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Comment from LeRoy Hagenbuch, NA

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General Comment

See attached file(s)

Attachments

PHIL RESPONSE RIN 1219-AB91, Docket No. MSHA-2018-0016

AB 91 - COMM - 12

DEPARTMENT OF LABOR

Mine Safety and Health Administration

30 CFR 56 and 75

RIN 1219-AB91

Docket No. MSHA-2018-0016

Request for Information on Safety Improvement Technologies for Mobile Equipment at Surface Mines, and for Belt Conveyors at Surface and Underground Mines

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I. Introduction

About Philippi-Hagenbuch, Incorporated

Philippi-Hagenbuch, Incorporated (PHIL) (www.philsystems.com), headquartered in Peoria, Illinois, is entering its fiftieth (50th) year in business, with a solid and ongoing reputation for innovative leadership in the mining industry. PHIL has over ninety (90) patents to its credit in equipment and methods related to mobile equipment operations, and mining equipment vehicle monitoring, beginning with patents in the mid-1980's that are the genesis of the current original equipment manufacturer (OEM) offerings of mining equipment monitoring systems.

II. Overview of PHIL Comments

In response to this Request for Information (RFI) wherein Mine Safety and Health Administration (MSHA) is considering the role of engineering controls that would increase the use of seatbelts by equipment operators, PHIL's response is primarily regarding seatbelt usage. PHIL believes the only way to ensure proper seatbelt engagement is to create, in a non-vehicle-controlled way, a vehicle climate / environment that encourages absolute seatbelt usage without putting the operator or equipment at risk.

Any seatbelt usage system with engineering controls that interlock with the vehicle are useless if proper seatbelt usage is not guaranteed; any type of seatbelt vehicle interlock is only as good as the seatbelt usage system that can absolutely guarantee and monitor proper seatbelt usage. Clearly, any seatbelt vehicle system that controls vehicle operation is an absolute safety hazard. There are too many examples where an operator panics in a crisis requiring the operator to rapidly move the vehicle, and the operator completely forgets a seatbelt hook-up; a highwall beginning to collapse, for example.

What is more paramount to this RFI than any type of vehicle / seatbelt interlock is having a seatbelt usage system that can *absolutely* ensure that the seatbelt is being properly used by the operator.

III. PHIL's Response to RFI Questions

A. Seatbelts

A. 1. What are the advantages, disadvantages and costs associated with a seatbelt interlock system?

First and foremost, however, is: How does one arrive at a seatbelt usage system that is undefeatable, thus guaranteeing seatbelt use? Unfortunately, all the seatbelt usage systems in use today are easily defeated - so all seatbelt usage interlock systems consequently are null and void. This RFI indicates MSHA "...is particularly interested in engineering controls that affect equipment operation when the seatbelt is not properly fastened." This responder does not believe that "properly fastened" seatbelts translates to "properly used" seatbelts.

How are current seatbelt usage systems defeated? Some of the ways are:

1. Use a standalone metal seatbelt tongue to fit into the seatbelt receptacle buckle to stop any indication that the seatbelt is not fastened.

2. Knot the seatbelt after it has enough length pulled out of the seatbelt retractor to mimic a human's girth and then fasten the tongue of the belt into the receptacle buckle.

3. Pull the seatbelt out of the seatbelt retractor and fasten the tongue into the seatbelt receptacle buckle and sit on the seatbelt.

The two (2) things required for successful implementation and ensuring proper seatbelt engagement is to have:

1. **An undefeatable seatbelt usage system.**
2. **A simple, but effective way to make sure the undefeatable seatbelt usage is in proper use.**

Regarding an undefeatable seatbelt usage system, Philippi-Hagenbuch, Inc. has a patent on a totally undefeatable seatbelt usage system. (Since identifying this undefeatable system, the responder organization has not been able to find a way to defeat this seatbelt usage method when put to the test). This system, which provides absolute confirmation of correct seatbelt usage, is identified in detail in United States Patent No: US 7,005,976 B2, Seatbelt Usage Detection System, and United States Patent No: US 7,446,652 B2 Seatbelt Usage Detection System.

Regarding guaranteeing absolute seatbelt usage confirmation, the PHIL system is, 99.5% of the time, guaranteed to confirm proper vehicle operator usage of the seatbelt system.

Confirming absolute proper use of the vehicle seatbelt is only the first (1st) part of a system that ensures absolute use of a seatbelt. The second (2nd) part of the system requires creating an environment that then guarantees operator usage of the undefeatable seatbelt system. The undefeatable component of this system monitors, 100% of the time, proper operator seatbelt usage. However, monitoring seatbelt usage will, in no way, guarantee operator seatbelt use. Thus, the need for the 2nd component of a seatbelt

usage system. The 2nd component is to create an uncomfortable operator environment. How the step one (1) seatbelt use monitoring interacts to create an uncomfortable operator environment is currently part of the responder's patenting process, more details of which can be shared as a further follow-up to this RFI.

1. **The advantage** is that it is undefeatable.
2. **The disadvantage** is that it works.
3. **In terms of approximate cost(s),** as seatbelts on equipment have definitive lives, the Intellectual Property of the afore-mentioned U.S. Patents US 7,005,976 B2, Seatbelt Usage Detection System, and United States Patent No: US 7,446,652 B2 Seatbelt Usage Detection System could be implemented as seatbelts reach their definitive lives. Even so, it is estimated that, in volume, the cost to produce the complete system, as identified in PHIL's points 1 & 2 above is estimated to be between, as a high, $750 - $1,000 per unit, depending on equipment.

A. 2. Are seatbelt interlock systems available that could be retrofitted, and if so, onto which types of machines and how? What are the costs associated with retrofitting machines with these systems?

a. Retrofitting can be accomplished.
b. Any machine with an operator cab could be retrofitted.
c. In volume, the cost to produce the complete system, as identified in PHIL's points 1 & 2 above is estimated to be between, as a high, $750 - $1,000 per unit, depending on equipment.

A. 3. Are some types of mobile equipment unsuited for use with seatbelt interlock systems, and if so, which machines and why?

All enclosed-cab mobile equipment with operator controls should be suitable for seatbelt systems.

A. 4. Reliability is the ability of a system to perform repeatedly with the same result. Please provide information on how to determine the reliability of seatbelt interlock systems.

A seatbelt interlock is only as good as a system that can guarantee proper seatbelt usage. Otherwise, reliability does not come into play.

Some engineering controls encourage and promote seatbelt use without directly preventing or affecting equipment operation. These engineering controls include audible and visual warning devices, such as lights and buzzers/bells that remind equipment operators to fasten their seatbelts.

A. 5. What are the advantages, disadvantages, and costs associated with these warning devices?

- Audio warning devices are ineffective as many operators wear noise cancelling headphones while listening to their desired genre.
- Using lights as visual warning devices are ineffective in bright sunlight, and if used at night may cause temporary loss of night vision.

PHIL is not a seatbelt manufacturer; but has had in-depth discussions with one (1) seatbelt manufacturer as to implementing the Intellectual Property of the two (2) afore-mentioned U.S. Patents.

PHIL is fully prepared to meet with the appropriate MSHA personnel to:

1. Discuss further the needed system as identified here.
2. Verify, implement, and test the system, as identified in points 1 & 2 above, on one (1) or more trial vehicles.
3. Work with a seatbelt manufacturer and appropriate sources manufacturer to provide this system on a machine-retrofittable basis.
4. Work with Original Equipment Manufacturers (OEMs) for implementation on their machines.

PHIL appreciates MSHA reaching out to industry to ensure safer mobile equipment operations. This is certainly a needed area within the mining industry. This request for information clearly demonstrates MSHA's commitment to safer mobile vehicle operations. In fact, it may be of interest to MSHA that PHIL has previously made some attempt to engage MSHA's involvement in the implementation of a seatbelt use / monitoring system. And, yes, it is heartening to see today's MSHA truly engaged in finding ways to ensure safer vehicle operation.

US007005976B2

(12) **United States Patent**
Hagenbuch

(10) **Patent No.: US 7,005,976 B2**
(45) **Date of Patent: Feb. 28, 2006**

(54) **SEATBELT USAGE DETECTION SYSTEM**

(76) Inventor: **LeRoy G. Hagenbuch**, 502 W. Northgate Rd., Peoria, IL (US) 61614

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 9 days.

(21) Appl. No.: **10/282,514**

(22) Filed: **Oct. 29, 2002**

(65) **Prior Publication Data**

US 2003/0137411 A1 Jul. 24, 2003

Related U.S. Application Data

(60) Provisional application No. 60/340,037, filed on Oct. 30, 2001.

(51) **Int. Cl.**
B60Q 1/00 (2006.01)

(52) **U.S. Cl.** **340/457.1**; 340/457; 340/426.31; 180/286; 180/268

(58) **Field of Classification Search** 340/457.1, 340/426.31, 438, 457; 180/268, 286; 280/801.1, 280/750
See application file for complete search history.

(56) **References Cited**

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"USA Human Physical Dimensions", SAE J833, Jan. 1980.
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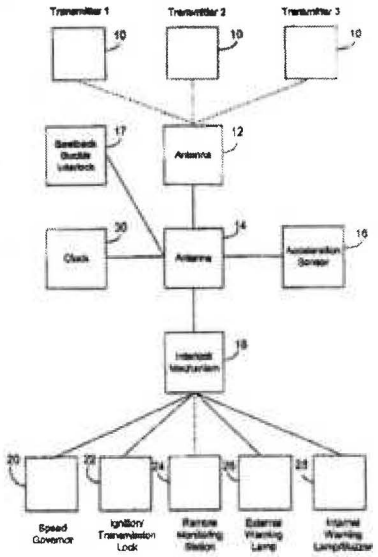
(57) **ABSTRACT**

A system for detecting proper usage of a seatbelt in a vehicle by an operator of the vehicle is provided. The seatbelt usage detection system includes a first communication device arranged on the seatbelt and a second communication device. One of the first and second communication devices is a transmitter and the other of the first and second communication devices is a receiver. The receiver and transmitter are capable of establishing a communication link with each other. The second communication device is arranged in the vehicle so as to be able to establish a communication link with the first communication device of a predetermined signal strength upon proper fastening of the seatbelt around the body of an operator. The system also includes a processing unit for monitoring the signal strength of the communication link between the first and second communication devices and for providing a signal that the seatbelt is unfastened when the signal strength is less than the predetermined signal strength.

33 Claims, 1 Drawing Sheet



US007446652B2

(12) **United States Patent**
Hagenbuch

(10) **Patent No.: US 7,446,652 B2**
(45) **Date of Patent: *Nov. 4, 2008**

(54) **SEATBELT USAGE DETECTION SYSTEM**

(76) Inventor: **LeRoy G. Hagenbuch**, 502 W. Northgate Rd., Peoria, IL (US) 61614

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 110 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **11/324,613**

(22) Filed: **Jan. 3, 2006**

(65) **Prior Publication Data**

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Related U.S. Application Data

(63) Continuation of application No. 10/282,514, filed on Oct. 29, 2002, now Pat. No. 7,005,976.

(60) Provisional application No. 60/340,037, filed on Oct. 30, 2001.

(51) Int. Cl.
B60Q 1/00 (2006.01)

(52) U.S. Cl. **340/457.1**; 340/457; 340/426.31; 180/286; 180/268

(58) **Field of Classification Search** 340/457.1, 340/457, 426.21; 180/268, 286
See application file for complete search history.

(56) **References Cited**

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(Continued)

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23 Claims, 1 Drawing Sheet