

The Siemens logo is displayed in a bold, teal, sans-serif font. It is positioned in the upper left corner of the page, set against a white rectangular background. The background of the entire page is a night-time photograph of the Los Angeles skyline, with city lights and a sunset sky in shades of orange and purple. Light trails from traffic are visible in the lower left foreground.

SIEMENS

Ingenuity for life

Metro Los Angeles

Substation modernization program helps keep light rail in the spotlight for L.A. commuters.

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In Los Angeles, where the automobile has always been king, mass transit is taking a leading role in the city's present and future. Case in point: the Blue Line operated by Los Angeles Metro. When it opened in 1990, ridership was projected at 5,000 trips daily. Actual ridership was double that figure within the first few months of operation and reached 32,000 daily trips by the end of its first year of service.

Today, the Blue Line provides 90,000 rides each weekday, over a 22-mile span connecting downtown Los Angeles with Long Beach. Its route serves communities in central Los Angeles whose residents depend on safe and reliable public transit for a ride to work, to school, or across town.

Client Objectives

After 20 years of at-capacity service, the Blue Line was in need of revitalization. In 2010, Metro unveiled a multi-year plan to upgrade the city's oldest light rail line. Improvements would be made to Blue Line station platforms, tracks, rail cars, and the power system – including the 20 traction power substations that supply electricity to the line.

"Upgrading the power substations was critical to our operations; the old ones were just failing too often," recalls Kelvin Zan, Sr. Director of Engineering for Metro. "Taking a substation offline for repairs meant we had to lower the speed of all trains; that hurt our ability to provide a reliable and dependable commute for citizens."

New substations would ensure a commute that Blue Line riders could trust. It would also make operations much more energy efficient, generating savings that Metro could use elsewhere.

"Siemens has strong construction experience and was familiar with our operations – we felt very comfortable with them leading this project."

Kelvin Zan

Sr. Director of Engineering
Los Angeles Metropolitan Transit Authority

Completion 6 months ahead of schedule ensured ARRA funding for Metro.

Siemens Solutions

To complete the substation project, Metro chose Siemens Mobility. Metro had worked with the company on two previous projects. Siemens successfully delivered 20 traction power substations for Metro's 20-mile Green Line and an additional 10 substations for the Gold Line.

Metro asked Siemens to take on the role of prime contractor for the substation project. "We felt that working directly with the manufacturer would lead to better communication," says Mr. Zan. "Good communication is critical for a complex project like this, where we needed to replace all substations while maintaining operations," Zan continues. "Siemens has strong construction experience and was familiar with our operations – we felt very comfortable with them leading this project."

As the prime contractor, Siemens was responsible for all aspects of the project including design, manufacturing, civil and electrical construction, installation, integration, and commissioning for each of the 20 traction power substations. To facilitate communications, Siemens established weekly meetings with all key stakeholders, ensuring smooth completion of the project.

The modernization program incorporated the latest DC traction power supply technology and AC gas-insulated switchgear from Siemens. Key components included:

- 8DA10 single-busbar, gas insulated switchgear
- Sitras REC diode rectifier
- 8MF10 DC switchgear
- Sitras PRO DC multifunction protection relay
- Siprotec 7SJ62 AC multifunction protection relay

All of the new substations were produced in-house at Siemens, helping to shorten the timeline and keep Metro ahead of schedule.

Over the course of four years, Siemens replaced all 20 substations. Every location was unique. Siemens needed to build each substation to fit its surroundings, which could be as cramped as a downtown L.A. alleyway.

The most challenging location may have been the Blue Line Yard, where maintenance on rail cars is performed. A continuous power supply is critical to the maintenance and performance of rail cars along the route. In its role as

prime contractor, Siemens worked directly with Metro's utility, Southern California Edison, to accommodate a temporary power supply during the substation replacement and ensure a seamless transition.

Client Results

Siemens completed the installation on-time and on-budget. In fact, with Siemens already ahead of schedule, Metro requested shortening the timeline by 6 months in order to ensure ARRA (America Reinvestment and Recovery Act) funding.

"While we needed to accelerate the schedule it could not impact quality control or safety" recalls Mr. Zan. "Fortunately, there were a lot of good people on the project that understood this, and things turned out well." The entire transition took place without interrupting operations or impacting ridership and revenue.

Today, the Blue Line is powered by the latest technology from Siemens. All along the 22-mile route, new substations ensure a safe, reliable ride for another generation of commuters. Meanwhile, using more efficient equipment has helped Metro reduce its electricity consumption significantly – it was recently named a "Demand Response MVP" by local utility Southern California Edison for its ability to help reduce electricity load during periods of high demand.



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4/17