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[www.silence-ip.org](http://www.silence-ip.org)

[www.qcity.org](http://www.qcity.org)

## Editorial

The world of today is facing a number of changes, particularly with respect to environmental issues. The population in large European Cities like London, Rome and Paris might increase dramatically already by 2020. The increase in population generally increases the environmental impact of traffic and hence traffic noise. This forces city authorities to accelerate their development actions to balance and reduce the increased environmental pressure.

At the same time, as the road and rail traffic noise burden increases, there is also a large potential available for solving these noise problems, provided that the willingness exists by the vehicle manufactures, road and rail infrastructure providers, city councils and planners. By combining all their efforts, substantial achievements in noise reduction can be gained based on existing technology and new technology coming out of current and future research.

The European Commission has demonstrated its willingness to take action to the benefit of the environment by issuing a Noise Directive (EC Directive 2002/49 on Noise mapping) that urges cities to describe their noise problems by producing noise maps as well as to create Noise Action Plans based on these noise maps.

In order to further contribute to the reduction of the increasing noise problems in European cities, the European Commission also decided to fund two projects both aiming at alleviating the noise impact to European city residents.

These two projects are QCITY and SILENCE, which are structured in such a way that they are complementing each other.

SILENCE focuses on mitigation measures for road and rail traffic noise, including their different sources, and is therefore orienting its research activities to become effective on a more long term basis.

QCITY focuses on finding infrastructure related solutions and on describing the gravity of noise problems by perception related post processing of noise maps.

In this joint Newsletter we will shortly describe the major results of the currently ongoing projects SILENCE and QCITY.

*Nils-Åke Nilsson*

Project coordinator  
of Qcity

*Franz Brandl*

Project coordinator  
of Silence





## Integrated Research Project within the 6th Framework Programme

- Project Leader** – Nil-Ake Nilsson (Acoustic Control)
- Project duration** – 48 months from Febr 1 2005 until Jan 31 2009
- Project budget** – 13.5 M€
- Project partner** – include 27 contractors

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The general increase of traffic severely increases environmental noise in our cities. In view of that 20-30 % of EU residents currently are exposed to excessive traffic noise, environmental noise should be rated as one of the most severe health and comfort problem in today's society.

Alleviating these increasing nuisances is therefore high up on the agenda of the European Commission. Consequently, an Environmental Noise Directive was published in 2002, ensuring that city administrations will understand and control the noise problems. In agreement with the Directive the European Commission have also, under the 6th Framework Programme, supported projects on controlling traffic noise in urban areas.

Quiet City Transport (QCITY) is such a research project, targeting at development of technology for the control of environmental noise for road/rail transport systems by measures both at the vehicle and infrastructure level. QCITY supports the EC Noise Directory, striving at providing solutions for reduction of transport noise down to the legislative limits. Providing municipalities with tools for mapping noise problems and making up noise actions plans are main objectives of QCITY that supports the Directive.

Hence a broad range of validated technical solutions for the treatment of specific hot-spot problems is made available. QCITY incorporates aspects such as traffic control, city planning, noise perception, interchanged transport modes, traffic restrictions, enforcement methods, economic incentives, introduction of hybrid vehicles etc.

QCITY involves 27 partners representing competence within acoustics, town planning, vehicle and tire manufacturing as well as town and traffic planning.

In a first phase, QCITY focused on noise mapping and conceptual design of considered solutions, including their potential impact. In the second phase, the most promising solutions are adapted for use in solving specific hot-spot problems in selected cities.

Involved cities are Amsterdam, Antwerpen, Athen, Augsburg, Brussels, Göteborg, Malmö, Nieuwpoort, Oostende, Stockholm and Stuttgart.

The project achievements:

- A new method has been developed converting a sound-level-map into a noise-problem-map, considering population density, indoor noise, noise levels in back-yards etc.

- Computer simulations reveal that if only hybrid vehicles operates in a city area, a virtually noise free environment could be achieved lowering noise by 10-15 dB(A).
- New measurement methods enables the rating of subjective impressions e.g. from tyre/road or driveline noise in comparison to over-all noise in a vehicle passage.
- A new embedded hybrid track with a sound absorbing surface has been developed displaying multi-functions, making it suitable both for rail and road applications. Tests will be performed at the Nieuwpoort site
- A poroelastic road surface has been developed being 6 dB(A) in less noisy than a SMA11. Apart from being porous it is also made elastic by adding crumb rubber to the mix.
- A special low noise rail profile prototype has been designed. It is currently under test at the Malmö site in Sweden
- A tram track prototype for low squeal-noise generation has been designed. This embedded track concept will significantly lower squeal noise in curves. The testing will take place in Athen.
- A new type of "platform" screen for trams has been developed. Being only 300-400 mm high and mounted close to the tram, noise reduction as high as 6-8 dB(A) was achieved. Tests continue in Göteborg and Athen.
- A new type of "single wheel" trailer for tyre/road noise measurements was developed. A 7 m long towing beam ensures low noise from the trailer support tyres. Both roadside and on-board carried microphones (CPX) can be used.



Noise map of Stuttgart Fildern

# Quieter Surface Transport in Urban Areas



Integrated Research Project within the 6th Framework Programme

Project Leader – Franz Brandl (AVL)

Project duration – 36+4 months from Febr 1 2005 until May 31 2008

Project budget – 26 M€€

Project partner – include 42 contractors

[www.silence-ip.org](http://www.silence-ip.org)

## SILENCE - Quieter Surface Transport in Urban Areas

SILENCE will provide relevant and world leading methodologies and technologies for the efficient control of noise caused by urban road and rail transport. The project integrates research in the areas of noise perception and annoyance, road vehicles and road surface, rail vehicles, infrastructure and operation, road traffic flow and city planning. This includes innovative strategies for action plans on urban transport noise abatement, and practical tools for their implementation.

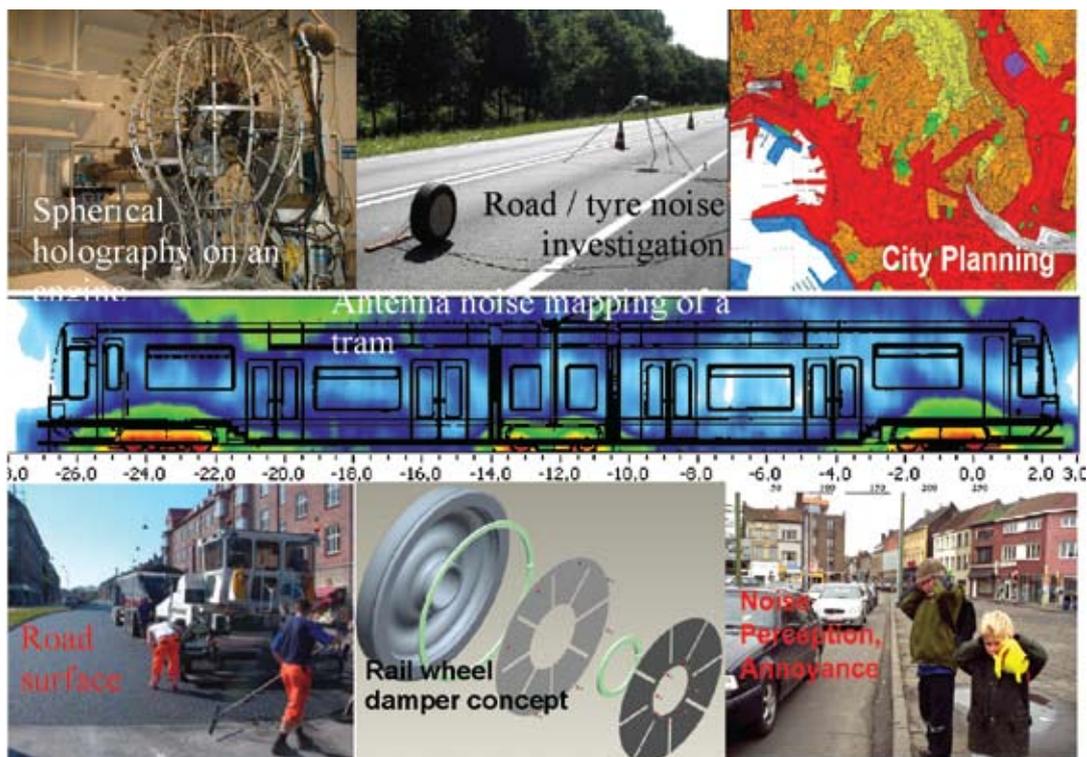
SILENCE involves the right mix of European expertise to develop appropriate solutions. The project gathers city authorities, public transport operators, research and engineering institutes, European associations, vehicle manufacturers, equipment, systems and technology suppliers. The overall outcome of the project should be a significant reduction of people's exposure to noise, especially under real urban conditions.

SILENCE is co-funded for 3 years by the Sixth Framework Programme of the European Commission (TIP-CT-2005-516288).

The work is in good progress and it is expected that all planned results will be achieved.

Road and rail traffic noise sources have been investigated on road and rail vehicles and simulated by sophisticated analysis tools and form currently a basis for noise reduction measures using new noise reduction materials and designs. Solutions have been developed and presented for road surfaces / road construction and rail design to reduce their noise emission. The tyre / road and wheel / rail interactions with respect to noise emission has been investigated in detail and simulated to be able to define efficient design measures for their reduction. Methods for noise control by road traffic management and driver assistance systems have been investigated as a basis for future noise reduction strategies in cities. Based on urban noise scenarios, action plans and decision support systems are being designed to support city councils to reduce transport noise in their cities.

The outcomes of SILENCE will be presented at conferences and in dissemination and training events, see next page.



## Dissemination events

### CALM event

**1 - 2. 10. 2007 Brussels**  
[www.calm-network.com](http://www.calm-network.com)

### QCITY Noise Congress

**15. 10. 2007 Stuttgart**  
[www.qcity.org](http://www.qcity.org)

### SILENCE Training event

**14. 11. 2007 Warsaw**  
[www.silence-ip.org](http://www.silence-ip.org)

### QCITY Noise Congress

**30. 11. 2007 Stockholm**  
[www.qcity.org](http://www.qcity.org)

### SILENCE Rail Seminar

**December 2007**  
[www.silence-ip.org](http://www.silence-ip.org)

### Silence Closing Conference

**May 2008 Brussels**  
[www.silence-ip.org](http://www.silence-ip.org)

### Acoustics 2008

**29. 06 - 4. 07. 2008 Paris**  
[www.acoustics08-paris.org](http://www.acoustics08-paris.org)

### ISMA 2008

**(International Conference on Noise and Vibration Engineering)**  
**15 - 17. 09. 2008 Leuven, Belgium**  
[www.isma-isaac.be/conf/index](http://www.isma-isaac.be/conf/index)

## Partners:

### Qcity

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Acoustic Control	NCC Roads
Accon	Stockholm Environmental & Health Administration
Akron	Société des Transports Intercommunaux de Bruxelles
Amec Spie Rail	Netherlands Organisation for Applied Scientific Research
Alfa Products & Technologies	Trafikkontoret Göteborg
Banverket	Tram SA
Composite Damping Material	TT&E Consultants
Havenbedrijf Oostende	University of Cambridge
Frateur de Pourcq	University of Thessaly
Goodyear	Voestalpine Schienen
Head Acoustics	Zbloc Norden
Heijmans Infra	Union of European Railway Industries
Royal Institute of Technology	
Vlaamse Vervoersmaatschappij DE LIJN	
Lucchini	

### Silence

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Adam Mickiewicz University Poznan	Institut National des Sciences Appliqués de Lyon
AEA Technology Rail	Kugliga Tekniska Högskolan
Alstom Transport	Lucchini Sidermeccanica
Ansaldobreda	M+P Raadgevende Ingenieurs
Autostrade per l'Italia	POLIS
AVL LIST	Regie Autonome des Transports Parisiens
Bombardier Transportation	Renault
Bristol City Council	Rieter Automotive Management
Bruel & Kjaer Sound & Vibration Measurement	SINTEF
Centre National de la Recherche Scientifique	Skanska Sweden
Centro Recherche Fiat	Société des Transports Intercommunaux de Bruxelles
Chalmers Tekniska Högskola	Société Nationale des Chemins de Fer Français
City of Brussels	Technical University of Berlin
City of Genoa	Trenitalia
Continental	TÜV Nord Mobilität RW TUEV Fahrzeug
Corus	Università Politecnica delle Marche
D2S International	University of Hannover
Deutsche Bahn	University of Southampton
DSD Barcelona	Vibratex
Forschungsgesellschaft für Arbeitsschutz and Arbeitsphysiologie	Volkswagen
Forum of European National Highway Research Laboratories	Volvo Technology Corporation