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### Fighting the copper theft epidemic

Businesses seek solutions from the security industry for an ever-increasing problem

By



**With prices on copper theft up significantly, utility substations, cell towers, under-construction homes and even existing commercial buildings are becoming targets of a new kind of crime: copper theft.**



Photo courtesy RSI Video Technologies

**At substations large and small, thieves are targeting the heavy copper grounding wires; the loss of the grounding wire makes the facility unsafe and susceptible to lightning damage.**

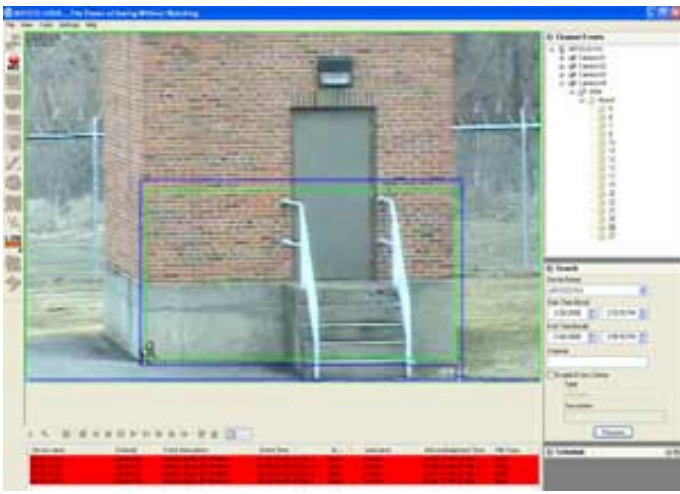


Photo courtesy Arteco

**Arteco, one of a number of providers of intelligent video solutions, offers the ability for utilities to add virtual perimeter detection to help identify intrusions via surveillance cameras.**

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The growing economies of India and China have created a large demand for copper and other non-ferrous metals over the past several years. Combine that with a weakening dollar and the price of copper has skyrocketed over the past eight years from about 80 cents a pound to over \$3.50 per pound.

The dramatic increase in copper prices has not gone unnoticed by criminals and preventing copper theft has become one of the biggest contemporary challenges facing businesses worldwide. Despite the severity of the copper theft problem, no federal or state agency has yet to gather statistical data on the crime.

It is a fact, however, that utility companies, along with various home and commercial builders, have been some of the hardest hit industries by the copper theft epidemic.

According to Jeff Wilson, a spokesman for Georgia Power, losses due to copper theft have increased more than 350 percent in the past two years.

"Anywhere they can find copper, they're taking it," he said.

"It's coming off poles, it's coming off transformers, it's coming off of construction sites, just anywhere it's at," added Philip Peacock, investigations supervisor for Georgia Power.

In addition to the financial impact, Wilson said that the thefts also jeopardize the safety of company employees, as well as others.

"Obviously, it's an ongoing concern for us. Not only is there a financial impact, but there is also a significant safety impact as well," he said. "Our employees who work in substations have safety training and they're required to wear all the protective equipment and take the necessary safety precautions. The people who are breaking into facilities and that type of thing, safety is not really a concern for them."

Peacock said the perpetrators are predominantly removing the grounding copper wire from their substations, which subsequently creates a dangerous working environment.

"Whenever they do that they make it unsafe for anyone who's around it," he said.

The company has begun replacing copper wire with steel-clad wire in various locations throughout the state to help reduce thefts, according to Wilson. Georgia Power has also started marking their wire to make it easily identifiable to recyclers.

The biggest challenge in combating the problem, according to Peacock, is that being such a large utility company, they have numerous locations spread out across Georgia. Peacock said that they keep all of their facilities locked and lit up at night, but that sometimes isn't enough to ward off brazen thieves.

Another industry plagued by frequent thefts of copper has been telecommunications where infrastructure and service providers like AT&T are being affected dramatically. AT&T alone recorded nearly \$6.7 million in copper theft damages in 2007, according to Dave Pacholczyk, a spokesman for the company.

"The real issue is the effect on our customers and our communities," Pacholczyk said. "Last year, we had more than 2,200 copper cable thefts, several hundred of which were service-affecting. Every outage caused by copper theft has left customers and communities isolated and possibly vulnerable in an emergency."

Starting in late 2005, Pacholczyk said that they began to see an upswing in thefts as the price of copper climbed. So far in 2008, he indicated that the numbers of thefts are currently outpacing last years' figures.

Thieves commonly target the utility's aerial cable, as well as other sources of copper that are found throughout the company's buildings and facilities.

"This is a multi-million dollar nuisance, and costs us far more than the thieves ever get for the copper," the AT&T spokesman said. "But beyond the damage it causes to our network and the cost to fix it, the criminals are disrupting and threatening the lives of our customers

and the safety of our communities. We can't put a price on that."

As with Georgia Power, Pacholczyk said that it's difficult for AT&T to secure all of its copper resources given the vast size of the company.

"The biggest challenge is the size of our physical footprint, which includes hundreds of thousands of miles of network, as well as hundreds of buildings and other facilities, across 22 states. We've been working closely with law enforcement across the country to help educate them on the issue and assist in identification and prosecution of the criminals," he said. "We've also employed remote video monitoring at our locations to identify copper thieves and have begun coding the materials to aid in identification. And we're working with the recycling industry."

Despite their best efforts, however, Pacholczyk said that it seems like the criminals stay one step ahead of them saying

"But this is like a game of whack-a-mole," he said. "Whenever we stop the thieves on one front, they find a way to do something else."

### **Video solutions for copper theft**

Keith Jentoft, president of RSI Video Technologies, feels that the security industry as whole has let consumers down when it comes to developing solutions for copper theft, even comparing it at one point with an ostrich.

The security industry, said Jentoft, "has had their head in the sand."

"The reason is that it's a very difficult problem to address because most copper thefts are in remote locations," Jentoft explained. "Often times there's no power, for sure no broadband, no telephone or any other communication, so it's very difficult to go put in a solution that works. Therefore, they ignored it because they didn't see any potential to make money on it."

Jentoft, who has done extensive research on copper theft and even has a company Web site dedicated to the issue, [www.coppertheft.info](http://www.coppertheft.info), also said that there is a strong link between copper thefts and organized crime groups.

"There's a whole subculture now that's been trained on where copper is and how to steal it," he said. "The fact that the economy is getting tight and copper is getting more expensive makes the problem something that grows."

Indeed, Jentoft is right that there may be a developing criminal subculture for copper thefts. The December 2007 issue of the *American Recycler* newspaper reported that a criminal organization tied to a Canadian branch of the Hell's Angels was recently found to be one of three groups connected to an industrial copper theft ring in Quebec. The groups were reportedly involved in more than 250 thefts from 12 different Hydro Quebec electric plants and some other private businesses since 2006. The total value of the metal stolen was \$2.5 million.

According to Jentoft, the copper theft epidemic has also begun to plague cities infrastructures as thieves pilfer schools, airports and gas lines for even trace amounts of copper pipe or wire.

RSI's solution, Videofied, is a totally wireless video system that detects motion at locations where copper maybe targeted. The camera records a 10 second video, which is subsequently sent to a central monitoring station where a dispatcher can notify authorities to any suspicious activity.

Jentoft said that Videofied has been implemented by major cell phone companies to protect their cell towers, large electric utilities, residential and commercial builders, as well as supermarkets and restaurants, whose air conditioning units thieves have started targeting for their copper components.

Outside of a few "high-end" applications, Jentoft said that it's just not economically feasible for companies to install CCTV systems.

"No one's going to pay mega dollars for a CCTV system in every substation. It just won't happen; they can't afford it," he said.

Unlike a CCTV system that could run a business tens of thousands of dollars. A basic Videofied system, which includes two outdoor cameras, cell based panel and a key pad retails for \$2,800. Up to 24 cameras can be placed on one system, according to the RSI president.

"The repair costs are tens of times more expensive. ... You might lose \$300 [worth of copper] from a cell tower and have a \$5,000 to \$7,000 bill just to repair it and that's when there's no lightning. Because they steal the grounding structure, if you get a lightning hit to the cell tower which happens quite often, you lose \$250,000 worth of switching equipment," Jentoft said. "You can't just sit back and absorb the theft and say 'Oh well.' It affects you too many ways and it's very expensive."

Another video surveillance company applying their solutions to aid businesses in their ongoing struggle against copper theft is Arteco. Arteco's Intelligent Video System (IVS) is a video analytics solution that uses surveillance cameras to create a "virtual perimeter" around a given location, according to Steve Birkmeier, vice president of Arteco.

Birkmeier said they generally use around four to six surveillance cameras at a facility to create this virtual perimeter, which is usually about five to 10 feet off the fence line. After that perimeter is established, the IVS is tuned to filter out objects other than people.

"You're not looking for the dog or perhaps the deer that may wander up to the fence line. What we're looking for is something the shape, size and orientation of a person," Birkmeier said. "Once that gets into the zone, it triggers an alert."

A video of the suspected metal thief is subsequently sent to a monitoring station where someone verifies whether or not the intruder is a human and then responds appropriately.

As with Jentoft, Birkmeier said that the development of copper theft solutions has come mainly from the requests of consumers, who are desperately seeking a way to reduce their losses

"For the large part, this is much more customer driven than industry driven," he said. "This is something we're hearing more from the consultants' side, who are dealing with the utilities, who have really just come to a point of frustration on how (they) can deal with this."

We get more direct requests for presentations on our equipment, proposals on our equipment from end users than any we do from just about any other vertical market out there."

Despite efforts to crack down on recyclers who knowingly purchase stolen copper by state legislatures and attempts by utilities and other businesses to in some way brand their metal equipment, Birkmeier believes that those measures are not adequate enough to address the crime.

"Our major concern with both of these issues is that they're both very reactive in nature. The damage has already been done, there's already been the potential for someone dying or being harmed, the power is being knocked out for thousands and (there is) the creation of a very dangerous working environment for utility workers," Birkmeier said. "What we try to do with our products is much more from a proactive side."

Those businesses interested in implementing an IVS can expect to pay between \$3,000 and \$15,000, according to the Arteco vice president. A four to six camera system would be about a \$5,000 to \$6,000 investment, Birkmeier said. Existing surveillance infrastructure can be used in many circumstances. Birkmeier notes that the Arteco IVS has been implemented by numerous businesses all over world, including various electric and water utilities.

## Securing the recyclers

Though they are often pointed to by law enforcement officials and others as being part of the problem, metal theft has also negatively impacted recyclers.

According to Mike Oliveira, director of information and systems technology for the David J. Joseph Company, which operates more than 50 scrap recycling facilities across the country, copper theft has cost them tremendously in man hours and security purchases.

"All of the municipalities in which we have our facilities in, there's been a lot of pressure from local police to crack down on non-ferrous metal theft, Oliveira said. "What's come out of that is, basically, you've got a lot people who are stealing various pieces of metal from different places, maybe from parks, businesses or wherever. The police have to research those incidents and find out where the metal went."

Oliveira estimated that the company loses a total of between four and six hours of productivity from employees per week at each recycling facility due to the amount of time it takes for them to work with police to track down suspected thieves. That pales in comparison, however to the amount of security upgrades they've had to make.

"Really the cost has been in implementing all of the technology," he said. "We've bought fingerprint devices, which range anywhere between \$500 and \$1,000, we've bought signature capture, which is between \$350 and \$600, and we've put in a host of cameras."

Recyclers, however, are not without other tools to help them keep track of suspected criminals.

Ken Gruber, founder and president of Transact Payments Systems, has developed JPEGer, a software solution that aids the scrap metal industry in keeping track of those persons who have obtained metal through nefarious means.

Originally developed to audit internal fraud, JPEGer has become a solution that recyclers can implement to cut down on time employees lose dealing with authorities tracking down information and images of suspected metal thieves.

"Recycler's are becoming more and more engaged with police departments just because of the rise in price of copper and other non-ferrous metals. The time it takes to pull together standard video clips just takes forever; nobody really has a chance to look at video," Gruber said.

Every time a transaction takes place at a scrap metal yard, whether a weight is taken off a scale or someone is paid for their recycled metal, JPEGer takes a photograph and stores the images on a database for easy access. Gruber said that JPEGer interfaces with a Milestone digital management and recording solution so all of the video and photographic evidence can be easily obtained by police.

There are currently 250 JPEGer users nationwide, according to Gruber. The software license to use JPEGer costs \$3,000.

"A lot of the legislation and stuff requires video, Gruber said. "The problem is, video is so cumbersome and large, I think the main point is that when we can create an interface with the scale that were saving the important image, it just creates a much easier auditing tool. Usually they find the problem -- the criminal -- in JPEGer and the video backs it up."

Oliveira said that they take over 60,000 images day with JPEGer and indicated that it has helped them meet the storage length requirements that many municipalities place on the photographs, some of which are as long as five years.

While copper remains the top choice among metal thieves, Oliveira said that aluminum and brass run a close second and third respectively.

Desperate to get their hands on metal wherever they can find it, thieves have even begun stealing pieces of artwork from public parks. According to a recent story in the Philadelphia Enquirer, outdoor sculptures, including a 5 and 1/2-foot statue of Sacagawea at the Lewis and Clark National Historic Park in Oregon, have been stolen and sold as scrap.

In the case of the stolen Sacagawea sculpture, pieces of the statue were sold to one recycler for a little more than \$500. The statue itself was worth an estimated \$20,000, according to the article.

In addition to the safety issues that copper theft has created at electric substations, there have been numerous media reports regarding the theft of metal and how it has resulted in the explosion of homes after an unwitting culprit accidentally knocked a whole in a gas line. Fire officials in California have also reported seeing vital fire sprinkler system parts being stolen and sold for scrap.

## The law enforcement push

"It's going to continue," said Officer Don Hawkins, of the Fort Worth Police Department, who also serves as member on the board of the

International Association of Property Crime Investigators.

Hawkins said that Texas law enforcement officials are working with state legislators to try and increase the penalties for scrap metal theft and that strict state law, along with strong city ordinances is how they try to combat the problem in Fort Worth.

According to Hawkins, the state recently changed its penal code to make the theft of copper wiring a felony.

"We would like to have (theft of) some of the other regulated materials (aluminum, bronze and brass) to be felonies because there is so much of this going on right now," he said. "I feel right now we need to be more strict on it, but we're not. The longer time that it takes for that to happen, the more and more we're going to see this problem occurring out here."

Hawkins indicated that most of the people they arrest for metal theft are repeat offenders, but he said if Texas and other states do not start imposing stricter laws that more people are going to begin resorting to the crime.

Though electric and communications facilities are a primary target for thieves in Fort Worth as they are everywhere else, Hawkins said that churches, due to the size of their air conditioning units, have also become hot spots for theft.

Another way the FWPD tries to combat the problem is to pass out educational pamphlets, which outline the epidemic and offers tips to businesses on how to protect themselves from theft, such as keeping vegetation cut down and installing cages around their air conditioners.

As long as the demand for copper and other metals remains high throughout the world, experts agree that that the problem of theft isn't going away anytime soon.

"Well, the economy's getting worse and copper's getting more expensive. Why would it stop?" Jentoft said.

**Solutions:**

- For more information about Videofied from RSI Video Technologies, call 877-206-5800 or visit [www.coppert theft.info](http://www.coppert theft.info).
- To learn more about Artec's Intelligent Video Systems, call 314-426-5331 or visit [www.artecous.com](http://www.artecous.com).
- For more information about Transact Payment Systems and JPEGer, call 812-212-7109 or visit them on the Web at [www.tranact.com](http://www.tranact.com).

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