

Door Security + Safety

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Access Control and Electrified Hardware



INSIDE:

- + SOLUTIONS IN THE FACE OF DANGER
- + HANDLING SUPPLY CHAIN ISSUES
- + THE NEW HEART OF SLIDING DOOR OPERATIONS
- + FIVE KEYS TO SOFTWARE IMPLEMENTATION SUCCESS

THE NEW HEART OF SLIDING DOOR OPERATIONS

Access control evolves for commercial sliding doors.

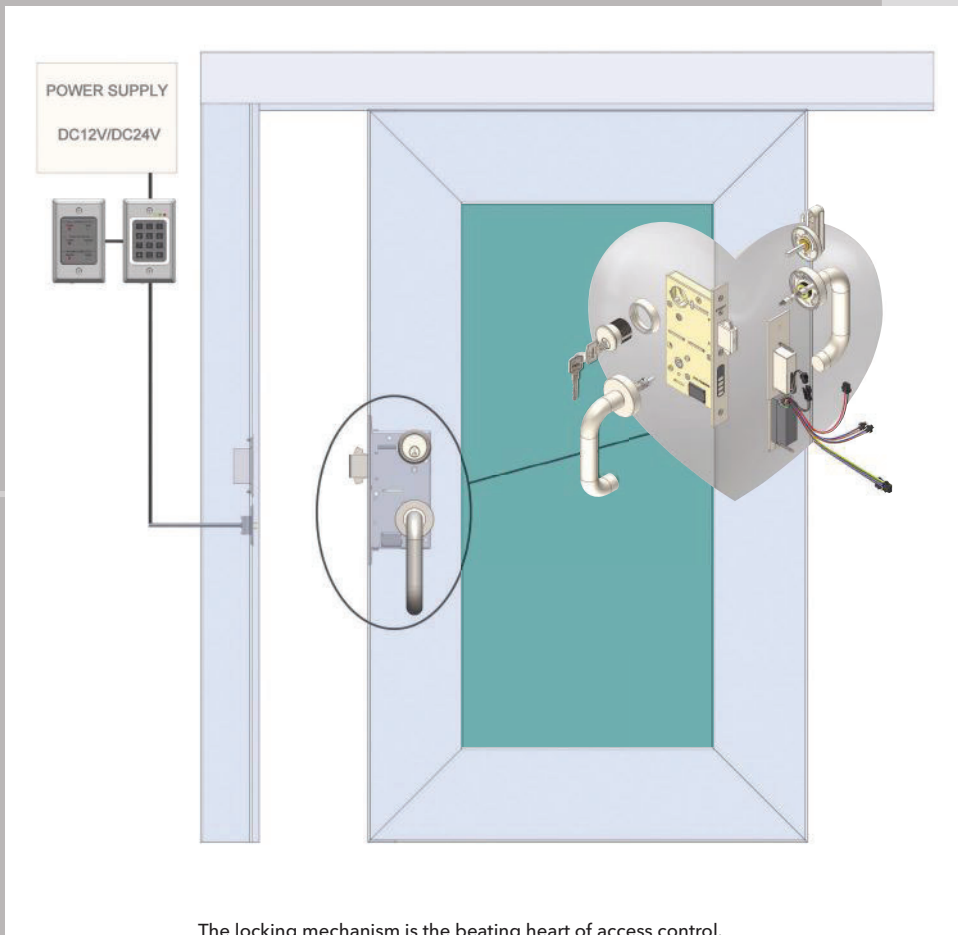
BY QIANYAN CHENG

Innovations in commercial sliding doors in the last decade have driven the evolution of interior openings including architectural space design, doors and frames, tracks and acoustic, locking mechanisms and access control.

Since the inception of electrified hardware, the heart of an access control solution for interior sliding doors was maglocks or electric bolts. Recently, leaps in evolution have delivered a motorized mortise lock that creates a brand new “heart” for sliding door access control systems.

An access control system often consists of a power source, a credential recognition and verification device, a locking and unlocking mechanism, and a relay for power management and sequencing. The locking mechanism essentially acts as the heart of access control, and the brain, which is the credential recognition and verification device, decides who is authorized to give a command.

“The locking mechanism essentially acts as the heart of access control...”



The locking mechanism is the beating heart of access control.

Lock Challenges

There are a number of challenges with electromagnetic locks for sliding doors as part of access control, and these include:

SECURITY

Maglocks or electric bolts are often used on sliding door locks. A magnetic lock or electric bolt relies on a constant supply of electricity to remain locked. They do not keep the door locked from either side when the power is out. Once the power goes off for whatever reason, the lock will lose its purpose and the opening becomes unsecure. The security issue prevents sliding doors from being used with common access control systems.

SAFETY

Electromagnetic locks are designed to be incredibly secure and strong and use 1,500 pounds or more of holding force between the magnet and armature. This is the same force, however, that could impede egress when a switch fails. A safety issue also exists if the lock is installed without a secondary switch or a connection to a fire prevention or detection system to release the lock in case of emergency.¹

EFFICIENCY

Electromagnetic locks require constant power to keep the magnet in effect and to maintain the opening in a locked position.

INSTALLATION

Installing electromagnetic locks on doors and frames of swing doors is not an easy task. Installing them on sliding doors would be difficult.

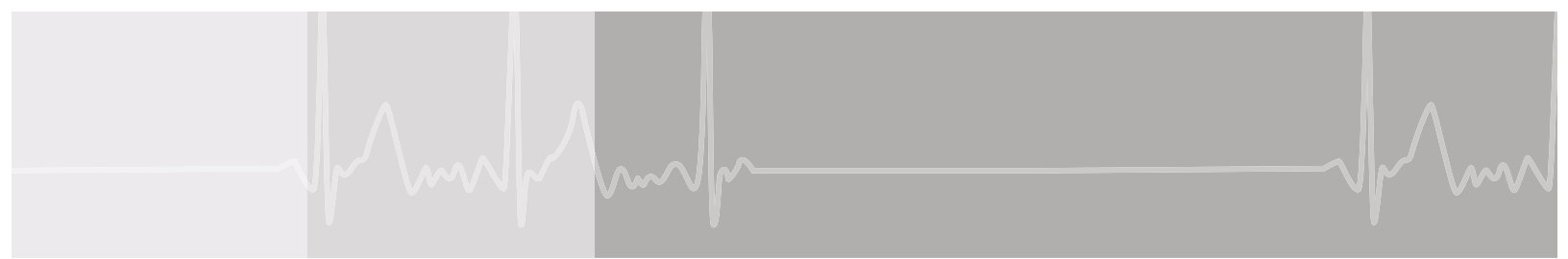
Seven Evolutions

There are seven evolutions that strengthen the heart of sliding door access control.

EVOLUTION 1: FULLY FUNCTIONAL WITHOUT POWER

An electrified mortise lock for sliding doors is also a fully functional mechanical mortise lock. When power fails, an electrified mortise can be locked or unlocked with a key from outside or a T-turn from inside.

¹Glorioso, David S. *Electromagnetically locked egress doors: Safe or unsafe?*, 2017. https://us.allegion.com/content/dam/allegion-us-2/web-documents-2/Article/Allegion_Article_OpEd_Electromagnetic_Locked_Egress_Doors_111955.pdf



Integrated power contacts on the lock faceplate eliminate wiring on the door side.

Many health care facilities with spaces that contain controlled substances, alcohol or biohazardous materials benefit from using sliding doors for security openings with or without power. Emergency egress is equally important with or without power. A single throw of the inside lever will allow the deadbolt to unlock and the door to slide open.

EVOLUTION 2: TOUCHLESS ACCESS CONTROL

A motorized deadbolt built inside a sliding door mortise lock supports hands-free locking and unlocking. Unlike solenoid-based electrified locks,

a true motor-driven lock supports touchless unlocking and enhances accessibility.

It can be difficult for a user in a wheelchair to reach and operate a door handle. Motor-driven sliding door locks can be incorporated with an auto-slider, hand wave or motion detector and sequencing relays. This supports a complete hand-free access experience while maintaining security.

EVOLUTION 3: ELIMINATING WIRING

With all the benefits a sliding door brings, the biggest challenge to incorporating access control is

connecting the wires through a moving piece. This is especially true when the track system, hangers and soft-close mechanism are already occupying the track above the door. An earlier generation of top-mount power contact proved too cumbersome for installation. A new evolution was required to change the paradigm and remove the wires completely from the door.

So, how does the new beating heart get power? Integrated power contacts built on the faceplate of the lock and strike are the arteries, and power flows like lifeblood from the jamb side to the door side.

EVOLUTION 4: BUILT-IN DOOR DPS AND AUTOLOCKING

A door position switch (DPS) is a common feature on electrified swing doors. On sliding doors, a DPS signal can be connected to a security monitoring station. An integrated DPS is also a trigger for the lock to perform an autolocking function. Once the door is closed, the lock detects a positive signal from the DPS, and the motorized deadbolt instantly engages and secures the opening. The autolocking function provides extra security without the need for the user to key in credentials to lock the door.

EVOLUTION 5: BUILT-IN DEADBOLT MONITORING

A further evolution has added a built-in deadbolt monitoring sensor with an algorithm to trigger an alarm when the deadbolt fails to engage after several attempts. The alarm reports abnormalities and informs security guards or caretakers of locking issues. Like the door position switch, the deadbolt monitoring switch can be connected to a local individual panel or a centralized monitoring panel.

EVOLUTION 6: FAIL AND REBOOT SECURE

Should power fail when the lock is in a secure position, the lock will remain physically locked. When power resumes, the lock will remain secured. In certain systems, a power reset requires an auto operator to reopen the door. In these instances, an alternative lock model can support a reset function with autolocking after the door is reclosed.

EVOLUTION 7: SMART SLIDING DOOR LOCK

The advancement of cloud-based internet of things (IoT) technology creates new opportunities to make access control and access management easier, simpler and more cost-effective. A fully integrated smart



SLIDING DOOR MORTISE LOCK WITH AUTO-LOCKING & BUILT-IN MONITORING SWITCHES: DOOR POSITION SWITCH, DEADBOLT MONITORING SWITCH, REQUEST-TO-EXIT

ENSURES A LOCKED DOOR WILL REMAIN MECHANICALLY LOCKED IF POWER IS LOST. ONE QUICK EASY ACTION OF INSIDE LEVER ALLOWS EMERGENCY EGRESS.

ENHANCED SAFETY AND SECURITY MONITORING OF OPEN/CLOSED POSITIONS AND LOCKED/UNLOCKED STATUS WITH DOOR POSITIONING SWITCH (DPS), AND DEADBOLT MONITORING SWITCH (DBM).

DESIGNED TO EASILY INTEGRATE WITH ALL STANDARD ACCESS CONTROL SYSTEMS AND MONITORING TERMINALS.

DPS
DBM
REX
Power Transfer

The “brain” and “heart” work together to create secure openings.

sliding door lock can be hardwired or battery powered. These smart locks allow real-time access management to create user permissions, set passage and privacy modes, enable and schedule autolocking and much more.

The storm of the pandemic left behind damage and debris, but it also taught us to stretch our imagination and consider new possibilities. Technology continues to push forward in remote communication, touchless automation and innovations in security, safety and efficiency. These achievements lead to novel ideas powering advanced evolutions for a better world. +



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