



# REIMS

## UNCORKS THE FUTURE



A special review from  
**TRAMWAYS &  
URBAN TRANSIT**



# THE INAUGURATION

*Tramways & Urban Transit* reports from the inauguration of France's latest tramway in Reims, a technological *tour de force* designed to unite the city.



**M**uch has been made of Reims' tram fronts resembling the traditional flûte Champagne glass. More than anywhere, this was the place that would warrant a Champagne send-off. Yet the very absence of the revered wine during the opening ceremony on Saturday 16 April 2011 carried its own important message – for the changes made to public transport were intended as advantages available to all and to benefit as many residents as possible.

For all Reims' association with Champagne – it is home to such names as Mumm, Taittinger and Veuve Clicquot – it does not permeate the city's being, unlike in the neighbouring town of Epernay. Reims' visitors, many there to see the great cathedral now in its 800th year, soon realise that it has much in common with similarly-sized 'ordinary' cities.

Beyond a small central district and entertainment centre concentrated on Place Drouet d'Erlon leading from the SNCF station, Reims has straggling suburbs interspersed with high-rise blocks and retail parks. Not a seat of extreme urban decay or social disintegration, like so many cities it has nevertheless grown more disjointed. During the evening before the tramway opened on 15 April, and as if a choreographed overture to the arrival of the trams, traffic in the centre and around the station forecourt became gridlocked.

When guests were shepherded from the splendour of Reims Hôtel de Ville (city hall) onto buses taking them

Above:  
Two-thirds  
of the fleet  
converged at  
Comédie as  
part of the  
inaugural  
proceedings.

Right: The  
APS/overhead  
changeover  
stop  
Boulingrin  
is usefully  
positioned  
for sampling  
Reims' most  
famous  
product.



to trams for the opening, some walked over metre-gauge tracks just visible in the square. The declining old network originated in the 1880s had fully closed in late 1939, a time when the event perhaps registered low amongst citizens' concerns – it would be over 40 years before received wisdom on how best to handle urban transport began to be challenged.

When new tramways began to proliferate in France it was not surprising that Reims would join in. In the mid-1980s there was a prospect of being in the vanguard of modern light rail alongside Nantes, one of whose Alstom *TFS-1* trams was exhibited in Reims to support the project. A line with a similar route to the 2011



version south of the main station reached advanced planning and budgetary stages before a sudden and unexpected cancellation. This was briefly referred to ('the failed attempt in 1993') during the opening ceremony by Reims Mayor and President of Reims Métropole, Adeline Hazan.

In spite of gaining almost three-quarters of popular support, the first project fell victim to a lobby embracing cost, concerns with disruption and assumed adverse trading caused by restricted car access. The cost of the aborted scheme was estimated at 12.5m French Francs (EUR1.88m). The spectre of cancellation costs with nothing to show thereafter would re-surface during the current project. It was thus second-time-lucky for a tram project, which even then had to survive threatened cancellation by an ultimately unsuccessful mayoral candidate.

For the nominally 'first ride' on Reims' tramway, six trams left from the north and six from the south to converge around the Opéra square. Passengers were mainly 1200 guests of consortium MARS and the civic authority, 1000 more having won places by lottery. In spite of getting used to trams during 'marche à blanc' trials, many lined the route for the spectacle of parallel running. During a long address to the crowd packed amongst the 12 trams, Mayor Hazan referred to the tramway as an instrument to unify the agglomeration and the region, with quicker and more comfortable journeys, better access, commuter opportunities and large-scale renovation of city streets and public spaces.

Just 45 minutes from Paris Gare de l'Est and near international borders, Reims' appeal to visitors and would-be investors is also expected to rise as the city becomes greener and less congested. The full changes came into effect on Monday 18 April after two days of free travel. This encouraged attendances for free events, a something-for-everyone programme ranging from fireworks, choral singing, *Son et lumière*, rock concerts and a giant mechanical spider stalking the streets.

With a population of 191 325, Reims is the largest of the six agglomeration communes totalling around 219 000 people. The urban population has been at best near-static for years and the surrounding Champagne-Ardenne region is depopulating, yet Reims is bigger or



Above: The only colour on just one tram, yellow 'Citron' 115 passes the junction for lines A and B near Médiathèque Croix-Rouge.  
 Right: The former mayor dubbed 'father of the tram', Jean-Louis Schneider, expressed hopes for more lines to be added.  
 Below: Grassed APS-fitted track near Langlet stop.



## IN BRIEF...

- **Transport authority:** Reims Métropole
- **Network:** CITURA (<http://citura.fr>)
- **Concession holder:** MARS (Mobilité Agglomération RémoiSe)
- **Project cost:** EUR345m
- **Revenue opening:** 18 April 2011
- **Routes:** Two
- **Stops:** 23, spaced approx. 0.5km
- **Network length:** 11.2km (7 miles)
- **Weekday hours:** 05.30-00.30
- **Peak frequency, line A:** Six minutes
- **Gauge:** 1435mm
- **Power:** 750V dc overhead and Alstom APS ground supply (1.9km, 1.2 miles)
- **Park-and-ride:** Three sites (438 places)
- **Fleet:** 18 Alstom Citadis 302
- **Tram capacity:** 205 (56 seated)
- **Max. speed:** 70km/h (44mph)





Above: With colour-coded scarves according to their transport to the opening ceremony, 1200 guests gathered at Reims Hôtel de Ville.

Below: Number 111 was one of the trams transporting 'first ride' lottery winners.



Above left: Northbound 102 lowers the pantograph at Comédie before entering the APS section through central Reims.

Above right: Mayor Adeline Hazan and leading project figures including Transdev Reims Director, Alain Bourion (far right) signal 'Go' for the new network.

Left: Reims tramway and its multiple contacts with bus routes.

comparable to Angers, Mulhouse or fellow northern city Valenciennes where the case for trams was accepted.

The opening celebrations were not only for the tramway, but also the formal launch of an entirely new 'Réseau Bus-Tram,' the network title according top billing to 20 routes using around 160 buses. There are four route classifications according to their role. Amongst the 'Ligne Fortes' – frequent, high capacity, central – the tramway forms the spine of a series of interchanges by multiple bus services. To provide detailed coverage for localities, network information is presented as six geographical sectors. Overall, an estimated 98% of agglomeration residents live within 500m of a tram or bus stop on the new network. The 11.2km (seven-mile) mainly north-south line, with a divergence to two branches at the southern end, was partly warranted by inability of buses to meet demand.

Embracing former coverage by very frequent but notoriously overloaded bus routes, there are two tram services overlapping in the centre. Line A is between Neufchâtel in the northern suburban area of Orgeval and Hôpital Debré terminus immediately outside the large hospital site; end-to-end travel takes 30 minutes.

Less frequent line B has departures according to trains using Champagne-Ardenne TGV station on the LGV-Est high-speed line that passes south of Reims. Trams use a siding between Boulingrin and northern line terminus Gare Centre by the main city railway station. Taking 20 minutes to cover, line B diverges from A at a roundabout before running downhill past the depot towards the final stop, Gare Champagne TGV.



# DREAM TO REALITY IN SIX YEARS

Initial consultations for network renewal began in 2003. A tender issued in July 2005 led to Reims becoming the first tramway in France created as a concession by a Public-Private Partnership (PPP). As valued in April 2011, the project cost EUR345m.

Contracted by transport authority Reims Métropole in July 2006, the Mobilité Agglomération RémoiSe (MARS) consortium undertook responsibility for the finance, design and build of the first tramline. Initial excavations were already underway by the time it took over operation of what was still a bus-only network at the start of 2008. An underlying challenge was that public transport in Reims had among the lowest fares in France, yet it had the highest pay rates. Creating 'transports collectifs en site propre' (TCSP – public transport in dedicated space) through a PPP became part of the response to this situation.

In 2010, the funding was classified by source as 6% from MARS shareholders, 42% public capital subsidy and 52% of debt. About 800 people were employed at the peak of the project implementation. Between pre-tram summer 2010 and post-tram, the expectation is for annual network passenger numbers to grow by 40% to 42 million and the distance travelled by 5.5%. The long-term growth depends to a large degree on CITURA attracting car users and success with the economic revitalisation of Reims; initial projections for tram use suggest 45 000 daily journeys.

Amongst the MARS partners, and designated with Bouygues Construction in the manufacturing group, Alstom has a 17% share. Supplying the trams and control equipment, Alstom incorporated its proprietary systems in the infrastructure. To preserve vistas in the city centre, notably that towards the cathedral near Langlet, no overhead line equipment was installed. APS ground supply covers a single 1.9km (1.2-mile) stretch between supply changeover carried out at Boulingrin and Comédie stops. This technology is a modified version

Top:  
Beyond the  
Champagne  
image, Reims  
has much in  
common with  
other large  
French cities:  
104 leaves  
Arago on the  
opening day.

Right:  
Supplier  
Alstom has a  
substantial  
equity  
interest in  
the MARS  
consortium.



of that first used in Bordeaux and proved trouble-free during three months of test running before the opening.

Making its debut in the construction of a French tramway was Alstom's Appitrack, as previously deployed in Jerusalem and Algiers. The use of paired machines for concrete slab laying and locating rail baseplates in the wet concrete is claimed to be five times faster than conventional methods. About 60% of the Reims tracks, the outer ends, used Appitrack.

After a year of utility diversions, the whole track installation was completed between May 2009 and April 2010. Alstom worked with Parkeon, suppliers to about three-quarters of French tramways, to create a contactless automatic fare collection system for the network. The 'Grand R' cards in person-specific and non-designated forms are rechargeable with various journey entitlements at over 150 points including machines at tram stops which also sell cards. Validation is by onboard readers.

Another 17% MARS shareholder, operator Transdev-Reims has around 600 employees. It recruited tram drivers from those already employed on buses, and the overall number will remain similar. Until conversion training has created sufficient numbers in autumn 2011, those tram drivers will remain in their duties, when it is intended they will divide their time between the two modes.

# TRAM DESIGN BY PUBLIC VOTE

Reims' choice of motive power follows a well-trodden path. The Alstom *Citadis* is the mainstay of most French tramways, with the 32m long, 2.65m-wide 100% low-floor 302 model being the favoured variant to launch many systems.

Like the Lyon 'silkworm' or Toulouse's Airbus-inspired nose, Reims has gone with styling that links visually with the host city. The tapering champagne flute look was however not in the brief to designers MBD Design and Alstom who worked within an overall concept by Ruedi Baur. By a comfortable rather than great margin, the winner in a public poll in January 2007 was the least conservative amongst the three styles offered.

There are eight colours used, with graduations rather than being entirely solid. Seven colours are used twice, with a solitary yellow 'citron' model (115). The other three (116-118) are regarded as neutral (grey) and they are the biggest earners in the fleet. Their external grey finish is only apparent on the cab ends, for they are specifically designated for vinyl advertising wraps. Coloured trams may however also carry advertising, as violet 103 did at the opening. The external colour extends to ceiling and side panels, with all having grey seating. Trams were built at the La Rochelle Aytré plant, delivered between March 2010 and February 2011; the system's infrastructure allows for extending the trams by two extra sections to 42m.

The tram-only depot is in Bezannes near Léon Blum stop on the route B line. The formal start of construction at the 55 400m<sup>2</sup> site was in November 2008. Currently at an edge of city expansion, nearby open land is zoned for development and two extra stations can be added on the track towards Gare-Champagne TGV as needed.

The depot includes the tram and bus control centres in the main building, their respective operators side-by-side in the single large room that also has a controller for direct visual and audio contact with travellers. Looking very different from its usual embedded installation, an APS supply beam is fitted on an outside track. The depot site allows for network expansion with relatively minor works, giving capability for storing and maintaining up to 40 trams. Of the present 18-strong fleet, 15 are needed for current peak services, 12 for line A and three for line B.



Above: First of the fleet, 101, on one of two inspection tracks inside the depot.

Left: Planned room for growth inside and out at the depot site.

Below: The controller oversees rehearsals for the next day's parallel running to the city centre on the bottom-right screen.





# LIFE IN THE FAST TRACK.. ALSTOM

## APPITRACK

Automatic Pin and Plate Insertion for Track

Appitrack



Survey station

Slipform machine

Appitrack machine

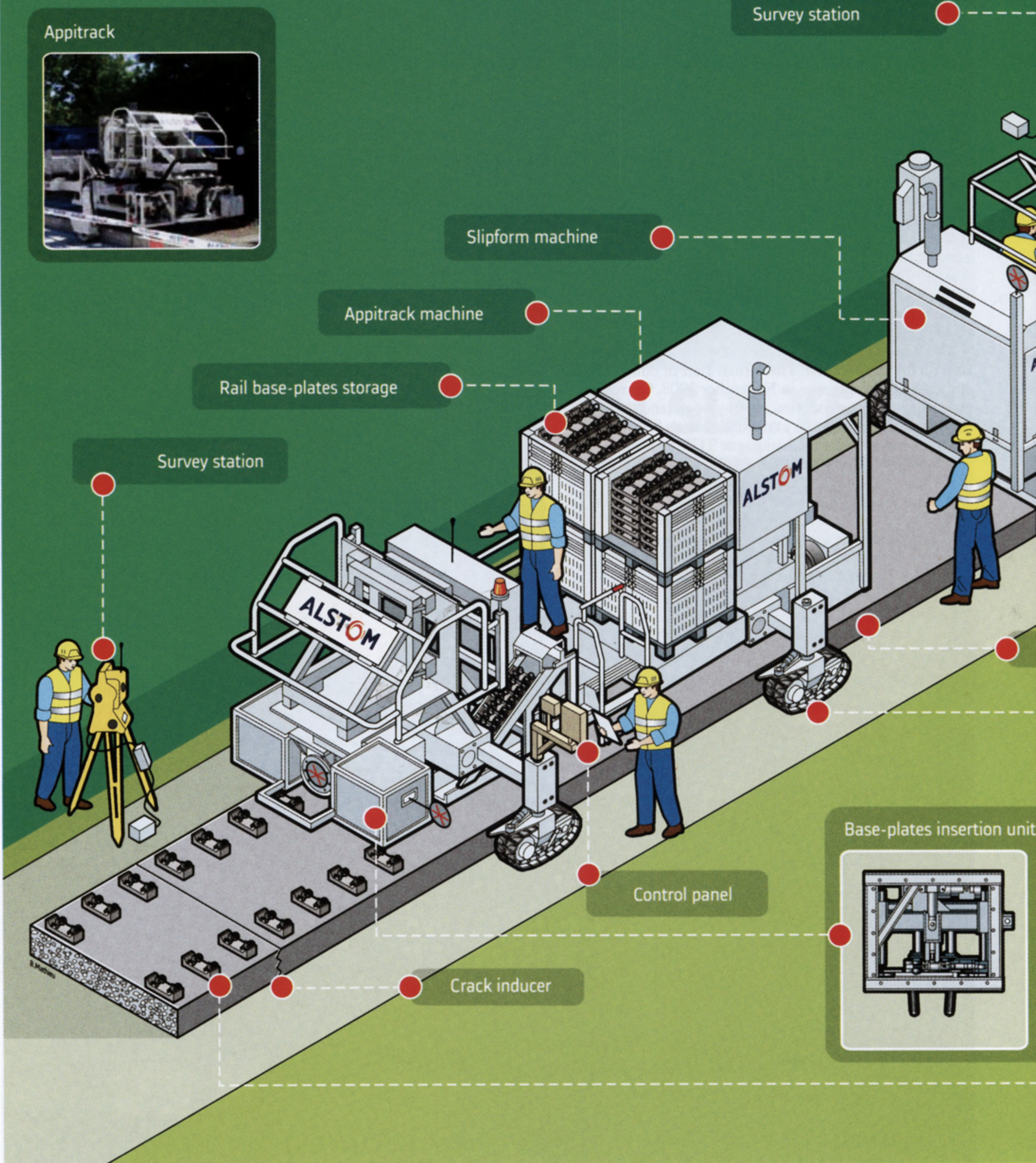
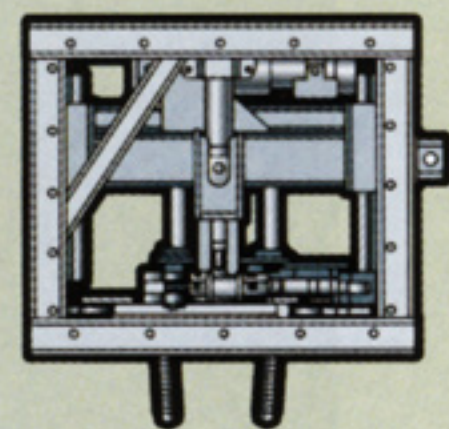
Rail base-plates storage

Survey station

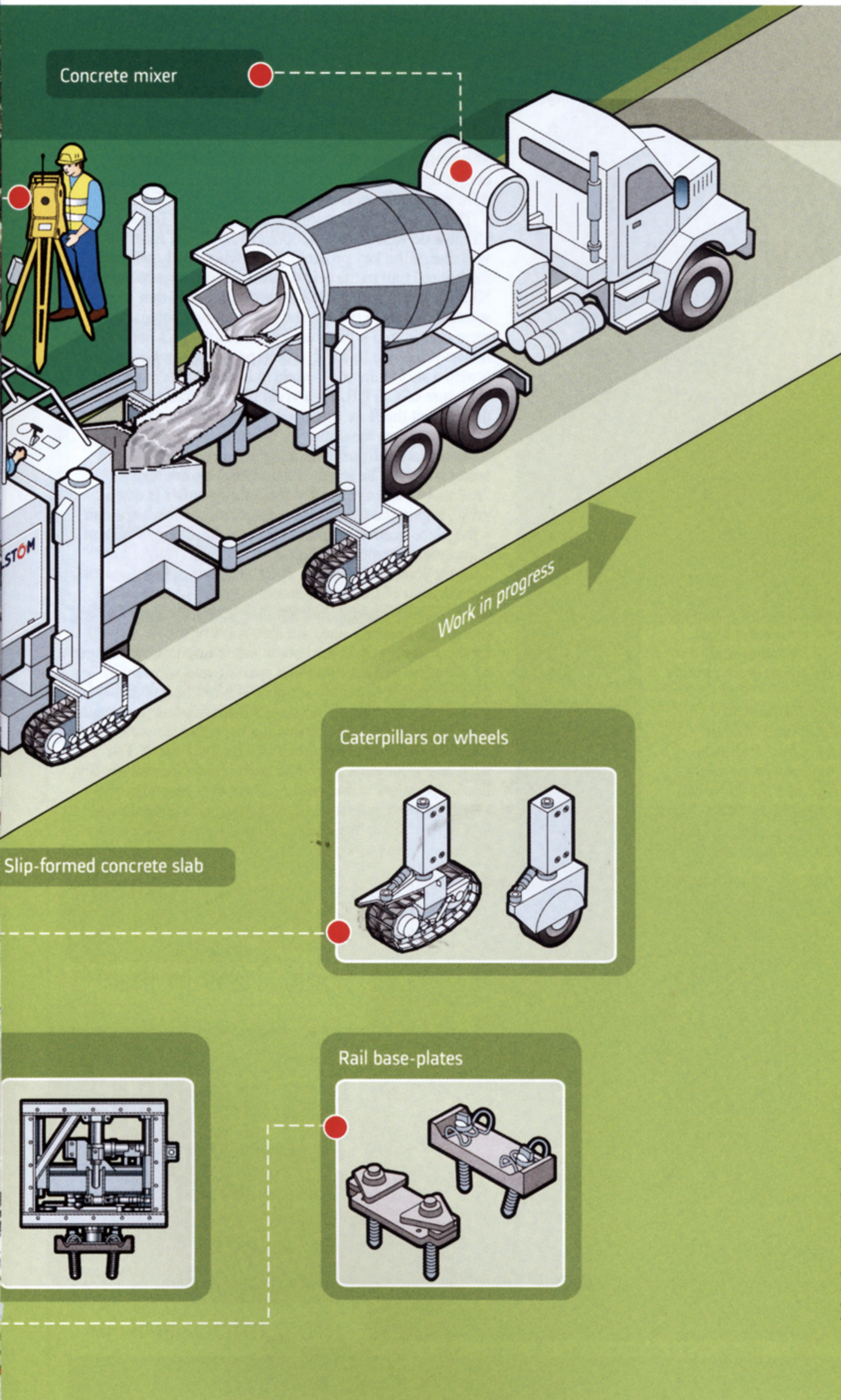
Control panel

Crack inducer

Base-plates insertion unit



# PIONEERS HIGH SPEED SOLUTION



Speeding the process of infrastructure construction for the Reims tramway, Alstom utilised its mechanised Appitrack (Automatic Pin and Plate Insertion for Track) slabtrack-laying system for the first time in France.

Developed at Alstom's facility in La Rochelle, the technology consists of two linked machines. The first is a slipform machine – also used for accelerated highway and airport runway construction – that creates a concrete slab following a predefined track alignment to within an accuracy of 10mm.

The machine has a precision wireless guidance system for accurate placement and joints are sawn into the trackbed at five-metre intervals once the concrete has cured. A second machine follows a few metres behind and inserts the baseplates into the freshly-laid concrete through vibration to within a 1mm tolerance. The resulting alignment is extremely precise thanks to automatic topographic guidance.

Appitrack allows the depth of the track structure to be reduced, cutting the time taken to lay the tracks, reducing costs and disturbances. The technology has been developed for light rail, tramway and metro applications.

After being used on the Reims project, Appitrack has also been employed in Orléans with up to 200 metres of rails being laid in a single day as opposed to 50-60 metres using conventional methods. Under optimum conditions Appitrack has seen 403 metres of light rail track laid in a single day. If those conditions – i.e. fully-cleared, level sites with good weather – continued for a week, imagine the advantages of being able to lay over a mile of track every seven days!

Key advantages of system are reduced noise and vibration during tracklaying, reduced disturbance to local residents and businesses, and a significant reduction in dust created and environmental impact.

Realisation Bernard Tavernier - illustration Bernard Mathieu

Left: This detailed schematic shows Appitrack at work. Alstom





# GETTING MORE OFF THE ROADS

On the eve of the tramway opening, Neil Pulling met Alain Bourion, Director of Transdev Reims, and found him calm in the face of some public adversity.

**T**ransdev's Reims management offices are at Rue André Huet bus depot in the north of the city, far removed from tram tracks. Like his colleagues on this potentially worrying day, Alain Bourion, Director of Transdev Reims, displayed an air of confidence, calm and good humour.

With education including the elite engineering and transport institute *École nationale des ponts et chaussées* in Paris, M. Bourion's career includes seven years in the development and marketing of Montreal's public transit and four years in Geneva.

When Reims restructured its public transport using a Public Private Partnership, a consortium including incumbent operator Keolis and Bombardier lost to a counterpart (MARS) with Transdev and Alstom amongst the partners. The challenge of transforming Reims' transport meant a return to northern France for M. Bourion who spent some of his early years around Douai. Now part of Veolia-Transdev, on 1 January 2008 the specially-formed Reims subsidiary took over operations with a 33-year contract. The first three years were in parallel with creating a tramway that formally welcomed the public on Saturday 16 April 2011.

Regarding local media comments that the opening celebrations were excessive and inappropriate in times of financial hardship (leading to some prominent local figures boycotting the proceedings) M. Bourion said: "I understand the scepticism, for people here were already proud of their transport system."

Like the tramway itself, the high-profile launch formed part of a bigger and longer-term brief, that of getting more people to use public transport. "Reims is very compact, but only 12% in the agglomeration use public transit, compared to the average of 17% for urban France... to change people's minds is most important." Taking some doubters to see what exclusive rights of way for modern trams and buses had done for other French



Above: Alain Bourion, Director of Transdev Reims

Below: Advertising tram 116 on the final *marché à blanc* day passes the junction installed at Opéra for possible extensions.

cities helped shift opinions. As well as being exemplars, several Transdev operations also provided technical support – driver training was partly done in Strasbourg, Montpellier provided fare control expertise and an operations manager, with systems management being influenced by methods in Grenoble.

The name to replace long-standing TUR (Transport Urbains de Reims) was adopted in 2010. M. Bourion was one of the key project figures who jointly pressed the big red ball to the release the balloons symbolising 'Go' for the new CITURA network. He said that local sensitivities were recognised in the name choice – 200 were considered – that conveyed the system's purpose: "It makes reference to TUR, which people were used to, but is also a shortening of *Cité de la future*." The main visual signature of CITURA is a vivid use of different colours throughout the fleet, again selected by public vote.

Carried from the outset by the trams, buses began the transformation from 'Champagne' to bright colours in autumn 2010. The intent is also based on the locality: "Reims is a town of grey stone... the weather is often grey." Again the Champagne association wasn't enough – the place needed brightening up and moving blocks of colour was deemed a solution.

In the long-term 'Reims 2020' study of city revival and growth, two of the three planning groups identified the need for more public transport in segregated lanes. Two more high capacity lines are a possibility, albeit with all modes considered. Asked about extending tram coverage, M. Bourion was adamant that specific and substantial plans were not currently active: "It is only a possibility: no studies – no decision – nothing." If longer-term expansion is to happen, it would start with a broadly east-west line to encompass the coverage of bus routes 1 and 5. For such an eventuality, there had been insistence that the first line's operation would not be, hence two junctions pre-installed for future shared tracks between Comédie and Opéra. Just before the trams were to enter public service however, the situation appeared to be wait and see...



"Reims is very compact, but only 12% in the agglomeration use public transit, compared to the average of 17% for urban France... to change people's minds is most important."

*With thanks to:* Alain Bourion, Director Transdev Reims; Eric Omnes, Marketing and Business Director, Transdev Reims; Caroline Le Got, Veolia-Transdev. Main cover image courtesy of Alain et Feng Haltat. All other images pics by Neil Pulling unless otherwise stated.