

**ECO-DESIGN.  
CONNECTION OF NEW TECHNOLOGIES AND NON-TRADITIONAL  
ART SOLUTIONS**

*Abstract .The article is devoted to synthesis of design and alternative power. The basic ways which allows giving decorative functions to devices of energy transformation by making their part of the art decision of interiors, exteriors and a landscape are described. In other way, involving alternative power in design area. Traditional and modern methods of alternative energy sources use are considered. The project of an unusual colour decision in water design which uses features of the physical phenomena of some chemical substances is presented, so the projects of the author developed with application of eko-technologies are shown.*

*Keywords:* - eco-design, alternative energy, power converters, solar pond, convection, water pillows, "water bridges".

**Statement of the problem.** The world has enough actively use alternative energy, so every year energy conversion devices are becoming less expensive and easier to use. Along with this, there is convergence of plants that convert energy, and structures up to their inclusion in the exterior and interior of buildings. Cheapening of devices, reducing their size and direct relationship with the architecture makes you wonder about the aesthetic function and finding design solutions.

**Analysis of recent research and publications.** Alternative or alternative energy is currently the factor begins to have a significant impact on the images as individual buildings and entire fragments of the urban environment. Existing studies [1,2] are typical, on the technical side of the energy-producing devices and how they can be integrated into existing energy supply system. Issues of aesthetics producing devices has received little attention.

**The wording of the purposes of article.** The purpose of this article is to consider the possible use of engineering principles of alternative energy devices in architecture from an aesthetic point of view within the emerging eco-style design.

**The main material.** Variant development of decorative devices using alternative energy.

I. Decorating "energy converters" and to give them the aesthetic qualities.

.1. Lighting and electricity. Lighting design is not currently done without the new products . Beautiful, bright and elegant fixtures have become environmental breakthrough in interior solutions . Modern lamp design allows you to focus the light , providing the necessary ergonomic requirements . In traditional architectural solutions engineering structures enhance the role of natural light and thus reduce the share of artificial light contribute to the following elements of the building : skylight , double light , solar tube lights - " Sunflowers " , solar awning. (Fig. 1 ).

Increasing the area of glazing and natural light construction period is one of the austerity measures.

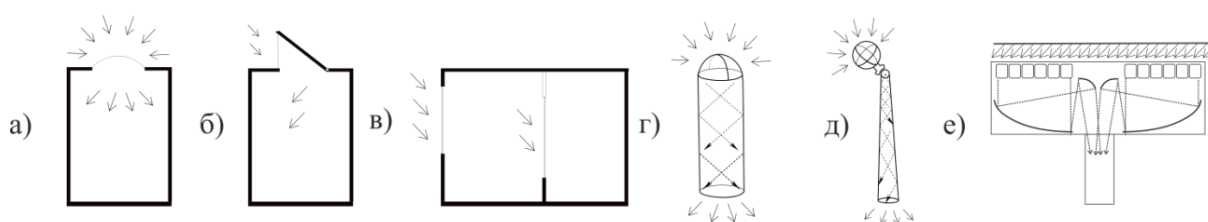


Рис. 1. а , б - световой фонарь, в - двойной свет, г - солнечные трубы, д - "подсолнухи", е - солнечный тент.

It helps to reduce the time of artificial lighting, increase the glass temperature, heating ventilation air.

Based on research in the field of new technologies and lighting design principles of their work, the author proposes to modify and use these devices in the following ways:

*Light pole* - lighting system, conducting sunlight inside a tall building: in bunk lantern light through "light wells", carries out the muted natural light by means of intercommunication step light (Fig. 2)

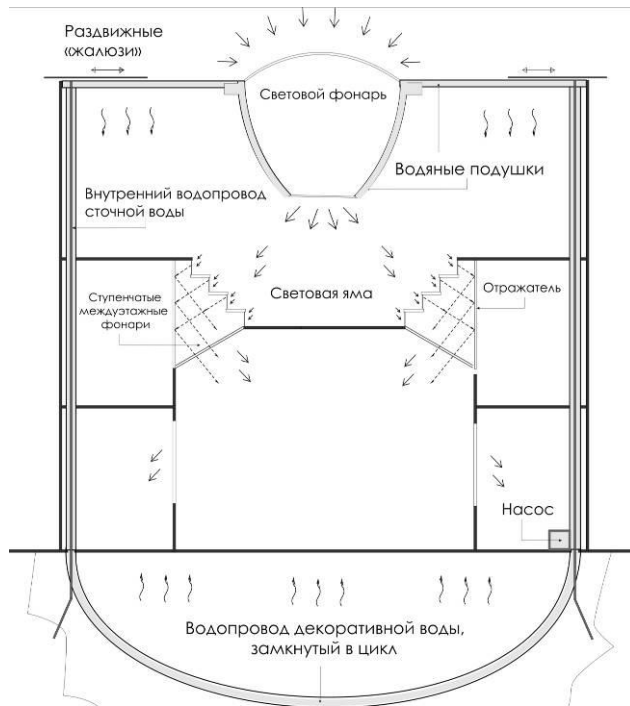


Fig.2. Scheme of lighting, heating and air conditioning in the building.  
(proekt. Office. Rybachenko SA)

Conversion Devices  
 gelioenergii: solar collectors and batteries - may provide interesting solutions complete roofs and decorating their coatings, which are partially transferred to the facade of buildings. Simultaneously, the simulation used the building's exterior and a reflective panel to prevent overheating of the walls of the building.

Wind turbines - another kind of power converters, which are beginning to be used as an element

of architecture. Design wind devices can be considered as part of exterior and landscape design. Such a solution was used for the first time in the exterior of the building in the design of the World Trade Center in Bahrain

1.2. Heating and air conditioning . Many interesting solutions can be found in the field of heating and cooling.

Water cushions - are part of heating and air conditioning facilities . Due to water pillows can not only solve the problem of economical air conditioning and heating facilities, but also to enrich the design of interiors , which is especially important for offices, residential and public buildings. You can use water reserve space for demonstration of aquatic plants and any other tracks , using the method of lava lamps.

In heating systems using the multilayer storage space for hot water allows to increase its temperature from room temperature up to the boiling point. The most rational use of them in conjunction with aqua water pillows. Including a set of decorative water with colored self-luminous elements may achieve interesting

"illuminative effect" (see Figure 4)

*The method of double walls and ceilings* - allows natural ventilation by convection air. Placing in the air intake grilles and aromatic cleansing filters, you can not only purify and aromatize the air inside the building, but also to prevent its spread and dusty through it harmful volatile substances, allergens, microorganisms (Fig. 3).

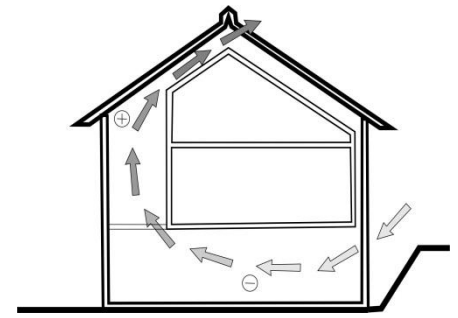


Fig. 3. ventilation scheme

1.3. Water supply and water purification. Wells and wells - water sources , and at the same time they are a small architectural form , which is used in a holiday cottage construction and in public buildings in the presence of nearby springs and artesian wells.

Solar still - a component of water purification systems . Can be placed indoors in the form of suspension structure on the ceiling , and an additional function object for relaxation and meditation inhabitants.

The article's author developed the idea of the project solutions multipurpose public complex , which used the maximum number of modern advances in physics, chemistry and energy-saving technologies based on energy conversion devices.

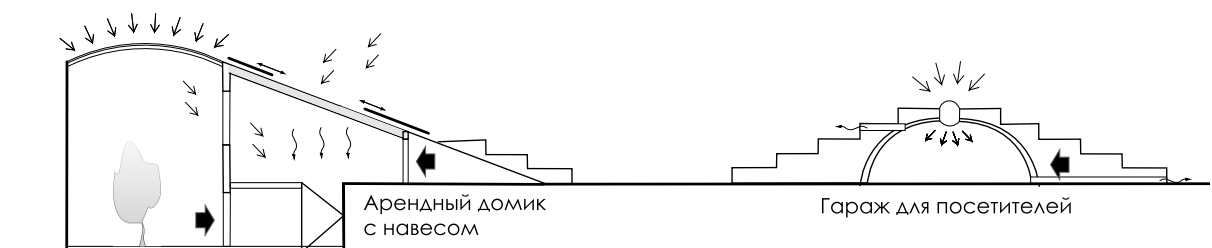


Figure 4. Scheme cut public center Technopolis.

*The hotel complex is semi-underground and underground garage with terraced roof garden. System elements used ecodesign conditioning, heating and landscaping residential rental houses and adjacent parking lots.*

## II. Design devices using alternative energy .

In modeling may apply aqua iridescent liquid chemical transformations . They occur due to temperature changes ( heating and modified natural substance density

) and introducing oxygen ( transfusion ) can show even create bubbles in the " layered liquid" and " water bridges" in the adjacent vessels by introducing electric discharge. Any experiments with water may be accompanied by John Tildana experience , based on the distribution of the light beam in a stream of water , as well as with the use of low-frequency sound ( possible use in aqua in creating the interior nightclubs ) or vibrating pillow

*Layered solar ponds* - water bodies intended for decorative and relaxation functions. Depending on how many layers there are several types of ponds.

1. *Bilayer moving bodies of water* that are based on water-immiscible solvents . They are given a different color using dyes. It is proposed to use two liquids of different densities and from time to time to saturate them with oxygen . When this happens mixing layers enriched extravaganza bubbles , and then follow the bundle liquids again . If the pick fluid so that upon heating the density of the upper layer was greater than the bottom , it will be possible to achieve " layers change effect " during cooling and reverse phenomenon occurs .

2. *Three-layer disintegrating ponds*: the lower layer - chloroform, medium - water, and the upper - or potassium permanganate ester, ether and bluestone.

3. *Multilayer standing ponds* - seven-layer liquid which is poured into a large glass bowl. The device works on the principle of placing different-density substances. Include substances used in medicine, and selected German scientists to experience "Pharmacy showcase":

1. Chloroform (stained green by maceration of chlorophyll);
2. Colorless glycerol;
3. Castor oil, dyed red alkaninom (red dye from *Alcunnatinctoria*) or a fat-soluble dye red firm IG Farben;
4. The colorless solution of ethanol in water with a density of 0.935 g/cm<sup>3</sup>;
5. Yellow fish oil;
6. Methanol, stained blue blue water-soluble dyes Methylenblau (used primarily in microscopy) or Indigocarmin;
7. Colorless light gasoline [5].

Provided that a security to others, can accommodate such decorative objects in the research institutes to create thematic recreation areas. Currently implemented in interior design lighting, working on a similar principle to the "layered ponds." Lava lamps employ two substances, one of which when heated changes its density and its location is changing slowly rising upward.

4 . *Chemical tubular fountain* using rainbow chemical transformations due to changes in temperature substances. Experience with the use of heated glucose and sodium hydroxide , which under the influence of temperature, the solution turns blue is red , orange, yellow , then green. After which the composition can be poured from the vessel into the vessel , thereby enriching it in oxygen. Thus obtained green reaction solution and further extends outward from green to yellow . The liquid is then poured again and again turns green composition of body fluids

**Conclusions** . Currently, eco-design has a significant place in the original design and construction of civil and industrial buildings. There are new tools for creating a stand-alone building infrastructure and simultaneous formation of an indoor environment with parameters must be set . Application of modern eco-technology enables the production of short-term effects of light , color phenomena , forming a favorable psychological climate not only indoors , but also in urban open space of streets, squares and parks.

**Prospects for further studies** related to explore ways to expand the possibility of applying the latest achievements of the eco-design in the creation of new architectural images of different types of buildings and structures. The most promising fields modification images recreational complexes and spaces.

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#### Анотація

**Рибаченко С.А., Горнова М.І. Еко-дизай. З'єднання нових технологій і нетрадиційних художніх рішень.** Дана стаття присвячена синтезу дизайну та альтернативної енергетики. Описано основні способи, що дозволяють надавати декоративні функції пристроїв перетворення енергії, роблячи їх частиною художнього рішення інтер'єрів, екстер'єру і ландшафту. І навпаки, залучення альтернативної енергетики в область дизайну. Розглянуто традиційні методи використання поновлюваних джерел, і їх більш сучасні модифікації. Представлений проект незвичайного колірною рішення в аквадизайну, який використовує особливості фізичних явищ деяких хімічних речовин, а також показані проекти автора, розроблені із застосуванням еко - технологій.

Ключові слова: еко-дизайн, альтернативні джерела енергії, трансформатор переходу енергії, сонячний ставок, конвекція, водні подушки, "водяні містки".

#### Аннотация

**Рибаченко С.А., Горновая М.И. Эко дизайн. Соединение новых технологий и нетрадиционных художественных решений..** Данная статья посвящена синтезу дизайна и альтернативной энергетики. Описаны основные способы, позволяющие придавать декоративные характеристики устройствам преобразования энергии, делая их частью художественного решения интерьеров, экстерьеров и ландшафта. И наоборот, привлечение альтернативной энергетики в область дизайна. Рассмотрены традиционные методы использования возобновляемых источников, и их более современные модификации. Представлен проект необычного цветового решения в аквадизайне, который использует особенности физических явлений некоторых химических веществ, а также показаны проекты автора, разработанные с применением эко-технологий.

Ключевые слова: - эко-дизайн, альтернативные источники энергии, преобразователи энергии, солнечный пруд, конвекция, водные подушки, "водяные мостики".