

OPTICAL KEY

Reliable and secure access control is necessary for critical physical infrastructures, sensitive communication networks, electronic devices and products against counterfeiting or piracy, among others. This technology aims at overcoming existing vulnerabilities in access control methods through an extremely difficult to hack new approach. It consists of the use of photonic crystals with non-conventional geometries to grant or deny controlled access to a place, device or information. By using properties of photonic crystals, or other periodic systems, it is possible to form images which do not diffract or destroy transporting information reliably from one end of the photonic crystal or other periodic systems, to the other regardless of the propagation distance.

CURRENT DEVELOPMENT STAGE TRL 4

At present, an optical key prototype is available at laboratory scale, using the same assembly required for its implementation, a number coding from 0 to 9, which can be transported approximately 10 centimeters. Tests have been carried out with different geometries through which it has been possible to transmit optical information in a massive and reliable way.

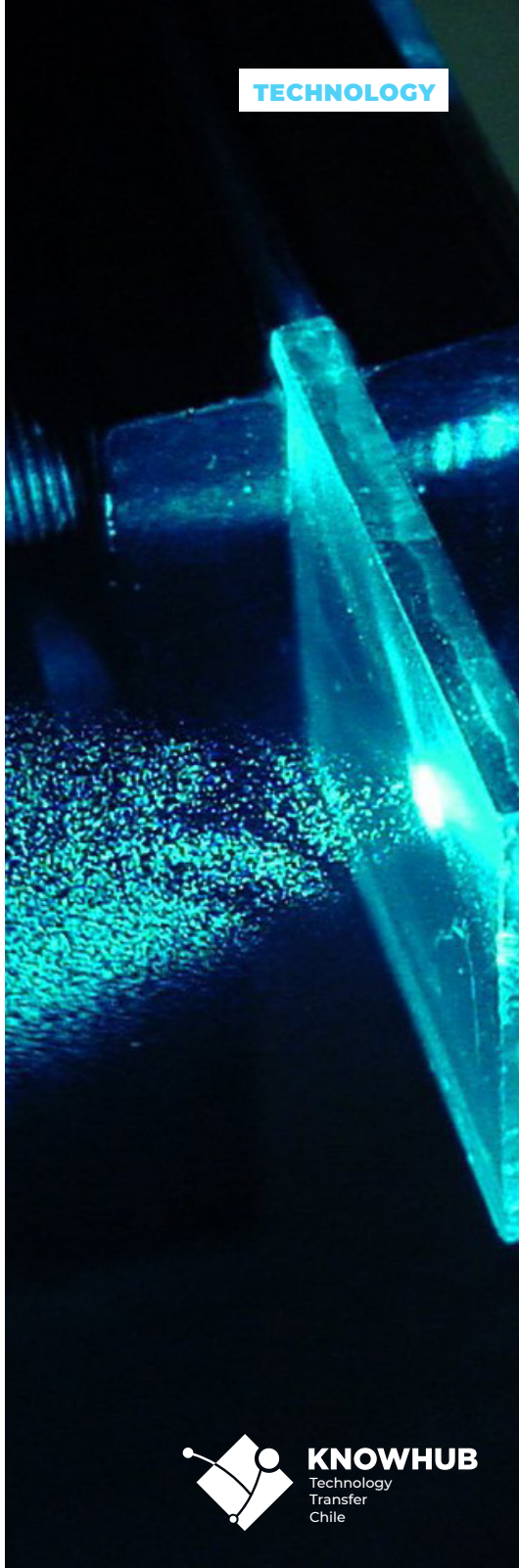
MARKET OPPORTUNITY

Market size: US\$ 10.030 million (2023).

CAGR: 6,5%.

Segment: Access control.

Facts such as the high demand for access control solutions due to growing security concerns, technological advances, the deployment of wireless technology in security systems, and the adoption of the Internet of Things (IoT)-based security systems drive this market. Market growth can be directly linked to the growth of the commercial sector and to the increase of security threats across the world. The adoption of access control systems is growing in the



existing and potential market segments, such as banking and finance, enterprises, retail, and health centres. The key factor restraining this growth is associated to a lack of awareness among end users about advanced security solutions.

COMPETITIVE ADVANTAGE

- Double user authentication: using identification digits encoded in complex light patterns.
- Able to recognize both, the door being accessed and the owner of the card, for security level administration.
- Cannot be intercepted and read as in radio-frequency devices, which can be pirated.
- Cannot be easily cloned as in magnetic cards.
- Cannot be faked as in 2-dimensional fingerprint scanners.
- Inaccessible to external electromagnetic fields.
- This Access Control System can be possibly offered as a means of safe communication link.

PROTECTION

Patent Pending in Chile & USA.

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