

Sustainability Approach in Large Real Estate Developments

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The examples are taken from projects
grant-supported by the Austrian Ministry
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and/or the Austrian Climate and Energy
Fond

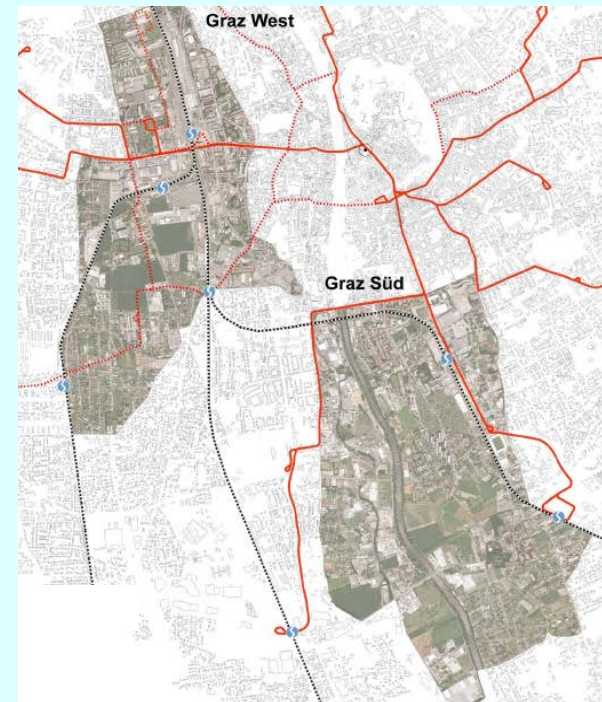


The innovations shown in the following slides are mainly taken from two projects:

aspersn plus Vienna's Urban Lakeside



Smart City Areas in the City of Graz



aspern plus - Vienna's Urban Lakeside

- An urban district of 240 ha for 20,000 residents and 20,000 additional jobs to be created over the next two decades
- Open space and microclimate connected to district development
- Energy supply and consumption cross-linked within small districts
- Demonstration buildings as "lighthouse projects", e.g. aspern IQ
- Quality monitoring at planning stage, and central monitoring of energy consumption during operation
- Development and use of simulation tools for district planning www.aspern-seestadt.at



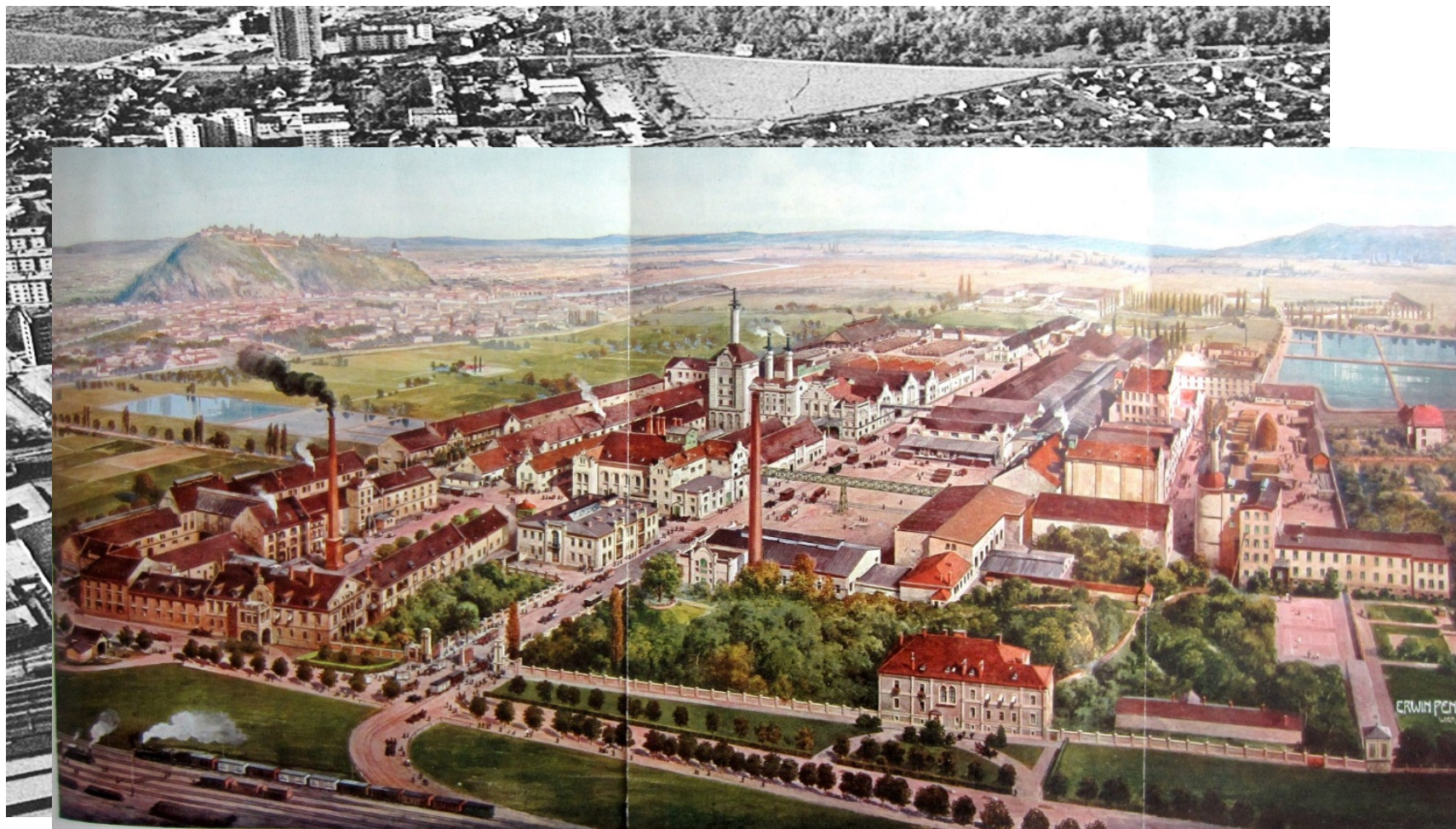
Most slides about ASPERN have been thankworthy provided by Mr. Peter Hinterkörner

„Smart City Graz West“

Projects „Waagner Biro“ and „Old Reininghaus“

- Location of the Smart City Quarter near the main station (West of Graz)
- Current use:
Industrial and commercial land, undeveloped land and residential areas
- Demonstration project:
First time of implementation of new urban technologies for a liveable and intelligent „Zero Emission District / Quarter“

How „Graz West“ looked like when it was an industrial zone



Sustainability Approaches in Cities

- Resource Efficiency
 - Energy
 - Materials
 - Water
 - Space
- Diversity
 - Nature
 - Economy
 - Population
- Integrated High Quality of Life
 - Living
 - Working
 - Education
 - Leisure

- Substitute with Low-Carbon resources
- Efficient use of carbon sources / increase energy efficiency
- Reduce demand without reducing quality of life / from products to services

Smart Cities are Zero Emission Cities

The Austrian approach for Smart Urban Districts compared to conventional planning:

To be decreased

To be increased

Distances

Economic productivity

Buildings- and traffic space-
usage

User density

Greenhouse Gas emissions

Interaction

Material streams with
ecological effects

Biodiversity

Ecological footprint

Living quality

Additional costs

Development potential

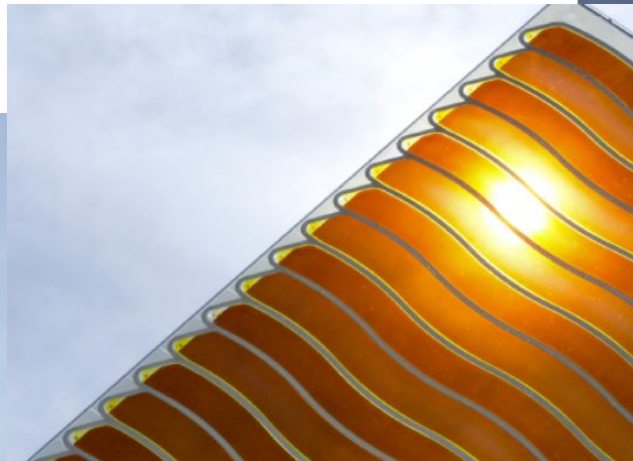
Efficiency Resources: Building standards

- Office, production and commercial space, seminar suite, restaurant with 6,600 sqm of lettable space
- "Building of Tomorrow"; Klima:aktiv passive-energy house gold award (1000 out of 1000 points); ÖGNB award (974 out of 1000 points)
- Energy-plus standard / passive energy standard (energy requirement six times lower than that of a conventional building)
- Green building methods (eco-concrete, avoidance of PVC and substances harmful to the environment)
- Intelligent control of domestic engineering installations
- Energy production via photovoltaic installation, heat recovery over 90%
- Six beehives located on the roof of the technology centre aspern IQ



Research tower in Smart City Waagner Biro

Graz

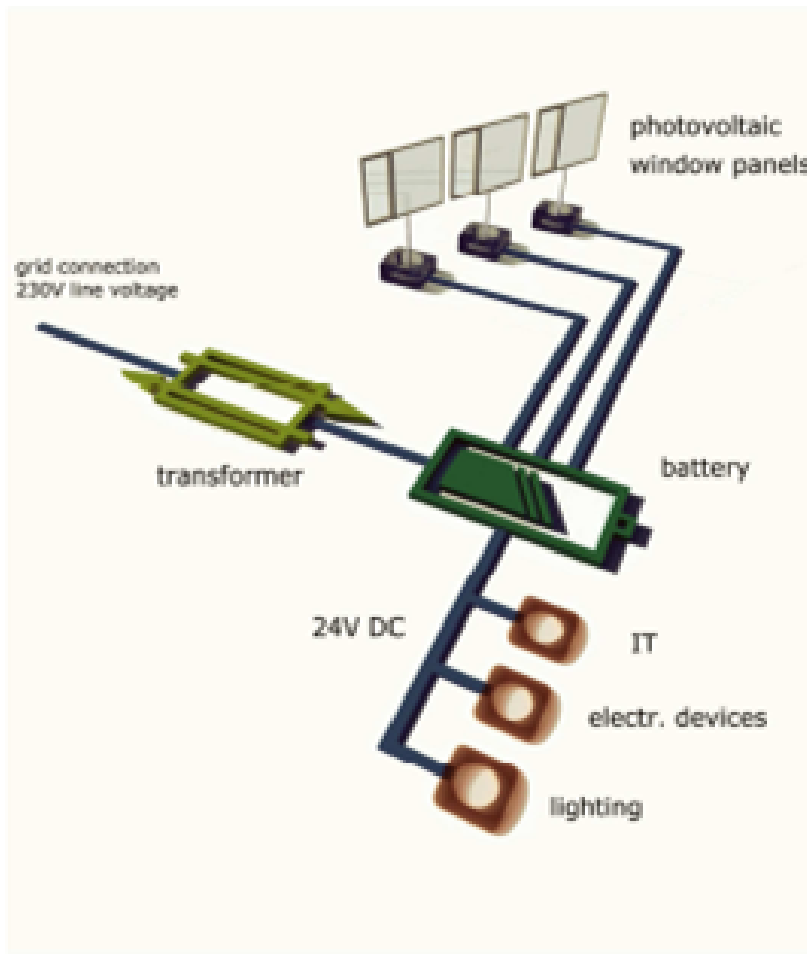


**dye-sensitized
solar cell
(Grätzel-Zelle)**



Abbildung: Markus Pernthaler Architekten ZT GmbH

Building integrated energy technology: a 24 V DC grid



BUILDING INTEGRATED TECHNOLOGY

REDUCTION OF ELECTRICITY CONSUMPTION

INCREASE OF EFFICIENCY

NETWORK-INDEPENDENT ENERGY SUPPLY

SMART FUTURE GRAZ
SMART CITY PROJECT GRAZ MITTE

Smart City Project Graz West, Project “Old Reininghaus”

Technologies for reduction of energy demand for heating and cooling



- green facades and roofs reduce heating and cooling demand

Source: <http://www.reininghaus-findet-stadt.at/projektuebersicht/projekte-in-planung/>

Energy production within the city

- 📍 Photovoltaics
- 📍 Solar thermal
- 📍 Bio-waste processing
- 📍 Urban wind
- 📍 Geothermal
- 📍 Industrial waste heat



Smart Industries in Urban Areas

Energy Efficiency in Business

- Almost 30% of final energy consumption in Austria is attributable to manufacturing
- A significant contribution to reaching the EU-target of improving efficiency by 27% by 2030
- Approaches:
 - Standards for equipment
 - Training of consultants
 - Granting awards
 - Creating networks of consultants, technology suppliers and businesses

Quality of life: Cultural activities

- easy access
- social inclusion
- identification and identity

Examples:

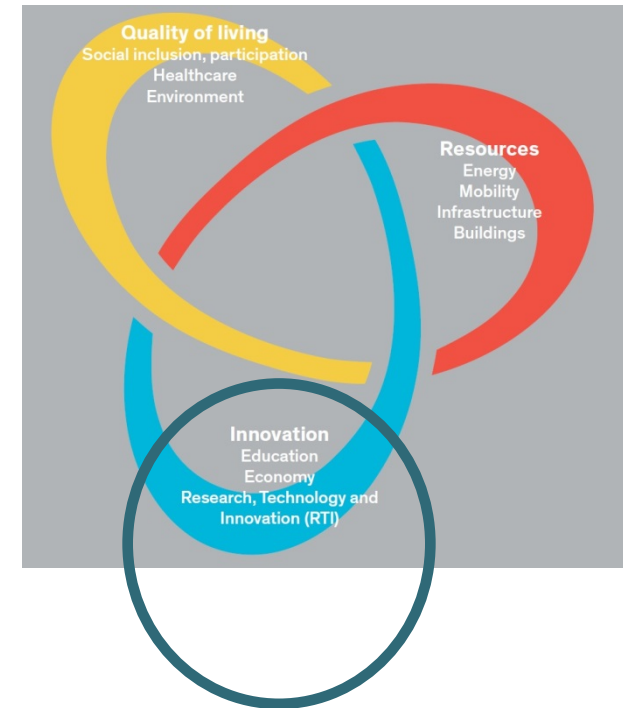
- “Crane Lake”
- Aspern Nord event space
- Art in the public space
KÖR project on U2 station forecourt
KÖR project at Aspern Nord
- Hubsj Kramer theatre performance
- Open-air cinema
- Poetry slam



Smart City Wien – Innovation

In 2050 Vienna is "innovation leader" through focus on top-level research, a strong economy and education

- Research, innovation, technology (RIT):
 - Among Top 5 research cities by 2050
 - Promotion of Vienna-Bratislava-Brno Innovation Triangle
- Economy:
 - Share of technology-intensive products in exports raised to 80% by 2050
 - Strengthening of position as preferred location for corporate headquarters for Central and South-East Europe
- Education:
 - City-wide introduction of full-day comprehensive schools



The challenge: a multidisciplinary & participatory approach is necessary

- 📍 city planning, including all groups of society, also the vulnerable
- 📍 housing at all price levels
- 📍 mobility, traffic
- 📍 economy
- 📍 ecology, green & blue back to the cities
- 📍 dialogue with future residents and users on urban development of the district
- 📍 energy
- 📍 urban metabolism
- 📍 social life
- 📍 ...