

# CON-SPACE

## hardline

White Paper

### Cost Efficiency Or Safety: Technical Voice Communications Deliver Both

*BRIEF: In this article, CON-SPACE co-founder Terry Ibbetson examines the arguments for specialized technical communications gear in confined space operations. Managers faced with budget constraints often struggle to justify expenditures for new equipment, even safety gear. Using actual industry case studies, Ibbetson illustrates how investments in enhancing workplace safety need not come at a cost to the bottom line.*

by T. A. (Terry) Ibbetson  
Past President and Founder  
CON-SPACE Communications Ltd.  
*revised June 2009*





## Cost Efficiency Or Safety:

---

### Technical Voice Communications Deliver Both

by T. A. (Terry) Ibbetson

### How Does Your Organization View Communications?

Communication equipment for confined space entry is not neatly defined by sector, claiming a place in both communications and safety. While definitely belonging to the communications industry, CON-SPACE voice communications equipment was designed as a safety product, making it part of the safety industry. How users define this equipment affects how, and if, it is used. A look at how each industry views its customers and products will help illustrate this issue. Let me tell you a true story.

### The Conflict Between Safety and Efficiency

**STRADDLING TWO INDUSTRIES** In the early '90s CON-SPACE developed a voice communication system for workers in confined spaces. Upon its launch, this portable intercom product was rejected by the communications industry because it was a simple device with an unknown market. As CON-SPACE developed this product to promote safer operations while working in confined

## *The Buddy System*

*When analyzing the problems with working in confined spaces, CON-SPACE found a noticeable lack of communication equipment throughout all of the 37 or more industries listed by the US Occupational Safety and Health Administration (OSHA) that worked in confined spaces. People working in these harsh environments had*

*(continued from p.2)*

*evolved a method of communication called the Buddy System, that included tapping on walls or pipes, hand signals, flashing lights, tugging ropes and shouting. While this can be effective, it does have severe limitations in many situations. For some time, the Buddy System was the norm for this type of work, and still lingers today.*

spaces, it looked next to the regulation-driven safety industry — a market that better understood the benefits that technical communications offered.

**SAFETY AND EFFICIENCY?** In the communications industry, all products are created with the sole objective of increasing the efficiency of users; however, safety professionals have other priorities. This became clear when CON-SPACE pitched the efficiency advantages of its communications equipment to safety professionals, adding that safety was a given if the Attendant and Entrant were talking to each other on a continuous basis. The Company was informed on more than one occasion that the words SAFETY and EFFICIENCY should not be put in the same sentence, and that offering equipment as a safety device that would pay for itself was unacceptable. The pendulum had swung too far.

**THE PRICE OF COST-CUTS** In the mid to late '90s, the pendulum started to swing back as the economy forced companies to downsize and motivated them look more seriously at the cost of everything, including safety. Bottom-line-driven production managers insisted on cost justification before buying anything — including safety products. The impact of cost-cuts on workplace safety soon forced these managers to review why these products were introduced in the first place.

**CHANGING HABITS** Today, the “normal” work environment has become far safer, and we sometimes forget why. Back in the day, it was common to see signs outside factories that read, “200 days Accident Free,” and were updated daily. What they could have said was, “Increase Safety To Increase Productivity.” Companies with a good safety record are usually rewarded with higher productivity. Each of the most commonly used safety products, like ear plugs, gloves, glasses, steel-toed boots, hard hats and protective clothing have become accepted by industry as essential. These once-novel safety items are now common consumer products, like paper clips, but we tend to forget how the original inventors of each of these products fought for industry acceptance in the first place.

This same challenge applies to the next generation of technical safety products; someone has to champion how using these products could enhance productivity and make the workplace safer. Workers on every job site have found their own way to do their job efficiently

with the tools they have on hand, ones they are used to. New tools have to prove themselves, and in confined space operations, electronic voice communication was the new tool.

## Safety Is A By-Product Of Efficiency

So let's look at a few examples where the use of electronic voice communication has improved efficiency in confined space operations, and why, when using this type of equipment, *increasing the safety of workers is unavoidable.*

### *Case Study 1:*

A nuclear power plant in the USA was required annually to clean out one of the two huge pipes that took water from the sea for cooling purposes — a confined space operation. Each pipe was cleaned on alternate years, and took six weeks to complete. Electronic voice communication had never previously been used during this procedure for a variety of reasons: radios did not work well in this metal enclosure, and workers wore breathing equipment to protect against the potentially explosive gases created by the rotting seaweed. This made conventional methods of communication impossible to use. Furthermore, in an explosive environment, all electrical equipment had to be Intrinsically Safe Approved. When CON-SPACE introduced equipment meeting all these requirements, including OSHA's confined space safety regulations, the power plant began using it.

The result was astounding. *The job time was almost cut in half — the efficiency created by having proper communication and the safety of the workers was vastly improved.*

There are numerous examples of how a communication system properly configured for a specific confined space application can meet the requirements of both safety and production. Here's another:

### *Case Study 2:*

A well-known chemical company was going into a 20-day shutdown for scheduled maintenance. Five days of shutdown period was required to service processing towers, which took about two and a half days each to complete. The work inside the tower took about a day; the balance of the time was used to remove covers from observation ports set in the side of the tower at intervals of fifteen feet, allowing the Safety Attendant to maintain visual contact with workers inside the tower. The covers had to be reinstalled with new gaskets once the work was complete. Before the advent of CON-SPACE's Hardline system, electronic voice communication had not been used due to similar constraints to those in the nuclear power plant example above. Safety of the Attendant was the driving force in acquiring the new CON-SPACE gear. With the equipment, the time to service each tower was reduced from five days to one day, as the need to remove observation panels was eliminated. The Attendant stayed on the ground and had continuous contact with workers inside the tower for the duration of the entry. Result: Production Manager happy, Safety Coordinator happy. *And the safety equipment paid for itself many times over.*

## **Choosing The Right Communications Equipment**

So what is the right communication equipment for confined spaces? What exactly will provide the efficiencies that allow equipment to pay for itself? In harsh work areas, will the equipment physically survive for more than one job or even to the end of one job? What about communicating in high noise, wearing breathing apparatus, working with grain dust or under wet conditions? And how about chemicals and explosive environments? These valid questions come from workers in the many industries that deal with confined spaces on a daily basis; many based on past experience and disappointments with unfriendly communication equipment. Next, we examine some of the things to look for when choosing communication equipment for particular confined space applications, along with real-life examples.

In determining your needs for a particular application, you first need to ask what will make the job easier. Here are a few points you may want to consider:

- What environments will equipment be exposed to? Water, Chemicals, Rugged Terrain, Explosive, High Noise?
- Will workers be wearing hoods, respirators, facemasks or breathing apparatus of any kind?
- Do workers need both hands free at all times to do their job efficiently?
- Is privacy on the job a benefit?
- Is communication needed for safety?

*Case Study 3:*

While sealed inside an aircraft fuel tank conducting a negative pressure test to find a leak, a freak accident caused an equalization valve to open spewing fuel onto the entrant. The man was in continuous voice contact with his Attendant, who immediately started to remove the sealed panel allowing the entrant to exit the tank before the fuel engulfed him. The entrant, experienced in this work, went home to his family that night because he had electronic voice communications on the job.

After spending many years working with workers and rescuers in the confined space field, I have learned first-hand what this personnel looks for in specialized equipment: it must make the work easier, be simple to operate, be reliable, and be rugged enough to survive the environment — preferably over and over again. For communications equipment, there is another requirement: communication should be continuous and hands-free, so that the job can be completed without interruptions.

**PORTABLE RADIOS CAN FAIL IN CONFINED SPACES** Portable radios may not be the communication equipment of choice for confined space work. Metal shields are used to protect sensitive equipment from radio frequency (RF) signals, so RF does not penetrate metal, or re-enforced concrete, which describes the construction of many confined spaces. When driving through tunnels, your car radio fades, becomes intermittent, or stops working; this is what entrants using radios face when working inside the majority of confined spaces. Reliability is a key element for any safety product; radio frequency communications are simply not reliable in all situations. Here's one example:

*As of 2001, crane operators in Chicago cannot use portable radios for crane-to-crane and crane-to-ground communication. A new Safety standard states that the only acceptable communication equipment on a crane is a Hard-line intercom. Radios were found to be unreliable, resulting in accidents attributed to poor communication, especially as the buildings on the construction site grew taller and became denser.*

The alternative to portable radio is Hard-line communication using portable intercom systems. Intercom devices are full duplex (continuous, uninterrupted communication), not subject to fading or cutting out, while communication is private, hands-free and reliable; **all desirable features for confined space workers.** Other desirable features include a system that will survive in harsh environments; one that works well, has

suitable accessories for communication in high noise or when wearing breathing equipment and one that is approved for use in explosive areas. CON-SPACE Hardline Systems meet all of these needs.

#### *Case Study 4:*

A rescue team was called to extricate two workers caught in a sewage line. The team arrived before the truck carrying their Hard-line Communication Kit, so they donned protective clothing and entered the confined space using their Supplied Air Breathing Apparatus (SABA). The space was cramped, dark and chest deep in raw sewage. Conditions could not have been worse, and having no communication at all made finding the two victims an impossible task. Later, Team members would unanimously agree that this was the most horrifying entry they had ever done. On their second entry, the Team was fitted with the SABA and Hard-line communication. Air lines and communication cable ran together inside a cover and the team reported that the difference in their psychological well being and efficiency was "remarkable." Full duplex, hands-free communication made talking to the operations officer and line handlers easy, which was very important when it came to maneuvering the victims back to the point of entry and out of the space.

**ESSENTIAL GEAR** Most customers are value driven, and when budgets need trimming, they look to cut non-essential purchases first. For confined space entry, gas detectors, ventilation equipment, fall protection equipment and breathing apparatus are all clearly defined, essential gear under existing regulations. On the other hand, communications equipment seems to be one of those “do we really need it?” items, especially if it is tagged as a safety product. **So why don’t we set the record straight and call “communication equipment for confined space” exactly what it should have been called from day one: an *efficiency product*?**

**SAFETY EQUIPMENT THAT PAYS FOR ITSELF** Viewed as an efficiency product, the decision to buy may now be based on a different set of parameters, safety being only one. The final decision should be the result of a step-by-step review of job efficiency, with and without the correct communications equipment. Senior managers can then perform a cost-benefit analysis and determine the breakeven point, making it easy to justify their purchase decision.

## SUMMARY

The question is: does using electronic voice communication in confined spaces provide a safety benefit, an efficiency benefit, or both? I hope you are better able to answer this question and have gained a new perspective on the value of technical communications gear in your operation. Electronic voice communications equipment will improve on-the-job efficiency no matter where it is used, but it is imperative to choose the right equipment for your work environment. Having clear, reliable communications in confined space operations improves morale, saves time, money and lives. I’m happy to say that we are now able to have the words “safety” and “efficiency” in the same sentence.

### Key Points:

- **Technical communications equipment designed for use in confined spaces struggled to gain acceptance in the communications and safety industries**
- **The communications industry saw it as unsophisticated; the safety industry thought it put efficiency before safety; neither view was accurate**
- **Further resistance was offered by workers using outdated practices, including the “Buddy System”**
- **Current regulations imply the need for electronic voice communications but do not explicitly state it**
- **Technical communications gear has been field-tested to demonstrate both an decrease in the time needed to complete a job and improved safety of the workers**
- **Although some organizations have cut back on safety equipment in times of budget constraints, a business case can be made for electronic voice communications based on increased efficiency**
- **It is essential to purchase the right equipment for the job; confined space operations have highly specialized needs**



*written April 23, 2001*

*Originally published in Bests Directory, 2002 Issue*

## WHITE PAPER SERIES