

coolregion


WP 3 - D19 (ZRMK, Slovenia)

best practice example No. 1

General data

Name of the building :	Mobitel IT centre
Country :	Slovenia
Address :	Vojkova 78, Ljubljana, Slovenia
Google Earth link (50 m) :	Ljubljana, Slovenia
Google Earth coordinates :	46° 04' 21,27" North; 14° 31' 13,24" East
Building owner/user :	Mobitel, d.d.
Building type:	Office building and IT centre

Building information

Picture of the building:	
Description of the building: (architecture/construction) <i>Please describe location insulation, window efficiency, building materials → summarize highlights of building</i>	Opaque envelope – leight structure with moderate thermal insulation, EE windows with low-E double glazing

Year of construction	2003
Total gross area (m ²)	9.276 m ²
Volume (m ³)	24.581 m ³
No. of floors	1
Glazed surface level	moderate

Cooling concept

Cooled area :	100%
Cooling approach (description) :	Central cooling / AC, air/water compressor of 1443 kW.
Annual electricity consumption (kWh _{el} /m ²):	cooling 792 MWh, i.e. 85 kWh/m ²

Building concept

Comfort	High / moderate / low
Solar protection	Cooling is avoided in a few steps: <ul style="list-style-type: none"> - Internal and external shading devices, - EE windows double glazed $U_{\text{glazing}} = 1,1 \text{ W/m}^2\text{K}$
Lighting performance:	Reduction of internal heat load by use of day-light and energy efficient artificial lighting.
Office equipment:	High level standard
Regulation:	Central and local

Links and download files

www.mobitel.si

Contact

More information: SDHK society, e-mail: janko.remec@siol.net

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WP 3 - D19 (ZRMK, Slovenia)

best practice example No. 2

General data

Name of the building :	MENERGA office building
Country :	Slovenia
Address :	Zagrebška cesta 102, Maribor, Slovenia
Google Earth link (50 m) :	Maribor, Slovenia
Google Earth coordinates :	46° 31' 18,54" North; 15° 40' 16,22" East
Building owner/user :	Menerga d.o.o.
Building type:	Office building

Building information

Picture of the building:	
Description of the building: (architecture/construction) <i>Please describe location insulation, window efficiency, building materials → summarize highlights of building</i>	<p>Envelope and structure – concrete Thermal insulation - 16 cm Thermal bridges reduced to minimum level Windows – energy efficient double glazing Thermally activated concrete building fabrics for heating and cooling</p>
Year of construction	2003
Total gross area (m2)	2720 m²
Volume (m3)	8600 m³ (estim.)

No. of floors	4
Glazed surface level	moderate

Cooling concept

Cooled area :	100%
Cooling approach (description) :	Thermally activated concrete structure, floors and walls, represent the basis of heating and cooling concept. Indoor air temperature of 20 ⁰ C is achieved in winter with 22-23 ⁰ C water in the system of thermal activation and in summer with 20-22 ⁰ C water, combined with cold inlet air (approx. Temp 19 ⁰ C). Indoor air temperature in summer time does not exceeds 26 ⁰ C. Heat pump is used as energy source.
Annual electricity consumption (kWh _{el} /m ²):	n.a. (test run only); cooling demand 27 W/m ² ; annual total energy consumption 533 GJ annual energy consumption for heating 317 GJ

Building concept

Comfort	<u>High</u> / moderate / low
Solar protection	Cooling demand is reduced by: <ul style="list-style-type: none"> - EE windows with high reflexivity and internal shading devices - thermal insulation of building envelope
Lighting performance:	Reduction the internal heat load was achieved by optimisation of daylighting and with adequate implementation of energy efficient lighting (T5 technology) with advanced regulation, expected 40-60% savings in lighting.
Office equipment:	high
Regulation:	Digital regulation covers heating, lighting, watering of green areas, defrosting of parking areas as well as control of shading devices. Energy source can be selected according to the tariff system. Electricity consumption is monitored for each energy consumer. Central BMS is upgraded with possibility of individual adjustment of indoor



	parameters at particular working point.
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Links and download files

<http://www.menerga.si/>; <http://www.menerga.si/asp/demo.asp>

Contact

Courtesy of: Menerga, d.o.o., Daniel Mursic; info@menerga.si

coolregion


WP 3 - D19 (ZRMK, Slovenia)

best practice example No. 3

General data

Name of the building :	Residential building – subsidized housing in Izola
Country :	Slovenia
Address :	Ulica Zvonimira Miloša 25, Livade, Izola, Slovenia
Google Earth link (50 m) :	Izola, Slovenia
Google Earth coordinates :	45° 31' 51,33" North; 13° 39' 52,57" East
Building owner/user :	Municipality Izola and Residential Fund of Slovenia (SS RS)
Building type:	Residential building

Building information

Picture of the building:	
Description of the building: (architecture/construction) <i>Please describe location insulation, window efficiency, building materials → summarize highlights of</i>	2 buildings, each with 30 flats Opaque envelope – concrete structure, 10 cm thermal insulation, EE windows with low-E double glazing 1,1 W/m ² K

<i>building</i>	
Year of construction	2005
Total gross area (m ²)	2.800 m ²
Volume (m ³)	9.000 m ³
No. of floors	Cellar + 5
Glazed surface level	moderate

Cooling concept

Cooled area :	No mechanical cooling, only passive measures
Cooling approach (description) :	<p>The façade structure with its geometry and movable shading protects the loggias from the sun.</p> <p>Semi-transparent textile shadings are used to reduce incoming solar radiation and to allow the view to the Adriatic coast out of the interiors and balconies.</p> <p>Passive design measures were used to reduce the overheating in living spaces to the level where mechanical cooling was no longer required.</p>
Annual electricity consumption (kWh _{el} /m ²):	n.a.; passive cooling

Building concept

Comfort	moderate
Solar protection	<p>Cooling is avoided in a few steps:</p> <ul style="list-style-type: none"> - external shading devices - screens, - balconies as overhangs - EE windows, double glazed $U_{\text{glazing}} = 1,1 \text{ W/m}^2\text{K}$
Lighting performance:	Standard performance of residential buildings, EE lighting recommended.
Office equipment:	low
Regulation:	n.a.

Links and download files

<http://www.ofis-a.si/>

Contact

OFIS arhitekti d.o.o. Ljubljana, architects Rok Oman and Špela Videčnik

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WP 3 - D19 (ZRMK, Slovenia)

best practice example No. 4

General data

Name of the building :	Mercator, Brod
Country :	Slovenia
Address :	Na Gmajni
Google Earth link (50 m) :	Ljubljana, Slovenia
Google Earth coordinates :	46° 03' North; 14° 30' East
Building owner/user :	Mercator
Building type:	Alimentary shop

Building information

Picture of the building:	
Description of the building: (architecture/construction) <i>Please describe location insulation, window efficiency, building materials → summarize highlights of building</i>	Walls – brick, low level of insulation $U_{\text{average}}=1,2 \text{ W/m}^2\text{K}...$ Windows – Double glazing low-E, $U_{\text{average}}=1,1 \text{ W/m}^2\text{K}$
Year of construction	Built in 60-ties, refurbished in 2005

Total gross area (m2)	610 m ²
Volume (m3)	1830 m ³
No. of floors	1
Glazed surface level	Moderate, south oriented

Cooling concept

Cooled area :	610 m ²
Cooling approach (description) :	Refrigerators necessary in alimentary shop became an important source of chill in the shop area (in winter time even additional heating had to be provided). In summer time less additional cooling is needed as before renovation. Central cooling device is implemented, waste heat is used for heating of hot tap water.
Annual electricity consumption (kWh _{el} /m ²):	Annual electricity for cooling 37 MWh, Specific electricity consumption for cooling 61 kWh/m ²

Building concept

Comfort	High
Solar protection	Cooling demand is reduced in a few steps: <ul style="list-style-type: none"> - Windows – internal shading of significant part of shopping windows, - Overhang at south oriented shopping windows, - Wall - ventilated metal covering, on top of existing brick wall - EE windows double glazed $U_{\text{glazing}} = 1,1 \text{ W/m}^2\text{K}$
Lighting performance:	Reduction of the internal heat load by the use of day light and energy efficient artificial lights (daylight spectrum)
Office equipment:	Low (but alimentary store technology adequate to demanding quality standards)

Regulation:

central

Links and download files

www.mercator.si

Contact

Mercator, d.d.; Marko Umberger, director for investments;

E-mail: marko.umberger@mercator.si

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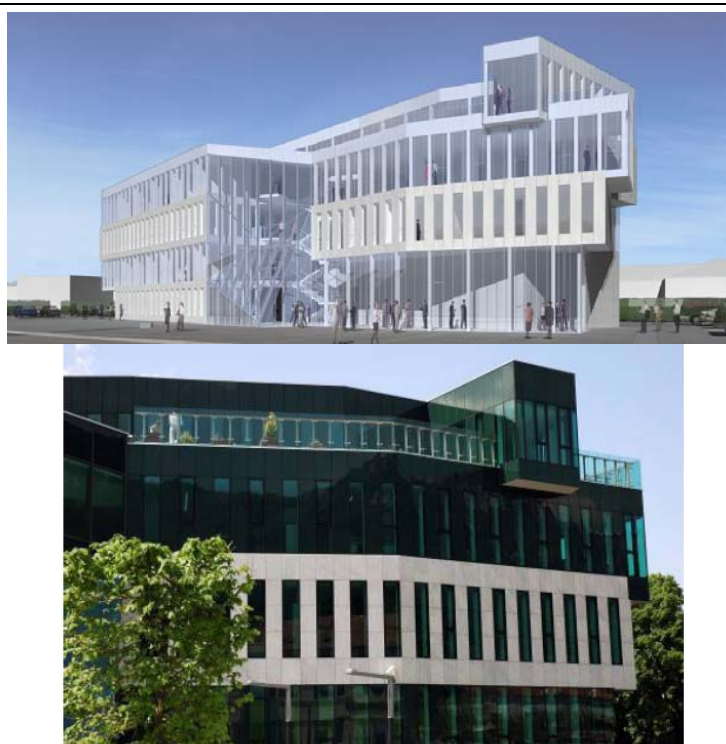
best practice example No. 5

General data


Name of the building :	Office Building Skupina Primorje / Primorje Group
Country :	Slovenia
Address :	Vipavska cesta, Ajdovščina
Google Earth link (50 m) :	Ajdovščina Slovenia
Google Earth coordinates :	46° 03' North; 14° 30' East
Building owner/user :	Primorje Group
Building type:	Office building

Building information

Picture of the building:





	
<p>Description of the building: (architecture/construction) <i>Please describe location insulation, window efficiency, building materials → summarize highlights of building</i></p>	<p>Author: prof. mag. arch. Boris Podrecca Architects: mag. Bostjan Furlan, Irena Kete, Marko Kosovel</p> <p>Design requirements:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fully automated <input type="checkbox"/> Comfort for the employees <input type="checkbox"/> The highest level of energy saving <input type="checkbox"/> Use of alternative energy resources <p>Walls – concrete, external thermal insulation, $U_{wall}=0,37 \text{ W/m}^2\text{K}$, $U_{roof}=0,19 \text{ W/m}^2\text{K}$... Windows – Double glazing low-E, $U_{window}=1,3 \text{ W/m}^2\text{K}$</p>
Year of construction	March 2007 – May 2008
Total gross area (m ²)	4100 m ²
Volume (m ³)	15000 m ³
No. of floors	cellar, ground floor + 3 storeys
Glazed surface level	Moderate, all orientations

Cooling concept

Cooled area :	2372 m ²
Cooling approach (description) :	<p>Geothermal heating&cooling system</p> <ul style="list-style-type: none"> <input type="checkbox"/> with 28 probes of 120 m depth, connected to heat pumps <input type="checkbox"/> Combined to water heaters (if necessary) <input type="checkbox"/> Entire pipe system is under supervision (calorimeters, temperature sensors) <input type="checkbox"/> SCADA system gives the exact map with major



	<p>energy dissipations</p> <ul style="list-style-type: none"> <input type="checkbox"/> The automated system has the technology to use the correct combination of heating sources for the highest energy efficiency (configurable also by the user) <input type="checkbox"/> Heating / Cooling ceiling beams (in combination to geothermal probes) – heat / cold transfer by natural convection in the storeys <input type="checkbox"/> Control of all HVAC equipment: Fan coils, HVAC room equipment, in-wall fan coils. <input type="checkbox"/> Floor heating in the basement only
<p>Annual electricity consumption (kWh_{el}/m²):</p>	<p>Specific electricity consumption for cooling kWh/m²</p> <p>No data available so far – construction completed in May 2008</p>

Building concept

<p>Comfort</p>	<p>High</p>
<p>Solar protection</p>	<p>Cooling demand is reduced in a few steps:</p> <ul style="list-style-type: none"> - Windows – internal shading – screens, full CMS, once the office is occupied manual control is possible, auto detection of users may switch back to automatic control, certain scenes may be set (arrival, leaving the office...) - Wall – good external thermal insulation with ventilated external stone cladding - EE windows double glazed $U_{\text{glazing}} = 1,1 \text{ W/m}^2\text{K}$
<p>Lighting performance:</p>	<p>Reduction of the internal heat load by the use of day light and energy efficient artificial lights</p> <p>Lighting control of offices, conference rooms, corridors</p> <ul style="list-style-type: none"> <input type="checkbox"/> Automated regulation of lighting intensity <input type="checkbox"/> Digital lighting system (DALI, DSI) for the

	<p>maximum flexibility of lighting structure</p> <ul style="list-style-type: none"> <input type="checkbox"/> Possibility to define different groups of lights by software settings (no need for additional cabling or physical modifications)
Office equipment:	<p>Integral BM system recognizes the presence of the user and</p> <ul style="list-style-type: none"> <input type="checkbox"/> "Turns on" the particular office <input type="checkbox"/> Lights ON to the predefined intensity <input type="checkbox"/> HVAC ON to the predefined temperature <input type="checkbox"/> Turn up blinds
Regulation:	Full CMS

Links and download files

<http://www.primorje.si>

<http://www.primorje.si/index.php?vie=cnt&id=2008050714312096&lng=slo>

Contact

Primorje d.d., Bostjan Furlan, M.Sc. responsible project manager;

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Courtesy of:

Primorje, Integra, Robotina, Pinss, Winky