

**THE PROBLEMS OF INNOVATIVE TECHNOLOGIES INTRODUCTION IN
KRASNOYARSK REGION
THROUGH THE EXAMPLE OF ENERGY-SAVING SYSTEMS**

**Brotsman S. K.,
research supervisor Bukhtoyarova A.A.
*Siberian Federal University***

Nowadays there are a lot of discussions in mass media on introduction new innovative technologies in our life. Unfortunately, construction and energy industries take one of the last places in the ranking of innovative industries.

Though there are some opportunities for development. Today much attention is paid to looking for solutions to energy saving issues. In my opinion there is a great potential in implementation new energy-saving technologies in residential buildings.

But all new things usually have to face some problems. For example, using of non-standard modern technologies often requires additional approvals at a lot of levels of authority.

As a rule introduction of innovations in Russia are constrained by administrative barriers, old standards, low-skilled workers and weak motivation from developers and investors.

Another problem is lack of funding from the state. But fortunately the government has been paying more attention to this problem for recent years. So there are new incentives and facilities for introduction of energy-saving materials and technologies.

From the practical point of view using of new technologies is very often not justified economically because modern equipment is very expensive to operate.

On top of all the other problems, new equipment is usually connected to old, outdated systems of urban infrastructure and communications. Such combination creates a conflict. This circumstance is a significant problem of innovation introduction.

In this article I would like to focus on the problems related to the particular example, such as applying the solar water heaters in Krasnoyarsk region.

To start with, Krasnoyarsk region is intensively developing region. Over the past few years construction industry has dramatically increased. More and more public and residential buildings are being built in region. Individual construction is also on great demand and developing quickly.

So there was an attempt to use solar water heaters in order to save electric power, like people do in many in other countries.

The working principle of a solar heating system can be easily explained. A collector receives the solar radiation, and as a result heats up. This produced heat is channeled at the greatest possible quantity to a hot water tank.

No fuel is used during this process, and so there is no CO₂ emissions, thus, no environmental pollution. A solar heater consists of a glass vacuum tubes. Vacuum is created by removing the air from a glass, a container achieves excellent insulation.

The principle, which has been known for a century and applied in the form of thermos in our everyday life. By using this type of insulation, the collectors can improve the conversion of solar energy even in the winter period.

Heat pipes are not a new concept. It was earlier used in the field of aviation. In an aircraft the scientists used this heat pipes to transfer high temperature, to keep temperature balance and maintain the aircraft in safe conditions. Now heat pipes are commonly used in computers and air-conditioning.

A temperature of water's boiling is 30⁰ C in the pipe of solar heater. This effect is achieved by lowering the pressure.

Thus there is only one thing that necessary for solar water heater. It is the sun's heat. But despite it, this type of innovation met a lot of negative reviews on it's account.

△ First one is the high cost of solar heating system and the high price of its maintenance service.

△ Second is the Siberian climate poor with the sunshine.

△ And finally is the lack of information about solar heating system.

On the other hand, using of such systems would save our money in the future. We would not have to spend money on electricity costs. Also these systems do not pollute the environment. I am sure these factors should play a significant role in our decision process.

On my opinion, we need government intervention for the successful implementation of the solar water heater systems. This issue can not be resolved without the government support. We need to begin with changes in legislation.

In 2009 a new federal law was introduced. It is the law on energy efficiency. New amendments in this bill began introducing new modern technologies in energy sector accordingly. But this is not enough.

Engineering of solar heating systems are developed by foreign scientists. So these systems are now imported in Russia. Hence. there is high cost of these system.

The modern Russian science is to large degree separated from the production, which hinders the development of innovative industries.

We must create a more narrow specialization in higher education institutions and produce our own experts in the field of energy conservation. It will help to open factories for the production of solar heating systems in Russia. Thus the system's cost would be much lower.

With the opening of new factories competition will increase too. Competition always has positive impact on business development.

Because of the the production concentration in a large company they can make high profit without any significant efforts for developing business. This leads to the lack of production and incentives of innovation. As a result it finally leads to inertia and stagnation of the industry. Russia must support small and medium businesses that is eco-friendly.

Finally, it is necessary to inform potential customers of solar water heaters about this way of saving energy. A human is afraid of innovation, because old stereotypes prevented him/ her from understanding new perspectives.

The manufacturer should participate in various trade fairs, conferences and exhibitions to provide new technologies. There the manufacturer will be able to tell and show all advantages of this systems.

Innovation it is a necessity. Because of the growth of construction industry, the import of modern materials and technologies is inevitable.

In my opinion, the problem of the introduction of solar water heater systems can be only solved with reasonable state intervention.

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