Energy Awareness in Public Space Design

camilla migliori
chapter 1
introduction

chapter 2
case Study

chapter 3
methodology

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design proposal
CLIMATE CHANGE and ENERGY ISSUE

OIL

YEAR

23 Gb/a
8 Gb/a
3 Gb/a

US
Russia
Europe

1930 1970 1985 2003 2050

1940 2005
CITY DESIGNERS CONTRIBUTION

create connection between people and energy issue
PEOPLE PLAY AN IMPORTANT ROLE

people awareness of energy consumptions
WE PLAY AN IMPORTANT ROLE
people awareness of energy consumptions

22 kWh per year
the netherlands
176 GWh per year

10 L per minute
Wash hands: 17 seconds = 3 L of Water

20 L per minute
THE ROLE OF CITY DESIGNERS

The public space is the key to reach people.

1. how can the public space generate energy awareness?
2. how can the public space be the tool for education?
3. how can the public space become an energy display?
Rotterdam Energy port

Reliable, affordable and sustainable: Rotterdam is the Energy port of Europe in every respect
CASE STUDY

Rotterdam
world war II: urban change of structure
FRAGMENTATION in URBAN PROFILE
4 regions

VISUAL FRAGMENTATION
Harbour city, Singel city, Modern city,
existing energy potentials the city has

energy network

SOURCES STUDIED: Solar energy, Wind energy, Kinetic energy

the problematic and interesting areas to work with according to the city’s needs

energy network + hotspots

interventions for public space awareness

ENERGY PRODUCTION

INFLUENCE CONSUMPTION

ANALYSIS METHODOLOGY

Public space potential

SPATIAL ANALYSIS

OVERLAP:

ANALYSIS METHOD

Public spaces potential
ANALYSIS METHODOLOGY

Analysis SAMPLE
AREA 2_Shopping district
Research parameters

PEOPLE MOVEMENTS
WIND INTENSITY
SUNLIGHT

people movements  wind intensity  sun intensity
ANALYSIS METHODOLOGY

Spatial analysis SAMPLE
AREA 2_Shopping district

Jan Gehl's conditions for a lively public space
RATIO
SENSORIAL ASPECTS

text: ratio experience  sensory experience = possible hotspots
DESIGN CONCEPT METHODOLOGY

Link the emotion stimulation to the message

Marketing strategy
DESIGN CONCEPT METHODOLOGY

Link the emotion stimulation to the message

Emotion stimulation is the link between People and Energy issue

TECHNICAL DISPLAY

SENSORIAL DISPLAY

15 Knots
by ATLAS and Forbes Lipschitz
Jardins de Métis International Garden Festival
2012 Edition
Big Lights
Water features
Spot Lights
Sounds

senses stimulation:
- view
- touch
- hearing

Grotekerkplein

Case study: People movements square
Cause - effect interventions
Maritiem museum Square

Case study: Sun garden

senses stimulation:
- smell
- touch

Sun energy case study
Wind energy case study

Willemsplein
Case study: Wind Park

senses stimulation:
- smell
- touch
- hearing
- taste
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design proposal
the wind Source in Willemsplein
DESIGN PROPOSAL
the wind Source in Willemsplein

Introduction to the area
Contains Rotterdam identity

deriver landscape
harbour landscape
urban landscape
city-green landscape
DESIGN PROPOSAL
the wind Source in Willemsplein

No public space without people
1. no answer to people needs
2. unpleasant weather conditions

where is the public space?
DESIGN PROPOSAL
the wind Source in Willemsplein

Introduction to the area

Flowscape
DESIGN PROPOSAL
the wind Source in Willemsplein

Problem connected to energy source

- bus station
- restaurant terraces
- pier & spido stop

4 m/s 14 m/s

maas
DESIGN PROPOSAL
the wind Source in Willemsplein

design strategy
concept: places of contrast
DESIGN PROPOSAL
the wind Source in Willemsplein

Entrances

spatial elements

square

gate

frame
DESIGN PROPOSAL
the wind Source in Willemsplein

Wind blocks: Hills
DESIGN PROPOSAL
the wind Source in Willemsplein

Groene loper
DESIGN PROPOSAL
the wind Source in Willemsplein

Spatial apparences
DESIGN PROPOSAL
the wind Source in Willemsplein
Square west side
Bus station
Interactive games
Terraces
DESIGN PROPOSAL
the wind Source in Willemsplein
East side
Wind vs Calm
DESIGN PROPOSAL
the wind Source in Willemsplein

design strategy
wind energy accumulation
wind block: hills
pleasure areas
DESIGN PROPOSAL
the wind Source in Willemsplein

Wind path
energy accumulation
music
wind games
DESIGN PROPOSAL
the wind Source in Willemsplein

Wind path

Wind turbines

module

25 wind turbines generates 50 to 120 Kw

15m x 15m

1 heater set = 45 Watt
Big Lamps = 300 Watt

1000 seats
166 lamps

1.5 MW

27 modules on site
DESIGN PROPOSAL
the wind Source in Willemsplein

Wind path

Wind organs
DESIGN PROPOSAL
the wind Source in Willemsplein

Wind path

Wind seats
DESIGN PROPOSAL
the wind Source in Willemsplein

Energy sent to Pleasure areas

Enjoy a coffee looking at the landscape
Warming up
Laying on the grass
Looking at the river
Enjoy a coffee looking at the Maas
Looking at the river
Going on a tour on the Maas

1.5 MW
DESIGN PROPOSAL
the wind Source in Willemsplein

Pleasure areas
DESIGN PROPOSAL

the wind Source in Willemsplein

Pleasure areas space

'Energy furniture'

resistance

compressed cherry pits planks

Plantings

Echinacea purpurea
Allium

[Diagram showing a design proposal for a wind-powered feature with energy furniture, plantings of Echinacea purpurea and Allium, and compressed cherry pits planks.]
DESIGN PROPOSAL
the wind Source in Willemsplein

Hill construction detail
Wind turbine placing

- pre-vegetated mat
- growing medium
- drain mat
- root barrier
- waterproof membrane
- cone
- styrofoam
- stabilizer
- drainage system
- sand
- ‘Energy furniture’
- Water retention hills
DESIGN PROPOSAL
the wind Source in Willemsplein

Wind block: The Hills
Plating scheme

Plastic grass grid

The Palais Omnisports
Paris
Andrault-Parat, Prouvé and Guvan

The Palais Omnisports
Paris 2008
Patrick Blanc

Plastic grass grid

calm side
windy side

Berberis candidula
evergreen - perennial - spring and autumn blooms

Pilea depressa
evergreen

Pie s Japonicum
evergreen - late winter blooms

Iris Japonicum
evergreen - propagate by seed - partial shade

Rue d’Alsace
Paris 2008
Patrick Blanc
CONCLUSIONS

The public space becomes tool for education

- By making people participants of the space through experience
- People and energy issue interaction by introducing the use of natural energy sources in public space design
CONCLUSIONS
The public space becomes tool for education

wind block
pleasure areas
wind energy accumulation
Thank you.