

POWER PROFILE

Customer: Natural Bridge Caverns

Location:

San Antonio, Texas

Customer Business Issue:

Maintain power for lights and other systems in caves

Solution:

D30, D40, D150, D175, and Cat® D200 GC diesel generator sets

Cat® Dealer:

Holt CAT Power Systems



Natural Bridge Caverns relies on Cat® generator sets to keep the lights on and ensure the safety of its guests. Not only do the gensets maintain power to lights and other systems in the caves, they also safeguard the continued operation of ticket and point-of-sale systems in the event of a grid outage.

POWER NEED

Discovered in 1960 by a group of local college students on a family-owned ranch in the Texas Hill Country, Natural Bridge Caverns is one of the world's premier show caverns.

At the attraction north of San Antonio, visitors go underground and explore different layers of limestone that likely formed during the Cretaceous Period when a warm shallow sea covered much of what is now Texas. Over millions of years, underground water dissolved the limestone and hollowed out the wondrous passages at Natural Bridge Caverns.

The family-owned and operated natural wonder features multiple tour experiences through two distinct caverns that each extend for one-half mile. Natural Bridge Caverns offers a selection of tours, including the Discovery Tour, the Hidden Wonders Tour, and Adventure Tours.

In May, a multi-million-dollar tour experience featuring state-of-the-art lighting, a sound and light show, and expansion into the southern Hidden Cavern will open to the public. Development of the new half-mile long Hidden Wonders tour and opening new areas of the cavern have been underway since 2017.

"The Hidden Cavern is a unique environment which never had a natural opening to the surface," said Brad Wuest, president of Natural Bridge Caverns. "As a result, incredibly delicate and beautiful formations were able to grow in a completely sealed environment."

New lighting is one of the dramatic changes in the cavern, with 3,366 lights and five miles of cable installed for WiFi, communications, and light control. A 1,100-foot-long expansion of the public passageways through the cave enables guests to tour through an area that was only previously accessible by cavers. Throughout the tour, guests will find "discoverable moments" consisting of special lighting on features that are unusual or of particular interest.

The new addition showcases an underground canyon, more formations, and a large 5,700-square-foot dome chamber called the Ballroom, which can serve as an event space. A new viewing area overlooking a massive passage called the Box Canyon serves as a natural theater for a new sound and light show.

Exiting the Hidden Wonders tour, guests can effortlessly ride to the surface on a 700-foot long Belt Assisted Transport (BAT) through a newly constructed exit tunnel. The BAT is the world's first ride-out conveyor system installed in a cavern.

An exit plaza and pavilion designed to blend into the karst landscape provides a comfortable transition for guests emerging from the subsurface, with soon-to-be-added amenities, including souvenir photographs, food, and drinks. Altogether, these innovative features deliver a completely new experience at the historic National Natural Landmark.

Given that many guests are on the Hidden Wonders tour at any given time, keeping the lights on is critically important. Because Natural Bridge Caverns is positioned at the end of a utility line, in the past power outages were not uncommon. While upgrades to the transmission system have made grid outages far less frequent, they can still happen.

"I think a lot of people have some apprehension about going underground into a cave for the first time," says Justin Royce, cavern development director. "They don't want the lights to turn off and be stuck in the dark. And you definitely see a little bit of relief when I tell them that we have Caterpillar generators that'll automatically start up and keep the lights on if we lose grid power."

SOLUTION

A new D200 GC standby generator set is the latest addition to Natural Bridge Caverns' fleet of five Cat® generator sets. It backs up 60 percent of the expanded Hidden Wonders tour, while another Cat generator set provides standby power to the remaining 40 percent.

"We have a history of using Cat generators here, so it was really easy to decide that the next one we purchased was a Cat unit," Royce says. "It's the size that we needed, and we're familiar with everything on them, not to mention the reliability factor."

"Before we open the Hidden Wonders experience to the public, it's essential that we have a backup power solution installed and ready to go," Royce adds. "During our busiest periods, we can have multiple groups in the cave, each taking these hour-long tours. The last thing we need is to lose the lights and power to other systems."

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Natural Bridge Caverns also features above-ground attractions, including two ropes courses for adults and kids, a climbing tower, maze, as well as restaurants and shopping.

"This is a large working ranch, and we operate like our own little city here—we have ongoing construction, maintenance and operations, grounds, landscaping, human resources, and accounting functions," notes general manager Terri Adams. "So with everything we have going on here, it's important to keep the power on."

RESULTS

Natural Bridge Caverns is open 361 days a year, and downtime from power outages is not only a safety issue for guests, but can also result in lost revenue.

"Being able to provide safety and have power and keep the lights on is the most important thing for our guests," says Vice President and Co-owner Travis Wuest. "But from a business interruption standpoint, our enterprise depends on power to operate ticketing systems and maintain point of sales, so we can't afford to lose power."

If any of the generator sets has an issue and a technician is required immediately, a customer value agreement (CVA) enables Natural Bridge Caverns to have a technician on site usually within a matter of hours, if not minutes, says Ryan Stoughton, a power generation specialist from Cat dealer Holt CAT.

Under the provisions of the CVA, technicians from Holt CAT perform all scheduled maintenance, conduct load bank tests, and take fuel samples on all five Cat generator sets at Natural Bridge Caverns.

With Cat generator sets installed throughout the property, having the ability to monitor their ready-to-run status is important. Holt CAT Power Systems recently installed Cat Connect on all of the facility's generator sets to enable remote monitoring.

Cat remote asset monitoring (RAM) provides real-time alerts, including engine and electrical parameters, fuel level, and current faults. Notifications are sent via text message and email. The end user can also view a web-based dashboard that displays key status parameters on a smart phone via a mobile app.

"In the past, I'd have to drive around and check the generators periodically or wait for someone to tell me that they heard a noise out in the pasture and have me go and check it out," Royce says. "Now with Cat Connect, it saves me from driving around to check on all the units. I receive an alert on my phone or an email to let me know if there's a change in status on one of the generators."

"With all the various activities we have going on here, time is precious, and checking fuel levels is a mundane task," Royce continues. "Until recently, I'd have to run over and check the fuel gauges. But now with the mobile app, I can also receive a fuel alert if any of the generators dip below 50 percent. So that alone is a real time saver."

All components in the D200 GC generator set are integrated in a seamless package that provides optimum performance. The diesel-powered 200 kW generator set requires up to 18 percent less installed space. Each generator set package is tested before leaving the Caterpillar manufacturing facility, and is reliability tested to run for 500 consecutive hours. Cat GC generator sets come with a two-year warranty.

After the new D200 GC generator and automatic transfer switch (ATS) were installed by electrical contractor, Seguin Electric, Holt CAT sent a crew out to commission the generator set, start it up and make sure the generator, and the ATS were in sync.

"At the end of the day, the Holt CAT technician walked me through all the features of the new Cat GC generator, noting the differences between the Cat GC model versus the older Cat generator set that we have on site," Royce says. "And when he left, I felt comfortable being able to check the unit myself when needed."

"Holt CAT is a very reliable source for service and maintenance when it comes to the generators," Royce adds. "They're quick to respond and develop a solution whenever there's a problem—they make sure it gets solved."



A new Cat D200 GC generator set is the newest addition to a fleet of four other Cat gensets that provide backup power to operations at Natural Bridge Caverns.