

### TSR: Trains for Regional Service

Glenair is a primary supplier of Interconnect components and systems for Trains for Regional Service (TSR) in Italy. Designed and manufactured in cooperation with AnsaldoBreda and Keller, TSRs are double-deck Electric Multiple Unit trains with distributed power, consisting of two MCH motor coaches with driver's cabs and one or more intermediate motor coaches.



*The TSR Train cars manufactured in cooperation by AnsaldoBreda and Keller.*

The traction unit's composition can be varied from 3 to 6 motor coaches to maintain constant performance. Two or more traction units can be coupled and remote controlled, up to 12 motor coaches. The installation of the train's furnishings allows easy modification of the seat layout, and the ability to substitute seats with a baggage compartment, folding seats, or lockers.

An IGBT traction inverter is installed in each motor coach. Each of these water-cooled inverters feeds two three-phase asynchronous motors. Furthermore, two static groups (3 kV DC/380 V AC 50 Hz) for auxiliary services, each equipped with a battery charger, are installed on the train. Every TSR is equipped with mechanical disc braking on each axle and regenerative electric braking, with reserve rheostat, on each motor axle.

### SEPTA Explores Energy-saving Technologies

Southeastern Pennsylvania Transportation Authority (SEPTA) is exploring ways of saving million of dollars by taking advantage of the latest energy storage technologies. The project is focusing on Philadelphia's Market - Frankford subway line, where the fleet of M-4 trains is already equipped with regenerative braking. "Smart Grid" technology will allow SEPTA to capture and store braking energy in large-scale batteries. This recovered energy can then be reused on the network, improving power quality, or fed back to the grid to generate additional revenue for SEPTA.



*The new SEPTA train manufactured by Amtrak.*

This energy-saving technology is also expected to reduce carbon emission by 1250 tons per year. The joint project between Viridity Energy and SEPTA is being supported by a \$900,000.00 grant from the State of Pennsylvania. If the pilot is successful, the technology could be deployed elsewhere on all the SEPTA network—the Regional Rail Division that provides commuter rail service on thirteen branches to over 150 active stations in Philadelphia, Pennsylvania and its suburbs.

Glenair is one of the main suppliers of Interconnection Systems and Connectors for this advanced, energy saving train.