

équipement utilisés dès l'étape de la conception. L'architecte japonais Shigeru Ban est un symbole de la recherche dans ce secteur, à travers ses études et ses constructions à base de tubes de cartons : ci-contre, une église réalisée sur ce modèle, que l'on peut admirer à Kobe, au Japon.

Pour terminer, une construction au top de la modernité, élue "building le plus green" par le Building Research Establishment : The Edge, le bâtiment abritant le quartier général de Deloitte, à Amsterdam. Ce building impressionnant par son apparence de "vaisseau spatial" est une merveille de technologie architecturale : un système de régulation thermique passif, une production autonome d'électricité, et une façade sud entièrement recouverte de panneaux solaires, qui ont à s'y méprendre l'apparence de simples fenêtres. Les eaux de pluie sont également collectées et utilisées pour les chasses d'eau et l'irrigation des zones de verdure. Dernière petite touche technologique le bâtiment est entièrement équipé d'ampoules LED connectées, qui permettent à chaque employé de régler son éclairage personnel selon ses besoins, et donc de ne pas suréclairer en fin de journée par exemple.

CHERNOBYL RECOVERY PLAN

ALINA HAVRYLCHUK, student

VICTORIA V. IVASENKO, Associate Professor, PhD in Engineering,
Scientific Adviser

OLEKSANDR V. SHEPEL, English Teacher, Language Adviser

O. M. Beketov National University of Urban Economy in Kharkiv

The current exclusion zone is not only radiation-hazardous areas – it is a valuable natural complex and a nature reserve, with natural biodiversity restored after years of isolation from the individual, as well as a world-famous tourist site that has confirmed the attractiveness of mass visits. In recent years, tens of thousands of tourists visited Chernobyl and the exclusion zone. As we see, the developers assume that with the development of tourism, science, infrastructure, ecology, industry will be accompanied by a general economic development.

Unfortunately, the developers did not take into account that in the exclusion zone for a long time there will be working enterprises for handling radioactive waste, spent nuclear fuel and the nuclear power plant itself. These facilities should have been taken into account in the future infrastructure of the Chernobyl zone.

The infrastructural skeleton of the exclusion zone is formed with the help of four main objects (stations), between which a new transport artery is laid (monorail track). The picture shows the main idea of station location on the territory of the Chernobyl zone.

The first station (called the Casino), designed to receive tourists and personnel of the zone, is organized on the south-eastern boundary of the

exclusion zone. The station “Casino” is located not far from the confluence of the Pripjat River in the Kiev reservoir, which allows to use both water and motor transport.

According to the plan of the designers, the station “Casino” will be not only a tourist gate, but also a small settlement with gambling establishments. The gaming infrastructure of the station “Casino” is concentrated in the gaming module – a network of buildings located in the territory of modern villages Parisham, Teremtsy.

In Ukraine, casinos and other gambling establishments are prohibited, but in the future, it may be decided to organize a separate city for these purposes. At least Ukrainian politicians have already voiced this idea. The station “Casino” could be such a place. A small distance from the capital of Ukraine, good transport highways – this is a clear trump card for the station “Casino”.

In addition to the station “Casino” it is proposed to create three more stations – Chernobyl, Ilyinty and ... station “Reserve”. If “Chernobyl”, “Il’inz” are abandoned settlements in which stations will be created, the station “Zapovednik” is a new architectural object in the north of the Chernobyl zone. From the west of the station there are wind turbines with the help of which they are supposed to cover all the needs of the infrastructure of the Chernobyl zone in electric power. The purpose of the Zapovednik station is purely scientific, the developers have suggested that this is an ideal place for scientific research, the placement of laboratories and the implementation of scientific tourism. On the development models “Reserve” is no different from the stations “Chernobyl” and “Il’inz”, but according to the rules radiochemical laboratories, test sites, pilot sites should be located at a distance from residential buildings. The laboratory infrastructure should guarantee the safety of tourists. Therefore, the scientific segment requires an “individual” layout. \\

Ukrainian scientists claim that in the Chernobyl zone wild nature is being restored – in particular, there are once again unique for Ukraine brown bears. As a result of the Chernobyl disaster, the nature of the zone is protected by radiation.

In recent years, the population of moose, lynx, deer, wolves and foxes has increased. Scientists have recorded 185 species of birds. It should also be noted that the species of animals associated with human activities – pigeons, mice, rats, and sparrows disappeared.

The established “traps” with photo and video fixation allowed capturing very rare animals, one of which is considered to be the Eurasian lynx. The last time in the territory of the current exclusion zone she was seen more than 100 years ago.

And this is a good chance for the restoration of nature in significant areas that serve as a barrier to radiation, work with green lungs and perform a number of ecosystem functions to clean air, water, preserve the climate and absorb carbon dioxide. In addition, the Pripjat River is a reserve source of water, “says the environmentalist Movchan.”

The biosphere reserve project is attractive, because the conditions for farming and nature conservation for biosphere reserves are flexible and functional, and they were developed by UNESCO. The project provides for the maintenance of traditional farming in certain areas, and on the other hand – the preservation of nature, scientific research, monitoring, educational projects, informing society and coordinating the work of various organizations in this territory.

According to the Ministry of Natural Resources, the territory of the future Chernobyl biosphere reserve will be zoned: in certain areas only scientists will be allowed. Other areas will be visited by tourists, but there will be no economic activity. They will be part of the reserve and the territory where limited economic activities are permitted, including timber harvesting. Industrial sites of the Chernobyl NPP and other enterprises in the reserve will not be included.

References:

1. <http://chernobylplace.com/chernobyl-recovery-plan/>
2. <https://ecoplanet777.com/en/nature-returns-to-the-chernobyl-exclusion-zone/>

ENGINEERING ADVANCEMENTS IN HEALTHCARE, ENVIRONMENT PROTECTION, AND ARCHITECTURE

YEVHEN HONCHAROV, student

LARYSA MARTYSHOVA, Associate Professor, PhD in Architecture,
Scientific Adviser

ZHANNA P. BEZTSINNA, Senior Teacher, Language Adviser

O. M. Beketov National University of Urban Economy in Kharkiv

Engineering is the knowledge and practical skills required to solve problems. For decades, engineering, which has evolved and branched out continuously, has helped humanity survive and improve the quality of life. “Whatever problem arises, it takes engineering science to solve it,” experts say. “The most urgent task for humanity today is to develop along a path that would not lead to the destruction but to protection of the planet. And here engineering plays a central role.”

In *healthcare* alone, engineering advances have improved water quality and sanitation, and many diseases have been eradicated, including typhus and cholera. More and more advanced prostheses, hearing aids, pacemakers, computer diagnostics, laser and microcamera surgery – all this became possible thanks to the work of engineers.

Among the recent advances in healthcare engineering, some of the most interesting are:

Autonomous power systems Powerwall. The head of the American company Tesla Motors Elon Musk said at a press conference that he is starting