idiot” lights on dash for low oil pressure and high engine temp. Programmable ignition shut down after “idiot” light stays lit for programmable time--- requires supervisor or mechanic’s code to restart.



OSHA regulation 1910.178(q)(9) ***When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.***

Are seat belts being used?



- OSHA's enforcement policy relative to the use of seat belts on powered industrial trucks is 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.** OSHA should enforce the use of such devices under Section 5(a)(1) of the OSHA Act.
- Auxiliary input on monitoring device can be connected to a seat belt with an internal switch---**shows on screen SEAT BELT LOCK OUT in 45—44—43—42 etc**
- Insures that operator engages seat belt clip or monitoring device will shut down vehicle
- If your forklifts have seat belts and they are NOT used, you are in violation.

Overloading your forklifts?



- Sensor sends signal when pressure exceeds full capacity pressure setpoint
- Setpoint is set on lift with full capacity load on forks
- Input from hydraulic sensor connected to monitoring device at the auxiliary input
- Auxiliary input can be programmed to shut down ignition in X # of seconds if signal remains high



Complete programmability from keypad

- User Codes/Cards, checklists, impact—speed settings, maintenance, hours, WiFi settings, etc.
- Everything you can program from software---you can, if necessary, program from the device!



TEXT message operators on your forklifts!



- Wireless text messaging *“Return to Shipping”*
- Individual LCD units can receive wireless test message from host PC
- Operator must respond alerting host he has received message
- Messages can be sent to individual operators or broadcast to all vehicles
- Example of broadcast message: *“Fire in building #2---EVACUATE IMMEDIATELY!”*

CYBERWIRE 2.4 ghz “Zigbee” wireless option

- Downloads available event log data automatically when vehicle comes within range
- Weatherproof enclosure for harsh environments
- Zigbee transceiver device---plugs directly into RS232 serial port of the KEYTROLLER
- Radio receives it power from monitoring device
- Transmission range: up to 1000' indoor, up to 2 miles outdoors depending upon interference
- LCD device can text messaging to individual vehicles from host
- Host PC Ethernet hard wired radio option will extend effective range by mounting of multiple host radio out in the warehouse (top picture) and hard wired into your network “Cat 5” cable.



CYBERWIRE 802.11 WiFi radio

- Requires WiFi access point “infrastructure” in ceiling to communicate to network PC
- Access points are dispersed throughout the ceiling of warehouse providing constant contact with roving forklifts
- Each lift has 802.11 radio in weatherproof box mounted to overhead guard
- Each lift radio has it's own IP address
- Devices can be configured to most encryption schemes
- Radio range can be extended with optional magnetic antennae



Set up of CYBERWIRE

External WiFi Radio

Keytroller WiFi Standard Compliance: 802.11
a/b/g **Radio Frequency Type:**
DSSS/OFDM

Tx Power :

- 17 dBm (typical) for Tx Power 11b
- 15 dBm (typical) for Tx Power 11g
- 14 dBm (typical) for Tx Power 11a
- **Rx Sensitivity:** -80 dBm
- **Transmission Rate:** 54 Mbps for 802.11a
- 11 Mbps for 802.11b
- 54 Mbps for 802.11g
- 54 Mbps (max.) with auto fallback
- (54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps)
- **Transmission Distance:** Up to 100 meters (in open areas)
- **Antenna Connector:** Reverse SMA
- **Network Modes:** Infrastructure, Ad-Hoc

Power Input:

- 12 to 48 VDC
- **Power Consumption:** 560 mA
- **Power Connector:** Power Jack or Terminal Block

Wireless Security:

WEP: 64-bit/128-bit data encryption
WPA, WPA2, 802.11i: Enterprise mode and Pre-Share Key (PSK) mode
Encryption: 128-bit TKIP/AES-CCMP
EAP-TLS, PEAP/GTC, PEAP/MD5, PEAP/MSCHAPV2, EAP-TTLS/PAP, EAP-TTLS/CHAP, EAP-TTLS/MSCHAP, EAP-TTLS/MSCHAPV2, EAP-TTLS/EAP-MSCHAPV2, EAP-TTLS/EAP-GTC, EAP-TTLS/EAP-MD5, LEAP

Regulatory Approvals

EMC

CE: EN55022 Class A/EN55024,
ETSI EN 301 489-17, ETSI EN 301 489-1

FCC: FCC Part 17 Subpart B, Class A
FCC Part 15 Subpart B, Class A

Safety

UL: UL60950-1

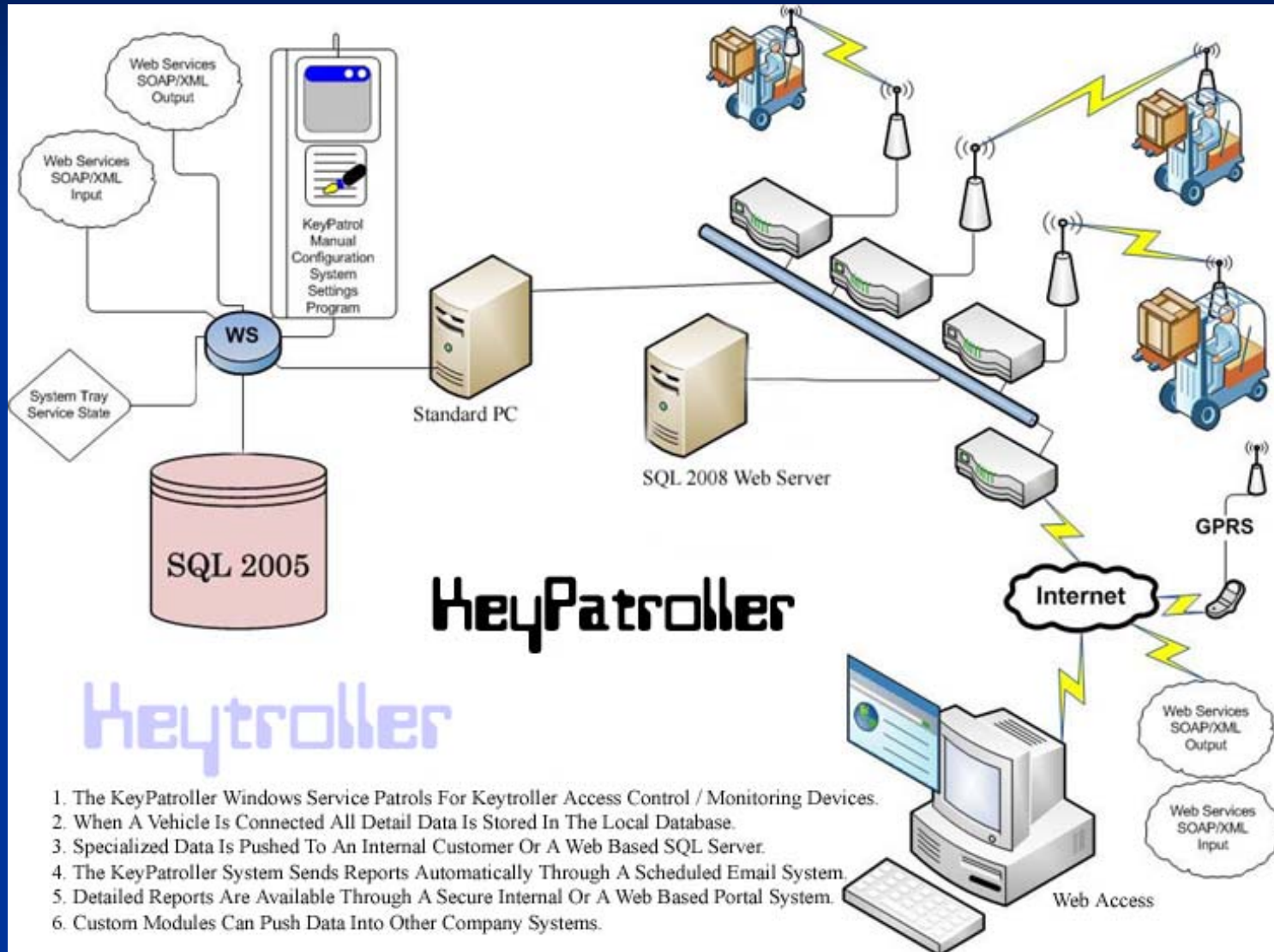
TÜV: EN60950-1

DSPR : ARIB-STD 33, ARIB-STD 66

Embedded WiFi on 601 -602 MUST be tested on site to ensure security compliance and operation

KEYPATROLLER

Client Server Software (available mid 2010)



ROI (Return On Investment) KEYTROLLER SYSTEM

Asset Depreciation Assumption			
Asset Cost (average vehicle cost)	\$25,000		\$50000
Salvage Value	\$5000		\$7500
Net cost of vehicle	\$20000		\$42500
Economic Useful Life in Hours (5 years @ 6.4 hours usage per day)		8,000 hours of usage	
Depreciation Cost per hour	\$2.50 per hour		\$5.31/hr
OSHA Checklist Inefficiencies			
OSHA Checklist – Operator		10 min. / day	
Key Accountability + lost keys		2 min. / day	
OSHA Checklist - Recording / file		5 min. / day	
Supervisor Correlating & maintenance		7 min. / day	
minutes / Day		24 TOTAL min per day	
251 work days per year		88 hrs / yr lost on checklist issues	
Hour Meter Readings			
Run Time Meter Readings		2 min. / day	
251 work days		8 hrs lost/ yr	
Maintenance Reporting			
Computer Generated Reports		20 hrs / yr	
Preventive Maintenance based on reports		24 hrs / yr	
251 work days		44 hrs lost/ yr	
Hours of <i>Lost</i> Productivity / yr			
OSHA Checklist Efficiencies		88 hrs / yr	
Maintenance		44 hrs / yr	
Run Time Meter Readings		8 hrs / yr	
Lost Keys		1 hrs / yr	
Total Annual Truck Hours saved		141 hrs total lost/yr	
KEYTROLLER Value/year/vehicle			
Asset through Depreciation	(\$2.50/ \$5.31 /hr X 141 lost hours)	\$352	\$748
Idle Operator Cost @ \$20/hr	(141 lost hrs X \$20hr)		\$2,820 per year
KEYTROLLER value/year/vehicle		\$3172 total/yr	\$3568 total/yr
Damage / yr			
Damage to rack		\$10000 @ 50% reduction = \$5000 savings/yr	\$13.69/day
Damage to product		\$2500 @ 50% reduction = \$2500 savings/yr	\$6.84/day
Damage to equipment		\$2500 @ 50% reduction = \$2500 savings/yr	\$6.84/day
If your fleet has 20 forklifts, you will <i>save</i> approximately:			
That adds \$500 per year per forklift to the payback or \$1.37/ day per forklift		\$10000 saved/yr	\$27.69/day
KEYTROLLER value/year/\$25000 vehicle (includes damage reduction estimate)	\$3672 total (\$3172 + \$500)		
KEYTROLLER value/year/\$50000 vehicle (includes damage reduction estimate)	\$4068 total (\$3568 + \$500)		
Per Vehicle KEYTROLLER 105 Keypad COST	\$650 system price		
Per Vehicle KEYTROLLER 501 LCD COST	\$1400 system price		
Savings per day based on 365 days	(\$3672 value/yr / 365 days)	\$10.06/day	\$25,000 forklift
Payback in days: KEYTROLLER 105 Keypad	(\$650 / \$10.06)	64 days (2.1 months)	
Payback in days: KEYTROLLER 501 LCD	(\$1400 / \$10.06)	139 days (4.6 months)	
Savings per day based on 365 days (\$4068 value/yr / 365 days)		\$11.14/day	\$50,000 forklift
Payback in days: KEYTROLLER 105 Keypad	(\$650 / \$11.14)	58 days (1.9 months)	
Payback in days: KEYTROLLER 501 LCD	(\$1400 / \$11.14)	125 days (4.2 months)	

Effective use of vehicle monitoring systems

- Requires management and supervisors “buy into” using data to discipline operators
 - **If management does NOT enforce the system, operators will begin to ignore the accountability and return to their old abusive habits.**
- Must meet with operators about WHY the system is being implemented and what is expected of them
 - **OSHA requires training and recurrent training**
 - **Keep unauthorized operators off of your equipment**
 - **Easier on operators ---no keys**
 - **Do NOT steal and use others codes or RFID cards!**
 - **All events are recorded, so there is accountability**
 - **Trying to slow down unsafe vehicles in plant**
 - **Want to evaluate high and low use vehicles and reposition**
 - **Reward (dinner) for lowest # of “bad” events**
 - **Evaluate operator productivity through event log or graphs**



Monitoring Devices: Many models available

- Designed for different applications
- Designed for different budgets
- Designed for different vehicles



KEYTROLLER

available in 2 model series

■ Keypad Model 105

- Code input---start from keypad
- RFID card reader optional
- Full featured monitoring device
- Impact, speed, logging
- Wireless 2.4ghz or WiFi



■ LCD Model 500— now upgraded to 601

- Full featured LCD RFID reader keypad
 - Model 601 –impacts/speeding etc
 - Model 602—no impacts/speeding
- Automated daily checklist
- Training scheduling
- Warns of maintenance due by hr/date
- Wireless 2.4ghz or WiFi



New Generation 601-602

Available Summer 2010



- 33% larger **COLOR** LCD screen
- Microprocessor: 20 X faster, 20X more memory
- Built in internal WiFi (optional)
- IP67 weatherproof custom enclosure
- Components designed for temperature extremes

Available in 601 or 602 models



- Capacitance keys with beeps + NO moving parts
- Can program all codes and settings directly from keypad using programmer ID to enter menu
- 602 has no aux inputs like impact, speed, temp etc.

New Generation 601 vs 501

- Faster (X20)
- More Memory (X20)
- New firmware features being developed
- Waterproof ---Custom enclosure
- Color display
- Larger display
- Keys for “texting” input from operator
- Built in WiFi (verify encryption capabilities)
- Multiple bracket options
- Easy change RFID readers



601 Application shots



START-SMART

Simple Inexpensive Keypad Ignition Systems

■ Outdoor SS0

- Indestructible metal piezo keypad
- Designed for tough outdoor applications
- Available as:
 - Simple coded keypad ignition
 - Option for advanced Model 105
- External wired relay



■ Outdoor SSD---SSM

- Indestructible metal piezo or Duraswitch keypad
- Designed and potted for tough outdoor applications
- Small profile, has no external wires showing



■ Indoor KEY-105

- Indoor membrane switch keypad
- Simple coded keypad ignition
- External wired relay
- Inexpensive keyless ignition



KEYTRAKER

Vehicle Monitoring Systems



Monitoring solutions for **ANY** make/model electric, gas, LPG or Diesel powered vehicle

KEYTROLLER, LLC.

The Company

- Full line of award winning equipment safety devices
- Over 400 equipment dealers for local representation and support
- OEM installation of devices available
- Over 25,000 devices installed in the field
- All models designed to install on any gas, diesel or electric powered vehicles
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