LONWORKS® NETWORKS AT WORK

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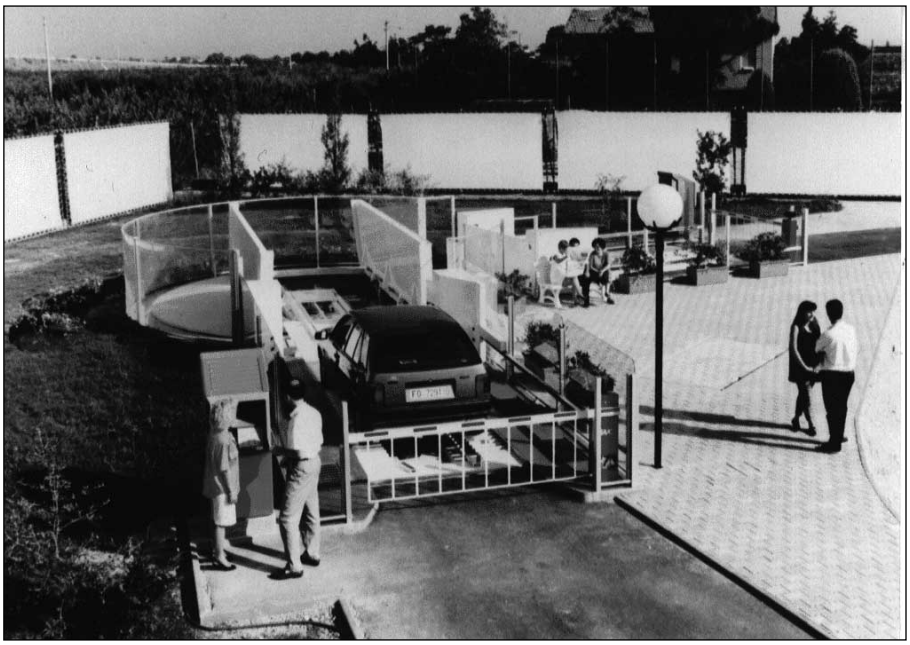
Italian Design Brings Style and Efficiency to Parking Structures

The Vanishing Parking Space

The quest for a parking place has become a nightmare in most modern cities. Urban planners have reacted to the challenge by adding ever larger garages to their cities. But, bigger isn't always better. In addition to the lack of suitable, cost-effective real estate, garages often introduce additional problems that range from finding the empty stall (or the car, for that matter) to exhaust fume ventilation to driver safety.

Recognizing the parking challenge facing most cities, Trevi Park, an Italian company, devised a new approach to parking. Why build up when you can build down? The strategy is simple. Drill a very large hole in the ground, install an automated parking system, and preserve the beauty and aesthetics of the city. Trevi Park chose the Italian cities of Cesena and Milano to begin the shift from bigger garages to smarter ones. Weidmuller, a Detmold, Germany-based engineering firm noted for systems interface design, produced an intelligent system that fully automates the parking process. Integral to the plan is a fully distributed LONWORKS based control system that eliminates large, expensive centralized controllers.

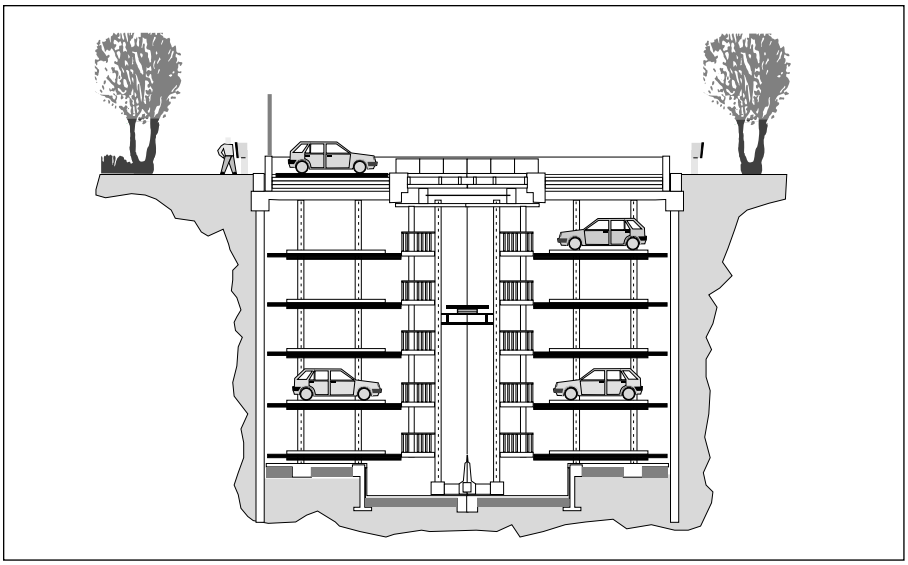


A Smarter Parking System

Finding a parking space has never been easier than with the Trevi Park system, because drivers no longer need to navigate through levels of stalls to park their vehicles. Instead, the driver pulls the vehicle up to the front gate of the parking garage, shuts off the engine, and presses a button on the kiosk for a parking voucher. A message is transmitted from the kiosk to a PC. Instructions are sent through a router to approximately 30 Dialoc (Decentralized Intelligent Automation modules) control nodes in the LONWORKS control network. Once the system locates a vacant parking space, the car is sent to that location by a metal rolling tower (a specialized elevator) that moves vertically and horizontally. The vehicle remains in the parking space until the voucher is inserted in the kiosk for retrieval.

Drivers experience more safety and security with this automated process, which eliminates searching for cars in poorly lit buildings and concern about breakdowns and unruly traffic inside the garage. Drivers never have to worry about forgetting where the car is parked. As soon as they exit their cars, they rely on a sophisticated system, based on a LONWORKS network, to park the cars in spaces as they become available.

Service is fast and reliable. In fact, the service record of the facility surpasses that of systems operated by



humans and navigated by drivers in the traditional manner.

Watching Out for Drivers

As is the case with most automated systems, safety is paramount. A mechanical barrier ensures the protection of drivers making their way toward the elevator. Operated with a card reader upon entering, the apparatus is connected to the automated system by a telecontrol or another automatic system. A car's proximity to the closing barrier is also assessed. Detectors send messages announcing to drivers the incorrect parking of vehicles at the entrance to the garage. A display shows the availability of parking and the progress of vehicles en route to positions inside the facility. All these functions are controlled seamlessly by the LonWorks network.

A Cleaner, Quieter Garage

The Trevi Park facility demonstrates a wide range of features that help to protect the environment. Noxious fumes traditionally found in parking garages are conspicuously absent here because engines are shut off upon arrival at the front gate. Nevertheless, a back-up system of gas detectors is connected to the control system for a better sense of security, just in case gases escape from any number of other sources adjacent to the garage.

Two sensors that detect the presence of gas propane vapors are located near the bottom of the facility. A second pair of sensors in the upper part of the garage are calibrated to register two key threshold levels indicating the need for attention: "alert" and "alarm." Digital information, signifying "on" and "off" positions, is sent to the control unit. This actuates the ventilation system, which is capable of replacing the entire volume of air in the facility three times per hour.

The electrical design of the structure replaces typical noise pollution with a quiet hum. Driverless cars move down the elevators in relative silence.

To ensure adequate flow of water in storm conditions, the sewer system employs two pumps that work in parallel. During normal conditions, only one pump works at a time. The second one kicks in when flood conditions occur.

Basic fire protection is addressed by a centrally controlled fire extinguisher.

LonWorks Could Drive This Garage Around the World

By any measure, the Trevi Park operation has been highly successful. Weidmuller and Trevi Park plan to follow up the Cesena and Milano "smart" garages with additional installations. Expect to see this kind of parking strategy making its way around the world wherever parking is a "nightmare."

It all goes to show that LonWorks really works — and under the most demanding conditions.

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