

## **WINTER SPORTS RESORT COMPLEXES OF THE «KURIN» EDITION**

*Abstract.* Holidays in the mountains became as much popular as holiday by the sea in summer thanks to alpine skiing facilities technologies and mountain slope development. The mountain skiing tourism became the lifestyle of the millions of people.

*Key words:* mountain skiing tourism, mountain skiing resort (MSR), hotel in the mountains, passive house.

The mountains are beautiful during any season. There is nobody who could stay indifferent to their beauty! At the same time they present a colossal energetic resource which supply their admirers – poets and artists, shepherds and geologists, sportsmen and extreme sports enthusiasts. With the mountains one associates the memories about hiking, equine tourism and cycle adventures, alpinism and rock-climbing. One can't help mentioning the mushrooms, berries and fishing.

Over the last years the mountain skiing and the accompanying recreation became one of the most popular activity. Nowadays the mountain skiing tourism became a matter of very high interest so that it can be called the lifestyle of the millions of people. Almost in all countries which have the mountain groups the mountain skiing settlements with population of thousands appear with dozens of powerful lifts and hundreds of kilometers of ski trail. There are two ski resort development tendencies:

1. Traditionally tourist settlements are situated in existing settlements or by the dwelling zones in valleys (in this case the tourists have to get to the lift low station by bus and stand in line to lift).

2. Tourist settlements are built directly in the mountains by the ski slopes (the scheme that works is one puts the skis on and go to the ski slope or to the lift), but in this case the additional expenses on the infrastructure in the mountains appear.

Unfortunately Ukrainian MSR and their infrastructure are in the egg comparably with foreign ones.

Which way should we take in the development mountain ski tourism in Carpathian mountains? To make the decision we need to analyze some background factors:

1. The Carpathian mountains climate doesn't supply the assured snow covering throughout the long time on the ups to 1000m heights.

2. The forests and mountain water sources preservation is the main ecological task in Carpathians.

3. The lands free of forest in lower part of Carpathian middle altitude are almost fully occupied by the dwelling zones and local communities' agricultural lots.

4. Relatively high Carpathian peaks of 1000-1500m height basically are covered with the forests.

5. In some places within the 800 – 2000 level marks there are alpine meadows, so-called “poloninas” with tight grass and stunted brushwood cover which is a perfect base for the ski trails development. The existing relief and slopes' exposition fully correspond the ski trails development demands.

6. The local communities have a positive attitude towards and are interested in mountain ski resort development realizing that it will provide the investments to the region and will create the additional workplaces.

We are of the opinion that the conclusion is evident:

1. It is reasonable to develop MSR on the Carpathian highlands according to the scheme #2 taking into account the local communities' interests, the forests' highest possible preservation and full ecological safety provision.

2. To provide supreme MSR charge and the ski trail lines variability the most preferable places are mountain skiing area <Dragobrat (1870m) – Kvasi (600m) – Petros (2020m)> and mountain skiing area <Borzhavski poloninas Temnatik (1314m) – Play (1334m) – Velikiy Verh (1596m) – Gymba (1492m) – Magura (1609m) – Grab (1365m) – Kichera Krugla (1240m)> (pict.1).

3. Simultaneously with mountain ski resorts development it is necessary to develop and supply their year-round attractiveness.

Within the conception of the tourist campus in the context of Carpathian highlands the architectural bureau “Y.Serjogin” worked out the hotel resorts edition under the conventional name “Kurin”.

The main object of current project is to create hotel building which is accommodated for construction on the steep relief and designed for the exploitation under the conditions of mountain climate taking into account exploitation economical efficiency and architectural expressiveness of the building.

Multifaceted pyramid form of the hotel building is taken for such reasons:

1. Minimal surface of the heat losses;
2. Maximal climatic suitability;
3. Economical acceptability of using of the standard construction materials.

The title “Kurin” emphasizes the Ukrainian traditional dwelling form appliance, equipped with the present-day technologies and materials for energy preservation in the combination with renewable energy sources using (pict.2):

1. The roof is made of thermally conductive profiled metal sheet. It provides efficient sun heating of the air space and its directing to the heat-exchange unit on the top.

2. Waste air from all internal premises is directed to the same place.

3. On the very top on pyramid vertical wind power generator is installed for efficient catching the wind not only from all the bearings but also directed along the slope (pict.5).

4. The snow barriers and rainwater smothers are used to capture the most of atmospheric water that is collected by trench drain along the perimeter of the building and directed to the cistern for further technical utilization (pict.6).

5. Entrance-hall atrium space is glassed-in by energy-conserving glass that allows to use solar for ornamental plant cultivation and natural air filtration.

6. Inclined pivot hung windows allow to protect premises from bad weather and at the same time it could be transformed into French balcony to provide direct communication with nature environment during warm weather (pict.3).

7. The premises that don't need natural illumination are hidden in the hill slope to provide energy saving.

8. Sewage runoff is run through heat-exchange unit for heat extraction before draining to the waste treatment facilities.

9. As a heat supply source the local firewood's boilers are applied. Upon this the chimney is situated in the center of cone in such a way as to keep the most of the heat inside.

Within the project five hotel schematic design were worked out: 6-storey "Kurin'-1" with the capacity of 115 people (40 rooms) (pict.4); 4-storeu "Kurin'-2" with the capacity of 70 people (35 rooms) (pict.5); 11-storey "Kurin'-3" with the capacity of 195 people (91 rooms) (pict.6); 3-storey "Kurin'-4" with the capacity of 33 people (14 rooms) and 2-storey "Kurin'-5" with the capacity of 23 people (11 rooms) .

Technical and economic performance comparison shows the system "Kurin" advantage (table 1):

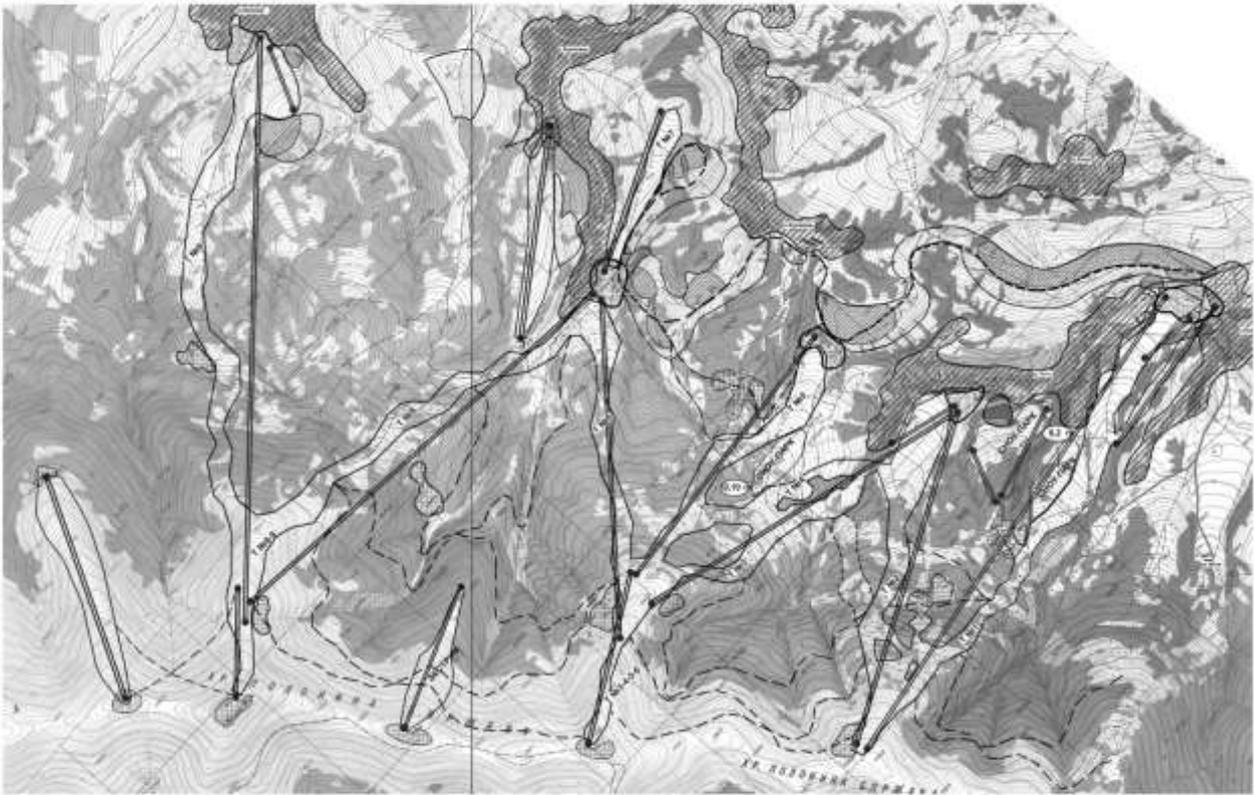
1. The cooling surface area per 1 unit of the capacity is less up to 59% that the analogues' one.

2. The cooling surface area per 1 m<sup>2</sup> of the gross floor area is less up to 59% that the analogues' one.

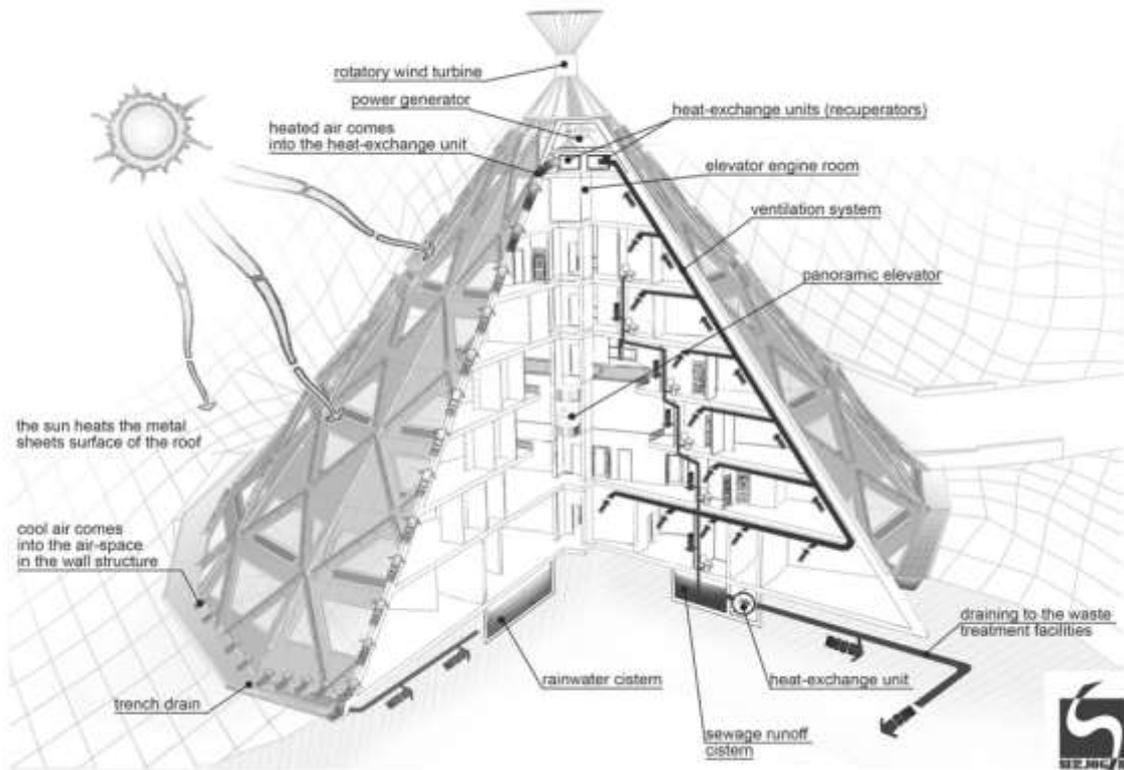
Thus one can expect on heating operating costs reduction of 25-30% and taking into account the energy-efficiency measures (point 1-8) the overall energy savings will make up to 50%.

We believe the proposed project edition will favor the mountain ski resort redevelopment in Ukraine, will verify their architectural expressiveness and will give an impulse for the search of the new economic and impressive decisions of the mountain ski resorts.

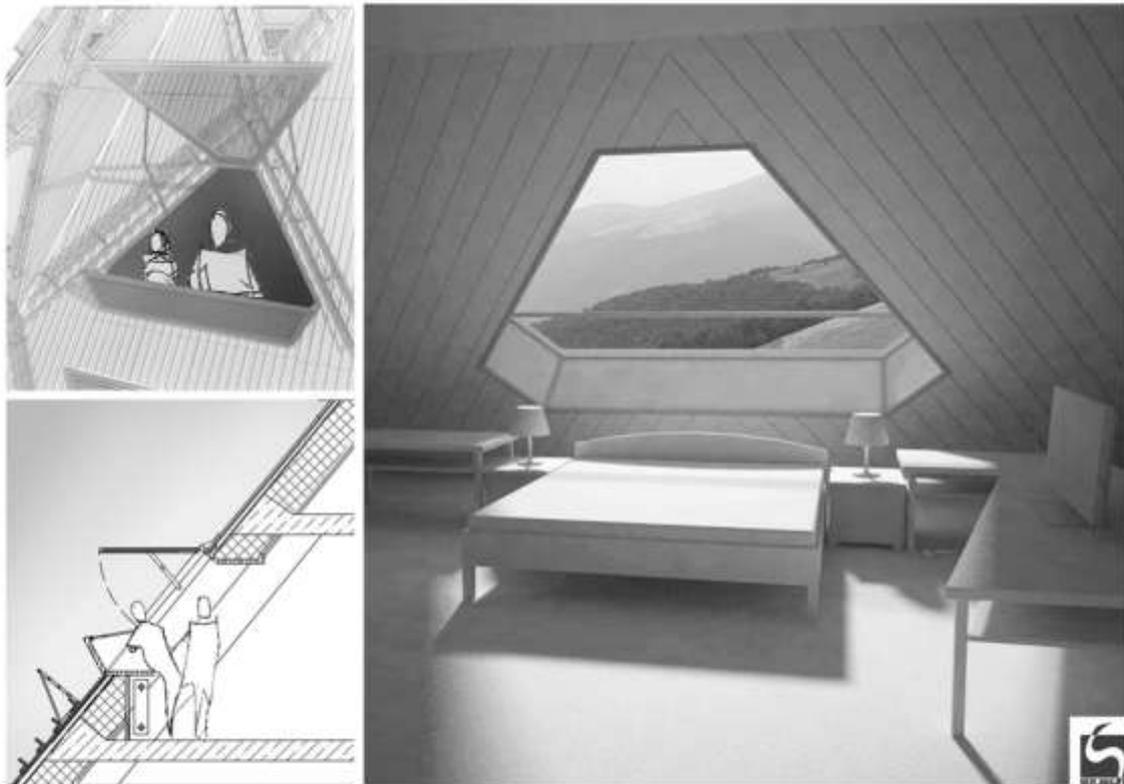
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pict.1 Ukrainian Carpathians ski resort "Borzhava" scheme



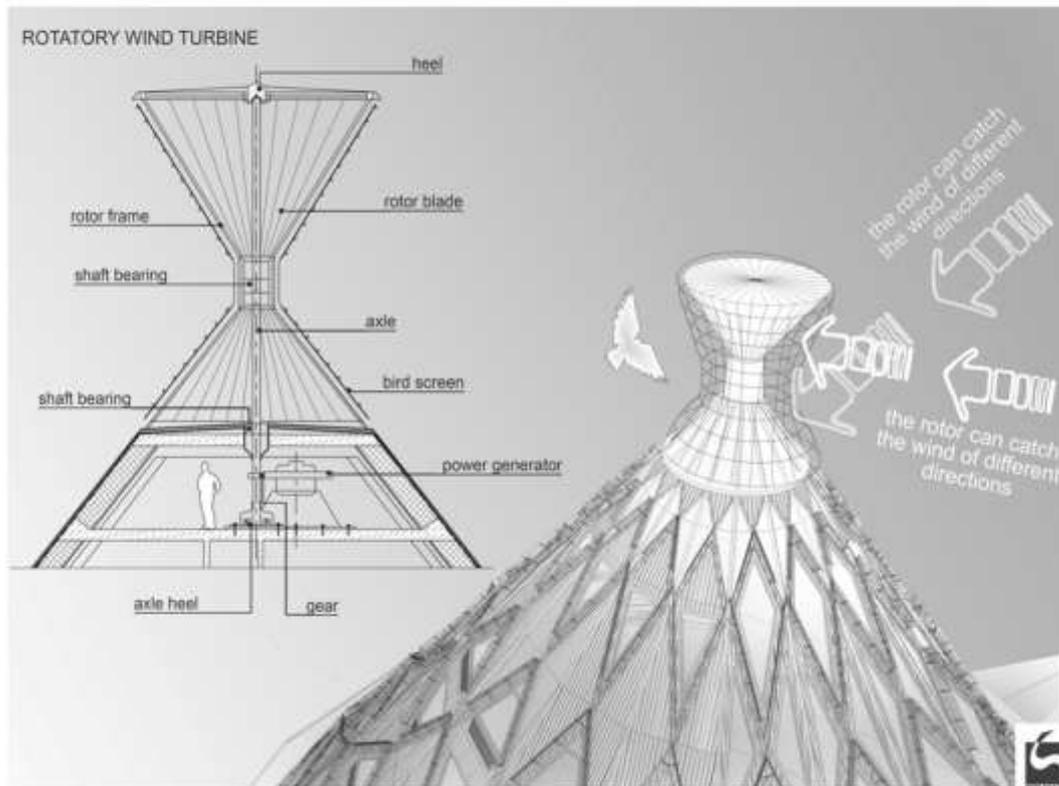
pict.2 "Kurin'-1". 3D-section. Building services



pict.3 French balcony



pict.4 "Kurin'-1"

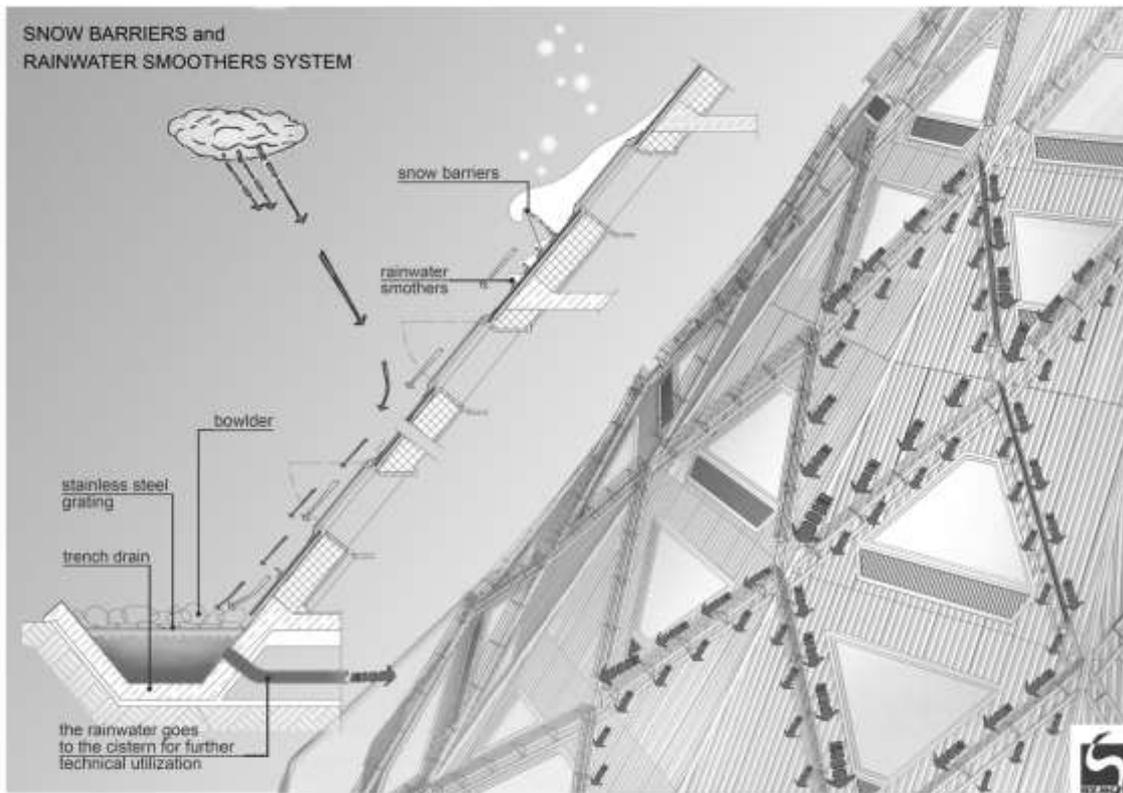


pict.5 "Rotary wind turbine"

Table 1

## "Kurin" edition hotels' technical and economic performances

No	Name	Unit	Kurin'1	Kurin'2	Kurin'3 (Arlekino)	Resort hotel township. Shidnitsya	Comparison with K 1	Sport hotel In Yuzhny	Comparison with K 1	
1	Minimal site area	ha	0,40	0,15	0,40	0,31	0,48	0,45	0,88	
2	Footprint area	m <sup>2</sup>	1960	595	1650	433	1,37	2200	0,89	
2.1	Layout overall dimensions	m	Ø50	Ø31	Ø50	21,0 x 28,0	-			
3	Number of storeys	storey	8 incl. 2 upper technical ones	5 incl. 1 upper technical one	10 incl. 2 upper technical ones	5 + attick				
4	Typical floor height	m	3,3	3,3	3,3	3,3	1,0	3,6	0,92	
5	Gross floor area	m <sup>2</sup>	4450	950	7600	1330	3,35	8120	0,55	
5.1	rentable area	m <sup>2</sup>	1665	353	2470	835	1,99	1400	1,19	
6	Gross volume	m <sup>3</sup>	15000	3235	25000	4200	3,57	25970	0,58	
7	Gross capacity	visitors	115	47	195	62	1,86	74	1,55	
8	Restaurant	seats / S m <sup>2</sup>	75	10	105 / 590	28	2,68	75	1,0	
9	Bar	seats / S m <sup>2</sup>	15	-	20 / 72	6	2,5	15	1,0	
10	SPA-salon	seats / shift / S m <sup>2</sup>	25	-	45 / 450	-	-	35	0,71	
11	conference hall (concert hall)	seats / S m <sup>2</sup>	-	-	180 / 210	40/110	-	95/150	-	
12	Sports equipment rent and storage	Storage units/ m <sup>2</sup>	200 / 90	50 / 20	800 / 120	-	-	50 / 35	2,57	
13	Rooms number incl.: - single room (11,75 m2) - double room (21,85 m2) - triple-room semi-luxe (41,95 m2) - double room (26,35 m2) - triple-room semi-luxe (38,60 m2) - quadruple room luxe(42,55 m2)	Rooms numb.	40	23	91	27	1,48	43	0,93	
		Visit. numb.	115	47	195	61	7,86	74	1,55	
		Rooms numb.	5	1	44	19			12	
		Visit. numb.	10	40	82	38			12	
		Rooms numb.	5	2	-	6			30	
		Visit. numb.	15	6	-	18			60	
14	The external cooling surface area	gross	3135	1770	1610	-	1,54	4075	-	
		Without underground premises	2320	1610		1505		3640	0,64	
15	S cool./ S gross	m <sup>2</sup> /m <sup>2</sup>	0,48	1,69		1,13	0,42	0,89	0,53	
16	S cool./ gross capacity	m <sup>2</sup> /visitors	20,17	34,25		24,29	0,83	49,19	0,41	



pict.6 Snow barriers and rainwater smoothers systems

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*Анотація.* Завдяки розвитку технологій по виготовленню гірськолижного обладнання та освоєнню гірських схилів, відпочинок в горах став не менш популярним ніж відпочинок біля моря влітку.

*Ключові слова:* гірськолижний туризм, гірськолижний курорт (ГКЛ) готель в горах, «пасивний будинок».

*Аннотація.* Благодаря развитию технологий по изготовлению горнолыжного оборудования и освоению горных склонов, отдых в горах стал таким же популярным, как и отдых у моря летом. Для многих миллионов горнолыжный туризм стал способом жизни.

*Ключевые слова:* горнолыжный туризм, горнолыжный курорт (ГЛК), гостиница в горах, «пассивный дом».