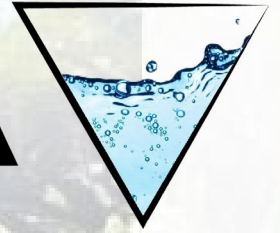


THE AQUA SPACE

water parks • pools • baths • SPA



15/04/2023:

IT'S TIME TO THROW OUT THE TRASH





INTRODUCTION

Glory to Ukraine! Welcome to The Aqua Space!

We did not accidentally choose April 15 as the release date, because today is the **All-Ukrainian Day of the Environment**. It's time to help the Armed Forces of Ukraine clean up bio-waste, right?

And more than 400 days of the war have passed — this is a sufficient period to analyze the industry and make interim summaries. At first, we thought that war and water are incompatible things. We grabbed different topics, researched, and at some point we were forced to admit that there are no unrelated things. We also found out (with pleasure) that we can not only continue to function, but also be useful.

Of course, everyone is capable of this, you say. And you won't be wrong. You can donate, help with logistics, weave nets, find equipment, and this will be a powerful contribution to the support of the Armed Forces. But there is another less obvious path for you as a pool industry worker, and that path is aquatic rehabilitation.

Victory is close, and now it is felt more than ever. The million-strong army of the Ukrainian Armed Forces will return to their homes, and we can already contribute to the development of programs that will facilitate their adaptation. Physical and psychological injuries, stress disorders — water and your care can help to cope with this.

How exactly? We will talk about it in this issue. Read, learn and apply. Help. This is the best way to say «thank you» to everyone who fights for our common home.

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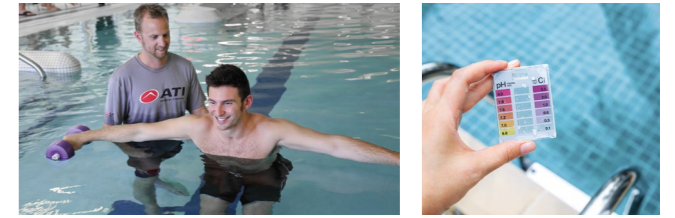
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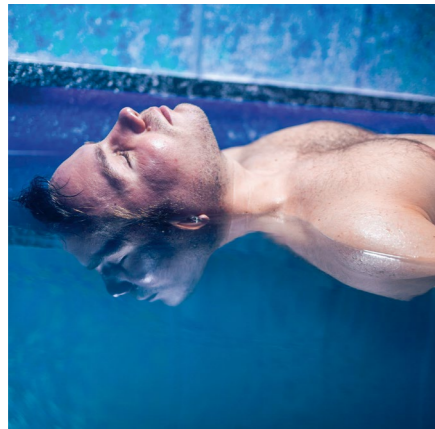
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A year has passed since russia's full-scale invasion of Ukraine.

We thank the men and women who protect our country and pay tribute to those who have made the ultimate sacrifice for our freedom.

We know that many veterans suffer from trauma and PTSD in varying degrees, and we want to let you know that you are not alone. We are also looking to attract funds and support from market leaders to help with rehabilitation, because water therapy can do wonders.



hydrotherapy in **REHABILITATION**

For centuries, water has been used as a comprehensive method of treating mental and physical pain.

Ancient Romans and Greeks bathed in hot springs to improve blood circulation and cure diseases. In Japan, people have been immersed in warm water for centuries to treat skin problems and relieve chronic pain. Modern medicine offers new and new ways to speed up rehabilitation with the help of water exercises.

Water therapy can bring relief for diseases of the neuromuscular or locomotor system. The unique properties of water allow you to benefit with less pressure on your joints and in a safe environment, eliminating re-injury. This therapy is also a great option for people who cannot exercise on land.



Among the advantages:

- The water temperature in the therapeutic pools reaches 28-36°C, which promotes muscle relaxation and improves blood circulation;
- Warm water stimulates body awareness and promotes a sense of balance;
- By reducing gravity, a person can stand up and begin gait training and strengthening exercises without causing further damage;
- The warmth and buoyancy of water helps reduce pain sensitivity.

Doctors have proven that water training in combination with land training accelerates recovery after injuries. Water is the safest place for rehabilitation because it allows for graded weight bearing, full range of motion, and resistance training. An important point is to understand the correct adaptation of exercises to achieve goals.

We will also note the positive effect of water on the treatment of PTSD symptoms:

- Water soothes, stimulates muscle relaxation, reduces anxiety and improves sleep.
- Even the sound of splashing water has been proven to release dopamine, which is responsible for motivation and pleasure.
- Toda et al. in 2006 found that swimming helps reduce stress hormones such as cortisol.
- Yamamoto et al. in 2008 found that foot baths reduced the stress response and reduced the fight-or-flight sensation.



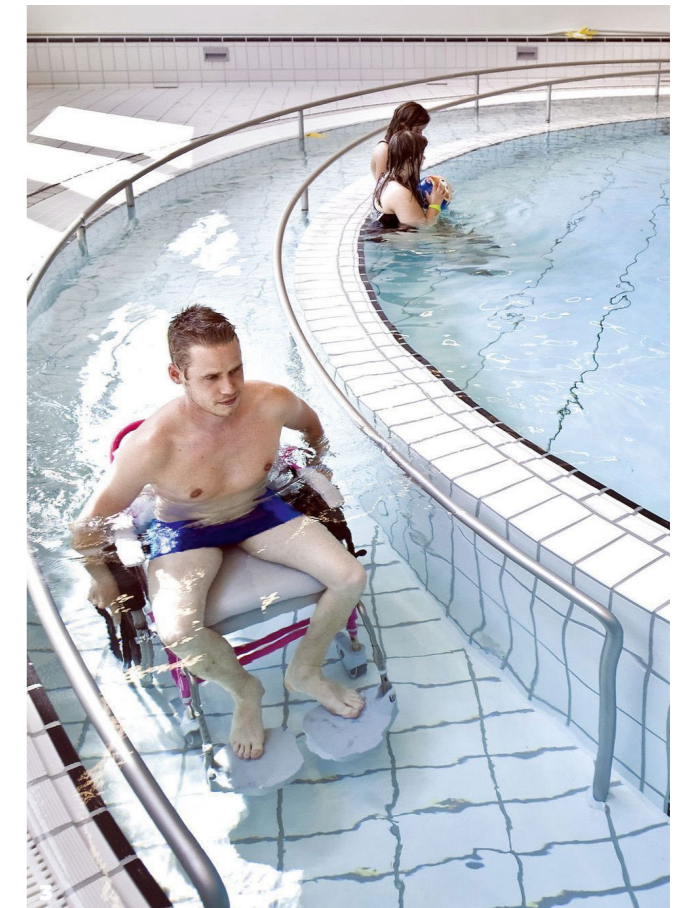
People with PTSD who have undergone aquatic therapy have reported a reduction in panic attacks, depression, anxiety, and suicidal thoughts — all possible symptoms of PTSD.



The official statistics of the wounded are not yet known, but we understand that many soldiers in the million-strong Armed Forces will have to go through a long road of rehabilitation after the end of the war. Hydrotherapy is unlikely to be enough to eliminate most injuries, but it can significantly help alleviate some of their symptoms.

We call on all workers of the swimming pool industry in Ukraine to join the restoration of rehabilitation pools and pools at medical institutions. You can become part of open charity projects or create your own initiatives: recovery centers, adaptation programs and hydrotherapy sessions. Together, we are able to give Ukrainian defenders useful breathing space while they work on solving the main problems.

WORLD EXPERIENCE OF REHABILITATION



1. «Dockery» Indoor Therapy Pool, Tuscaloosa, USA
2. «Olympion» Rehabilitation Center, Patras, Greece
3. «Vandhalla» rehabilitation center, Odder, Denmark
4. «Timpany Center» therapeutic pool, San Jose, USA
5. «CP Rochester» therapeutic pool, Rochester, USA





PROJECT: pool for soldiers undergoing rehabilitation

Despite the fact that the war with Russia has been going for nine years, psychological therapy for soldiers and PTSD treatment is a new experience for Ukraine. A few years ago, soldiers avoided meeting with a psychologist or psychotherapist because it was something like «I admit I'm insane».

But everything has changed. Last year, centers for the psychological rehabilitation of soldiers and veterans began to be actively built. The state budget for 2023 has earmarked UAH 540 million for the implementation of programs of the Ministry of Veterans Affairs on psychological rehabilitation and professional adaptation, and resort treatment of soldiers. This amount is twice as much as in the previous year. In addition, compared to 2014, the number of psychologists in the army increased by 40%.

In July of last year, the first Ukrainian rehabilitation center started working in the Kharkiv region. Already in the first six months, about

two thousand warriors were treated there. Most of them successfully returned to the front within the first two weeks of treatment. But one rehabilitation center is not enough for a million-strong army, so the Ministry of Veterans Affairs of Ukraine created a register of providers of psychological rehabilitation services for veterans and their families. As of December 15, 2022 (the latest available information at the time of publication), 45 medical institutions are included in the register.

One of the civilian health care facilities that began accepting soldiers is the Kyiv Clinical Hospital «PSYCHIATRIA». Patients with mental illnesses are treated here, and a department for soldiers was opened last year. At the beginning, the department was designed for forty beds, but at the moment the number of patients has reached a hundred.

Soldiers are admitted to the hospital with the consequences of mine and

explosive injuries, post-traumatic stress disorders (PTSD).

With the help of psychiatrists, they overcome anxiety and depression, cope with obsessive thoughts and nightmares about war; undergo adaptation and get used to a normal life. In addition to medical treatment, patients receive a complex of psychological and physical rehabilitation measures. Activity helps to overcome anxiety and tension, releases a number of hormones, including endorphins,

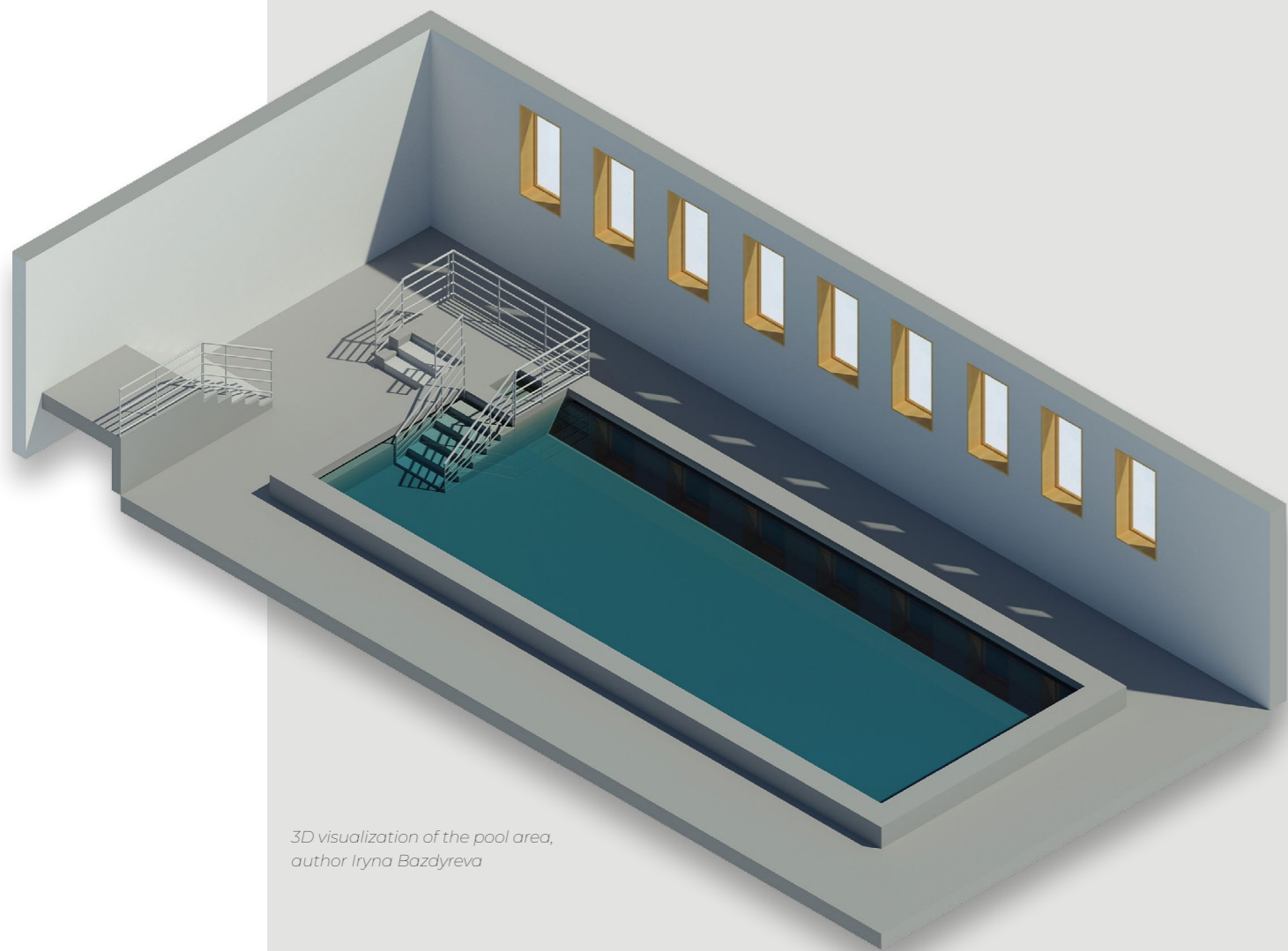
which are responsible for feelings of happiness.

The clinic takes measures to provide patients with places for full-time sports and physical rehabilitation. Currently, the gym is being renovated. There are plans for a massage room and a room for yoga classes, but the main goal is an indoor all-season pool. Swimming is one of the effective methods of rehabilitation. We talked about the benefits of water and swimming in the treatment of PTSD symptoms in the article

«rehabilitation» (page 4).

The hospital has a polyclinic building with its own swimming pool, but it has not functioned for more than 30 years. In March, we contacted by volunteers at the request of Igor Dubinin, the head of the department for the treatment and rehabilitation of soldiers.

The hospital is taking the first steps in the reconstruction of the pool, and we can help with this.



3D visualization of the pool area,
author Iryna Bazdyreva

Currently, the dismantling of the lining has begun, the purpose of which is to understand the condition of the concrete pool. If we approach the repair more globally, then the list of works is approximately as follows:

- design and installation of the ventilation system;
- restoration of the water supply and sewage system;
- wall and floor lining;
- complete replacement of sanitary ware;

door replacement.

Volunteers and hospital staff will be happy if we help them with the work listed above. If you have experience, desire to help with tools, equipment or funds, please contact the magazine editors. You can also donate to the restoration of the pool through the "All Together" fund.

Together we can create wonders!

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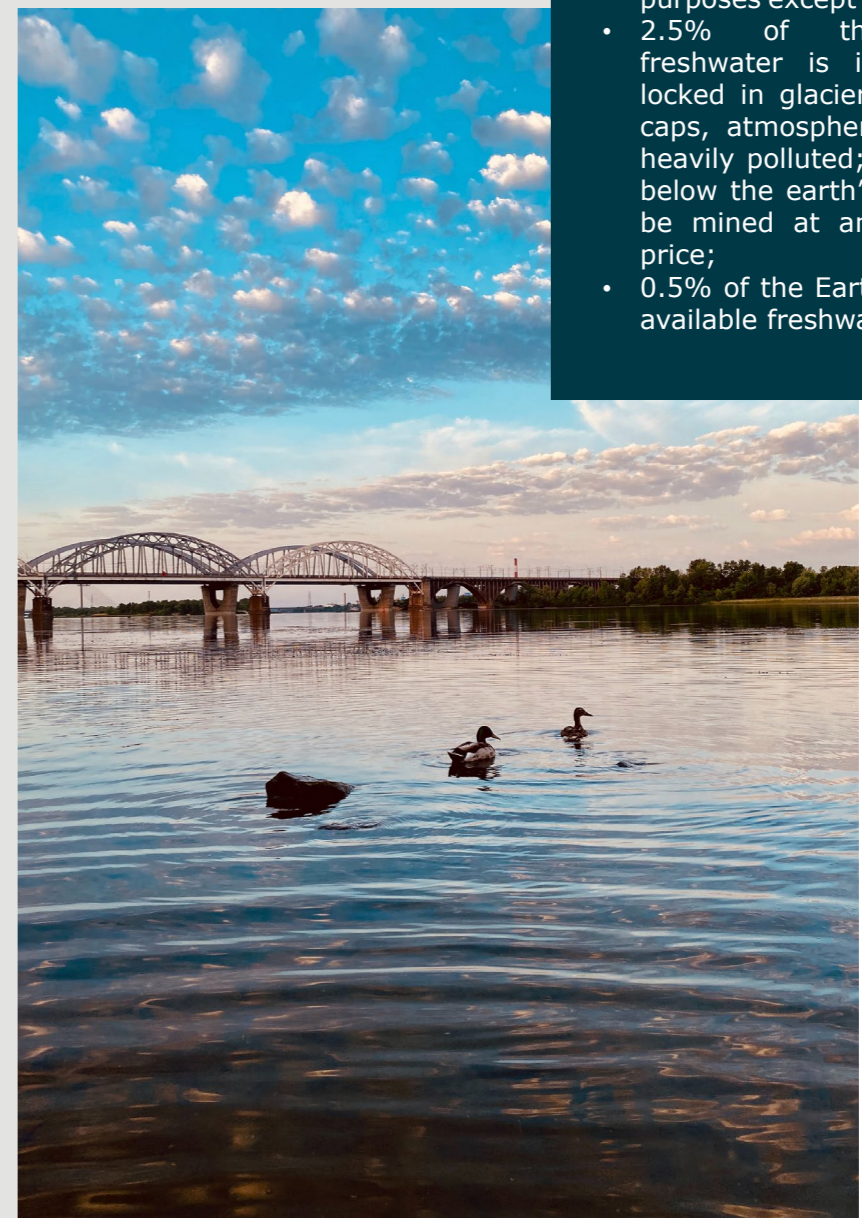
WAR & WATER



The value of water resources is unbounded, because there is no life without water and water is irreplaceable.

This fact is best illustrated by the widespread enthusiasm for the possibility of water on Mars and the interchangeability when we talk about water and life. Let's turn to the numbers:

- 71% of the earth's surface is covered by water;
- 1359 million km³ of water on the planet;
- 97% of Earth's water is contained in the oceans (too salty for drinking, growing crops, and most industrial purposes except for cooling);
- 2.5% of the Earth's freshwater is inaccessible: locked in glaciers, polar ice caps, atmosphere and soil; heavily polluted; lies too far below the earth's surface to be mined at an affordable price;
- 0.5% of the Earth's water is available freshwater.



Consequently, humanity uses available freshwater from only two sources — underground and surface, the existence of which is under constant threat due to humanity's careless attitude to the environment. Water is extremely vulnerable to pollution. Known as the «universal solvent,» water can dissolve more substances than any other liquid on Earth. This is the reason why water is so easily polluted. Toxic substances from farms, cities and factories easily dissolve and mix with them, causing pollution.

Let's talk about groundwater. Rain falls and seeps deep into the ground, filling the cracks, crevices, and porous spaces of an aquifer (essentially an underground reservoir of water). There it becomes groundwater, one of the least visible but most important natural resources. Almost 90% of Europeans rely on groundwater, which is pumped to the surface and becomes high-quality drinking water. In Ukraine, by the way, this percentage is much lower — only 25%. For some people in rural areas, this is the only source of freshwater.

Groundwater is polluted when pollutants — from pesticides to waste leached from landfills and septic systems — enter an aquifer, making it unsafe for human use. Cleaning of groundwater from pollution can be difficult and expensive, or even impossible. After pollution, the aquifer becomes unusable for tens, hundreds or even thousands of years. Groundwater can also spread pollution far from its original source by seeping into streams, lakes, and oceans.

As for surface sources of freshwater, it makes up more than 75% of all water delivered to Ukrainian homes. But a significant percentage of this water is under threat or completely unsuitable for use, because according to the state of chemical and bacterial pollution, it is classified as polluted and dirty (IV - V quality class). The worst ecological condition is observed in the basins of the Dnipro, Siversky Dinets, rivers of the Azov region, some tributaries of the Dniester and the Zahidny Bug, where the water quality is classified as very dirty (class VI). Elements of ecological and metabolic regression are inherent in the ecosystems of most water bodies of Ukraine. The main pollutants are oil products, phenols, ammonium and nitrate nitrogen, heavy metals, etc.

The majority of industrial and municipal enterprises discharge much more pollutants than the permissible level. This leads to pollution of water bodies and violation of water quality standards.

Environmental problems caused by the war should be considered separately:

- The first attack by the russians on the Dnipro was on February 26, when they aimed at the dam of the Kyiv Reservoir. Then the missiles were shot down by air defense. Since that moment, dozens of rockets of salvo fire systems, explosives, helicopters, combat vehicles, fragments of bridges and other structures have appeared in the surface waters of Ukraine, in particular the Dnipro and its tributaries.
- Russian shelling and emissions of pollutants (powder gases, products of explosive gases from the explosive transformation of TNT and hexane) lead to the formation of dangerous gaseous substances. If military equipment is affected, there is more active contamination with fuel and lubricants contained in the tanks and engines of tanks, BMPs, APCs, cars, fuel trucks and other models.
- As a result of shelling, many cities lost their sewage treatment plants. This is how untreated sewage from Vasylivka of the Zaporizhia region enters the Dnipro, and we can make assumptions about a similar situation in other occupied settlements.
- Fish and other representatives of the local fauna die as a result of being stunned by airstrikes. An example of such an ecological disaster is the lake in Irpin, where there was a mass plague of fish, stunned as a result of air strikes (probably from March 2 to 9). The main mass of dead fish is carps weighing 10-15 kg. A month and a half later, local activists pulled out more than 2 tons of dead fish, but another part had already begun to fall apart and sink to the bottom, poisoning the reservoir.

There are also indirect effects of war that do not arise from fires or shell bursts. Due to the shortage of electricity, water treatment plants are stopped. Untreated sewage flows into rivers, from there into reservoirs. Similarly, without electricity, the pumps in the mines stop and they are flooded with toxic and radioactive waste that can enter the groundwater. This problem has existed in the Donbas since 2014 and cannot be solved while the region is under occupation.

In general, according to the State Ecological Inspectorate of Ukraine, during the first 10 months of the war, russia caused losses in the amount of more than UAH 55 billion as a result of man-made pollution,

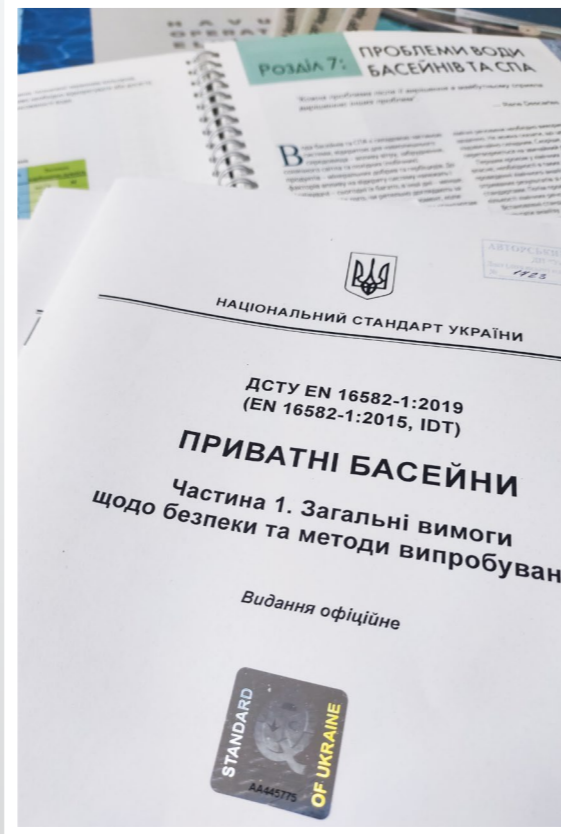
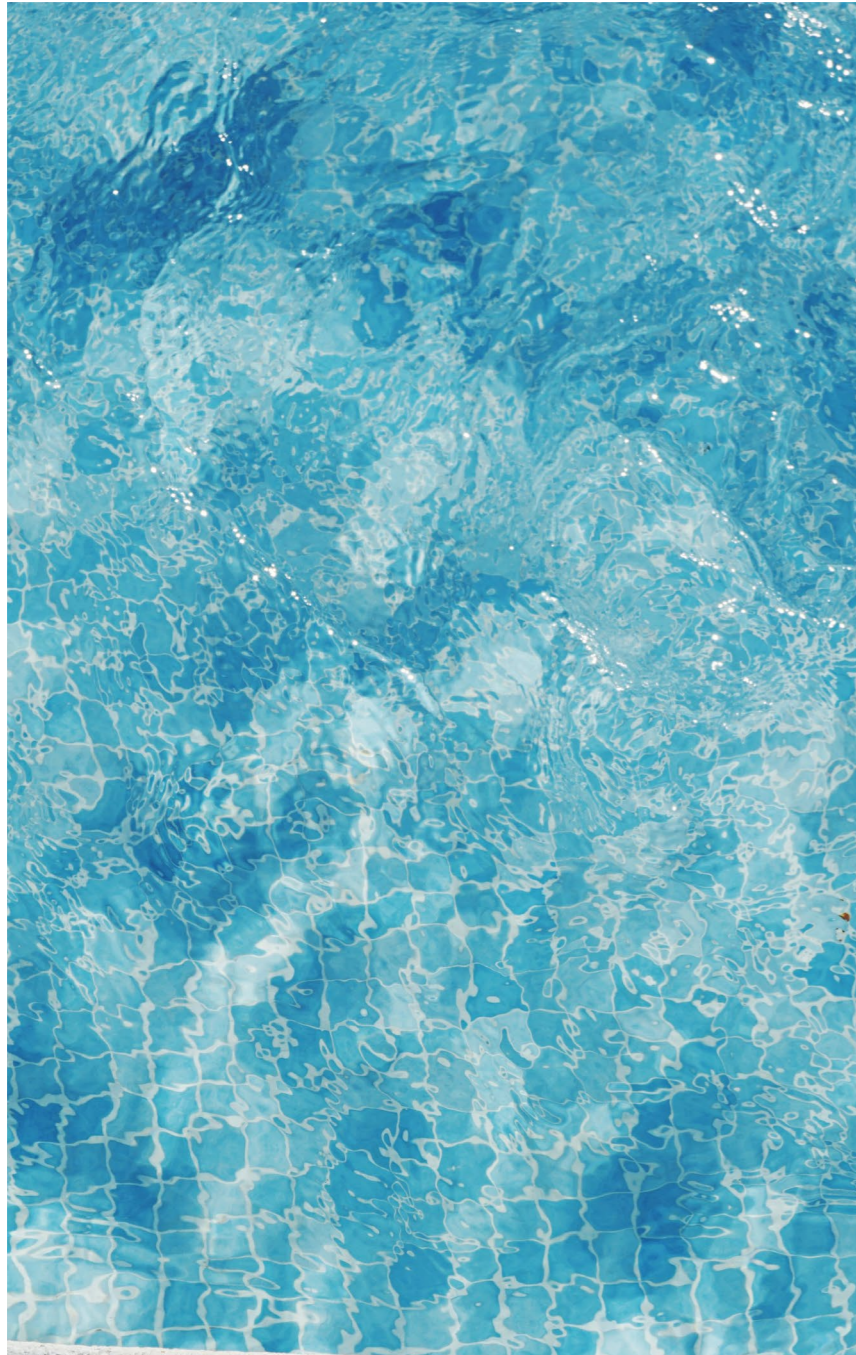
water pollution and arbitrary use of water resources.

Let's talk about the consequences: water pollution kills no less than shelling. In fact, it causes about 1.5 million deaths worldwide each year. About 1 billion people get sick every year from unsafe water, and communities in active war zones are at disproportionate risk of being among them.

The pool industry — the wellness and sports industry — has a deep attachment to accessible, clean water. Firstly, it fills the bowls of our pools, and the quality of this «raw material» has great importance for its further maintenance. Secondly, taking into account the level of pollution of Ukrainian rivers and lakes, we must be «ready» during the summer heat to guarantee people's health from swimming.

Social responsibility of business is also quite important in the period of global challenges. Environmental issues will not be at the top of the main government issues for a long time, so we can contribute to the restoration and protection of water with our own finances and initiatives.





Standardization according to CEN/CENELEC.

Ukraine has more than two hundred years of experience in standardization, which began with the transition to the European system of weights and measures in the 19th century. According to this indicator, we did not lag behind the developed countries of the world, but during the years of dependence and fragmentation, we lost our leading positions. After the declaration of independence, in the nineties of the 20th century, Ukraine made an attempt to return the lost, but the full recovery of work in this direction began only in 2015 — from the moment of the creation of the national department of standardization, The State Enterprise “Ukrainian Scientific Research and Training Center for Standardization, Certification and Quality” (SE «UkrNDNC»).

Standards are norms that create common ways of working. They promote, among other things, the interoperability of equipment, improve fair competition and at the same time facilitate the daily life of industry and consumers. In the early stages of civilization, the primitive process of standardization laid the foundations for improved cooperation, productivity, and innovation.

Standards have been created for various purposes over a long period of time. The first standards were ways of measuring time and space. With industrialization, standards have become more important for technical decisions. Standardization played a key role in the Industrial Revolution. Firstly, interchangeable parts reduced costs. Secondly, new goods were easier to assemble

and cheaper to change. It also saved workers time and effort. One example is the standardization of tracks. Before the standardization of tracks in the EU, goods moving between regions had to be unloaded and loaded onto new trains because the distance between the rails no longer corresponded to the wheels of the train.

How do standards differ from technical conditions or other regulatory documents?

- Standards define modern requirements for products, for their development, production and application;
- Standards are intended for general and multiple use in order to achieve the optimal degree of regulation in a certain area;
- All interested parties are involved in the development of standards (developer, executor, state executive authority, etc.);
- Standards are applied voluntarily, unless otherwise established by law.

Standardization is an important stage of Ukraine’s successful integration into the trade and economic space of the European Union. Last December, the national department of standardization officially adopted the normative documents of the European Committee for Standardization (CEN) and the European Committee for Standardization in Electronics (CENELEC). Thus, Ukraine adopted the full base of European standards, which brought us one step closer to the ratification of the ACAA Agreement. Thanks to the conclusion of the ACAA, or

the so-called industrial visa-free program, Ukrainian manufacturers will be able to obtain the necessary certificates in Ukraine. Now they are forced to turn to an official representative — a resident of the European Union, who has the right to receive such a document. The possibility of concluding this agreement is provided for in the Association Agreement between Ukraine and the EU.

Thus, 20,268 European normative documents of CEN/CENELEC have been accepted as national normative documents by the method of confirmation with validity from December 31, 2023. This means that Ukraine has a year to harmonize European norms with Ukrainian ones and reach a reasonable consensus with minimal interference in the process of Ukrainian production. The documents have already been sent to the relevant technical committees for detailed analysis and processing.

Why is this important?

As ordinary citizens, we need to understand that standards are not just a set of requirements for food production or the width of railway tracks. We face the successful (or not so) implementation of standards every day — even when we pour water into a glass.

The quality and main indicators of this water are determined by DSTU 7525:2014, which is a consensus between the Law of Ukraine «About Drinking Water and Drinking Water Supply», DSanPiN 2.2.4-171-10, the requirements of the EU Directive 98/83 and WHO principles. Among other things, it contains a table with a list of chemical elements and their permissible concentration in centralized and non-centralized drinking water supply.

However, can the standard introduced in 2014 guarantee water safety now? Since the beginning of the war, Ukrainian land and water bodies have been polluted with poisonous substances of military origin, which were not present 9 years ago, so there are no checks for their presence in the water.

For example, cruise missiles, the fuel supply of which is calculated for the entire flight time. Their wreckage is almost guaranteed to

contain remnants of toxic aviation fuel. Russia also uses archaic Soviet Kh-22 missiles, the fuel for which is so dangerous that the team uses chemical protection suits during refueling. They use the TG-02 mixture as fuel, and the AK-27Y is based on nitric acid as an oxidizer. These are highly aggressive and toxic substances that enter the ground and water. Therefore, Ukrainian standards must be urgently updated to «list» these substances. We wrote more about the destruction of Ukrainian ecology by the Russian military machine on page 11.

In a narrower plan, as specialists in the field of swimming pools and water parks, we should be interested in adopting European standards, harmonizing them with Ukrainian standards as gently as possible.

Currently, these standards are sent to TK-167 for processing. However, according to the order of the UkrNDNC, this will happen only after the review of the current committee, most of which is currently inactive. Formation of a team of specialists is another reason why the Association of Aquaparks of Ukraine calls pool builders for active collective discussion.

What is the benefit of standardization in the pool industry?

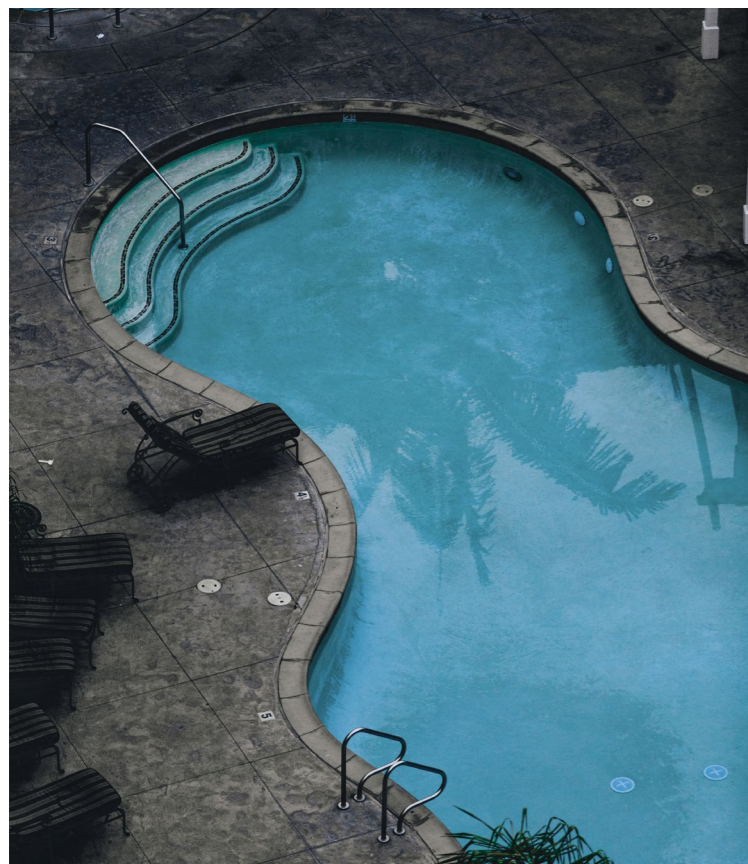
- Pools, equipment and tools of Ukrainian manufacturers, made according to standards, after the ratification of the ACAA agreement, will be able to be exported without problems and be in demand on the European market, because they will meet European quality standards, requirements for shapes and sizes;
- Pools that are built and maintained according to standards will be able to feel safer in force majeure situations, because they use generally recognized norms;
- After all, to build and maintain according to standards means to build and maintain high-quality, therefore ecologically, prestigiously, modernly and for the future.

Of course, whether to listen to the standards or not is a voluntary decision. However, it has many advantages, and first of all, it is an opportunity to remove part of the responsibility from yourself and transfer it to technical specialists and scientists. This is a good reason to be interested in this area and the solutions approved in it.

POOLS IN '22

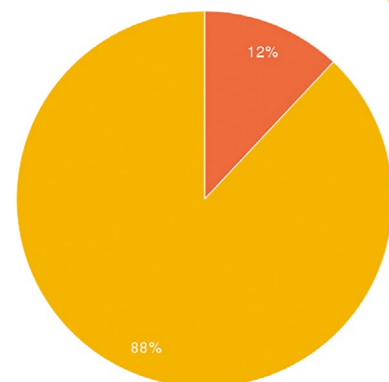
In the last issue, six months after the start of the war, we wrote about the Ukrainian pools that were destroyed by the russians. This issue sees the world more than 400 days after the start of the war — enough time to talk about the fate of the pools that survived.

We sent emails to 28 all-season indoor swimming pools in Ukrainian cities that were not occupied. The answers to the questions are presented in diagrams — for a general understanding of industry trends and the opportunity to compare your successes with the successes of colleagues in the workshop.



Has the range of services of your pool changed since the beginning of the war?

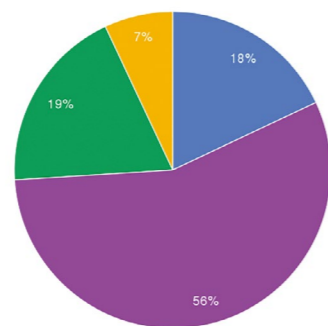
- has not changed
- has decreased



Assess the impact of the war on the swimming pool industry:

The impact of war on the x/10 scale

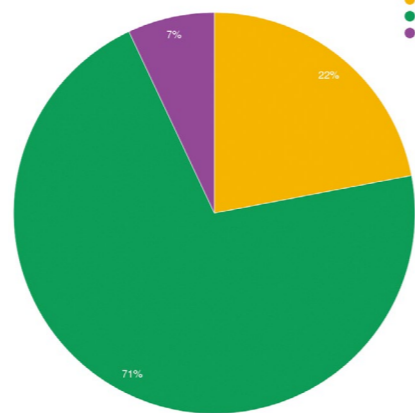
- 1-2
- 3-4
- 5-6
- 7-8



Estimate the occupancy of your pool in 2021:

Occupancy on the x/10 scale

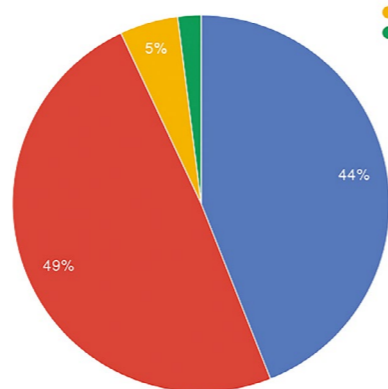
- 5-6
- 7-8
- 9-10



Estimate the occupancy of your pool in 2022:

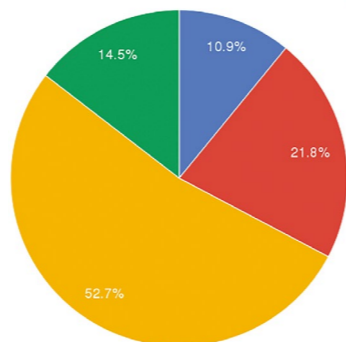
Occupancy on the x/10 scale

- 1-2
- 3-4
- 5-6
- 7-8

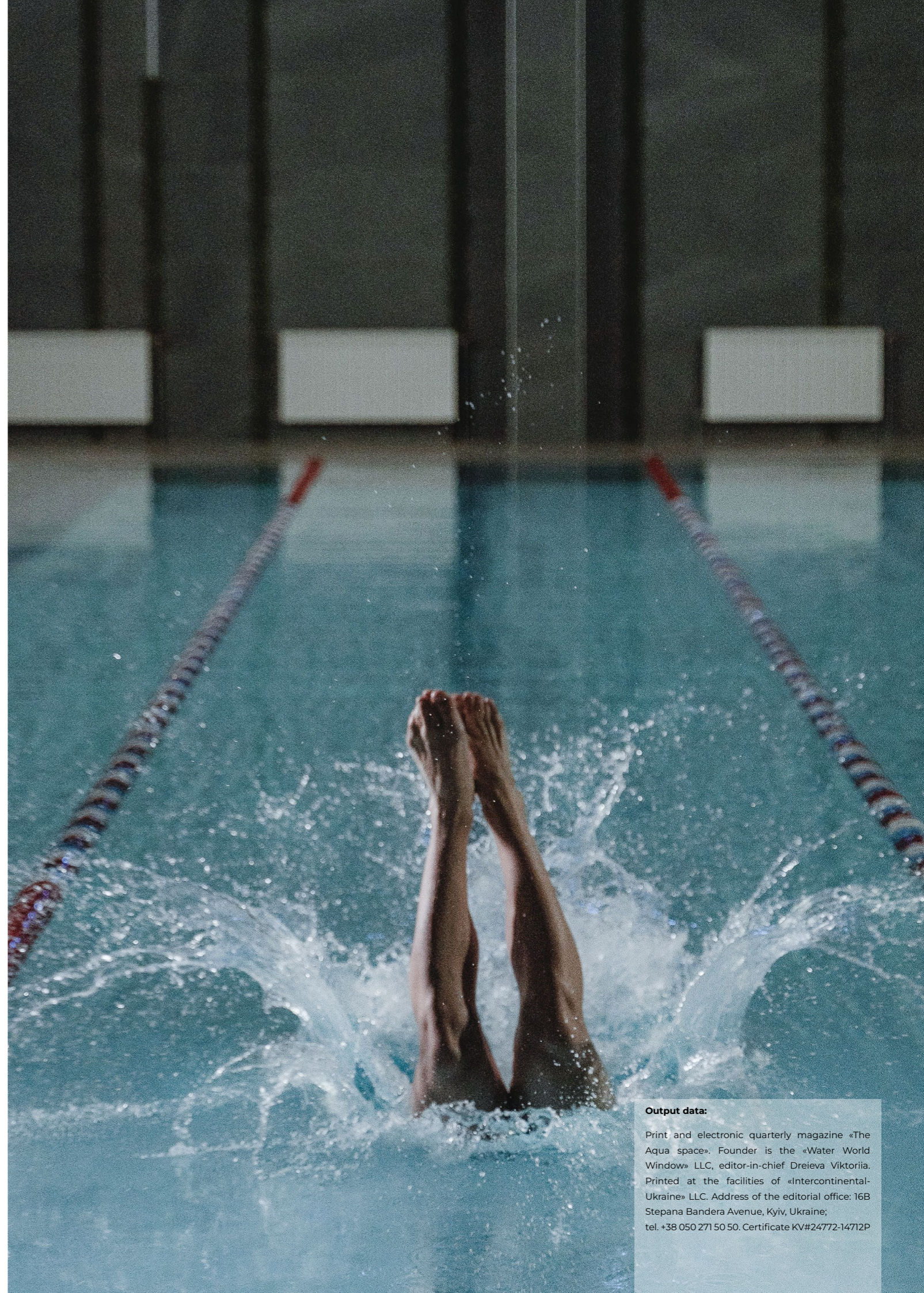


Is there a problem with finding personnel (instructors, managers, technical specialists) during the war?

- yes
- rather yes
- rather no
- no



The general trend is a decline in pool attendance. This is a logical consequence of the economic downturn in the country. However, the outflow of specialists is not observed, which is a good indicator for the development of the basin business in the future.



Output data:

Print and electronic quarterly magazine «The Aqua space». Founder is the «Water World Window» LLC, editor-in-chief Dreieva Viktoriia. Printed at the facilities of «Intercontinental-Ukraine» LLC. Address of the editorial office: 16B Stepana Bandera Avenue, Kyiv, Ukraine; tel. +38 050 271 50 50. Certificate KV#24772-14712P

