



ETS **SIEMENS**

Minneapolis – St. Paul Metro Transit

Siemens connects the Twin Cities year-round with its customizable S70 light rail vehicle.

The Twin Cities of Minneapolis and St. Paul came closer together on June 14, 2014. Fifty years after streetcar service ended, the two cities were reconnected by rail. Operated by Metro Transit, the new METRO Green Line connects residents with 23 stations between Target Field in downtown Minneapolis and the St. Paul Union Depot.

Employing more than 5,000 workers, construction of the METRO Green Line is the largest public works project in Minnesota history. Planning and implementation of the 11-mile transit line involved many key decisions to ensure smooth operations, especially during the chill of winter. Chief among these was selection of the right light rail vehicle (LRV) to serve over 40,000 riders per day by 2030.

Client Objectives

To meet ridership goals, Metro Transit needed to provide commuters with a reliable and comfortable experience year-round. This is especially challenging during harsh Minnesota winters where temperatures can reach as low as -40F, and a single storm can deliver more than 20 inches of snow.

Cold weather can cause serious problems for a LRV. "With previous LRVs in use, we had a history of problems, such as corrosion, that came up due to environmental conditions,"

notes Rick Carey, Metro Transit's Assistant Director of Rail Vehicle Maintenance and project manager for the new light rail vehicle program. Salt used to melt snow leads to corrosion on the underside of a LRV, resulting in damaged parts and costly, unplanned maintenance. Maintaining comfortable temperatures for passengers and operators is also a challenge, with doors opening frequently and letting cold weather inside.

Criteria that Metro Transit used to evaluate different vendors for the METRO Green Line included a proven track record of in-service reliability, the ability to incorporate technical modifications to accommodate for the local climate, and a guarantee for on-time delivery.

Siemens Solutions

Metro Transit selected the S70 light rail vehicle from Siemens as its light rail vehicle of choice. The specifications of the S70 – named after the 70% low-floor design that is ideal for street-level operation in the United States – and the capabilities of Siemens engineering team combined to provide an ideal fit for Metro Transit.

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“One of the key factors in meeting our opening day deadline was the ability of Siemens project management and commissioning team. We have had a very transparent relationship; they are excellent to work with.”

*Richard Carey
Assistant Director of Rail Vehicle
Maintenance and Project Manager
Metro Transit*



With almost 1,300 light rail vehicles in operation throughout North America, Siemens has established a reputation for reliability. Siemens vehicles operating in the cold, Canadian cities of Calgary and Edmonton helped assure Metro Transit officials that it was up to the job of handling Minnesota winters.

To meet the cold weather challenge, Siemens made more than 1,000 customizations, large and small, to each LRV. During meetings at Siemens solar-powered manufacturing facility in Sacramento, Siemens and Metro Transit looked at every detail of the S70 design. “We brought a number of lessons learned to the design process and Siemens addressed our concerns, providing several options along the way; they were very easy to work with,” recalls Carey.

The final S70 design incorporates many features that enhance safety, reliability and comfort on the METRO Green Line. These include:

- Stainless steel components and corrosion-inhibiting paint on the underside of each LRV
- More durable hydraulic hoses and better heaters to keep couplers free of snow and ice
- Full-width snowplows at each end
- Fiberglass-reinforced outer panels and added insulation that moderates temperatures and reduces noise
- A heating system with sidewall units, that recovers heat more quickly after doors open and close
- Fully insulated operator cabs and heating for inactive cabs, ensuring operator comfort when switching cabs at each end of the route
- Video cameras and displays in place of rearview mirrors
- Enhanced security systems including cameras that capture audio as well as video

The S70, which fits 230 passengers with space for bicycles and wheelchairs, is also about 6,000 pounds lighter than the previous LRV model used on Metro Transit’s Blue Line route. The lighter load offers greater efficiency, using 5%–6% less electricity. More efficient heating and cooling and the use of LED lights reduce energy consumption – and Metro Transit’s operating costs – even further.

Client Results

Between late 2012 and early 2014, Siemens delivered fifty-nine S70 LRVs to Metro Transit. Forty-seven are in use on the METRO Green Line; the other twelve have been added to METRO Blue Line service to meet greater demand. On-time delivery ensured the new METRO Green Line could go into operation as scheduled.

In its first month of operation, ridership on the METRO Green Line has exceeded Metro Transit projections. In September 2014, the new S70 LRVs carried more than one million passengers in a single month. Ridership is expected to grow to more than 40,000 passenger trips per day by 2030. Increased ridership on the METRO Green Line is resulting in a better environment for local residents; each trip on a LRV instead of in a car reduces greenhouse gas emissions by more than 70 percent per mile.

On the METRO Green Line, the Twin Cities are being brought closer together with public transportation that’s efficient, comfortable and reliable, and building a stronger community in the process.

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