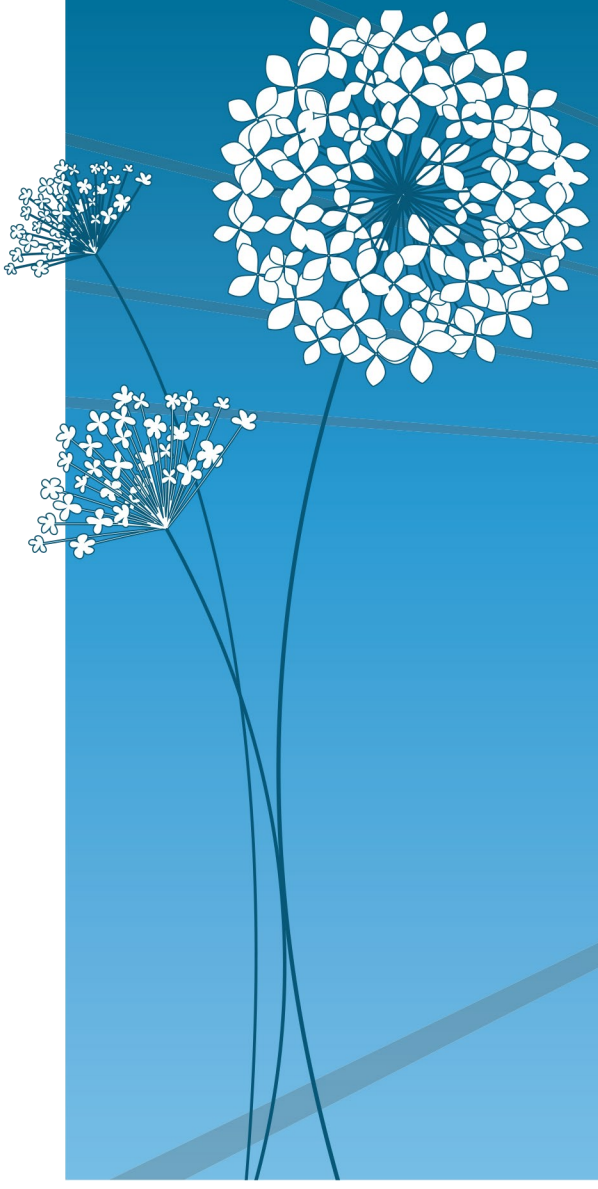
UIC Energy Efficiency Days 2014

Energy Efficiency, the best fuel to move our trains!



Antwerpen
16 - 19 June

INFRABEL

UIC Energy Efficiency Days 2014

Antwerpen, 16 - 19 June

Day 0 - 16 June Hilton Hotel

19:00 Official Welcome Dinner

Day 1 - 17 June Zalen van de Zoo

09:15 Welcome and Opening
10:00 UIC Plenary
11:00 Coffee Break
11:30 UIC Plenary // Merlin Mid Term Conference
12:30 Lunch
14:00 UIC Plenary // Merlin Mid Term Conference
17:15 Champagne Cocktail
18:30 Walk in the zoo
19:30 End of Day 1

Day 2 - 18 June Zalen van de Zoo

09:00 Welcome and Introduction
09:30 UIC Parallel WS Session I // ERESS Forum
11:00 Coffee Break
11:30 UIC Parallel WS Session II // ERESS Forum
13:00 Lunch
14:30 UIC Parallel WS Session III
16:00 Coffee Break
16:30 UIC Plenary
17:00 End of Day 2 / Free evening

Day 3 - 19 June Antwerpen Station

08:30 Welcome coffee
09:15 Historic & Cultural Visit of Antwerpen Station
Technical Visit to Antwerpen Port
Technical Visit to Antwerpen Rail Park by bike
13:00 End of EED 2014

www.energy-efficiency-days.org

Practical information

VENUES

Gala Dinner
16 June 2014

- **Hilton Hotel Antwerpen, "Belle Époque Ballroom"**
  19:00 - 23:00

  Address
  Groenplaats, 32
  2000 ANTWERPEN

Conference
17-18 June 2014

- **Antwerpen Zoo grounds "Zalen van de Zoo"**

  Address
  Koningin Astridplein, 26
  B-2018 ANTWERPEN
  www.zooantwerpen.be

  Access
  The zoo is located next to the Antwerpen Station.

Technical and Cultural Visits
19 June 2014

- **Meeting point Historical waiting room (close to Ticket hall)**
  08:15 – 13:00

  Address
  Antwerpen Centraal Station

LANGUAGES

Russian and Japanese in plenary sessions of Day 1
English language **only** for workshops, reports and papers

CONFERENCE WEBSITE

www.energy-efficiency-days.org

CONTACT

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Day 0 - Welcome Gala Dinner (Hilton Hotel, Antwerpen)

Monday 16 June 2014

19:00 **Welcome Cocktail**

20:00 **Opening speeches**
Welcome from Luc Lallemand, Infrabel, CEO
Welcome from Jo Cornu, NMBS/SNCB, CEO
Welcome from Jean-Pierre Loubinoux, UIC, Director General
Welcome from Johann Pluy, Director of the Business Unit Railway Systems, ÖBB

20:30 **Seated Dinner** at Ballroom "Belle Époque"

23:00 **End of Evening Program**

Programme

5th UIC Energy Efficiency Days

Day 1 - Strategy Day: Morning Session

Tuesday 17 June 2014

08:30 **Registration and welcome coffee**

09:15 **Welcome and Opening**
Moderator: Margrethe Sagevik, Head of Environment, NSB and Chair of UIC Sustainable Mobility Expert Network

Welcome from UIC
Vladimir Yakunin, President, Russian Railways

Welcome from NMBS/SNCB
Michel Jadot, General Director Europe

Welcome from Infrabel
Richard Marcelis, Head of Power Engineering Department

Keynote Address
Jean-Pierre Loubinoux, Director General, UIC

10:00 **Session I - Energy Vision and Trends for 2030 and Beyond**
Moderator: Raimondo Orsini, Director, Sustainable Development Foundation

Key messages from the new Energy and Technology Perspectives 2014
Didier Houssin, Director Sustainable Energy Policy and Technology, IEA

The role of transport & energy: horizontal impacts for the economy, society and wider sustainable development agenda
Holger Dalkmann, Director Embarq, WRI

Low Carbon Development strategies
Rie Tsutsumi, Programme Officer, UNEP

Energy Consumptions and CO_2 emissions: a green growth opportunity for railways in the world
Veronica Aneris, Senior Advisor Energy and Environment, UIC

10:50 **Questions & Answers**

11:00 **Coffee Break**

11:30 **Session II - Working towards a more energy efficient railways: the role of European railways**
Moderator: David Briginshaw, Editor-in-Chief, International Railway Journal

Setting the Scene: Climate and Energy towards 2030
Tom van Ierland, Head of Unit, Strategy and Economic Assessment, DG CLIMA

Making greater use of more-energy efficient modes
Keir Fitch, Head of Unit, Research and Innovative Transport Systems, DG MOVE

Achievements and contributions of the railway sector and industry (Discussion)
Libor Lochman, Executive Director, CER

Josef Doppelbauer, UNIFE, Chair ERRAC and President and Chief Technical Officer, Bombardier Transportation

Giles Dickson, Vice President Environmental Policies and Global Advocacy, Alstom

12:30 **Networking Lunch**

Day 1 - Strategy Day: Afternoon Session

Tuesday 17 June 2014

14:00 **Session III - Let's do more with less: Energy Efficiency as a strategic driver for railways business (Panel Discussion)**

Moderator: Raimondo Orsini, Director, Sustainable Development Foundation

Key Note Speech

Willy Bontinck, Chair of UIC Environment Energy and Sustainability Platform

Panelists:

- Michel Allé, CFO, SNCB
- Boris Ivanov, first Deputy Head, Department of Technical Policy, RZD
- Olivier Menuet, Energy Deputy Director, SNCF
- Hitoshi Nakajima, Deputy General Manager of Electrical & Signal Network System Department, JR-East
- Johann Pluy, Director of the Business Unit Railway Systems, ÖBB
- Arnold Truempi, Head of Energy Management, SBB AG
- Klaus Vestner, Head of Environmental Management Passenger Transport, DB

15:30 **Session IV - The Voice of Members: Best Practice in Energy Efficiency from all over the World**

Moderator: Ian Papworth, Director Ian Papworth & Associates Ltd

- FS (Italy) - Luca Carusi, Energy Manager and UIC Energy Expert Network co-Chair
- JR East (Japan) - Hitoshi Hayashiya, Manager of Electric & Signal Network System Department
- HR Rail (Belgium) - Christian Smets, Expert Corporate Recruitment
- IR (India) - Sanjay Kumar, Chief Materials Manager, Northern Railway, Ministry of Railways
- NS (The Netherlands) - Frans Slats, Programme Manager Energy & Environment
- NSB (Norway) - Marie Loe Halvorsen, Energy Advisor
- ÖBB (Austria) - Harald Jony, Director of Energy Sales, ÖBB-Infrastruktur AG
- RAI (Iran) - Saed Rasooli, Vice President of Planning & Transport Economy
- RZD (Russia) - Boris Ivanov, first Deputy Head, Department of Technical Policy
- SBB (Switzerland) - Arnold Truempi, Head of Energy Management
- VR (Finland) - Janne Pusa, Energy Efficiency Manager

17:00 **Conclusion of Day 1**

Nick Craven, Manager of Sustainable Development Unit, UIC

17:15 **Champagne Cocktail**

18:30 **Walk in the Zoo**

Programme

5th UIC Energy Efficiency Days

Day 2 - Technical Day: Morning Session

Wednesday 18 June 2014

09:00 **Welcome and introduction**

Welcome from UIC
Jerzy Wisniewski, Director Fundamental Values Department, UIC

Introduction
Willy Bontinck, SNCB and Chair of UIC Environment Energy and Sustainability Platform

09:30 **Parallel Session of Technical Workshop I**

Green Electricity and Carbon Disclosure (Part I)
About accounting and reporting of renewable energy in railways
Moderator: Veronica Aneris, Senior Advisor Energy and Environment, UIC

Energy Efficient Rolling Stock
Is dual hybrid the future?
Moderator: Harald Jony, Director of Energy Sales, ÖBB-Infrastruktur AG

Traffic Management System
How to make train communicate
Moderator: Bart Van der Spiegel, Energy Manager, Infrabel and Co-Chair of the Energy Efficiency and CO_2 Emissions Expert Network

Load Factor
Good examples of monitoring and communication of the occupancy rate
Moderator: Willy Bontinck, SNCB and Chair of UIC Environment Energy and Sustainability Platform

11:00 **Coffee Break**

11:30 **Parallel Session of Technical Workshop II**

Green Electricity and Carbon Disclosure (Part II)
About accounting and reporting of renewable energy in railways
Moderator: Veronica Aneris, Senior Advisor Energy and Environment, UIC

Non Traction Energy Consumption
Optimizing use of energy in stations, workshops and buildings
Moderator: Luca Carusi, Energy Manager, FS and and Co-Chair of the Energy Efficiency and CO_2 Emissions Expert Network

Energy Efficiency in Electric Traction Supply
Increasing the efficiency from substation to pantograph… and back.
Moderator: Koen De Gussemé, Engineer, Infrabel

Procurement of Energy Efficient Rolling Stock
Applying the Tec Rec 100_001
Moderator: Philippe Clément, Ecomobility Manager, SNCF & Laurent Nicod, UNIFE Environment Strategy Group Chair and Alstom transport

13:00 **Networking Lunch**

Day 2 - Technical Day: Afternoon Session

Wednesday 18 June 2014

14:30 **Parallel Session of Technical Workshop III**

Energy Efficiency in Planning
Influencing energy efficiency at an early stage
Moderator: Matthias Tuchschmid, Project manager energy management, SBB

Energy Efficient Diesel Traction
Best Practices in diesel traction efficiency
Moderator: Roland Nolte, Director, IZT - Institute for Futures Studies and Technology Assessment

Ecodriving and DAS
Benefits of driving in an eco-friendly way and related challenges
Moderator: Frans Slats, Program manager energy and environment, NS Reizigers & Catherine Poncin, Senior advisor Energy Management, Infrabel

Rules on Track?*
Regulation and Standardization of Energy Billing
Moderator: Enno Wiebe, ERA and Research-related Issues Adviser, CER

You can only manage what you measure
Technical Developments Traction Energy Metering*
Moderator: Raimondo Orsini, Director, Sustainable Development Foundation

**Coordinated by ERESS*

16:00 **Coffee Break**

16:30 **Concluding Session**

Nature & Energy Efficiency
Biomimicry, 3.8 billion years of R&D in Energy Efficiency and Design
Gauthier Chapelle, Greenloop, Scientific Director
Sebastiaan de Neubourg, Greenloop, Strategic Sustainability

Conclusion of the Conference
Willy Bontinck, SNCB and Chair of UIC Environment Energy and Sustainability Platform

17:00 End of Day 2

Programme

5th UIC Energy Efficiency Days

Day 3 - Technical and Cultural Visits Day

Thursday 19 June 2014

08:30 **Welcome coffee in Historical Waiting Room of Antwerpen-Centraal Station** (close to tickets Hall)

09:15 **Start of Technical and Cultural visits**

1. Visit of Antwerpen-Centraal Station	2. Antwerpen Port Technical Visit	3. A 30 km bicycle trip through the railway history of Antwerpen
Duration: 1h A world-class monument Experienced guides will not only show you this railway cathedral of the 21st century, they will also let you discover the amazing surroundings: a melting pot of shopping and Zoo entertainment, the Jewish and Chinese quarters...	*Duration: 3h30* Bus Departure: 09h15 The bus will bring you to the maintenance depot for rolling stock of SNCB, the major Belgian Railway Undertaking. Your visit will continue to the other side of the river where you will be able to visit the building facilities for a new railway tunnel connecting both sides of the river.	*Duration: 3h30* You will be able to use one of the bicycles available for hire in many Belgian stations. The tour will first visit the 3.5 MW photovoltaic plant on the roof of the high speed line to the Netherlands, then take you to a park constructed on regenerated railway land, before returning via the historical centre of Antwerpen. Participants should be comfortable travelling by bicycle and have a reasonable level of physical fitness.
		

End of
UIC EED 2014 Conference

Green Electricity and Carbon Disclosure

About accounting and reporting of renewable energy in railways

Moderator: Veronica Aneris, Senior Advisor Energy and Environment, UIC

The purchase of Guarantees of Origin and related products is an important tool available to electricity consumers, such as the railway sector. The market for renewable energy certificates and other related zero carbon products is developing quickly, with more market players appearing every year and new products available.

What are the attributes and the environmental impact of these products? How does the certificate system work? What is the difference between a grid based approach and a market based approach when accounting and reporting CO_2 emissions? What are the opportunities and threats for the railway sector?

These are some of the questions that the workshop will address and clarify with the help of sector representatives and the outcomes of the UIC project “Zero Carbon railways”.

Among the speakers: representative of the World Resource Institute, Carbon Disclosure Project, ECOHZ, Ifeu and environmental NGOs.

Keywords: **RECS, GOs, Carbon Accounting and Reporting, Renewable Energy Directive, Statistics KPIs, Ecolabelling, CDP, GHG Protocol.**

Energy Efficient Rolling Stock

Is dual hybrid the future?

Moderator: Harald Jony, Director of Energy Sales, ÖBB-Infrastruktur AG

The biggest single energy consumer in the rail sector is the train.

However, this need is changing, with the demand for energy per train km increasing because of evolving market requirements. There are some solutions using dual hybrid rail vehicles in Europe, but is this the technical solution the future?

This workshop will show some solutions from European manufactures, from today and the future. It will also consider the question of what kind of rail vehicles will be available in the future and will they be energy efficient? What is the real impact of using dual hybrid locomotives in terms of energy efficiency?

Keywords: **Energy Efficiency, Rolling Stock, Locomotive, Rail Vehicle, Hybrid.**

Workshops Description

5th UIC Energy Efficiency Days

Traffic Management System

How to make train communicate

Moderator: Bart Van der Spiegel, Energy Manager, Infrabel and Co-Chair of the Energy Efficiency and CO_2 Emissions Expert Network

More and more suppliers are delivering tools to improve the energy efficiency and punctuality of train traffic. New traffic management systems should be able to detect possible conflicts (two trains arriving at the same time at the same crossing) and should be able to propose the optimal solution. This information should get communicated to the trains. An interoperable data exchange is needed.

Keywords: **Traffic Management Systems, Driving Advisory Systems, Eco-Driving, Smooth Train Traffic.**

Load Factor

Good examples of monitoring and communication of the occupancy rate

Moderator: Willy Bontinck, SNCB and Chair of the UIC Environment Energy and Sustainability Platform

The average energy consumption per pkm or tkm is the main indicator to measure energy efficiency in transport. For this reason accurate registration and follow up of the load factor is essential. A major part of rail passenger traffic takes place during the in the morning and evening peaks. Outside of these rush hours some trains run almost empty.

This unbalanced demand leads to an inefficient use of rolling stock so also an inefficient use of energy. What measures are feasible to enhance the average load factor as well in passenger traffic as freight?

Is tariff differentiation between peak and off-peak hours an effective way to incentivize clients to travel outside the rush hours?

NS (Dutch railways) communicates the load factor of each coach in real time. This service helps passengers to find a free seat and it also to shorten time delay in the station thereby enhancing punctuality and the potential of Eco driving. Automatically monitoring the occupation level also enables the RO to better match train composition with customer demand. Other good examples of monitoring and communication of the occupancy rate will also be presented.

Keywords: **Load Factor, Passengerkm (pkm), Seatkm (skm), Net-Tonkm.**

Non Traction Energy Consumption

Optimizing use of energy in stations, workshops and buildings

Moderator: Luca Carusi, Energy Manager, FS and and Co-Chair of the Energy Efficiency and CO_2 Emissions Expert Network

Non-traction energy accounts, in average, for 15% to 20% of the overall consumption of Railway Undertakings and Infrastructure Managers operating in the railway sector. It includes energy consumption mainly in railway stations, maintenance workshops, buildings and infrastructures. In particular actual and future stations are being designed with the aim to become central urban nodes in modern cities, larger and more comfortable to passengers and customers, yet also very energy demanding. Buildings and workshops use energy for lighting, heating and cooling. Infrastructure needs energy for signaling, crossings, platform lights, GSM-R and point heating. It is generally acknowledged this is an area with a significant saving potential which is largely untapped.

The workshop will provide an overview on what non-traction energy means for railways and how they are approaching energy efficiency plans, focusing on best practices and innovative solutions from members' experience. The workshop will address the following questions:

- What are the main consumption drivers of non-traction energy in railways ?
- What are railways doing, or planning to do, to reduce non-traction energy consumption ?
- What are the lessons learned and the key success factors in the energy efficiency process ?

Keywords: **Non-Traction Energy, Sustainable Station, LED, Heat Pump, Building Management, Energy Service Providers, Energy Efficiency Directive, Human Factor, ISO50001.**

Energy Efficiency in Electric Traction Supply

Increasing the efficiency from substation to pantograph… and back

Moderator: De Gussemé Koen, Engineer, Infrabel

Electricity is produced by or supplied to the network of the Infrastructure Manager. This network has converter stations, substations and (overhead) contact lines in order to bring the energy to the trains. Braking trains might return energy to this network. This energy can be reused by other trains, stored in flywheels or transferred to low voltage for charging of batteries of electrical cars. This workshop will deal with the optimization of the energy flow in both directions.

Keywords: **Electrification System Voltage, Flywheels, Power Electronic Converters.**

Procurement of Energy Efficient Rolling Stock

Applying TecRec100_001

Moderator: Philippe Clément, Ecomobility Manager, SNCF & Laurent Nicod, UNIFE Environment Strategy Group Chair and Alstom transport

The European railway sector wants to reduce its energy consumption – for reasons of costs and the associated environmental and climate impacts. A prominent way to reduce consumption is to procure, design, build and operate energy efficient trains. Since 2010, technical guidelines (UIC/UNIFE TecRec 100_001) have been available for free use by railway operators and manufacturers.

TecRec 100_001 is the “Specification and verification of energy consumption for railway rolling stock”. The workshop will demonstrate the different applications and discuss experiences harvested from key European players.

The challenge is to make much better use of this guideline by disseminating knowledge and best practice examples among operators, manufacturers and relevant knowledge partners. The workshop is a great opportunity to get up to date on this subject – whether you are a new comer or an experienced energy expert.

Keywords: **Procurement, Rolling Stock, Energy Consumption, Energy Efficiency.**

Energy Efficiency in Planning

Influencing energy efficiency at an early stage

Moderator: Matthias Tuchschmid, Project manager energy management, SBB

The integration of Energy Efficiency criteria into the various planning processes from the very beginning is promising: the whole system may be optimized and significant energy saving are possible. Aspects with influence on energy consumption are for example the extension of travel times, optimization of track layout and harmonization of speed profiles. Also changed planning priorities of mixed traffic, the reduction of traffic demand peaks over day and the modular adjustment of train sizes according to demand allow a more efficient use of energy.

However, for a given infrastructure, limited financial resources or the demand for shorter travel times handicap an energy efficient planning process. In the workshop we will discuss different possibilities for improvement under the given conditions and collect success stories. The main goal is the discussion and exchange of successful approaches and ideas among the participants.

Keywords: **Planning Process, Time Table, Speed Profiles, Load Factor, Modular Trains.**

Energy Efficient Diesel Traction

Best Practices in diesel traction efficiency

Moderator: Roland Nolte, Director, IZT - Institute for Futures Studies and Technology Assessment

Diesel traction plays a major role at world level and a significant one in Europe in providing rail services. In Europe Total emissions of NOx and PM have already decreased by about 20% from 2005 to 2010 and (absolute) energy consumption decreased from 50 to 41 PJoule from 2005 to 2009 for passenger and from 27 to 23 PJoule for Freight but where improvements in Energy Efficiency are still possible? The workshop will explore the impact of the introduction of cleaner Technologies (Biofuel and Others...) but also the best current practices in operating regimes such as less idling or higher load factor.

Keywords: **Diesel, Idling, Modular Trains, Thermal Traction Chain.**

Ecodriving and DAS

Benefits of driving in an eco-friendly way and related challenges

Moderator: Frans Slats, Program manager energy and environment, NS & Catherine Poncin, Senior advisor Energy Management, Infrabel

During this workshop Railway Undertakings will give their return of experience with Driving Advisory Systems (DAS). The workshop will include a debate on the possible conflict between a speed advice coming from a DAS that is conflicting with the speed permitted via lateral signalling. Also the interface with the driver will be handled.

Can a DAS be an extra stand-alone device? How should the advice be given?

Keywords: **DAS, Driving Advisory Systems, Eco-Driving, Driving Style, Optimal Speed, Coasting, Cruising, Human Machine Interface.**

Rules on Track?

Regulation and Standardization of Energy Billing

Moderator: Enno Wiebe, ERA and Research-related Issues Adviser, CER

This workshop will deal with different aspects of recent changes in the regulatory framework that has an impact on the energy consumption of trains. The workshop starts with an overview on standardisation and regulation in the field of energy metering and billing. Also the different roles and exchanges in the energy market are presented.

Keywords: **EN 50463, TSI Energy, Loc&Pas TSI, Metrological Certification, Energy Measuring, Energy Billing, Free Choice of Supplier.**

You can only manage what you measure

Technical Developments Traction Energy Metering

Moderator: Raimondo Orsini, Director, Sustainable Development Foundation

This workshop will give a look to the market of on-board energy metering equipments. Which products are available already? Which is the scenario for next years? Can we use these products everywhere? Do these products comply with EN 50463 or any other standard? Which is their added value to interoperability? Which are the costs of retrofitting existing rolling stock? Manufacturers will present improvements on products, testing facilities and software, railway operators will put on the table their technical needs and customer expectations, and infrastructure managers may be interested in board-ground technical requirements.

Keywords: **EN 50463, TSI Energy, Loc&Pas TSI, Energy Measurement System, Energy Measuring, Energy Billing, ISO 50001, Metering.**

UIC Energy Efficiency Days 2014

Antwerpen, 16 - 19 June

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