



Asplan Viak AS

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THE PROFESSIONAL DIVISIONS



Planning & Analysis



Architecture &
Landscape



Buildings &
Installations



Transport
Infrastructure



Water & Environment

We have expertise in



- Architecture
- City and area planning
- Building and construction
- **Energy and the environment**
- Geographic Information Systems and IT visualisation
- Social analysis and evaluation
- Community planning
- Technical infrastructure
- Water supply and environmental engineering

- Energy management
- Analyses/investigations
- Research & development
- Technical consultation – energy use and production in buildings and industry
- Strategic advise and business development
- Innovation analysis
- Information and education

Powerhouse Kjørbo

- Located in Sandvika outside Oslo in Norway
- Existing buildings from 1980
- Area: 5180 m²

The Powerhouse Kjørbo project in Norway, involves the world's first renovation of existing offices into energy-plus buildings. The project demonstrates that the renovation of existing properties into energy-plus buildings in cold climates makes commercial and environmental sense.



The world's first rehabilitated energy-positive office building

- Reuse of materials
- Energy concept: Reduction in the energy need by employing energy efficient solutions and a well insulated building structure
 - Heating and cooling from energy wells
 - Efficient heat recovery (85%)
 - Recycling of heat from computer servers
 - Displacement ventilation
- Two heat pumps running at different temperatures
- Local production of PV electricity
 - Calculated energy production: 210 000 kWh/year



Energy budget

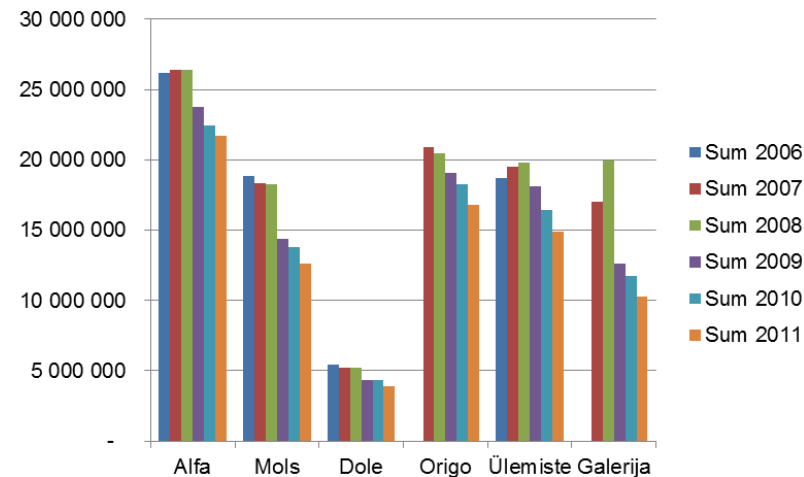
Energy demand/ production [kWh/m2]	Delivered/ produced energy	Primary energy factor	Primary energy demand
PV-production, first 30 years	40,7	1,98	80,6
PV- production last 30 years	60,1	0,93	55,9
PV – production average 60 years			68,7
Operational energy use	-20,4	1,46	-29,8
Embodied energy		1,35	-22,1
Sum			16,8

The solar cells have to produce ~52 kWh/m2 for the building to be energy neutral. Because it produces ~69 kWh/m2, the building is energy positive -> fulfills the criteria for Powerhouse

Other projects – energy management, Linstow Baltic

5 shopping centers in Riga and one in Tallinn

- Since 2008
- Objective: Reduce energy consumption by 15 % compared to 2006
 - Already achieved in 2010
 - Reduced energy cost in 2011, compared to 2010 ~ 522 000 € per year



8 hotels in Estonia, Latvia, Lithuania and Russia and one spa in Riga, Latvia

- Objective: reduce energy consumption by 10% from 2010 to 2011
 - Total reduction in 2011 for all hotels 13.6% reduction

Project ideas

- Main idea:
 - Latvian Powerhouse – possibility studie
- Other ideas:
 - Buildings
 - » Existing buildings – Energy Management
 - » New Buildings
 - » NZEB – Nearly Zero Emission Buildings
 - Renewable energy
 - » Biomass
 - » Biogas
 - » Geothermal
 - » Solar
 - » Heat pumps
 - Sustainable Development of new areas
 - » Holistic approach
 - » Energy, transport, water, waste

Thank you for your attention!