

## Elevator World Article

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### **Elevator Emergency Telephone Technology using Wireless & Cellular Networks.**

#### **Introduction:**

The American Elevator Industry has been struggling with the existing and varied telephone systems and platforms, along with land line carriers existing infrastructure for service to elevators.. Meanwhile Europe has been quietly moving ahead with expanding cellular networks and locating niche cellular markets to create new revenues. One such market that has emerged over the past few years is emergency telephones for elevators and related applications.

Along with this elevator application, cellular telephones have advanced with many new capabilities, Ex. The I-Phone and Smart Phone technology which allows many new methods of utilizing this technology as it applies to the elevator industry.

The major elevator manufacturers' operations in Europe have been experimenting with the technology, and engineering new applications for the existing cellular technology. It is predictable that this technology will be soon emerging in the US Marketplace with hardware soon available to the suppliers and contractors for conveyance Owners.

**Information Reviewed:**

Elevator World, August 2013 Issue

ASME A17.1 Section 2.27.1.1 B 2010

ANEP Product Literature:

Janus Product Literature

European Cellular market providers of wireless elevator emergency phones.

WurtecUS

ANEP France

JANUS US

European Cellular Phone systems

Vodafone, UK

Orange, France

T Mobile Germany

Telecom Italia

Telenor, Norway

## **Background:**

Most building elevator telephone systems have been cobbled together over the years and employ a myriad of different methods just to get the emergency call out to the answering service. Some systems use an auto-dialer. Others may employ a “ring down” line, that is programmed by the phone company to dial a specific number whenever the elevator telephone receiver is lifted.

Where does the telephone company's part end and the elevator company's part begin? Suffice it to say, if we have a outside dial tone coming into the machine room for the elevator; that junction would be the beginning of the elevator contractor's part, the beginning of telephone line monitoring, and the end of the telephone company duty.

We attach the line or dial tone monitoring device to that specific line and from the dial tone monitoring device to any line sharing device and/or directly to the two way communication system. It's first come first serve in terms of who gets the open line on the line sharing device. There is no prohibition against party line sharing with other elevator subscribers on a line sharing device.

*On buildings with over 100 feet in rise, a prescribed method for the fire department to jack into the car directly shall be provided.* This type of hardwired connection can be between the line sharing device and the individual subscribing car. However, this traditional hardwired system can also be supplemented by the emergency cellular telephone.

In summary, it is a series circuit between the telephone company line, the dial tone monitoring device, the subscriber phone, and or line sharing device that connects to the subscribers phone.

## **Analysis**

More often than not, the elevator company is called upon by the Owner and or AHJ to perform the installation. The contractor is also called upon to determine operation and condition of the telephone in the elevator when there is a problem.

The Emergency Telephone service in most elevators today is made up of a fragile alliance of the following:

- A. The elevator contractor.
- B. A telephone exchange equipment supplier.
- C., Telephone equipment installers.

D. Telephone equipment maintenance service companies.

E. Telephone signal carriers.

and finally:

F. Telephone answering services.

If anything goes wrong with the system, the initial service request usually goes to the elevator contractor by the Owner. If the faulty operation lies in any other domain it is up to the elevator contractor to identify the fault and coordinate proper action for where the difficulty lies. Even more difficult is locating the correct party to accept responsibility. In the meantime, the manure gets piled on the elevator service contractor as the problem remains unsolved. It's no wonder that panic frequently seizes the elevator company operations manager when asked to put a price on a telephone repair. There is a potential and substantial liability to spend a lot of time and effort in solving a problem that most likely the elevator company never created and frequently out of their control.

To assist in resolving the telephone problem a process has to occur. The number of the telephones on site in question must be searched out and the carrier billings must be reviewed to determine if the line is active and if the account is current. If all of this checks out, the wiring from the building telephone phone room to the machine room must be verified for continuity and line voltage, and so it goes.... .. on and on, and sometimes ....forever on. In the end, often a substantial labor charge is generated by the contractor to be collected or absorbed without a final resolution to the problem. These kind of issues often bode the end a good customer relationship.

## **Findings:**

The better solution has arrived that lies in controlling more of the variable factors associated with the emergency telephone service. Today's wireless technologies allow the contractor to do just that.

Frequently the added benefits of the cellular system results in eliminating building wires and traveling cable conductors dedicated to the elevators. The cell phones can be used with a group elevator system to maintain multiple telephones that can be multiplexed onto one line for reduced line charges by the cellular network over land line system.

A gateway and antenna is used to relay and transmit the signals to the cellular network where reception is always at a maximum. In underground applications, or weak signal areas, a repeater is used to amplify the signal.

In most cases, by reducing the number of control factors the contractor will be able to offer their customer better overall telephone service coupled with line monitoring and simplified billings.

Today's elevator industry has truly grown into an international endeavor. More often contributions are coming from engineers and technicians worldwide.

In France ANEP has developed a cellular system that can replace the old hard wired telephone, perform all of the functions required by the new codes, and then some! In about three hours an average technician can install all of the components required to eliminate the old multi faction system and replace it with new cellular equipment capable of handling up to eight cars on each line.

The system is easily adaptable and accommodates cellular, hard wired, even VOIP configurations. Code issues such as periodic line checking have been implemented and the phones "call home" at programmed intervals to verify the answering service and monitoring systems are working.

In Europe there are over five million elevators as compared to over one million here in the US. 45% of that base is over 20 years old. This translates to 125,000 new and refurbished elevators per year that need emergency telephone services. Cellular technology helps lower installation and connectivity costs significantly.

Operation costs are reduced even further by line and data monitoring using a professional contact center. The sophisticated software platform available to the contractors allows managing diagnostics as well as emergency calls received from these new cellular and alarm devices. The future of cellular technology looks bright for the US elevator niche market.

Additionally, different points on the elevator or escalator can also be monitored to determine if the equipment is working properly and reporting status, faults and events. ANEP also provides the

monitoring software for the call center for complete recording of report and related corrective actions to be taken.

All of this new technology is designed to provide the elevator contractor with an opportunity for an additional revenue stream. Cellular systems gives the contractor full control over the elevator emergency communications system for the Owner. This applied technology by the elevator contractor results in simplifying the customer's work load, and eliminating the tasks of tracking multiple billings from the telephone carrier, the telephone service technician, and the answering service. All of this accounting work is eliminated and the owner charges can be captured and folded into the elevator service agreement.

Future market demands in the US call for more extensive elevator monitoring to assist the elevator company technical staff in servicing the equipment. This is by documenting faults and events of existing elevator control systems and doing it with a minimum investment. Plug and Play transducers and module extensions can be placed on the bottom and top of the car to monitor select functions such as safety circuit, door open and others, along with the added safety benefit of an emergency call button provided for a technician to report when they access the top of car or pit areas. These serial link modules may also be used in future applications to record acoustical profiles of components and compared with established base lines to detect deterioration within the system.

The ASME A 17.1 code does not speak directly to Escalator applications of wireless technology, However, change is in the wind for Code review and added Code language is needed for escalators and power walks. This basic language is already in place for elevators and very little change would be needed to accommodate cellular systems into escalators for monitoring.

### **Conclusion:**

We are living at an interesting point in our technological history. For the first time since their invention, we are starting to do away with our traditional phones. The wireless revolution has made a "land-line" all but obsolete. Even our business models are moving away from traditional phone lines to wireless VOIP or cellular options. Today wireless phones do so many incredible things, while old-fashioned telephones do so little (they make phone calls). Who needs them? It soon becomes obvious that even in elevators, cellular digital systems will be the new standard.

If you are like most people, your first response to the idea of a cell phone in an elevator cab sounds like a complicated idea. Any challenge that using wireless cellular technology in emergency telephones present are easily overcome.

Considering all the functions a smart phone can do, one cannot help but imagine how we might apply the current technology in conveyances to maximize efficiency, reliability and the effectiveness of industry communications.

The possibility to view, listen and record what is happening in and around mechanical equipment such as our conveyance industry is a game changing key.

This will eventually make the contractor resolution of operational issues more proactive, and solve communications and operational problems before break-downs occur.

End

of the land line Telephone;

... and beginning of the Cellular systems:

#### FOOTNOTES:

Article Information in part obtained from:

ANEP [www.anepstore.com](http://www.anepstore.com)

The Telekom Austria Group M2M site.

Janus

Wurtec

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