



SPECIAL FEATURE

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Innovation

New RFID tag tech aims to reduce 'back-up' accidents

JEAN SORENSEN
CORRESPONDENT

A new leading-edge application of technology, which has found greater acceptance in the U.S., is now trickling into Canada and providing safety officers with another tool to create safer ground conditions for those working behind machines.

Peter Gibbons, who is Finning Canada's B.C. regional technical manager, said the technology, which is known as Radio Frequency Identification (RFID) tagging is very new in Canada. Finning has sold three systems in Western Canada: one in the Fort McMurray, Alta. mining sector, a second now installed on a loader in at a dry land sort in Crofton, B.C. and Kiewit Infrastructure have also used RFID tagging on their machines at construction sites. The systems are seen to gain an advantage in congested areas such as gravel pits, construction site, pipelines and mill yards. The technology is directional rather than 360 degrees, but has the advantage of operating in adverse conditions such as fog.

RFID technology is not complicated and has been used since the Second World War when its military application was used to spot enemy aircraft. Modern-day applications range from scanners reading credit cards and debit cards in stores, to chip identification in animals and even law enforcement applications where officer's guns can be chipped for identification purposes. Construction industry applications, in the past, have focused mainly on inventory control and mitigating theft rather than spotting those behind a piece of equipment or hazards a machine might hit.

"It is another tool," said Jeff Davis, safety department manager for Kiewit Infrastructure projects in Western Canada, adding it is

not a replacement for training for personnel and good on-site safety practices. The danger of relying upon any sensing equipment such as RFID is two-fold, he said, as operator complacency sets in (the alarm going off too often and is disregarded) and a false sense of security (operator and staff relying upon the system too much) rather than using other safety measures such as shoulder checks or back-cameras. RFID systems, he said, can contribute to workplace safety but only under the right conditions.

Finning is marketing several systems but others exist. The systems work by placing an antennae box onto the rear of the machine working in close proximity to ground workers or vulnerable structures. RFID tags which carry a chip respond to the antennae box. There are several manufactures of the RFID tags and they range from strips attached to items to chips imbedded in clothing items such as vests and hard hats.

The antenna's radio frequency recognizes an RFID tag; it sends an audible alarm in the operator's cab warning the equipment operator. At the same time, the external audio alarm is warning the ground worker that he or she is in a danger zone.

Caterpillar, which is distributed by Finning in Western Canada, has its Cat Detect, which is a total package including other Cat products but also distributes a second version Scan-Link Armour System, originating in Eastern Canada. The systems can be adapted to any size of equipment. Kiewit used the Scan-Link system. The Scan-Link system is also being trialled on Vancouver Island in the forest industry in a busy dry-land sort application where scalers, machines, pick-up trucks, waste bins, debarkers and stacks of logs all challenge equipment operators.



COURTESY OF SCAN-LINK

RFID is emerging as a new back-up technology for protecting ground workers. With an antennae box fixed on the equipment's rear, it alerts equipment operators and ground personnel of potential close encounters.

Scan-Link co-developer Jonathan Fava, based in Ontario, said his system has been five years in the design and evolution stages but in 2014 the technology took off and has been growing in usage, mainly with U.S. companies including the construction sector.

"This was a new way that safety was going, where you could tag a person or a random object," Fava said.

Previous back-up systems on equipment have used radar or sonar type system, which needs a ground clearance level behind the machine to avoid false positives. If a ground worker collapsed on the ground, these systems will scan over that person. Fava says his system recognizes any RFID tags, whether on a prone or upright person.

The system can also be used to protect critical structures. He says the Scan-Link system has been used on a New York bridge construction site where a client did not want rolling stock on site to hit any bridge columns under construction. The columns as well as ground workers were outfitted with the RFID tags.

Another application, he said, has been in the waste removal and recycling industries. Debris trucks back into tipping floors, where a loader will remove debris.

"The loader operator can detect anyone who is on the tipping floor," he said. At the same time, entrances can be alarmed so that anyone entering the area (who is tagged) will be noticed.

"It can flash a red light," Fava, as it (alerting all those in the area that another person is entering) and also alerts the loader operator.

The B.C. forestry trial at TimberWest's Crofton dry-land sort addresses many of the basic concerns seen in congested work areas where men and machines interact. A dry-land sort has stacks of logs, debarkers, waste bins, pick-up trucks, scalers and support staff on the ground, plus other equipment. Spuzzum Contracting has equipped a Finning Cat 980K wheel loader with the RFID to prevent back-up incidents.

Spuzzum company owner Alben Stromquist said TimberWest has been on a campaign to reduce its accident rate and opted to pay for the expense of placing the equipment if Spuzzum would trial it.

Son Jessie, general manager at the dry-land sort, said the real advantage that the system gives is another layer of protection against hitting objects or individuals on the ground. Because of emission standards, equipment today sees higher and larger housings over engines making it harder for an operator do a standard shoulder check when backing up.

"We do have a back-up camera in the loader as well," he said. "The camera is now one part of the tools now for checking behind the machine along with the RFID. The RFID broadens it. You capture a little bit more information." He said the audio warning both inside and outside the operator's cab adds to that protection when the operator doesn't check the camera or forgets to make shoulder check.

The system has been working for six months and Stromquist is impressed with the system. While it is directional, it can be adjusted to partially scan to the sides. There are two aspects to any accidents, he said.

"There is mechanical failure and human failure," said Stromquist.

The human failure can be over-reliance on a system or failure to follow standard safety procedures while the mechanical failure can be mitigated through equipment checks. Stromquist said that despite checking the equipment regularly, operator still need to follow standard safety procedures and not rely totally on any one system.

Finning customer service representative Dave Price, out of the Nanaimo office, said the system can also be used in situations where an operator might be working alone on a site. RFID tags can be placed on lighting poles, for example or "anywhere there is a hazard around you."

"It is a really an extra set of eyes," Price said.

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Compensation

How is the price tag on death and suffering set?

PETER CAULFIELD
CORRESPONDENT

How much is a human life worth in dollars-and-cents workers compensation?

A recent memorial for four workers who died tragically 37 years ago provides an opportunity to consider the gruesome calculation.

Gunther Couvreur, Brian Stevenson, Donald Davis and Yrjo Mitrunen were carpenters working on Bentall Tower IV in downtown Vancouver. On Jan. 7, 1981, they were killed when the fly form on which they were standing collapsed, sending them plummeting 36 storeys downward to the street below.

As reported in a recent issue of the Journal of Commerce, construction workers, labour organizations, government representatives and the families of the men gathered at the Bentall Memorial plaque on Jan. 8 to mark the anniversary.

Those men — all of us — have a spiritual, personal and social value. We also have an economic value, as producers and consumers.

When there has been a workplace death, what is the economic value of the deceased worker and how is it calculated?

“Workers and their families need to be able to make better and more informed choices,”

Terry Bogyo
B.C. Worker Compensation Researcher
and Consultant

According to B.C.-based independent worker compensation researcher and consultant Terry Bogyo, the amount in Canada depends on the jurisdiction.

In Nova Scotia, for example, dependency benefits are 85 per cent of net average earnings before the accident, payable until either the spouse reaches 65 years of age or the worker would have reached 65 years of age, whichever is later.

In Ontario, a surviving spouse can receive a lump-sum death benefit of

\$78,616.07, increased by \$1,965.40 for every year under 40 years of age or reduced by \$1,965.40 for every year over age 40. There is a minimum of \$39,307.99 and a maximum of \$117,924.03.

In B.C., compensation for a dependent surviving spouse is payable for life. A surviving spouse 50 years and over, or invalid, can receive 60 per cent of the compensation wage rate that would have been paid to the deceased worker for permanent total disability, less 50 per cent Canada Pension Plan (not less than \$1,105.63 per month).

(Note — the provincial information above is illustrative and partial. For current details, check with Workers Compensation in your jurisdiction.)

“Because workers’ compensation is a pro-

vincial responsibility, each province establishes its own benefit structure and calculation model,” said Bogyo. “Most are based on the average earnings prior to injury with compensation paid to either the estate or in the form of periodic payments to survivors and dependents.”

Different jurisdictions have different philosophies underlying their legislation and policy.

“This may reflect societal values, historical precedence or competitive pressures from neighbouring jurisdictions,” said Bogyo. “Legislation reflects the societal values and political responses at the time it is passed. There are often trade-offs and compromises that result in policies that are unique to the provincial system.”

For example, although the coverage for funeral costs in B.C. and Alberta is similar, the methodology for compensating surviving spouses is different.

“While B.C. has benefits that continue for life, Alberta has provisions for a decreasing benefit,” said Bogyo.

Compared to other countries, Canada rates well for scope of coverage and level of financial compensation available.

“About one-half of the deaths accepted each year for workers’ compensation coverage are related to traumatic injury,” he said. “Compensation for these single, work-related events are generally accepted with little dispute.”

The other half of fatalities are related to occupational disease and may be more contentious.

“Complications, including deaths that may be related to drug reactions, depression, post-traumatic stress disorder, secondary infections, underlying diseases and so forth are more contentious,” Bogyo said. “They may involve protracted consideration, investigation and adjudication.”

As good as fatality compensation in Canada is, Bogyo says there is room for improvement.

“Fatality compensation should be provided as if the worker — any worker killed in a work-related incident within the scope of coverage — were earning the maximum insurable earnings,” he said.

“Or, in the case of Manitoba, which has no maximum, some multiple of the provincial average industrial wage.”

For long-latency occupational diseases, such as asbestos-related deaths related to mesothelioma cancer, Bogyo says there should be a lump-sum benefit even if the worker is retired at the time of death.

“This adds pressure to prevent asbestos exposures in the first place,” he said. “And it would add little cost to the overall premiums because, thankfully, fatal work-related deaths are relatively rare events.”

Bogyo says the industry also needs to do a better job of educating workers and employers regarding what is and is not covered if there is a work-related fatality.

“Workers and their families need to be able to make better and more informed choices about their needs for group and private insurance coverage,” he said.



FILE PHOTO

A wreath is placed near the Bentall IV memorial to Gunther Couvreur, Brian Stevenson, Donald Davis and Yrjo Mitrunen who died on Jan. 7, 1981 when their fly form collapsed and they fell 36 storeys from the Bentall IV tower to their deaths.



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SILICA CONTROL TOOL

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The BCCSA has developed the Silica Control Tool as a resource for the construction industry in BC. The Tool assists employers in conducting appropriate risk assessments and implementing effective controls and safe work practices where RCS dust may be an occupational hazard. The Tool identifies processes that may lead to exposures over the allowable exposure control limit, provides information about how to bring the exposure within the allowable limit, and produces a corresponding Exposure Control Plan (ECP) for the user.

WHAT DOES IT DO?

The Tool guides the user step-by-step for each of their identified RCS dust producing processes through:

- Assessment of the risk from exposure
- Identification of the expected exposure
- Suggestions for appropriate controls
- Identification of expected exposure with the controls
- Any PPE that may be required
- Production of components of a related Exposure Control Plan (ECP)

EMPLOYERS' KEY BENEFITS

- Help to ensure the health & safety of workers engaged in RCS dust producing processes.
- Assist in complying with the requirements of the OHS Regulation relating to assessing & controlling RCS dust exposures to below the allowable exposure limit.
- In some situations, eliminate the need for air monitoring tests for planned work processes, which is particularly helpful given that testing can often be challenging on construction sites because of short duration of work, and changing nature of activities.
- Preparation of specific process-based ECP templates that can be tailored for each jobsite.

The BCCSA Silica Control Tool can be a valuable aid to qualified persons in conducting RCS dust risk assessments, selecting and implementing controls and developing ECPs. However, the Tool is NOT a replacement for professional advice or jobsite air monitoring tests as may be needed. Jobsites and construction projects can be highly complex with unique variables and ever changing nature of work. The Tool does not purport to provide a conclusive output for every possible RCS dust producing process. Employers are ultimately responsible for taking whatever steps are needed to ensure that the requirements of the OHS Regulation are met.

...another tool developed by
BCCSA  **BC Construction Safety Alliance**