

The Key to RFID Door Lock Technology



by AMANDA STROUSE

Installation, cost, maintenance, convenience, durability, security – these are all important factors to consider before a lodging facility or hotel chain switches its door lock technology (or any technology). While hotels search for a harmonious balance of benefits for the guests, hotel staff and the hotel's spending, there seems to be a new technology winning the heart of the hospitality industry: **RFID**.

There's no doubt that RFID is the present, but whether or not it's the future of hospitality access control is still uncertain. Are RFID door locks all they're hyped up to be? How do they compare against magnetic stripe cards? Learn the facts, read varying viewpoints and decide for yourself.

What is RFID door lock technology?

RFID stands for radio frequency identification. This type of technology uses two-way communication via radio waves and a small computer chip to assign unique data to something, often for tracking and access management purposes. It can be used for access control, but it's also used in inventory tracking systems, electronic toll collection systems and even in movie rental kiosks.

industry. "It's strictly another lock in another format that uses a different type of credential," Lopes said that his company started RFID projects for the hospitality industry in 2008 and RFID has since continued to grow in popularity.

To understand why more and more hotels are choosing RFID technology, we must first understand traditional door lock technology options.

"RFID was initially developed to track merchandise, then it became: how can we use this to track people?"

Even though RFID is used for a wide variety of reasons, it's gaining popularity as a low-risk, high-reward door lock technology in hotels.

"When data is loaded onto the RFID tag for that lock, a certain distance from it to the lock, the technology reads it and unlocks it," Certified Protection Professional (CPP) Thomas R. McElroy of the Hospitality Security Consulting Group, said. "It's a miniaturized radio." McElroy has worked in hotel and public venue security since 1999. He is a self-described "agnostic" in regards to RFID technology. "RFID was initially developed to track merchandise," McElroy said. "Then it became: how can we use this to track people?"

You may have seen a TV show or movie where the characters need to wave a card or something at a mounted device in order to get inside a room or building. That is RFID door lock technology. "They could be key fobs, key cards, bracelets, all that," said dormakaba Group's Senior Product Manager for Electronic Locks Division, Mike Lopes, who has more than 20 years' experience in the access control

Brief History of Access Control In Hotels

"Originally, hotels used hard keys," CPP and Executive Director of Security for Eldorado Resorts, Darrell Clifton said. He manages security for three resorts in Reno, NV, totaling around 4,500 rooms. "Hard keys had obvious drawbacks. Magnetic stripe cards replaced these in the late 1970s."



Now, the magnetic stripe cards (also called swipe cards, magstrips or magcards) we all have grown accustomed to are increasingly considered traditional door lock technology. Not only is the technology old – it can be easily hackable. But are magcards really seen as a security risk?

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"Magnetic stripe has been in use for the last 20 plus years," McElroy said. "But unfortunately, one of the manufacturers gave it a bad name. The manufacturer, didn't update the code after hackers found a way into it."

One way to avoid magcard breach problems is if the manufacturer consistently updates the code. McElroy also explained that manufacturers are producing cheaper magcards, which also creates inconveniences for the hotel guests and staff. "Cheap cards, with weaker coercivity or decrease the thickness of the magnetic stripe, so they're thinner, makes them more susceptible to failure," McElroy said. "They get decoded from magnetic fields. Cell phones demagnetize them, leather also does."

Lopes said he has experienced a different major factor for the switch from magcards to RFID. "Key card costs were a huge driver for the shift," he said.

What Hotels Use RFID?

Newer hotels or hotels that have recently gone through a renovation or remodel are more likely to have RFID technology for their guests' doors. "RFID is more common in new installs and smaller hotels that require less capital for the upgrade," Clifton said. "None of my hotels use this technology, mainly because of the expense and timing of modifying existing locks. As new locks are purchased, RFID would be an acceptable option."

However, Lopes strongly believes that RFID technology is beneficial and looks appealing to lodging facilities of all sizes. "The price of the locks is about the same," Lopes said. "But less maintenance and no key cards, that's where everyone's going. They're all going toward RFID."



Smart phones in the place of key cards / Bluetooth Low Energy (BLE)

Hung Luk is the Chief Operation Officer for the LAM Group hotel portfolio, one of the most prominent real estate investment conglomerates in New York City, NY, with various types of commercial and residential properties across the U.S. "We own 12 hotels," Luk said. "Six use RFID and the other six have magcards. We have a RFID chip that is embedded into the room cards. We've been using them for around six or seven years."

The LAM Group's hotels utilize ASSA ABLOY Hospitality's RFID door locks. Luk really likes this technology in his hotels and said that magcards are long gone. "Today, RFID is the best technology out there," he said. "The magcard is history. It's like when we had floppy discs, now we have USBs."

The LAM Group's six hotels that utilize RFID are their six newest hotels. "We will convert locks in more hotels to RFID in the short future upon renovations," he said. "It's the most convenient time as to not duplicate work."

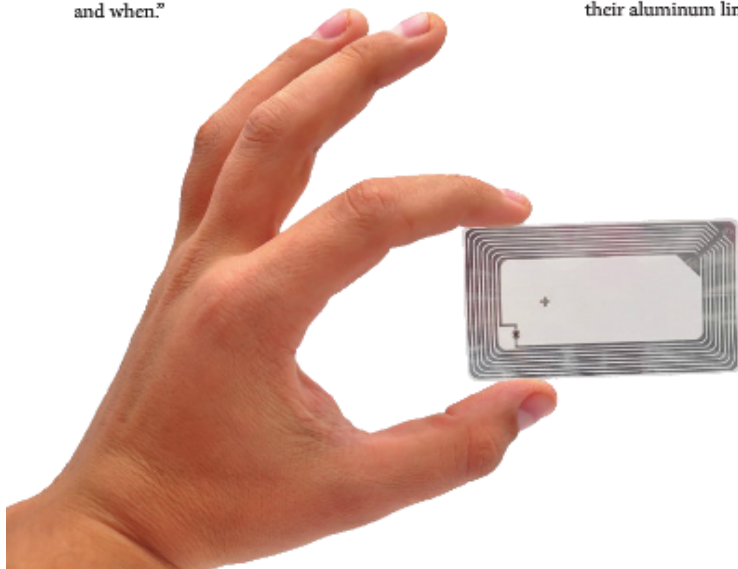
Additionally, some of the major global hotel chains use dormakaba's RFID door lock technology, including Marriott, Hilton and Hyatt.

Advantages of RFID Door Locks

Lopes said some benefits of RFID for hotel doors are easy usage, guest satisfaction, they don't demagnetize and there isn't any maintenance to clean the readers. "There is 100 percent guest satisfaction because you can't lock it incorrectly," he said. "Some people get flustered at the door with magcards." Most travelers have experienced this: they're unsure of which way to insert the card, the card won't work because it was

"If I had to put a percentage on it, a RFID card has a 99 percent accuracy for it to work."

accidentally demagnetized, etc. Luk said that he prefers RFID technology because of convenience for guests, but also because the hotel can interrogate locks without physically being there, since it can be done online. "If I had to put a percentage on it, a RFID card has a 99 percent accuracy for it to work," Luk said. "High end is 90 percent for a magcard. You can't put your RFID card in the wrong way, it won't self-destruct. It can get wet and still work. We can know who accessed what room and when."



How Big of A Security Risk is RFID?

Clearly, the primary function of hotel guests' door locks is competent security. "Door locks need to meet code compliance, provide safety for the guest and convenience for everyone," Clifton said. "There are also some secondary considerations like durability, reporting availability and maintenance requirements." "As a security professional, I would prefer the least defeatable door lock technology," he said. "Since none of these is more or less secure than the others, I would prefer convenience and cost. That would be something that requires no key, like a phone app."

But McElroy argued that the vulnerabilities for these technologies are still unknown. "Common Access Cards that utilize RFID are used by all government employees," McElroy said. "It's kept in a sleeve. If the RFID technology is so secure, why does the government mandate a protective

card holder for it? There is a company that makes aluminum-lined wallets for RFID cards. So obviously, the industry and the government think there is a vulnerability."

According to Secrid, a company based in the Netherlands that produces aluminum-lined wallets to protect RFID cards, these types of cards "can be activated, read and copied at a distance of up to 98 feet," so the company claims their aluminum lining prevents this from occurring.

Since this vulnerability seems to be a real threat, what are the RFID door lock manufacturers doing to increase and ensure security for their products? Lopes said that his company's first priority is to make sure that their locks function in a secure manner. "We update our firmware and software on a daily or monthly basis," Lopes said. "We feel we are trying to stay ahead of the curve."

We are always looking at ways to enhance our products," Lopes also pushed the significance of low maintenance on RFID door locks as one of its key attributes.

"From an engineering standpoint, it is truly about security, operational efficiency and less maintenance," Lopes said. "The less they have to focus on these doors, the better they have it. Security is important, but operational efficiency, from the aspect of low maintenance, is too."

The Maintenance Factor

The more maintenance something requires, means more labor and time, meaning more money will be spent on it. Therefore, hotels that care about their bottom line prefer to invest in upgrades that require less maintenance than the previous system in place. "Hotel engineers have such a full plate of duties they have to attend to," McElroy said. "Hotel engineers and the maintenance departments care about the low-maintenance factor and low-touch factor."

An attractive quality about RFID is that the maintenance is solely for the batteries. "There are less components that are susceptible to failure," Lopes said. "Battery life is up to two

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years based on average usage. (The typical lock is opened eight to 10 times a day.) But I have seen them last longer than three years."

Lopes said that replacing the batteries is less expensive than the magcard system. He also talked about a gross disadvantage to magcards. "Anything on the guests' hands, gets on the magcards," Lopes said. "Those key cards grab that dirt and then it goes inside the lock. It becomes a nightmare for engineers and maintenance. RFID is overall a by far easier platform to maintain."

According to Luk, whose hotels have had RFID technology for more than five years, the maintenance for RFID and magcards is pretty similar, minus the cleaning aspect.

Who Prefers RFID and Who Benefits From It?

One of the biggest benefits to RFID technology is convenience. McElroy said that hospitality's business model, to provide guests with the best experience possible, leaves room for potential convenience risks. "This is a matter of convenience overtaking security," he said. "Everything is vulnerable."

Although door lock technologies are widely known to the hospitality industry to be easily hackable, it's clear that most hotel staff would still like the use of RFID.

"Hotel engineers prefer fewer visits to the doors," McElroy said. "RFID is embraced by the operations side,

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"The maintenance is the same because it's run by either a hard wire or battery," Hung said. "But you do not clean them like magcards. You need support from the manufacturer to make sure the technology systems are upgraded, whether you have a magcard or RFID. You need it compatible to your PMS (property management system)."

Lopes and Luk agreed that the cost for magcards and RFID are comparable.

"Magcards used to be five times cheaper, but you get what you pay for," Luk said. "But now the prices have switched. RFID got cheaper and is about the same amount as magcards – a little more expensive but more than worth the purchase."

Lopes said more hotels are becoming conscious that RFID lock prices are about the same price as other types of locks. "Some more traditional locks are more expensive because they have older parts that are more expensive," Lopes said.

guest services and front desk staff, because they have fewer complaints."

Luk said that it takes the same amount of time to code an RFID card as a magcard, so the front desk staff see the RFID benefit as being that it doesn't get demagnetized. "It's less of a problem," he said. "The mag strips fail, the RFID chips do not."

Also, guests may favor RFID, because they might see magcards as an older technology.

"Most guests prefer modern applications of technology," Clifton said.

Lopes said the level of convenience RFID establishes is a huge perk to both engineers and guests.

"It's about satisfaction," he said. "You can't insert RFID in the wrong way, you can't demagnetize RFID like you can with a key card, I can go on and on. We have people writing



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and asking me: Can you discontinue the old door locks so that I have a reason to upgrade?"

Changing The Locks

If a hotel doesn't want to wait for a remodel or renovation, how do the engineers determine whether it's time to replace their current door lock technology? "When it becomes unreliable," said Clifton. "This is generally when maintenance or breakdown costs become unreasonable and justify a large investment."

Upgrading door lock technology to RFID can be viewed as the same as upgrading to energy-efficient light bulbs and low-flow plumbing fixtures, in the sense that it's a newer technology but requires relatively the same type of installation process as magcards, according to Luk and Lopes.

"We use certified installation teams to install the systems," Lopes said. "The hotels usually contract the appropriate people to install them. It's preferred."

Skepticism of RFID Door Locks

What are the disadvantages to RFID access control technology in hotels? The best answer seems to be: the unknown.

McElroy is primarily concerned with what hotels are doing with the data they're collecting from the RFID cards when they are used for more functions than just opening up a hotel room. "Some hotels actually use the RFID cards for payment," McElroy said. "Now they're capturing your spending habits. It's called data mining. What do you want them to know about you? Are they using the data internally or selling it? Does that bother people? This hurts privacy." "My second concern is the vulnerability by hackers," he said. "My third concern is where is it going to go from here? Is RFID going to go into drivers' licenses? Other people will start embracing it. Then we're at a 'everyone's watching you state.'"

Luk, as a big fan of RFID, wasn't as suspicious. "When you compare RFID to magcards, I don't see any negative," Luk said. Modern Competition of RFID Door Locks. RFID is the door lock technology trend of today, but how long will it stick around?

"I think we are at a point somewhere at the end or middle of the RFID period," Clifton said. "Next will be something to do with phones or biometrics or something like that. Phone apps, using near-field communication (NFC) and even audio combinations have seen popularity in the past five years or so."

Lopes practically agreed. "RFID is the current technology and, I think, the future," he said. "If there's a modern alternative, it's leveraging smart phones in the place of key cards [Bluetooth Low Energy (BLE)]."

The Future of RFID

McElroy said that RFID should be built upon to make it more complex, robust and less susceptible to hacks. "The technology is there, but the security isn't," he said. "When you're putting people inside guest rooms in hotels, they're vulnerable. This is not like checking in and checking out a library book."

Despite vulnerability skepticism from security professionals, Lopes is confident that the door lock industry is going in the direction of RFID. "RFID is here and is here to stay for quite some time," Lopes said. "We don't see that going away. RFID is here and there may be different formats, but it could potentially be here for decades."

If your hotel suffers from severe inconveniences as a result of traditional door lock technology, you might be on the edge of your seat waiting for an upgrade or counting down the days to the hotel's next renovation. But it's important to weigh all of the pros and cons of different door lock technologies, as well as your budget, the hotel's environment and your guests' tech savviness. Before you make a commitment to a technology, ask yourself if you are sacrificing security for efficiency or cost.

While magnetic stripe cards aren't yet obsolete, the disadvantages (including soaring card costs) when compared to RFID may turn more and more hotels off. It seems to be only a matter of when, not a matter of if, a better door lock technology will eventually outshine modern RFID and the others without jeopardizing guest security.

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