

# **Innovative Measures to Reduce Noise Emissions and increase logistics effectiveness**

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## Contents presentation

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- **SenterNovem**
- **Background**
- **Legislation**
- **PEAK-Programme**
- **Product innovations**

## SenterNovem, the organisation

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- **Project agency**
- **Department economic affairs**
- **Sustainable environment**
- **Sustainable transport**
- **Departments of transport, environment and economic affairs**

## Background

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- **1998 : Shop opening hours extended**
- **Increased distribution evening, night**
- **1998 : Order in council/decreet**
  - 19.00 – 23.00 : 65 dB(A)**
  - 23.00 – 07.00 : 60 dB(A)**
- **Shops: responsible for compliance**
- **Councils: responsible for enforcement**
- **Transport operators: support shops to reduce noise complaints**

## Peak noise without 'quiet' development (1998)

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	Peak level at 7,5 m in dB(A)
● Slamming door	: 74
● Driving up/away	: 67 – 83
● Load hatch	: 65 – 92
● Containers over load floor	: 74 – 85
● Refrigeration kicking in	: 70 – 78
● Removing onboard forklift	: 77 – 82
● Shopping trolleys	: 53 – 77

## 10 main projects:

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- 1. Transfer of knowledge
- 2. Encouraging quiet behaviour
- 3. Loading and unloading locations
- 4. Distribution vehicles up to 7.5 tons
- 5. Distribution vehicles over 7.5 tons
- 6. Refrigerated transport installations
- 7. Portable forklift trucks
- 8. Roll containers, pallet trucks
- 9. Shopping trolleys
- 10. Electric propulsion

## Project 2: Encouraging quiet behaviour

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- **Education programme**
- **Drivers, planners, managers**
- **How to avoid noise**
- **Integrated in basis education**

## Training on the job

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## Project 3: Loading and unloading locations

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- **CROW guideline**
  - ◆ Calculate noise level current situation
  - ◆ Advise how to reduce noise levels
- **'Quiet' asphalt , pavement**



## Project 4, 5: Vehicles, drive-line

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### Small trucks

- Engine 76 Db(a)  
Speed / rev limiter  
Cover up the engine

### Heavy trucks

- Engine 79 dB(A)  
Speed / rev limiter  
Cover up the engine
- Gear box 68 dB(A)  
Automatic gear box



## Project 4, 5: Cargo space

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- **Floor 85 dB(A)**
- **Wall 74 dB(A)**
- **Tail lift 83 dB(A)**
- **Warning system, reversing beep 110 dB(A)**
- **Cargo stowage 85 dB(A)**

## Silent Trailer

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## Project 6: Refrigeration

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- **Noise level: 69 - 74 dB(A)**
- **Inlet and exhaust noises**
- **Casing noise-insulation**
- **Running speed**
- **Condenser**

### **Solutions**

- **Cryogenic refrigeration system**
- **Truck engine powered refrigeration**
- **Diesel incapsulation**

## Refrigeration incapsulation

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## Project 7, 8: Roll container, hand pallet truck

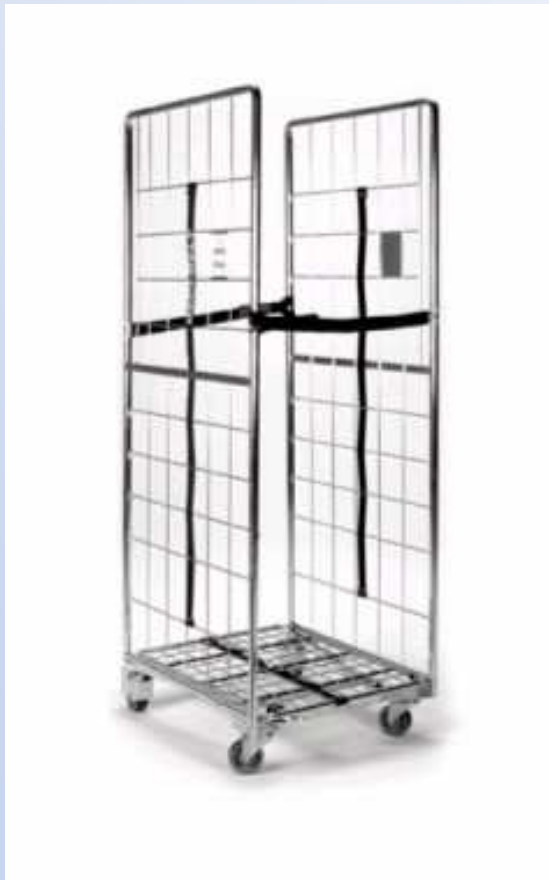
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### Problems 83 - 93 dB(A)

- The wheels, too hard
- Play between the wheel and fork bearings
- Connection wheel - metallic structure
- Metallic structure
- Bumping noise

## Roll container, handpallet truck

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## Current situation

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- **Technology is available**
- **Silent products : > 60 and increasing**
- **Higher price + 10 % - 15 %**
- **Lower costs**
  - Saving in energy**
  - Improvement labour conditions**
  - Improvement hygiene of cargo**
  - Efficient transport**

## Quiet products sold 2004 - 2008

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- **Subsidy programme 6 mio Euro**
- **Turnover quiet equipment 60 mio euro**
- **Quiet product sold: 17.000**
- **Supermarkets convinced**
- **Transport operators convinced**
- **Quiet distribution achieved**
- **Implementation accepted and supported**
- **Next step → efficient transport**

## Efficient Transport

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**Evening and night distribution → efficient**

- **No traffic jams →**
- **Do more with the same vehicle →**
- **More environmentally friendly**

**Study 31 cities impact of night distribution:**

- **Nox – 41 %**
- **PM – 41 %**

## Night distribution and safety

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- In many cities access of lorries restricted
- Distribution activities : morning
- Afternoon: no access for lorries, only pedestrians
- Lorries enter the city in the morning in rush hour

### Study 31 cities impact of night distribution:

- Fatal accidents : - 44 %
- Casualties : - 41 %

## Large volumes in the night

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- **Seize restriction for trucks**
- **Small vehicles : 3900**
- **'Large vehicles': 1811**

### **Study 31 cities impact:**

- **Fatal accidents : - 29,6 %**
- **Casualties : - 38 %**
- **Nox – 27 %**
- **PM – 23 %**

## Large volume: + 60 % capacity

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## International co-operation

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- **Night distribution international topic**  
**Solution for traffic congestion**
- **Source approach is best approach**
- **Source approach needs common rules**
- **International approach is essential**
- **Co-operation:**  
**Ireland, UK,**  
**Germany, France, Belgium, Austria**  
**Spain, Sweden, Italy**  
**Poland?**

## National government

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- **Legislation**
  - ◆ Passengers cars
  - ◆ Trucks
- **Policy**
  - ◆ Passengers cars
  - ◆ Trucks
- **Emission zones**
- **Evening – night distribution**

## Cities

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- **Environmental zones**
  - ◆ Noise
  - ◆ Pollution
- **Legislation**
  - ◆ Passengers cars
  - ◆ Trucks
- **Policy**
  - ◆ Passengers cars
  - ◆ Trucks
- **Evening – night distribution**

## Companies:

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- **Industry**  
**Production of noise reduced products**
- **Transport operators – Shops**  
**Noise related distribution problems?**

## 7-th frame work programme call 2008

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### Preparation

- Open a call evening – night distribution
- Support: UK, Ireland, France, Denmark
- Set-up co-operation structure preparing proposal

### Topics to address:

- Sustainable transport: quiet and clean
- Logistics
- Knowledge dissemination

### Scope of research

- Quiet equipment
- Logistic modelling

## More information

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- **More information PEAK: [www.piek.org](http://www.piek.org)**
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