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Editorial

Dear Trolleybus Community,

During the week from 22 to 26 October, TROLLEY, supported by our project partners trolley:motion and Leipzig Transport Company, hosted a series of events in our German partner city Leipzig. With the choice of Leipzig as host city, the consortium made a statement that we will continue to promote the trolleybus in Germany, where it has a difficult position in the electric urban transport and funding "landscape", as our German project partners Leipzig Transport Company and Barnim Bus Company already have experienced.

But the worldwide trolleybus renaissance seems to have an impact on the so far negative attitude towards trolleybuses in Germany, as the German Federal Ministry of Transport announced in Leipzig that at least trolleybus applications that consider hybrid approaches

will be checked in the future. However, the presentations in Leipzig made it clear once again: the electrification of public urban transport systems won't be realised in the long or at least medium term future without the backbone of a catenary system. Thus, trolleybus and tram cities are in the pole position when it comes to the further electrification of their urban transport systems. But, the introduction or extension of a catenary system stays a challenge to be overcome from a planning perspective. Therefore, TROLLEY searches for new innovative designs of trolleybus infrastructure within the framework of this year's TROLLEY Marketing Award (please find more information in this issue).

Good news reached us from the Central Europe Programme, as the TROLLEY project got a strategic label and thereby we have the chance to capitalise our results beyond the planned activities. Thus, TROL-

LEY will develop a research road-map describing needs for further research and development activities to advance trolleybus systems for the future. Besides, TROLLEY will develop a "starter kit" for trolleybus cities to expand the successful initiative of the European Trolleybus Day beyond the runtime of our TROLLEY project.

Finally, I would like to invite you to our TROLLEY final conference on 22 and 23 January 2013 in our partner city Szeged. Please mark this date in your calendar and find more information about the conference in this issue!

For more information about TROLLEY, please visit our project website www.trolley-project.eu or contact us via trolley@salzburg-ag.at.

Enjoy reading the TROLLEY journal!

Yours faithfully
Gunter Mackinger,
Lead Partner TROLLEY



Frank Wruck, Director Barnim Bus Company, at the trolley:motion conference

Barnimer Busgesellschaft is, with „only“ 12 trolleybuses, one of the smallest TROLLEY project partners. However, the company does not have to hide.

As oldest trolleybus operator in Germany, the company, situated 50 km North of Berlin, can draw on decades of knowledge and experiences and it has turned into an innovative pioneer especially over the past years – also in part thanks to TROLLEY.

With the latest acquisition of the Solaris trolleybuses in 2010, a large focus was already put on energy storage. The 12 new trolleybuses were equipped with electro-chemical double-layer capacitors, so-called supercaps, which have the highest energy density of all capacitors. This energy storage device can also store energy, which is otherwise lost, such as brake energy. Subsequently, this energy is for example made available for drive or ventilation processes, lighting, compressor operation, air conditioning, heating or operation of the air system.

In the framework of the EU project TROLLEY, another possibility of energy storage had to be investigated. Surplus energy, which cannot be stored in the supercaps anymore, should also be picked up. To this end, it was investigated to feed energy back to a substation via the catenary and to make it available to other vehicles in the network. However, first results soon revealed that the share of possible storage capacity and its savings would not be proportional to the high investment cost. The company started to look for a new, more efficient solution and refrained from this investment.

The acquisition of the trolleybuses in 3 stages turned out to be a lucky choice and allowed for the installation of a lithium ion battery in the last vehicle instead of the diesel driven generator. Thanks to TROLLEY, the first catenary hybrid bus (with catenary + supercap + lithium ion battery) was born this way.

The installed lithium ion battery has a total capacity of 70.4 kW/h. The energy consumption per kilometre amounts to approximately 2.5 kW/h. With this capacity, the trolleybus could, at least theoretically, cover a distance of more than 28 km. In practice, this calculated distance will not be reached. When discharged excessively, the battery's lifespan will decrease substantially. In the end, the total capacity in normal operation will be about 42.2 kW/h, which corresponds to a state of charge of 85%. A maximum distance of 5 kilometres should be covered

to achieve about 12,000 loading cycles. For a distance of 5 km, the charging time is about 20 minutes. The battery is recharged via the current collectors at the catenary.

These innovations are always accompanied by selected marketing activities meant to strengthen the long-term trolleybus commitment of the population. The TROLLEY campaign „ebus – the smart way!“ was adapted to



TROLLEY's campaign "ebus – the smart way!" adapted for Eberswalde

Eberswalde and also conveys an innovative, sustainable and future-oriented picture of the public transport system of this town. Thus it is not surprising, that the population of Eberswalde vehemently adheres to this system. Furthermore, Eberswalde's trolleybus now has its own mascot, which by now adorns all buses and stops. Even the city museum supported the trolleybus and, in 2011, supported by the TROLLEY project, dedicated a special exhibition to the topic „From trolleybus to ebus – with electric mobility clever into the future“. Even the little ones love their trolleybus as they are allowed to enter the special driver's seat for children, steering ahead into a sustainable, emission-free future.



Europe's first Trolley-Battery-Hybrid-Bus operating in Eberswalde

3rd European Trolleybus Day – the success story continues!

On 22 September 2012, the TROLLEY partner cities celebrated the 3rd European Trolleybus Day. With this initiative, the TROLLEY partnership would like to call attention to trolleybus transport as an important part of sustainable urban mobility in European cities. This year, with the Polish cities Lublin and Tychy, for the first time non-partner cities organised a European Trolleybus Day.

The activities in the participating cities ranged from information campaigns, open days at trolleybus depots and sweepstakes to a European photo competition "My trolleybus – my city!" as well as a design contest in Salzburg.

Altogether, more than 100,000 citizens have been reached by the partner cities so far during the first three European Trolleybus Days and more than 1 Mio. people have potentially been reached by the media reporting about the events. As the TROLLEY partners hope that more trolleybus cities will follow this initiative in the future to raise the general public's awareness of trolleybuses as a clean, electricity-based public transport mode, the TROLLEY partners will pre-



Relaxed atmosphere in Salzburg during European Trolleybus Day 2012

pare a "starter kit" for trolleybus cities to support the organisation of a European Trolleybus Day. The 4th European Trolleybus Day takes place as part of the European Mobility Week on 21 September 2013.

Promote the trolleybus on this occasion and contact us for more information and further support!

TROLLEY at 10th International Salzburger Verkehrstage

TROLLEY carried out a workshop „ebus – wishful thinking or economically realisable?“ subsequent to the 10th International Salzburger Verkehrstage from 8 to 10 October 2012 in Salzburg, Austria.

The main topic of the workshop was energy storage systems for e buses ranging from stationary to mobile storage system technologies as well as optimised electrical infrastructure planning concepts.

You can find the **presentations** of this workshop (in German) at the events section of TROLLEY's website.

For more information about the 10th International Salzburger Verkehrstage "Cities in motion – urban centres as motor of sustainability", please have a look at:

www.regionale-schienen.at.



TROLLEY's photo competition "My trolleybus – my city" – Polish competition winner 2012

TROLLEY – a week full of events in Leipzig



Paul Jenné, Van Hool (on the left), and moderator Arnulf Schuchmann, trolley:motion.

TROLLEY held a series of events during the week from 22 to 26 October 2012 in Leipzig. It started with the 2nd TROLLEY City-Industry-Summit on "new trolleybus designs & innovative trolleybus marketing", which took place on 22 October 2012 in Leipzig in the framework of the new mobility/ euregia fair 2012. The topics of the presentations ranged from the importance of new bus designs for trolleybus promotion to the potential



TROLLEY Roadshow in the tram line 16 to the Leipzig trade fair

of social media applications for trolleybus marketing and the relevance of strategic marketing and communication activities for the introduction of new trolleybus systems, using the example of the City of Leeds in the UK.

All presentations can be downloaded at TROLLEY's website.

The event series continued with the 3rd International Trolleybus Conference "New horizons for urban traffic", organised by the TROLLEY partner trolley:motion,

and the TROLLEY Transferability Conference on 23 and 24 October 2012. After the Swiss cities Zürich and Luzern, the TROLLEY partner city Leipzig was selected as the host city for this international gathering of the trolleybus community. The aim was to showcase the trolleybus as a smart, innovative and sustainable transport mode, as in particular in Germany the trolleybus is often not considered as a future-looking transport mode.

In the TROLLEY partner city Leipzig, the re-introduction of trolleybuses has been considered for the past three years. With the



Andreas Randacher, Salzburg AG, during his presentation at the conference



Closing of the conference by Arnulf Schuchmann, Daniel Steiner, both trolley:motion and Siegfried Rupprecht, Rupprecht Consult (from left to right)

recently launched hybrid buses, an important first step was made in the transition to sustainable electric solutions for road-based public transport in Leipzig. The conference highlighted existing systems worldwide and in Germany as well as introduction plans for the cities of Montreal, Canada, and Leeds, UK, and newest developments from the ebus industry. The TROLLEY project presented its results from local pilot studies and investments in the TROLLEY partner cities. About 150 people listened to the

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Conference participants vote for their favourite photos in TROLLEY's photo competition 2012 during the conference dinner

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presentations about future innovative electric bus transportation solutions and the development of interconnected infrastructure for cities and entire regions.

All presentations of the **TROLLEY Transferability Conference** can be downloaded from the event section of TROLLEY's website.

The presentations of the **3rd International Trolleybus Conference** can be downloaded from the trolley:motion website.

Last but not least, the TROLLEY Summer University "eBus - the smart way!" took place in Leipzig from 23 to 26 October.

During the Summer University, young researchers and professionals presented their research results and TROLLEY partners showed their project results. The Summer University offered these young researchers and profes-



Fruitful discussions during TROLLEY's Summer University

sonals the possibility of discussing research and project results in the field of electric bus systems in an international environment. The TROLLEY Summer University started with the 3rd International Trolleybus Conference and the TROLLEY Transferability Conference in Leipzig, giving comprehensive input to all participants

for further discussions in a more informal atmosphere.

Please find all **presentations of the Summer University** at TROLLEY's website.

Furthermore, video recordings of the sessions on energy storage systems and diesel bus to trolleybus conversion can be seen here as well.

TROLLEY partner city Gdynia is runner-up of this year's CIVITAS Awards

The TROLLEY partner city Gdynia was recognised as runner-up in the Technical Innovation Category of the ninth edition of the CIVITAS Awards at the Municipal Theatre in Vitoria-Gasteiz, Spain. The awards are given to cities that demonstrate ambitious urban

transport activities, programmes or policies supporting cleaner and better city transportation. Gdynia made it to runner-up (Porto won for its smart phone travel planning application MOVE-ME in the category of Technical Innovation) for its commitment



Alicja Pawlowska from Gdynia at the awards ceremony

towards energy efficiency and 'for doing something original, useful and cost-efficient' by converting old diesel engine buses into trolleybuses, and for producing a conversion guidebook within the framework of the TROLLEY project. The guidebook will be made available in English soon, to enable other cities to learn about and implement the unique technical solution.

Furthermore, an eTraining in the form of an educational video from the lectures on diesel bus to trolleybus conversion principles of TROLLEY's Summer University will be prepared.



Converted trolleybus in Gdynia

Marketing Award 2012

TROLLEY in search of "hidden champions" - innovative designs for trolleybus infrastructure!



Example of mast greening. Photo source: Markus Zapke-Gründemann (cc-by-sa)

For the second time after 2011, the Central Europe project TROLLEY announces the TROLLEY Marketing Award. The award is part of TROLLEY's European awareness campaign to promote trolleybuses as a clean, sustainable, urban transport mode for the future!

This year's call for applications places emphasis on innovative designs for trolleybus infrastructure. This backbone for electric urban transport with trolleybuses is always a topic of discussions and conflicts when planning new trolleybus systems.

Therefore, TROLLEY would like to get best-practice examples or new ideas (sketches & drawings) from city authorities, public transport operators, urban planners or architects (category I) or private persons (category II).

A representative of the winner (for each category) will be invited to receive the award and to

present the concept during the transnational TROLLEY final conference in the Hungarian TROLLEY partner city of Szeged on 22 January 2013.

The template for the application and outline description is available at TROLLEY's website.

The deadline for submission of applications is 21.12.2012.

Contact and information: www.trolley-project.eu

For further information subscribe to our mailing list and receive the TROLLEY newsletter or contact the Lead Partner:

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TROLLEY's final conference in Szeged

Szeged will be the host city of TROLLEY's final conference on 22 and 23 January 2013. Please mark this date in your calendar! The conference will highlight project results from each partner as well as lessons learned and continuation plans regarding the pilot studies and investments in TROLLEY. In addition, the trolleybus cities Debrecen and Budapest (Hungary), Cluj (Romania) and Belgrade (Serbia), will present their trolleybus systems and future plans for their systems.

Furthermore, the 3rd TROLLEY City-Industry-Summit "Synergies of trolleybus and tram systems" will take place accompanied by an innovation market place. Last but not least, the winner of TROLLEY's Marketing Award 2012 "hidden champions' - innovative designs for trolleybus infrastructure!" will be presented (see

above) and the TROLLEY Roadshow exhibition can be visited in Szeged.

Please, find more information, the programme and a registration form at the events section on TROLLEY's website

www.trolley-project.eu

We are looking forward to welcoming you in Szeged next January for sharing latest results



Trolleybus in TROLLEY's partner city Szeged

of TROLLEY, for discussing new ideas or future research needs with regard to trolleybus systems. The conference languages will be English and Hungarian.

Calendar

► **Innovation in Transport for Sustainable Cities and Regions, Annual Polis conference,**

Perugia, Italy,
29-30.11.2012,
<http://www.polisnetwork.eu/annual-conference>

► **Energy Efficiency in Public Transportation,**

Brussels, Belgium,
7-8.02.2013

http://www.globalmasstransit.net/conference_jan2013.php