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# Applied Welding

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PLASMA CUTTING REACHES NEW

## HEIGHTS

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TIER-1 SUPPLIER  
AUTO BOOSTS  
PRODUCTIVITY

# 25%

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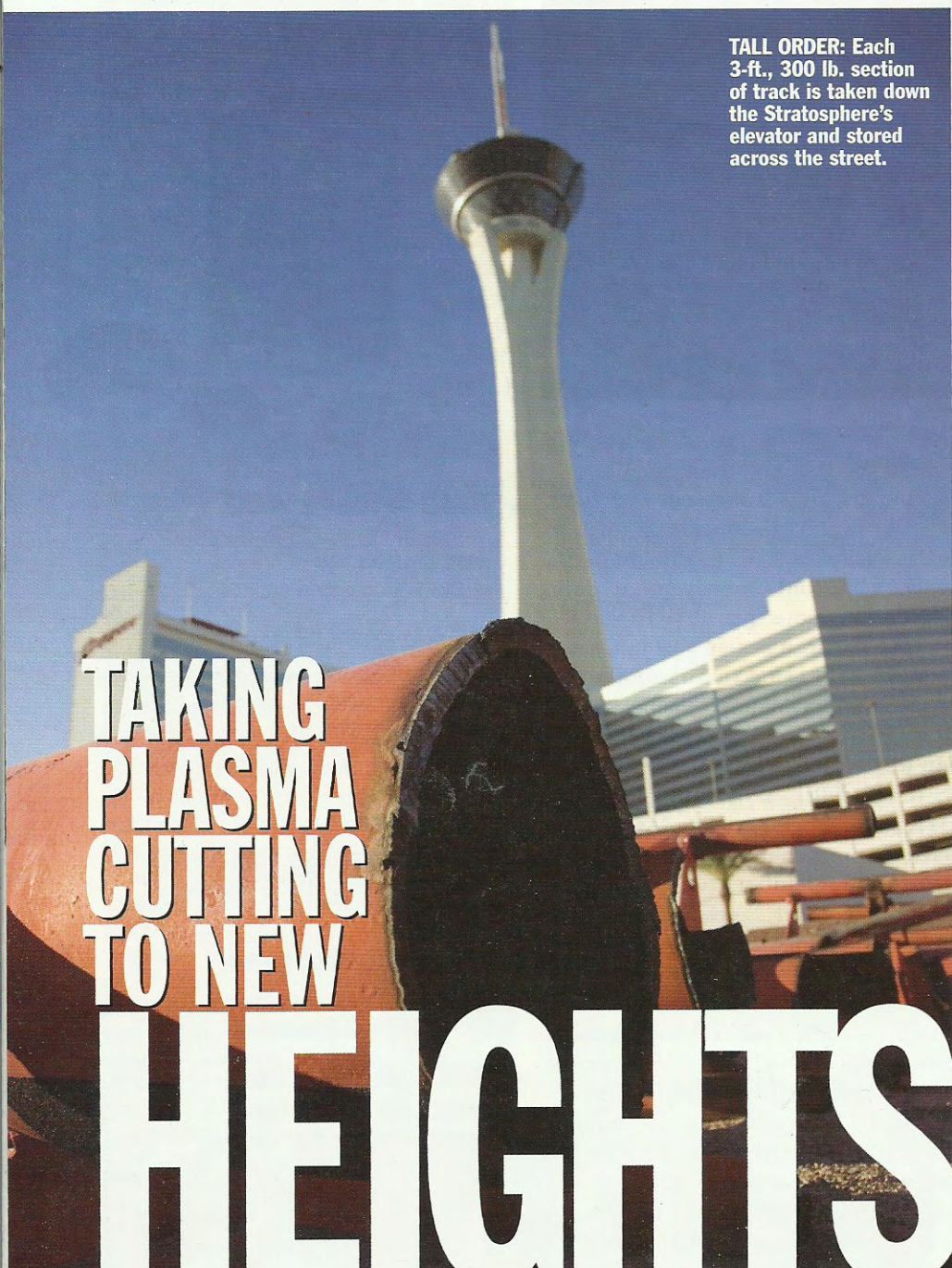
## THE WAR

ON ERROR p.4





**TALL ORDER:** Each 3-ft., 300 lb. section of track is taken down the Stratosphere's elevator and stored across the street.



# TAKING PLASMA CUTTING TO NEW HEIGHTS

**Spectrum 1000 helps the Stratosphere maintenance crew cut their time by 55%**

**BY STEVE HIDDEN  
MILLER ELECTRIC MFG. CO.**

**A**BOUT 900 FEET ABOVE THE STRIP, Brian Day pauses for a moment and looks down on the early morning Las Vegas skyline.

"I put up the signs there and there," Day says, pointing at the brightly lit casino signs below. The Strip casinos all

look small from the top of the Stratosphere. Ready to start, Day picks up the torch to a Miller Spectrum 1000 plasma cutter and begins cutting another section off of the High Roller, the Stratosphere's famous roller coaster.

After 10 years and almost 3,000,000 riders, the High Roller's time has come. Although it was lifted into place by the Tower crane, its more than 110,000 lbs. of track will be going down in the elevator, one piece at a time. Day is one member of the ride maintenance crew who will be doing the demolition work under the direction of Patrick Brinckerhoff, the Stratosphere's director of ride engineering.

To fit into the Tower's elevator, the track and support structure needs to be cut into approximately 367 three-foot lengths, each weighing about 300 lbs. To ensure safety—his primary concern—and speed, Brinckerhoff armed his crew with a Spectrum 1000 plasma cutter.

To see how much time he would save, Brinckerhoff conducted his own cutting speed test, pitting the Spectrum 1000 against the gas torch. He had one of his trained welders practice with the gas torch and then timed him. Cutting a section of track took between seven and eight minutes, although the operator felt that he could bring it down to below seven minutes with practice.

Then he tried the Spectrum 1000. The same cut took three minutes, ten seconds.

"Everyone is working on overtime, so the ability to cut the time in half is huge," says Brinckerhoff. With 367 sections to cut, the cutting times would amount to 19 hours for the Spectrum 1000 vs. 43 hours for oxy-fuel—a savings of 55 percent.

Fifteen days and already one-third of the way through the project, Brinckerhoff says, "The Spectrum 1000 has already more than paid for itself."

## **HIGH ROLLER NO MORE**

Rising 1,149 feet above the Las Vegas Strip, the Stratosphere Tower is the tallest free-standing observation Tower in the United States and the tallest building west of the Mississippi River.

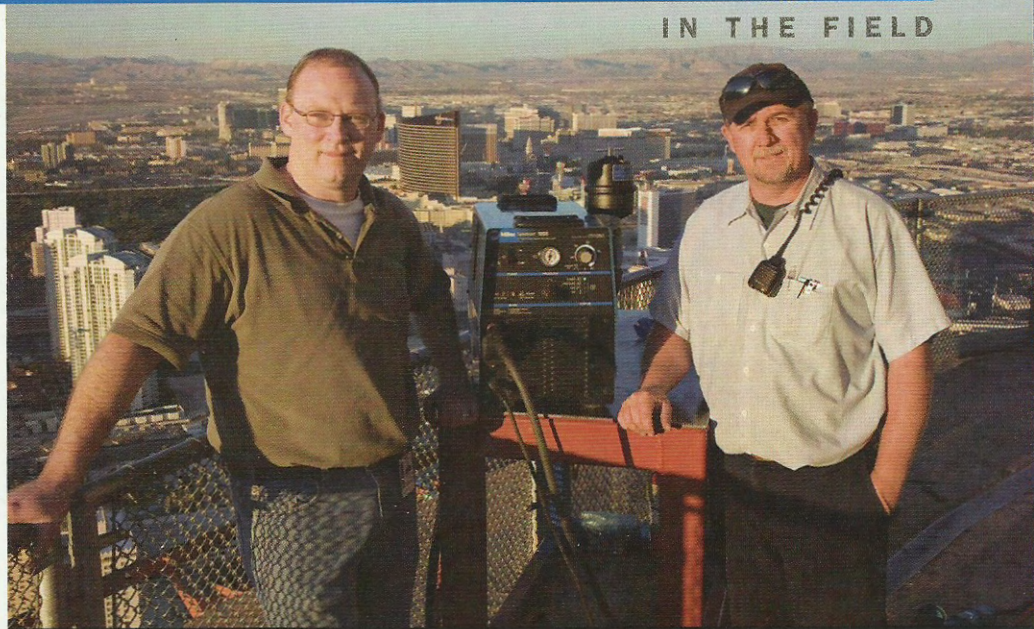


Offering a breathtaking view of Las Vegas and the surrounding valley, the Stratosphere also offers some thrill rides for its more adventurous visitors. Three rides, the Big Shot, Insanity and X Scream, offer all the excitement of an amusement park with the added attraction of being one-fifth of a mile above ground.

While these rides spin, turn, hang passengers over the side or shoot them upward at high speed, the High Roller circled the observation deck at a mild 30 miles per hour. Many considered it the tamest of the rides. After 10 years, it needed rehabilitation and a decision had to be made.

"The High Roller was due for a facelift that would cost well over \$500,000," Brinckerhoff explained. "The hydraulics were antiquated and it required a lot of maintenance to keep it in perfect working order. We decided instead to bring it down and look at possibilities for a future project to replace it."

To accomplish this, Brinckerhoff worked with an engineering firm, Interactive Rides, to engineer a Thern davit crane to the original front car frame of the roller coaster. The car is pushed into place, the crane is attached above the next section to be removed and the section is then cut away. Each



**HIGH EXPECTATIONS:** Patrick Brinckerhoff (left), the Stratosphere's director of ride engineering, did thorough research before choosing the Spectrum 1000. One-third of the way through the project, both he and Brian Day (right) "couldn't be happier" with the choice.

3-ft. length of track consists of one backbone, two running rails and a few track ties. The cutout section components range in thickness from 1/4 in. to 5/8 in. Once cut, the section is then hoisted onto a cart, taken down by elevator and placed into a storage yard.

The same people responsible for ride maintenance during operating hours are doing the work. Several times a month, four or five crew members work overtime on the High Roller between 2 a.m. and 8 a.m., the only time the Tower isn't open to visitors.

All of them are accustomed to working at great heights, according to Brinckerhoff.

#### THE RIGHT TOOL FOR THE JOB

Before the demolition began, Brinckerhoff researched his equipment options. He called other amusement parks and spoke to others in the industry to see what they recommended. He then checked all of the top manufacturers' Web sites, landing at MillerWelds.com.

After conducting his research, he settled on a Miller Spectrum 1000 plasma cutter. Rated for 1-in. (based on a cutting speed of 10 inches per minute) cutting capability and with features such as Auto-Line that allow it to connect to any primary voltage, from 208 to 575 volts, single- or three-phase, the Spectrum 1000 seemed ideal for the job. Brinckerhoff called John Aldrich at Nevada Compressed Gas who agreed with his choice.

#### SAFETY

"We have all of the concerns of any amusement park, but we have them 1,000 feet in the air," says Brinckerhoff, who is responsible for the rides' interface with the building. "When it comes to the safety of the passengers or the Tower, we don't make compromises."

Although he had an oxy-fuel cutting setup on hand, it presented several risks.

**FLYING HIGH:** 900 feet above the Las Vegas Strip, Brian Day uses a Miller Spectrum 1000 plasma cutter to cut apart the Stratosphere's High Roller roller coaster.







**REST IN PIECES:** Using the Spectrum 1000, each section of the High Roller track took about three minutes to cut. Using oxy-fuel would take seven minutes for each section. With about 367 sections, the time difference is 19 vs. 43 hours of cutting time.

“One of my biggest fears is that if an acetylene tank were to leak, it would seriously compromise the integrity of our building,” Brinckerhoff says. “Fire is probably the biggest concern, especially in the Tower. We can’t store the oxy-acetylene tanks in the Tower because of fire department regulations. So the oxy-fuel tanks would have to be transported by elevators every night. We brought the Spectrum 1000 up and it stayed there. It really saves a lot of time and effort.”

#### SPEED AND TRAINING

“Oxy-fuel cutting requires more skill,” says Brinckerhoff. “If you have someone who is really skilled with a gas torch, you may be able to forgo the use of a plasma cutter. But if you have an operation like mine, where you have multiple users with different skill levels and backgrounds, the Spectrum 1000 is the way to go.”

It also eliminated some of the difficulties a gas torch would have encountered.

“It’s more difficult to use a gas torch on continuous round shapes and tubular sections,” Brinckerhoff says. “One of the big differences is that with gas you have to get the area cherry red first in order to penetrate through and start the cut, and that is time consuming.

The Spectrum 1000 penetrates fast and just slices through.”

At three minutes of cutting time per section, they can rig and remove seven or eight sections of track per night. After 15 nights of

cutting, they have removed about 40,000 lbs, about a third of the total.

“It’s more than paid for itself,” Brinckerhoff says. “For pure power cutting, nothing beats the Spectrum. It really is the machine to use. All of the major obstacles in using oxy-fuel—cutting speed, ease of use, transportation and storage of gas—were overcome by plugging the Spectrum 1000 into a 250V outlet.”

Although Brinckerhoff is free to choose whatever product or distributor he likes, he keeps returning to Miller.

**The Spectrum 1000  
has already  
more than paid  
for itself.**

## THE BOTTOM LINE

### Spectrum 1000

**APPLICATION:** Cutting sections of track off of the High Roller, the Stratosphere’s famous roller coaster in Las Vegas.



#### REAL ISSUES:

**KEY ISSUE:** Increase productivity and eliminate safety and portability issues associated with oxy-fuel.

**CHALLENGE:** Oxy-fuel cutting takes more than twice the time it takes to plasma cut and presents fire safety issues and complications involved in transporting oxy-fuel tanks.

**PREVIOUS CUTTING EQUIPMENT:** Oxy-fuel.

#### REAL ANSWERS:

**NEW SOLUTION:** Spectrum 1000 plasma cutter.

#### REAL RESULTS:

##### INCREASED PRODUCTION:

Switching to the Spectrum 1000 plasma cutter provided cuts in less than half the time of oxy-fuel torches, a 55 percent savings.

##### INCREASED SAFETY AND

**PORTABILITY:** Plasma cutters don’t present the fire hazards that oxy-fuel tanks present and can therefore be stored at the work site and easily moved around.

“We’re not a weld shop,” Brinckerhoff says, “Welding is only a part of our job. We see a job that needs to be done and then find products that can fill that role. All of our welding equipment is Miller.”

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