

The background of the top section is a photograph of Sacramento Regional Transit light rail vehicles. One vehicle in the foreground is white with a yellow and blue stripe and has the number 304 on its front. Another vehicle behind it is blue and white with the number 301. The vehicles are on tracks with overhead power lines under a clear blue sky.

**SIEMENS**

*Ingenuity for life*

## Sacramento Regional Transit

Light rail vehicle refurbishment provides Sacramento RT a smart option to support service expansion.

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When boarding the Blue Line at Sacramento Regional Transit's new Blue Line station at Cosumnes River College, a rider may be forgiven for thinking the light rail vehicle is just as new. In fact, it could be more than 20 years old.

With the help of a light rail vehicle refurbishment program implemented by Siemens, the Sacramento RT has added 21 vehicles to its fleet at a significant cost-savings, helping the agency expand service at a time when every dollar is precious.

### **Client Objectives**

In 2013, Sacramento RT faced many of the challenges familiar to transit agencies. It had an aging fleet and a limited budget, and ridership was growing. At the same time, it was expanding its Blue Line service, extending its reach by 4.3 miles and adding four new stations. The RT expected the Blue Line extension to generate 11,270 average weekday boardings by 2030.

Serving an increased ridership with its existing fleet posed a problem for the RT. The current vehicles ranged in age from 15-25 years. While they served the RT well, older vehicles require more maintenance, which means less time in service. The RT's fleet would be shrinking just when it needed more vehicles. And, with tight state and local budgets, new vehicles were not a consideration.

Fortunately, the RT had another option. It had previously purchased 21 light rail vehicles from the Santa Clara Valley Transportation Authority. The vehicles, originally manufactured by Urban Transportation Development Corp. (UTDC), had been in storage for over 10 years but were serviceable. With the right partner, the RT could refurbish them, inside and out, to like-new condition for a fraction of the cost of purchasing new vehicles.

# Refurbishment provided Sacramento RT a cost-effective option to fleet modernization.

## Siemens Solutions

Sacramento RT selected the Mobility division of Siemens Industry to complete a full refurbishment of all 21 UTDC vehicles. The refurbishment was headquartered at the Siemens solar-powered plant in Sacramento.

The program addressed all aspects of the vehicles, both the interiors and undercar, with the goal of returning them to like-new condition.

Refurbishment of vehicle interiors included:

- Full removal of the vehicle interior and windows followed by an inspection of the flooring and panels for corrosion or other damage
- Cleaning of all interior panels and paint touch-ups where needed
- Inspection of seat pedestals and cleaning and replacement of damaged cushions
- Removal and refurbishment of the air conditioning system
- Modernization of technology including new door push buttons, intercom system and LED signage

- Operator cabs were also modernized with equipment matching those in other RT vehicles; this allows operators to easily switch from one type of vehicle to another

For the undercar, Siemens removed the bogies and completed a full overhaul, which was managed from its bogie service center. The refurbishment included:

- Removal of traction motors, gearboxes and axles, which were sent to specialists for inspection, cleaning and refurbishment
- Inspection and maintenance of other equipment at Siemens bogie service center
- Structural testing of the bogie frames followed by re-working and re-welding, if needed
- Full blasting, priming and painting of the bogie, which were then rebuilt and re-attached

In addition to work on the interiors and undercar, Siemens completed a full overhaul of the vehicle exteriors. With many of the vehicles sitting exposed for close to 20 years, corrosion was a very

real issue. Siemens sanded, primed and repainted the exteriors, eliminating corrosion problems. The vehicles were then wrapped in a vinyl covering using RT designs.

Each vehicle was given a full inspection by Siemens quality assurance experts, along with a full functional test completed at the Siemens testing facility in Sacramento, before being sent to RT. The testing followed the same procedures used for a new vehicle.

## Client Results

Siemens completed the refurbishment in a phased approach with the last two vehicles delivered back to Sacramento RT in December 2016. Each vehicle was tested on RT's mainline before being returned to revenue service.

The refurbishment program provided RT a cost-effective way to modernize its fleet. For a fraction of the cost of purchasing new vehicles, the RT was able to take older equipment, return them to like-new working order, and add an expected 15 years of life.



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