

Chinese cities stoke demand



urban population which obliges city authorities to build new metro lines at an astonishing rate.

Exports

CSR secured its largest ever export order in August with a major contract to supply metro trainsets to Iran, where Chinese suppliers are already well established. The first of these trains is due to be delivered just 21 months after signature of the contract.

Another Chinese export deal in October formed part of a framework agreement signed in 2008 between Citic and the Argentinian government. This covered a drawdown of 65 metro cars for Buenos Aires.

Chinese builders continue to develop their technical expertise, and in August CSR Sifang turned out its first lightweight stainless steel six-car trainset for Chengdu metro. In the following month CSR Zhuzhou announced that it too had completed a batch of stainless steel metro car bodies, emphasising that it had used locally-developed welding techniques. Already able to supply cars with aluminium or carbon steel bodies, the Zhuzhou factory has the capacity to turn out 1 000 cars a year.

Collaboration between Chinese and western suppliers continues, with Siemens announcing in February 2011 that it had secured contracts to supply traction equipment for 93 metro trainsets for Shanghai, Zhengzhou and Ningbo. Taken together, these contracts represent 420 cars.

In February Siemens unveiled a

CAR ORDERS Murray Hughes reviews contracts placed for metro rolling stock during 2011 and highlights forthcoming orders.

One factor dominates this review of orders placed during the calendar year 2011: Chinese cities placed contracts for more metro rolling stock than the rest of the world put together. Table I shows that around 1 800 cars were ordered by cities in Europe, the Middle East, North and South America and cities in Asia other than China. Japan is excluded as it is essentially a closed market.

Compare the total in Table I with the figure of nearly 2 700 cars shown in our summary of orders reported for Chinese metros in Table II. Based on the value of known orders, the number of cars ordered in the 12 months from January to December 2011 appears to be significantly higher than in previous years. Note, however, that it is difficult to be precise about the numbers of cars ordered

CSR exhibited this car destined for Hong Kong MTR at the Metro China 2011 event in Beijing last year.

Siemens unveiled a mock-up of its Inspiro car design for the Warszawa metro on February 21 in Wien. Sandra Gott-Karlbauer, Head of the Metros, Coaches & Light Rail business unit and Wolfgang Hesoun, Managing Director of Siemens Österreich, presided at the event.

from Chinese builders, and our figures include estimates for several cities. The huge volumes undoubtedly reflect the rapid expansion of China's



Photo: Andrew Benton

Photo: Siemens

mock-up of its Inspiro car for Warszawa, having signed the contract only 12 months earlier.

Lost contract is found

In Europe, reinstatement in mid-year of a cancelled deal for Budapest was good news for Alstom Transport. The company had been in dispute over 44 Metropolis trainsets that it was building under contracts awarded in 2006. The project fell foul of a reported failure to comply with Hungarian braking standards, meaning that the cars were not accepted by the National Transport Authority. Covering 22 five-car trains for Line M2 and a further 22 for Line M4, now under construction, the contract is now in force again and all the Line M2 trains are expected to be in service by the end of this year. Alstom also scored hits in Latin America, with contracts in Venezuela and Peru. These were followed by more orders for Singapore in early 2012 (p7).

After a bulge in orders from North America in 2010 (Table III), 2011 was quiet, with Bombardier taking the only major contract. This covered 300 Series 5000 cars for Chicago, following on from an order placed in 2006. This will take the total number of cars of this type supplied to Chicago Transit Authority to 706.

CAF continues to hold its position in this sector of market, with two contracts in Latin America and a breakthrough deal for 16 trainsets for Metrorex in Bucuresti. The Romanian contract provides for local assembly and includes an option for eight more sets.

Given the general need for high capacity, monorail schemes have rather surprisingly been gaining ground in

Table I. Metro car orders reported in 2011

City	Cars	Supplier	Date order announced	Contract value	Price per car
Warszawa	210	Siemens	Feb 2 2011	€272m	€1.29m
Taichung	72	Kawasaki	Mar 9 2011	n/a	n/a
Lima	95	Alstom	Apr 28 2011	€130m	€1.37m
São Paulo	72 ¹	Scomi Rail	Jun 2 2011	n/a	n/a
Chicago	300	Bombardier	Jul 20 2011	US\$331m	US\$1.1m
Santiago	108	CAF	Jul 21 2011	US\$144m	US\$1.33m
São Paulo	156	CAF	Jul 21 2011	€276m	€1.77m
Paris	330	Alstom-Bombardier-Areva	Jul 25 2011	€300m	€0.91m ²
St Petersburg	24	Vagonmash	n/a	492m roubles	20.5m roubles
Manaus	60 ¹	Scomi Rail	Aug 2011	46.4m ringgit	0.77m ringgit
Iranian cities	n/a	CSR Nanjing Puzhen	Aug 2011	2 540m yuan	n/a
Delhi	76	Bombardier	Sep 5 2011	€84m	€1.10m
Bucuresti	96	CAF	Sep 22 2011	€97m	€1.01m
Caracas-Los Teques	132	Alstom	Oct 27 2011	€325m ³	n/a
Kuala Lumpur	48 ¹	Scomi Rail	Nov 2011	494m ringgit ⁴	10.29m ringgit
Wuppertal	31 ⁵	Vossloh-Kiepe	Nov 10 2011	€122m	€3.93m
Total	1810				

1. Monorail cars
 2. Third part of framework contract for up to 160 trainsets
 3. Includes project management and design, substations, some signalling and other work
 4. Contract includes station and system upgrades and a new depot
 5. Articulated vehicles for Schwebebahn suspended monorail

certain markets, one of which is Brazil. Table I includes three orders in this category.

Refurbished fleets

Operators anxious to limit their capital outlay on rolling stock are turning to refurbishment and life extension of existing cars rather than new purchase. This option was chosen for the nascent metro project in Lagos (p44) where concessionaire Ekorail has contracted to obtain 255 cars from Toronto Transit Commission.

In September Bombardier secured an order for 76 more cars for the Delhi metro. The Movia vehicles will be assembled at the company's Savli site in India.

Not all of these will be used in Lagos, and Ekorail is looking for other cities where they may find a home.

After 30 years of service in the rugged environment of Cairo, the original fleet of 52 trainsets on Line 1 was starting to show its age. Taken out of traffic for a makeover, the first refurbished set was returned to service in January 2011 by contractors Alstom and Cairo Metro Organisation.

In Brazil, CMSP, operator of the São Paulo metro, has put back into service on Line 1 the first of 26 six-car sets that Bombardier had refurbished with local partners Tejofran and Temoinsa.

BART contract imminent

In the USA the huge contract for BART cars in San Francisco is at a critical stage. Evaluation of best and final offers is due this month so that a recommendation to the board can be made in April with a view to a contract being awarded in May. Initial bid results for a base order of 260 cars put Bombardier ahead as low bidder against Alstom and Hyundai Rotem, but the low bidder for the total build of 775 cars is Alstom with a car price of US\$2.44m.

In Ankara, bids were due to be handed in last month to supply 342





Life extension of metro stock through refurbishment represents a cheaper alternative to new purchase. These cars have been refurbished for use on São Paulo Line 1 by Bombardier, Tejofran and Temoinasa.

28 this year. Prequalified bidders are Hitachi, CAF, Bombardier and Siemens. These are really express metro or commuter cars, but the trains will fulfil a metro function across the core of the cross-city route (p34).

Also in London, the plan for replacement stock for London Underground's Bakerloo and Piccadilly lines is slowly firming up, and LU said last June 2011 that it planned to take delivery by 2015 of a prototype of a 'lighter and more energy-efficient' trainset (MR 9.11 p12).

Market outlook

The Middle East represents a promising market area in the next decade, with ambitious metro projects planned in Qatar, Kuwait and Abu Dhabi.

In terms of market size, Siemens estimates the metro and light rail car market to be worth €7bn a year, growing at 4% to 5% annually. SCI Verkehr puts the value of the metro car market at just over €5bn a year, with an identical growth rate.

Anticipating continuing growth in the market, Siemens is investing a further €50m to boost its production capability in Wien. This is the headquarters of its Metros, Coaches & Light Rail business unit, which forms part of the Rail Systems division.

Hardly surprisingly, Siemens identifies China as the biggest market opportunity, noting that there are 7000 metro cars already in operation in Chinese cities. It expects this number to nearly quintuple by 2020. ↩

metro cars to operate on three lines (p8). Looking further ahead, Bucur-esti plans to order another 21 trainsets for the future Line 5, while SL in Stockholm will be going out to tender this year for a new generation of metro trainsets, having invited prequalification bids by January 25. Current plans envisage between 250 and 320 cars being acquired by 2020.

In London, the tendering process for the Crossrail fleet of around 60 trainsets of 10 cars began on February

Table II. Chinese metro car orders reported in 2011

City	Cars	Supplier
Beijing	512	CNR Changchun
Shanghai	138	CSR Zhuzhou-Siemens
Zhengzhou	150	CSR Zhuzhou-Siemens
Ningbo	132	CSR Zhuzhou-Siemens
Shanghai	246	CNR Changchun
Kunming	120	CSR Zhuzhou
Guangzhou	192	CSR Zhuzhou-Itchu
Chengdu	65*	CSR
Harbin	75*	CNR Changchun
Beijing	132	CNR
Beijing	114	CSR
Kunming	185*	CSR Zhuji
Changsha	75*	CSR Zhuzhou
Nanjing	402	CSR Nanjing Puzhen
Wuhan	50*	CSR Zhuzhou
Hong Kong	100*	CNR Changchun
Total	2 688	

* Estimated figure

Table III. Geographical distribution of reported metro car orders, 2007-11

	2007	2008	2009	2010	2011	Totals
Asia	1912	1040	1896	362	2884	8094 ¹
Europe	444	419	258	683	691	2495
Latin America	357	174	468	585	623	2207
USA & Canada	620	396	18	1115	300	2449
Middle East & Africa	0	455	400	88	300 ²	1243
Totals	3 333	2 484	3 040	2 833	4 798¹	16 488¹

1. Includes estimated figures
2. Estimated figure