



New Trolleybuses For North America

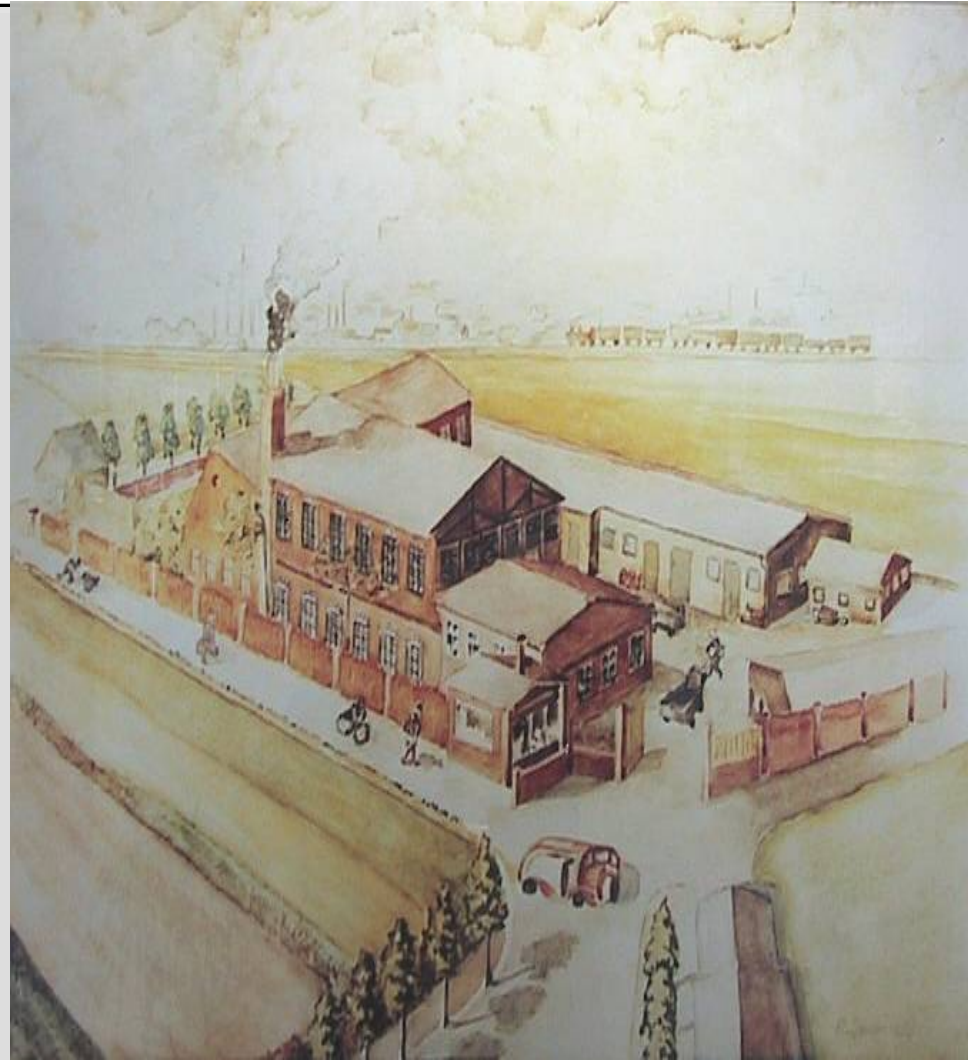
Stuart Kerr/ April 2006

Vossloh Kiepe GmbH – Essentials

Founded:	In 1906 by Theodor Kiepe
Owned:	100% Vossloh AG, Werdohl
Facilities:	24,000 m ² , with ca. 13,000 m ² for manufacturing and offices Various assembly sites with vehicle manufacturers
Employees:	ca. 500 in the headquarters in Düsseldorf, Germany HQ Düsseldorf, subsidiaries in Austria, Italy, Canada and Poland plus worldwide distributors
Annual turnover:	approx. 100 million €
Product lines:	Vehicle systems for road – Trolleybus Vehicle systems for rail Services, Vehicle components, Industrial components
Certification:	Quality management DIN ISO 9001 Environmental management DIN ISO 14001 Occupational health management system OHSAS 18001

Vossloh Kiepe – Chronological History

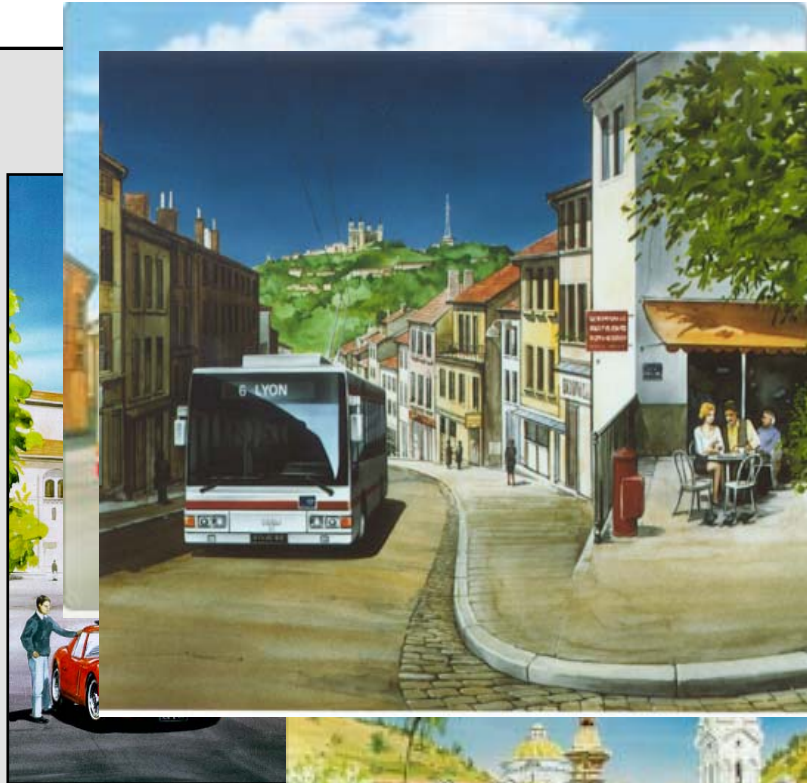
- 1906 Founding of the establishment of a “special workshop for the repair of electrical arc lamps” by Theodor Kiepe in Düsseldorf
- 1952 Argentina places Mega-Order for 700 trolleybuses with Daimler-Benz, MAN, Henschel
- 1986 CAN –Bus, Diagnostics
Direct pulse inverter based on GTO
- 1993 Delivery of the first low-floor trolleybus for Montreux
- 1995/ Delivery of the first low-floor tramcars for Cologne (K 4000) and Düsseldorf (NF6)
- 1996
- 2000 KVB orders 146 light rail vehicles- K 5000
- 2004 Order for 228 trolleybuses for Vancouver/Canada
- 2006 Vossloh Kiepe 100 years



Trolley bus in AC Technology

	Salzburg	Austria
	Innsbruck	Austria
	Eberswalde	Germany
	Budapest	Hungary
	Arnhem	Netherlands
	Mürztal	Germany
	Montreux	Switzerland
	Quito I	Ecuador
→	CARROCERA	
	Bologna I	Italy
	Parma	Italy
→	Bern I	Switzerland
→	Biel	Switzerland
	Arnhem	Netherlands
	Milan	Italy
→	Lyon	France
→	Modena	Italy
	Athens	Greece
	Bologna II	Italy
→	Bern II	Switzerland
→	Quito II	Ecuador
	CARROCERA	

10
112
15
12
59
441



/ ÖAF
/ ÖAF
/ ÖAF
RUS
HOOL
/ ÖAF
HOOL
HISPANO

/ AUTODROMO
ROMO

ROMO
ROMO
LAN
ROMO

Trolley bus in AC Technology

	1-page	441
Linz	Austria	19
Salzburg	Austria	30
Parma	Italy	6
→ Esslingen	Germany	9
→ Riga	Letonia	10
→ Merida	Venezuela	45
→ Solingen	Germany	20
→ Lausanne	Switzerland	27
Budapest	Hungary	15
Fribourg	Switzerland	9
Bergen	Norway	6
→ Athens	Greece	142
→ Luzern	Switzerland	8+2
Geneva	Switzerland	38+10
→ Vancouver	Canada	228

1065 Trolley



**...zero-emission technology. Example:
Vancouver**

powered by Vossloh Kiepe



powered by Vossloh Kiepe

TransLink / Vancouver:

- 188 (+20) SETBs, 40"
- 40 AETBs, 60"
- Pilot Bus delivered July 2006, Series deliveries: 2006-8

SEPTA / Philadelphia

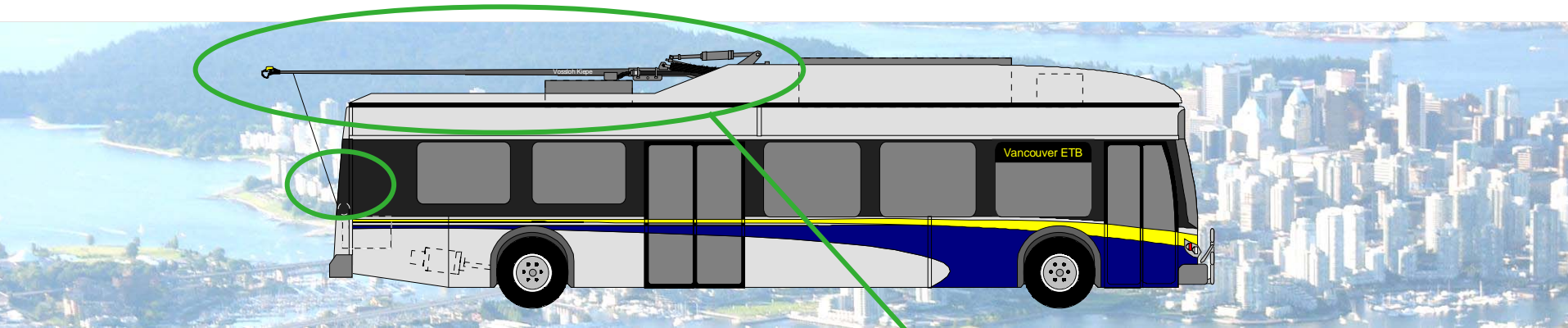
- 38 (+23) TTBs, 40"



Vancouver SETB concept



Vancouver SETB concept



Current Collector

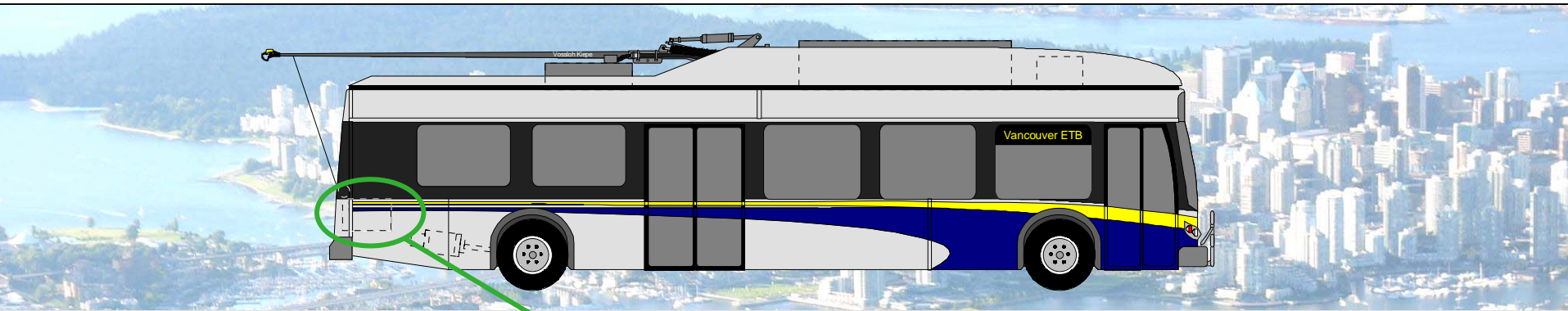
- OSA 289 w/ PRE 100 retrievers
- patented dewirement detection

Traction Motor

- 19 ML3550 K/4: 240 kW



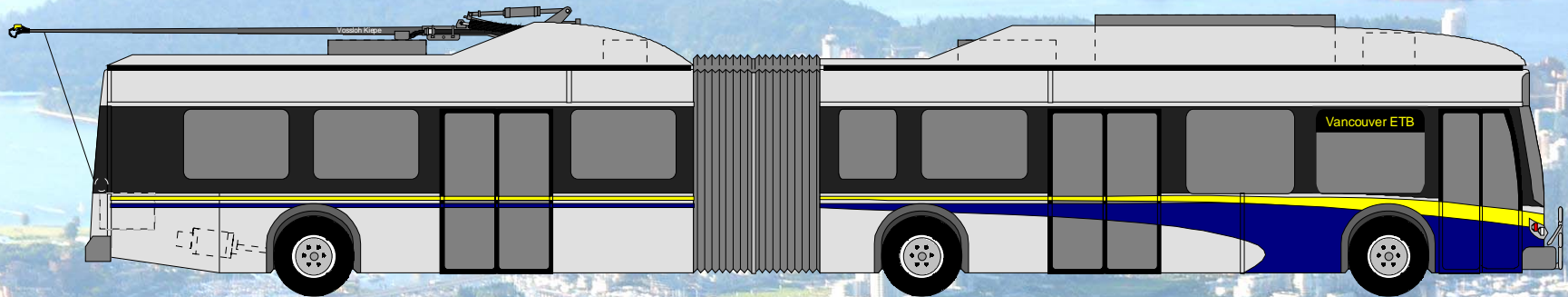
Vancouver SETB concept



EPU Battery
- NiCd, 188 cells



Vancouver AETB concept



Brake Resistor

- same as SETB

Traction DGG

- similar to SETB
- same BNU
- same KGU
- same SKS

New Trailer DGG

- units same as SETB

Current Collector

- same as SETB

Retriever

- same as SETB

Motor

- same as SETB

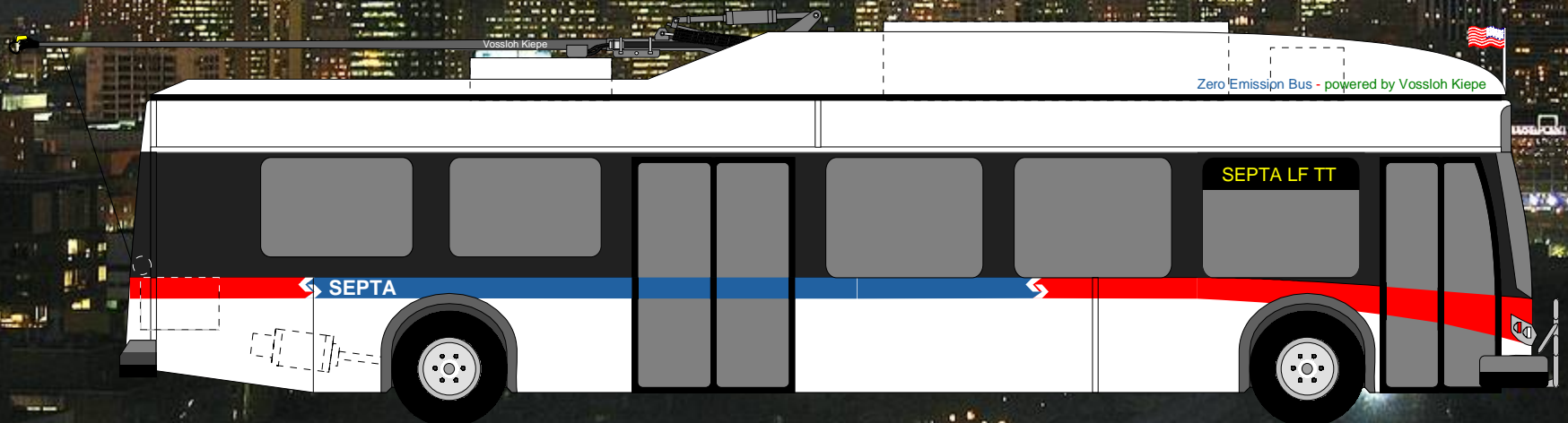
EPU Battery

- similar
- same concept

**...zero-emission technology. Example:
Philadelphia**

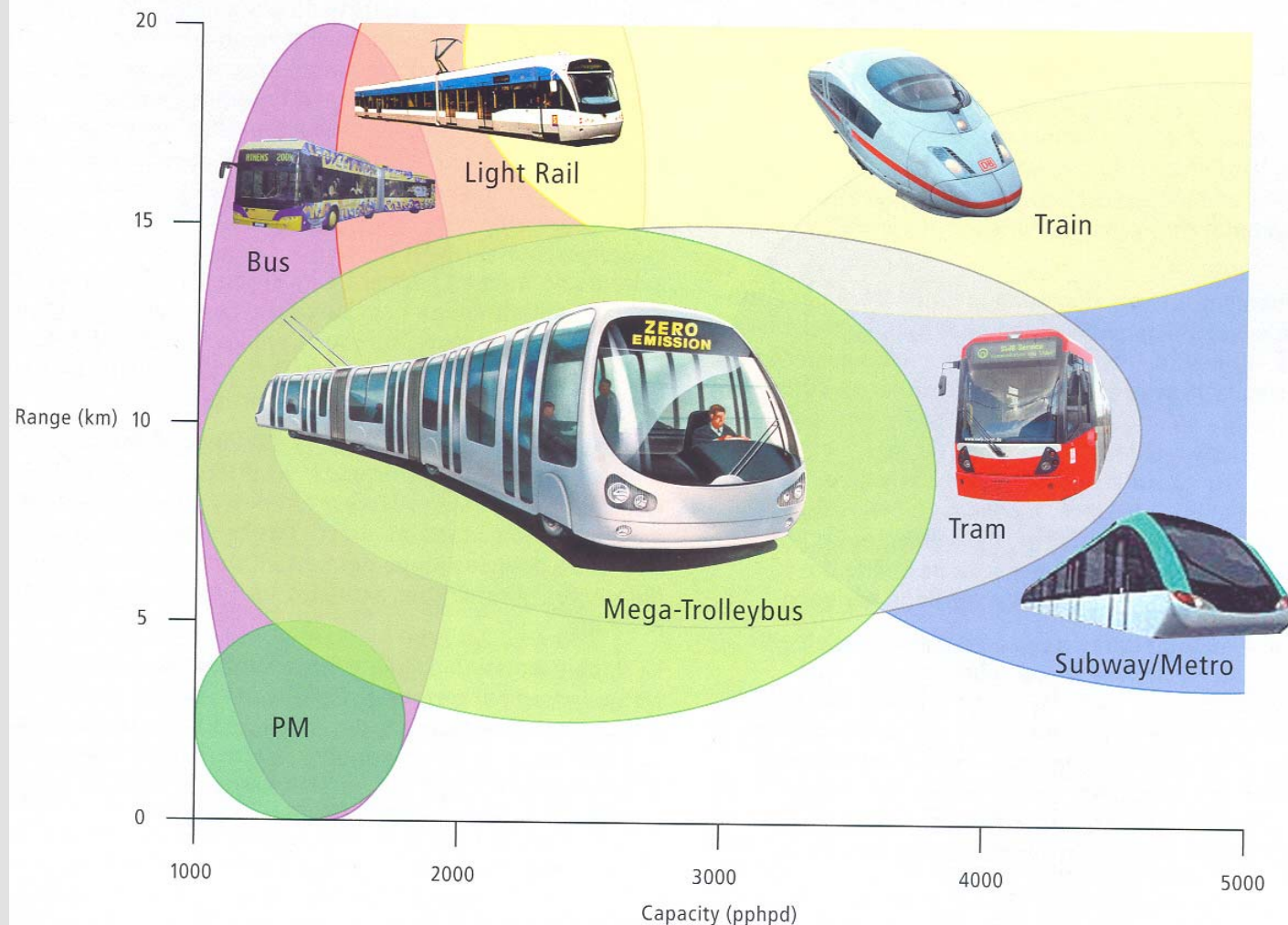
Philadelphia TTB version

- Re-introduction of trolleybuses
- Derived from Vancouver ETBs: service proven technology
- HVAC
- Diesel genset
- 3rd project with SEPTA



**...zero-emission technology.
Where is the future taking us?**

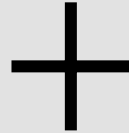
Mega-Trolleybus action field



Mega-Trolleybus



- High passenger capacity
- High average speed
- Own traveling ways
- Zero emission



- Electrical traction
- Favourable traveling way
- Easy integration into existing infrastructures
- Flexible employment – Track deviation
- Low noise emission
- High climb ability (12%+) because of pneumatic tyre
- Proven technique



Mega-Trolleybus

Mega-Trolleybus Geneva and Zurich technical information

24m vehicles :



Mega Trolleybus existing systems



• 190 Riders
per Vehicle



Trolleybuses new projects

New Trolley bus systems:

- Rom
- Lecce
- Quito
- Merida
- (Savona)
- (Pescara)



New 24m rubber vehicles are ordered in:

- Genf
- Zürich
- St Gallen
- Eindhoven
- Aachen
- Hamburg
- Utrecht

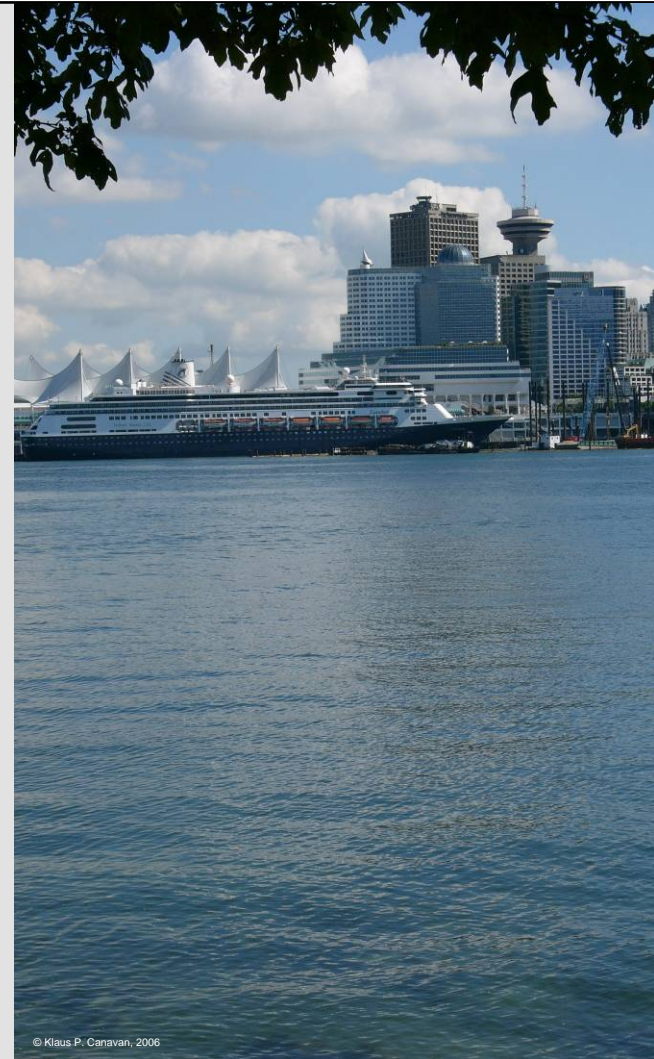
Zero-Emission Technology powered by Vossloh Kiepe

Highlights from the 2006 Quality of Living Survey

The top three cities for **best quality of life**

1. Zurich
2. Geneva
3. Vancouver

all operate **Vossloh Kiepe** trolley buses!



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Thank you for your attention