Munich’s municipal utility Stadtwerke München (SWM) has ordered eight trams from Siemens for the local line network in order to modernize and expand its existing vehicle fleet. The Avenio series of trams is based on the proven Combino Plus platform, which is already in service successfully in Lisbon and Budapest.

Each of the trams – to be delivered by the beginning of 2014 – consists of four modules, each with its own centrally installed bogie. The modules are interconnected to form a complete end-to-end passenger compartment filled with light. The trains are equipped for unidirectional operation with a driver’s cab and an auxiliary driver’s cab.

Siemens is one of the leading suppliers of integrated mobility solutions for the urban area (Complete Mobility) and of vehicles for local, regional, and main-line traffic.
Brake system
The Avenio has four individual, independent brake systems:
- Electrodynamic brake in the powered bogies with braking to standstill
- Hydraulic passive spring-loaded brake in the powered bogies
- Hydraulic active disk brake in the trailing bogies
- Electromagnetic rail brake in all bogies

Design and braking properties fully comply with EN 13452 and the directives of BOStrab (German regulation on the construction and operation of trams).

Bogies
The three powered bogies with their two longitudinally installed traction units feature a low center of gravity and minimal unsprung masses. The mechanical coupling of the wheels in a longitudinal direction results in significantly improved running characteristics compared with conventional 100 percent low-floor bogies without wheel coupling. Two suspension stages in the bogie together with rubber-sprung tires and vertical and horizontal dampers ensure optimal dynamic running characteristics.

First door behind the driver’s cab also has a lift that allows disabled passengers to easily access the tram. Seats and handrails designed according to ergonomic criteria increase travel comfort, as do the infotainment monitors and automatic ticket machines installed at the customer’s request. Air-conditioning systems for passenger compartment and driver’s cab

Technical properties/special features
- Vehicle concept designed to meet highest aesthetic requirements to fit the environment in which it is operating
- Amply proportioned and bright interior design
- Perfect ride comfort and optimized wheel-rail wear
- Optimal load distribution
- Efficient air-conditioning systems for passenger compartment and driver’s cab
- Uniformly arranged double doors with spacious door areas
- Large multifunction rooms for baby buggies and wheelchairs
- Video-monitored lift for disabled-friendly access
- Large, easy-to-read train destination displays inside and out
- Infotainment monitors
- Interior video surveillance
- External video camera to supplement outside mirror