

PASSO LAVAZÈ CROSS-COUNTRY SKI CENTER MODERNIZES TICKETING SYSTEM WITH RFID

From NFC Cards
to Cloud-Based
RFID Technology

In response to the growing demand for efficient ski pass management, the Passo Lavazè Cross-Country Ski Center, which welcomes around 14,000 visitors yearly, embarked on a journey to modernize its ticketing system. What began as an NFC-based card solution has since evolved into a sophisticated cloud-based RFID solution. This transformation involved the integration of innovative features, including real-time monitoring of ticket holders, enhanced security measures, and seamless access control. In cooperation with Caen RFID and Aroundstore.com, the new cloud-based RFID ticketing system now leverages wearable RFID tickets to streamline access and enhance the overall skiing experience. Pass holders can now access a personalized dashboard, enabling them to track their outings, record ski metrics, and review weather conditions – all via their e-mail address.

Success Story powered by:



The Passo Lavazè Cross-Country Ski Center opted to modernize its ski ticketing system in cooperation with Aroundstore.com and Caen RFID.

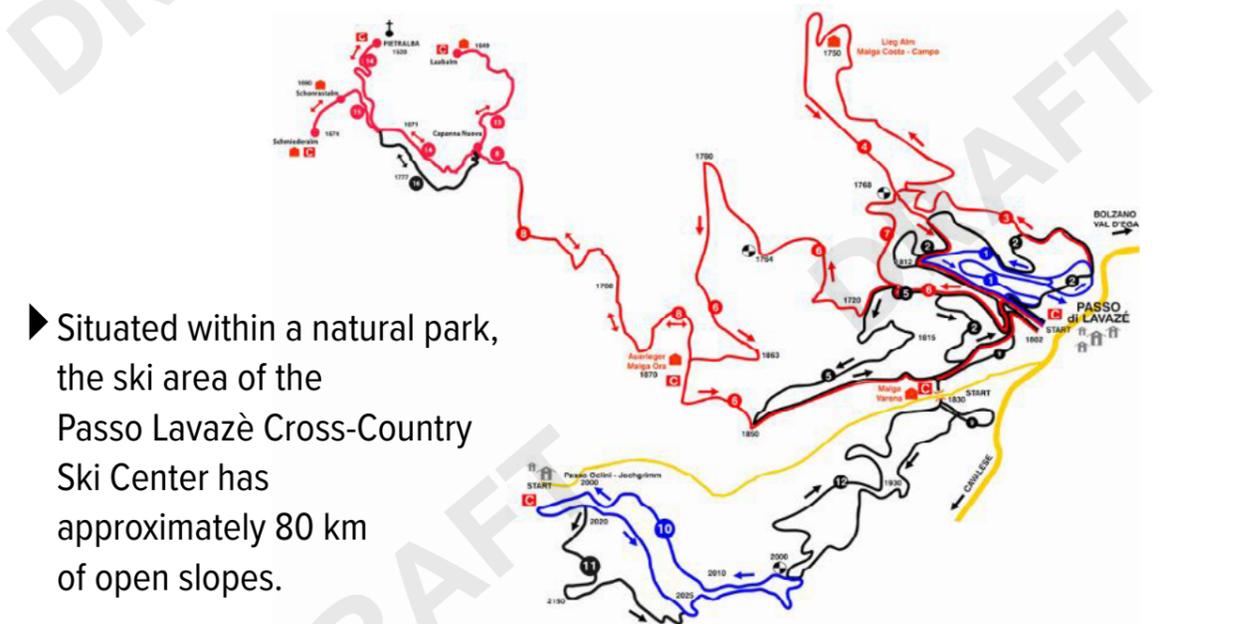


- ▶ World Cup skiing competitions have been hosted on these slopes at the Passo Lavazè Cross-Country Ski Center, attracting numerous national teams for training sessions.

The Passo Lavazè Cross-Country Ski Center

Situated on a plateau between Trentino and South Tyrol in Italy, at an altitude of 1808 meters, the Passo Lavazè Cross-Country Ski Center has served as a cherished destination for cross-country skiing enthusiasts in search of pristine slopes of diverse difficulty levels. In the 1950s, Lavazè saw a surge in cross-country skiing development when the Lavazè Ski Team in Varena laid down the

initial tracks. The existing Campiol and Torbiera tracks were expanded and leveled. A consortium of ski resort operators united to establish the Lavazè Tourist Development Company in the 1980s. In the 2001/2022 season, the Lavazè Pass slopes were selected as reserve courses for the international Fiemme 2003 Nordic Ski World Championships. Since then, World Cup skiing competitions have been hosted on these slopes, attracting numerous national teams for



- ▶ Situated within a natural park, the ski area of the Passo Lavazè Cross-Country Ski Center has approximately 80 km of open slopes.

training sessions. Since October 2014, management of the center has been overseen by the company Progetto Lavazè, comprising 25 members, primarily Varena citizens.

Aroundstore.com

Based in Predazzo, approximately 58 kilometers northeast of Trento in Italy, Aroundstore.com is a company that specializes in cloud server management, leveraging years of expertise in cloud computing to offer efficient and scalable services while prioritizing data security. With a strong background in processing sensor data and time series, the company provides solutions for big data management and analysis. Aroundstore.com offers software solutions that are adaptable to changes, user-friendly, require no installation, and are accessible from any workstation regardless of the operating sys-

tem. The initial NFC access control system and ticketing software at the Lavazè Pass was developed by Aroundstore.com.

Caen RFID

Caen RFID, based in Viareggio, Italy, is a manufacturer of UHF RFID hardware, including readers, tags, and data loggers. All products from Caen RFID are passive UHF RFID compliant with GS1 EPC Class1 Gen2 or ISO 18000-63 standards. The company offers expertise in all aspects of UHF RFID deployment and offers solutions in various industries including retail, pharma, food, waste management, security, access control, industrial manufacturing, and logistics. Caen RFID's QuadIP antennas, Hadron reader module, and UHF RFID Tile Reader were selected for the access solution at the Lavazè Pass.a

TRANSITIONING FROM NFC TO RFID

Access to the Ski Slopes

Situated within a natural park, the ski area of the Passo Lavazè Cross-Country Ski Center has approximately 80 km of open slopes. There are three manned entry points to the slopes that are spaced approximately 200 meters from the central office. Tickets can be purchased here. In this setting, with a lack of fencing and minimal staff, managing unauthorized entry is essential. The Malga Varena Children's Snowpark is also located nearby, accessible via turnstiles. The slopes, approximately 4 meters wide, are meticulously groomed by a 4.8-meter-wide snowcat on a daily basis. An effective ticketing system was required in order to ensure seamless access for all skiers, including season or multi-day pass holders, via designated 'fast-lane' gates.

The Shift Away from NFC Technology

For several years, ski center relied on an access control system developed by Around-store.com, utilizing NFC cards issued at checkouts. The NFC-based access control system was first implemented in (year). However, the limitations of NFC technology prompted the ski center to discontinue this system. Despite being cost-effective and functional, the NFC-based system posed challenges due to its requirement for close proximity to the reader, typically within a distance of 3 cm. This resulted in queues forming at access gates during peak hours. Season-ticket holders faced challenges retrieving and positioning their cards, particularly while wearing gloves or dealing with inconvenient pocket placements. Addi-



With over 14,000 visitors yearly, the Passo Lavazè Cross-Country Ski Center required a more efficient access control system to accommodate all skiers.

- ▶ With RFID, the ski center could effortlessly issue and verify tickets while collecting additional data, such as individual athlete lap times to enhance services like timing.

tionally, manual ticket verification along ski tracks required personnel to physically stop skiers, leading to inconvenience and the need for on-slope control staff.

The Transition to RFID

In seeking an alternative to NFC-based ticketing, the ski center prioritized several key features for their new solution. This includ-

ed the need for long-range reading capabilities, the affordability of wearable tags, and fast reading speeds with non-changeable tag characteristics. After careful consideration, Caen RFID's WinTag and other RFID products emerged as the ideal choice. These solutions facilitated the creation of an optimized reading system tailored to end-customers' needs. By leveraging RFID technol-

ogy, the ski center could effortlessly issue and verify tickets while collecting additional data, such as individual athlete lap times to enhance services like timing. This transition took place in (year) and marks a significant step forward in streamlining access control processes and enhancing the overall guest experience at the Passo Lavazè Cross-Country Ski Center.

A dual-gate RFID system ensures rapid access to the ski slopes, minimizing queue times and enhancing the overall skiing experience for visitors.

SOFTWARE & HARDWARE

The Ticketing Software

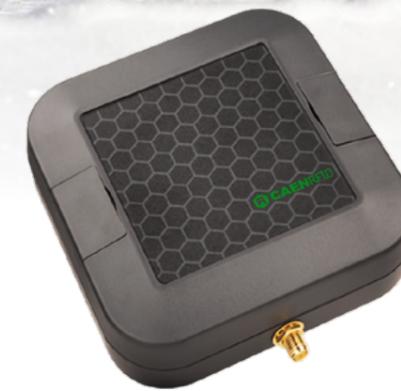
The RFID-based ticketing system implemented by the ski center comprises several essential components to facilitate efficient ticket issuance and access control. Central to this system is the ticketing software, owned by Aroundstore.com. This software acts as the backbone of the system that handles card verification, validation, and access authorization processes. This versatile software can be deployed locally on physical machines or accessed via the cloud through VPN, offering flexibility in implementation. With the ability to configure an unlimited number of card types based on various parameters such as time slots, days of the week, or number of exits, the software caters to diverse ticketing needs. Additionally, the system allows for the setup of turnstiles with NFC readers, multiple points of sale (POS/cash registers), and user accounts with varying privileges. Equipped with a comprehensive customer database, the software also enables efficient data collection, sales statistics tracking, email communication, and receipt issuance.

Hardware Implementation at the Office Station

The office station serves as the central point for selling multi-entry, seasonal, or long-term tickets. Sales calculations and cashier checks are efficiently conducted here. This PC workstation grants administrative access to the system, facilitating seamless ticketing operations. The customized access solution equipped at this station features Caen RFID's Tile Reader that programs the UHF RFID ski passes. It also incorporates two gates equipped with Caen RFID's Hadron modules. The first gate, measuring 1.5 meters wide, is equipped with a Hadron reader with two antennas. It serves as the entry point for all visitors after purchasing their day or week pass. Just a few meters ahead lies the second gate, a five-meter-wide structure, equipped with a Hadron reader with four Caen RFID antennas. This dual-gate system ensures rapid access to the ski slopes, minimizing queue times and enhancing the overall skiing experience for visitors. The Hadron module is a 4-port embedded reader that can be connected to four QuadIP antennas with circular polarization. This ensures consistent read range regardless of tag orientation. Positioned strategically around the gate, these antennas capture every RFID tag passing through, ensuring a secure and efficient access solution for all skiers.



► The Hadron module is a 4-port embedded reader that can be connected to four QuadIP antennas.



► The QuadIP antenna is a medium-short range RAIN RFID antenna in a compact and robust form factor.



► The customized access solution equipped at this station features Caen RFID's Tile Reader that programs the UHF RFID ski passes.