

Ingeteam has installed on the Malaga area railways system (3,000 Vdc) an energy recovery system with feed-back to the grid. The final customer for this project is ADIF.

The INGEBER system, integrated on La Comba substation, is transparent to its operation and solves energy recovery limitations.

The system will allow savings of 12% of the actual traction energy on substation.

The system is made up of a double converter, connected to the catenary in parallel with the substation's rectifier, and to the already existing transformer. INGEBER monitors the state of the catenary at all times, and if there is energy to be recovered, converts it into high quality alternate current, which is fed back to the general three-phase grid.

## System Characteristics

Catenary voltage:	3,000 Vdc
Alternating voltage:	1,300 Vac
Maximum power:	2,000 kW
Rated power:	645 kW
Alternating current max.:	444 A
Direct current max.:	666 A
TDD%	<5%
Output frequency:	50 Hz
Cooling system:	Forced Air



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## Power diagram

