

UITP TROLLEYBUS WORKSHOP

**NEW WAVE OF INTEREST IN TROLLEYBUS IN TURKEY AND WORLDWIDE
MALATYA, 1ST AND 2ND OCTOBER 2015**

**GERMAN EXPERIENCES ON
„SYSTEM COMPARISON“
BY MICKAÉL PANDION**

WHY WE NEED A SYSTEM COMPARISON

IN THE PAST

BUS



LIGHT RAIL



WHY WE NEED NEW SYSTEMS

CUSTOMER REQUIREMENTS

- SAFETY
- SERVICE
- PASSENGER INFORMATION
- DISABLED PERSONS

URBAN DEVELOPMENT

- RISING PASSENGERS NUMBERS
- GROWING URBAN AREAS
- ENVIRONMENTAL AND CLIMATE IMPACT

TECHNICAL DEVELOPMENT

- E-BUS
- DOUBLE ARTICULATED BUS
- TROLLEYBUS

WE HAVE NEW SYSTEMS

THE GERMAN CITY OSNABRÜCK LOOKS AFTER NEW SOLUTIONS FOR HIS PUBLIC TRANSPORT SYSTEM

**THE RESULT WAS A GOOD SYSTEM
COMPARISON WHICH CAN HELP OTHER
CITYS**

MATRIX SYSTEM COMPARISON

BIG POINTS	BUS SYSTEM	E-BUS SYSTEM	TROLLEY BUS	TRAMWAY
TRAFFIC	1			
	2			
	3			
	4			
	.			
STREET INTERIOR	.			
	.			
	.			
	.			
	.			
ENVIRONMENTAL IMPACT	.			
	.			
	.			
	.			
	.			
ECONOMICS	34			
	35			
	36			

RATING SCALE

+ = good

0 = ok

- = bad

LIGHT RAIL



TRAFFIC MATRIX

TRAFFIC	BUS SYSTEM	E-BUS SYSTEM	TROLLEY BUS	TRAMWAY
DEVELOPMENT QUALITY	+	0	0	0
TRANSFER RELATIONS	+	+	0	0
TRAFFIC SAFETY	+	+	+	0
OPERATIONAL FLEXIBILITY	+	0	0	-
PASSENGER CAPACITY	-	0	+	+

EXAMPLE OPERATIONAL FLEXIBILITY

Pantograph system from the bottom to the top

The pantograph is performed from the vehicle to the charging station

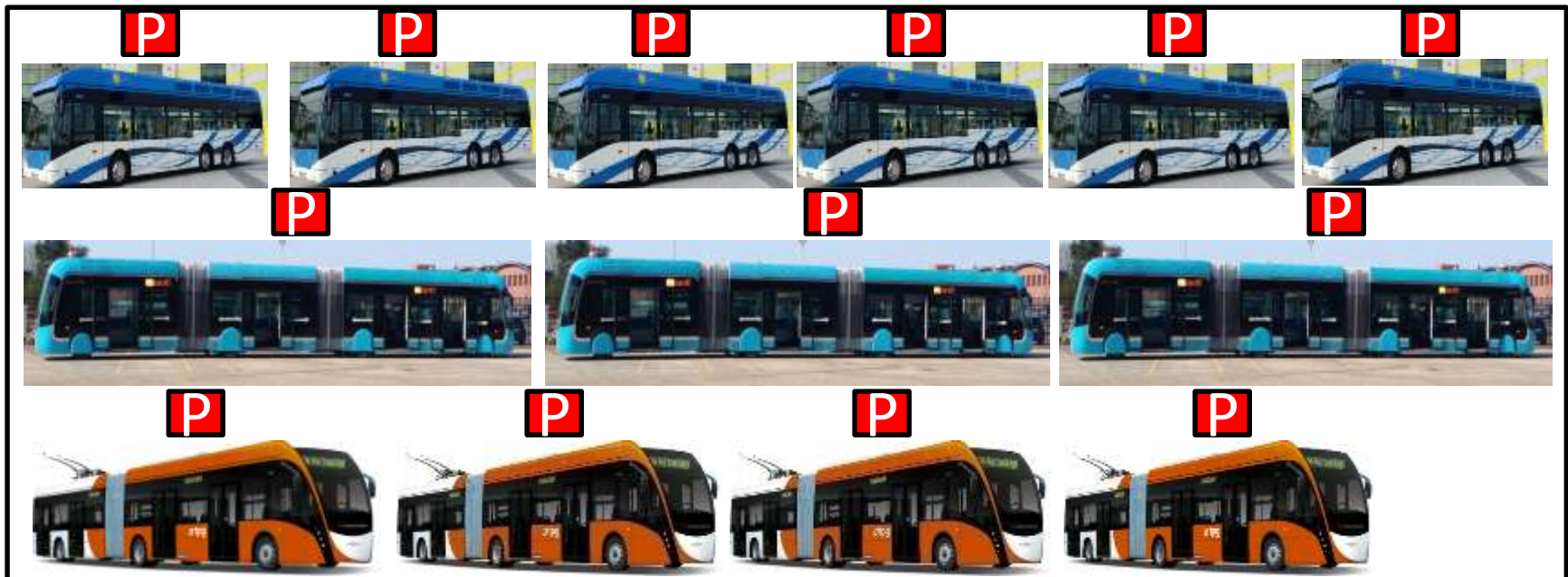


P = pantograph

EXAMPLE OPERATIONAL FLEXIBILITY

Top down pantograph system

The pantograph is performed from the charging station to the vehicle



P = pantograph

MATRIX STREET INTERIOR

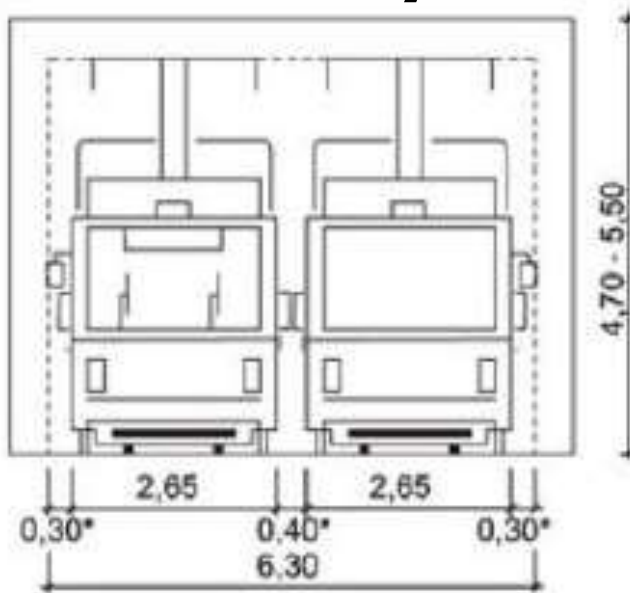
STREET INTERIOR	BUS SYSTEM	E-BUS SYSTEM	TROLLEY BUS	TRAMWAY
SPACE REQUIREMENT	0	0	0	-
INTEGRATION STATION	0	0	0	-
INTEGRATION DEPO	0	0	0	-
AESTHETICS	-	+	0	+
CAPACITY	-	0	+	+

LIGHT RAIL



EXAMPLE SPACE REQUIREMENT

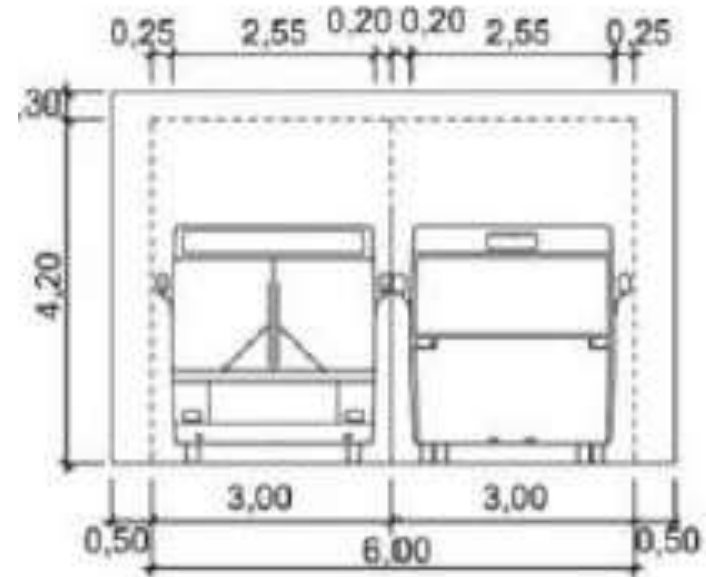
Tramway



**minimum radius
25 meter**

- Lichter Raum
- - - Verkehrsraum
- * Übersichtsmaß

Bus - Trolleybus



**maximum radius
12 meter**

Alle Angaben in [m]

Quelle: RAS 06

MATRIX ENVIRONMENTAL IMPACT

ENVIRONMENTAL IMPACT	BUS SYSTEM	E-BUS SYSTEM	TROLLEY BUS	TRAMWAY
NOISE EMISSION	-	+	+	0
POLLUTANT EMISSION	-	+	+	+
SHAKES	0	+	+	-
ENERGY EFFICIENCY	-	+	+	+
SURFACE SEALING	-	-	-	+

MATRIX ECONOMICS

ECONOMICS	BUS SYSTEM	E-BUS SYSTEM	TROLLEY BUS	TRAMWAY
COSTS	+	0	+	-
GRANT - SUBSIDIES	?	?	?	?
TIME IMPLEMENTATION	+	0	+	-

RESULT OSNABRÜCK



**THE MAYOR SUDDENTLY DON'T
WANTED AN OVERHEAD WIRE
HE WANTS SOMETHING BETTER**



UITP TROLLEYBUS WORKSHOP

E-BUS STUDY TOUR TO GERMANY AND FRANCE

FIVE DAYS - FIVE CITIES - FIVE WAYS

FROM 21.02. – 28.02.2016

WHAT IS OFFERED?

In preparation to the world's largest Bus exhibition in Kortrijk/Belgium from 16 to 21 October, the UITP Trolleybus Committee invites transport experts, city planners and international decision takers from public transport companies to an all-in exclusive Study Tour to German and French pioneering model places of electro-mobility.

WHERE DOES IT TAKE PLACE?

Leading European manufacturers and system suppliers show during five days in the five cities of Mannheim, Metz, Stuttgart, Hamburg and Eberswalde near Berlin the newest solutions in clean and low-emission technology.

WHY YOU HAVE TO BE THERE?

Who takes decisions today in urban public transport, will have to know today the achievements of electro-mobility of tomorrow – from serial hybrid in a BRT-system to inductive fast-charging. In this extraordinary Study Tour these and other important innovations in the E-bus domain and their applications will be presented to the participants. The varied program will be completed with exciting come-togethers, city sight-seeing tours and cultural highlights.



Included in the package

- All main travel and transfers within Frankfurt, Mannheim, Heidelberg, Metz, Stuttgart, Hamburg, Eberswalde and Berlin. The Technical visit ends at 18.10.2015 in Berlin
- All accommodation from 11.10. to 18.10.2015 (accommodations in four star hotels with breakfast). Not included beverages and extra meals not mentioned in the program, mini-bar and other personal expenses
- Meals are indicated in the program.
- English speaking is mandatory

Not include

- The international flight to Frankfurt am Main
- Returnflight from Berlin

Technical visit fee

Registration deadline			
UITP member	4.000 €	4.500 €	5.000 €
UITP no member	5.000 €	5.500 €	6.000 €
Included value added tax			

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Blick über den Schlossplatz, Werner Dieterich;



FIVE DAYS

- FIVE CITIES

- FIVE WAYS



**FROM 21.02. –
28.02.2016**

UITP E-bus study tour to Germany and France **FROM 21.02. – 28.02.2016**

SUNDAY

7.00 p.m. Frankfurt
Welcome reception
Accommodation in Frankfurt

MONDAY



09.00 a.m. Transfer by coach to Mannheim
10.00 a.m. – 5.00 p.m. "Inductive Charging"
Companies confirmed: **Bombardier, Hess, VRN**
Evening programme at Heidelberg
Accommodation in Mannheim

TUESDAY

08.00 a.m. Transfer by coach to Metz (France)
10.00 a.m. – 5.00 p.m. "Serial hybrid bus, BRT, 24-meter-bus"
Companies confirmed: **Siemens,**

Van Hool, Metz Metropole
Evening programme to be confirmed
Accommodation in Stuttgart



WEDNESDAY



09.00 a.m. – 6.00 p.m.
"Fuel cell bus, Serial hybrid bus"

Companies confirmed: **Mercedes, SSB, VVS, VRS,**
8.00 p.m. Stuttgart airport, flight to Hamburg
Accommodation in Hamburg

THURSDAY



09.00 a.m. – 4.00 p.m. "Parallel Hybrid, Conductive Charging, Maintenance"
Companies confirmed: **Siemens, Kiepe, Volvo, Solaris, Mercedes, FFG, Hamburger Hochbahn**
Sightseeing - Hamburg City Center

08.00 p.m. Transfer by coach to Berlin
Accommodation in Berlin

FRIDAY



09.30 a.m. - 11.30 a.m. "Technological strategy for electric buses in Germany and Berlin"
Presentations by: **eMO, NOW and BMU**
01.00 p.m. Visitation at Eberswalde: "Trolley hybrid bus, automatic connection"
Companies confirmed: **Cegelec, Solaris, Barminer Verkehrsbetriebe**
04.00 p.m. Transfer back to Berlin
07.30 p.m. Dinner
Accommodation in Berlin

SATURDAY



10.00 a.m. – 01.00 p.m. "Inductive Charging, Innovations line 204"
Berlin sightseeing tour and evening programme (programme to be confirmed)
Companies confirmed: **Kiepe, Solaris**
Company to be confirmed: **BVG**
Accommodation in Berlin

SUNDAY

Departure day



THIS PROGRAM IS SUBJECT TO MODIFICATION.

manufacturer		operator
vehicle	Electrical	SSB
Hess	Siemens	RNV
Mercedes	Kiepe	Hamburger Hochbahn
Solaris	Bombardier	BBG
Van Hool	Cegelec	LE MET
Volvo		BVG

maintenance	
FFG	SSB

technology	manufacturer
Serial hybrid	Van Hool, Mercedes
Parallel Hybrid	Volvo
Fuel Cell	Mercedes, Solaris, Kiepe
Inductive Charging	Hess, Bombardier
Trolley Hybrid	Solaris, Cegelec
Conductive Charging	Volvo, Siemens
BRT System	24 Meter Van Hool

authorities, ministries	
Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit	
Berliner Agentur für Elektromobilität eMoO	
Verband Region Stuttgart VRS	
Member of the Parlaiment BW Andreas Schwarz Ausschuss für Verkehr und Infrastruktur Baden Württemberg	
Nationale Organisation Wasserstoff- und Brennstoffzellentechnologie NOW	
hySOLUTIONS Innovative Antriebe für Hamburg	
City Metz	

TWO MORE BATTERIEBUS MANUFACTURER

BOZANKAYA VDL



		departure	flighttime
Wednesday	flight to Hamburg	8.00 PM	1,00 Std.
Transport		Reisebüro	
Monday	Mannheim	Schlienz SuperClass 2 + 1	Mercedes 4 Sterne de lux
Tuesday	Metz	Schlienz SuperClass 2 + 1	Mercedes 4 Sterne de lux
Wednesday	Stuttgart	Schlienz SuperClass 2 + 1 + Flight	Mercedes 4 Sterne de lux
Thursday	Hamburg	AGT Luxus-Ausführung	Mercedes 4 Sterne de lux
Friday	Berlin	AGT Luxus-Ausführung	Mercedes 4 Sterne de lux
Saturday	Berlin	AGT Luxus-Ausführung	Mercedes 4 Sterne de lux
Sunday	Berlin		
		Hotel	
Sunday	Frankfurt	Sheraton Flughafen	
Monday	Mannheim	Mercure	
Tuesday	Esslingen	Best Western Premier	
Wednesday	Hamburg	Radisson Blue or Europäischer Hof	
Thursday	Berlin	Steigenberger	
Friday	Berlin	Steigenberger	
Saturday	Berlin	Steigenberger	
Sunday			
Sunday	Hotel		Come together
Monday	Breakfast	Lunch	Dinner
Tuesday	Breakfast	Lunch	Dinner
Wednesday	Breakfast	Lunch	Dinner
Thursday	Breakfast	Lunch	Dinner
Friday	Breakfast	Lunch	Dinner
Saturday	Breakfast	Lunch	Dinner
Sunday	Breakfast	Lunch	Dinner
		inclusive 2 bear or two wine	inclusive 2 bear or two wine

Thank you for your attention

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