

# The Customer: Communauté d'Agglomération de Reims

## The Solution: Turnkey Tramway Project

### Country:

 France

### Project:

Reims Tramway

### Scope:

- > Rolling stock
- > Track work signaling
- > Power supply and catenaries
- > Ticketing and telecommunications
- > Workshop equipment, depot
- > Maintenance and project management
- > System support & Engineering

### Entry into revenue service:

April 2011

### Project start date:

July 2006

### Construction start date:

May 2008



### THE CONTEXT

The French city of Reims decided to develop its public transport provision by creating the first tramway line for the Greater Reims urban area. This project was scoped to include urban planning work, operations and maintenance of a combined bus and tramway network over a 30-year period.

ALSTOM Transport is a 17% shareholder in the MARS concession and is also the construction consortium's representative. Other companies who contributed to the construction included CDC Infrastructure, Veolia Transdev, COLAS SA, Caisse d'Epargne Lorraine Champagne-Ardenne, FIDEPPP, BOUYGUES Travaux Publics, SNC-Lavalin, Quille and Pertuy Construction.

### ALSTOM SOLUTION

ALSTOM has delivered an optimized turnkey tramway system solution that included the design and production of rolling stock and all electromechanical systems as well as a two-kilometer section of APS (ALSTOM's ground-level power supply system) on Line 1 – enhanced to operate in winter conditions.

### HIGHLIGHTS

- Special CITADIS™ : front-end styled to project the image of a champagne glass
- 18 CITADIS™ tramsets fitted with the most up-to-date passenger amenities

### THE BENEFITS

- > In outsourcing the creation of its new urban transport system to a highly competent concession, Reims municipality was able to focus on the big picture: urban integration and services.
- > In choosing the MARS concession, Reims was assured to get the very best E&M tramway system and civil works know-how.



APS System



CITADIS™ Tramway in Reims



Inauguration of Reims Tramway



Reims CITADIS™ in revenue service

## DETAILED SCOPE

ALSTOM delivered a turnkey tramway solution for Reims that included the design and production of rolling stock and all electromechanical systems: 18 CITADIS™ tramsets, 23 stations and 11.2 km of tram line.

### Rolling Stock

18 bi-directional low-floor CITADIS™ tramsets delivered in:

- > width 2.40 m
- > length 32.4 m
- > Passenger capacity: total (4pax/m<sup>2</sup>) > 205, seated – 56

CITADIS™ tramways provide smooth access, comfort and safety. For Reims, they have been equipped with air conditioning, rear-view cameras and ground-level power supply.

### Track work

11.2 kilometers of double track 60% of which were laid using ALSTOM's advanced APPITRACK™ (technology for speed and reduced construction footprint).

### Depot

- > Laying tracks in the depot: pitted tracks, storage tracks and testing tracks
- > Tracks electrification and all rail signaling installations
- > Design, supply, installation and management of all of the center's maintenance
- > Equipment: wheel reshaping machine, trainset wash station, complete trainset lifting and bogie maintenance jacks

### Power Supply

Design, procurement and installation of:

- > 9.2 kilometers of catenary system and 2 kilometers of APS
- > 7 substations of 20kV

### Maintenance

- > 30 years of Rolling Stock maintenance and fixed installations including routine, preventive and corrective maintenance, technical support, management of spare parts and stocks for the CITADIS™ tramsets.
- > Track maintenance, maintenance of power supply and distribution equipment, catenaries, signaling, APS and other E&M installations in first-rate condition.

### Passenger Information & Security

- > Passenger information displays
- > Public address
- > Real time Closed Circuit Television (CCTV) supervision on trains

### Signaling

Signaling system comprising:

- > Smartlock™ 400 interlocking with SmartIO™ object controllers
- > Trackside product such as axle counters for train detection, LED signals
- Automatic train supervision, SCADA
- Centralized Computer Logic

## KEY FEATURES

Street-level power supply length	2 kilometers
APS running kilometers	190 000 km/year
Single line on concrete base length	22.4 kilometers
Maximum speed	70 kph
Operational headway	6 min (line A); 18 min (Line B)
Number of CITADIS™ tramsets	18
Number of stations	23