

Hearst Castle®

One thing visitors won't see at this historic landmark is the smoke detection system. But California State Parks will see the benefits of no false alarms and protection of the Castle's assets from fire and water damage.

Company name
Hearst Castle®

Location: San Simeon, California, USA
www.hearstcastle.com

Industry
Cultural/Heritage

Products used
7 x VESDA LaserSCANNER
3 x VESDA LaserPLUS

Providing adequate protection for historic landmarks presents certain challenges to any smoke detection system, because the limits of such systems are often in conflict with unique preservation requirements. These limits involve architectural design, height and volume configurations, airflow, obstructions, and evacuation plans. The designs can affect smoke dilution and smoke stratification, which in turn can reduce the response rate of such detectors. For example, high ceilings can create problems with access to and maintenance of traditional smoke detectors, and the presence of the detectors can be obtrusive.

Traditional smoke detectors also generally do not detect a fire until after the incipient stage, when heavy smoke and flaming has occurred. The structure and contents are then damaged not only by smoke and flame, but also by the water or chemicals used to extinguish the fire.

Located 250 miles (402 km) north of Los Angeles, Hearst Castle®, a historic house museum, is home to a priceless art collection. The estate overlooks the Central Coast of the Pacific Ocean and 80,000 acres (32,400 hectares) of conservation land and grasslands. It is considered a jewel in the California coastline.

Over a 28-year period, from 1919 to 1947, William Randolph Hearst and San Francisco architect Julia Morgan created Hearst Castle®, which Hearst dubbed "La Cuesta Encantada" – The Enchanted Hill®. The estate has 165 rooms and 127 acres of gardens, terraces, pools, and walkways. It totals 90,080 sq. ft. (27,456 m²). The main house is Casa Grande, with towers inspired by a Spanish cathedral. The three guest houses, named Casa Del Sol, Casa Del Mar, and Casa Del Monte, were built in the Mediterranean Revival style. There is also an indoor Roman pool, the Neptune Pool, two libraries and an indoor movie theater.

The buildings and vaults house Hearst's famed collection of European and Mediterranean art, spanning many centuries. The collection includes a variety of historic marble sarcophagi, painted wooden ceilings, carpets, mantels, doors, paintings, sculptures, bas-reliefs, textiles, and tapestries.



The Hearst Corporation donated the estate to the People of the State of California in December 1957. It is maintained by California State Parks (CSP), which oversees care of the art collection and preservation of the historic structure. Hearst Castle® hosts a variety of events and exhibits, as well as numerous tours of the buildings, artifacts, and grounds. It has received more than 30 million visitors since it became a state park in 1958.

CSP regards the protection of personnel and cultural assets as a primary mission. The challenge was to integrate a leading-edge detection system within the fabrics of historic structures, to get the most sensitive detection with minimal structural and visual impact. Since most tour areas are not equipped with sprinklers, it was necessary to rely on early warning. There were also concerns about preserving a ceiling that is a work of art, when the installation of traditional smoke detectors in such a ceiling would damage what it was intended to protect. VESDA was chosen to meet these requirements. The system works by continually drawing air from a protected area into a pipe network, and actively transporting it to a detector. If smoke is discovered, the information is sent to a fire alarm control panel, software management system, or building management system. One detector can monitor the entire progression of fire growth.

Hearst Castle® chose VESDA LaserPLUS and VESDA LaserSCANNER to meet its specific needs. The LaserPLUS detector has the world's widest sensitivity range. One unit supports four configurable alarms and protects areas up to 20,000 sq. ft. (2000 m²). LaserSCANNER locates the origin of smoke by identifying the pipe with the highest level of smoke, and then continues to sample from all sectors to monitor fire growth. It provides four alarm levels for each individual pipe, and offers individual pipe addressability and individual pipe settings.

The project was completed in stages. In 1998, three LaserPLUS systems were installed in the New Wing, Refectory Dining Room, and Assembly Room. In 2001, three LaserSCANNERS were installed in Casa del Sol, Casa del Monte, and Casa del Mar. A Hilltop basement sprinkler project in 2003 included the installation of three additional LaserSCANNERS, providing complete coverage of all sublevel areas of Casa Grande. The latest install was a LaserSCANNER for a recently restored Maid's Quarters. CSP is currently planning the addition of mid-level sampling in some of the taller rooms, to mitigate several of the more stubborn stratification prone areas not recognized in earlier installs.

"VESDA gives us significantly faster and more reliable detection than conventional systems, as well as improved sensitivity in some of the larger areas where stratification can occur," said Lawrence Ross, stationary engineer for Hearst Castle®. "We have documented events where VESDA detected electrical faults and excessive carbon ignition that our conventional system never picked up. Aesthetically, we have had great success in our guest house installations, by being able to use quarter-inch capillary tubing for sampling points that challenge even the sharpest eye to spot."

Hearst Castle® recently formed a fire department that employs hybrid firefighter/armed security professionals to provide continuous on-site inspection and protection. The estate also has a gravity-fed hydrant system, standard wet-pipe sprinklers, and several new high pressure mist systems that deliver a fog of distilled water in sensitive areas, such as the vaults and archival storage.



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Lawrence Ross

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