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State of Reconstruction of Ukrainian Multifunctional Stadiums after EURO-2012

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Abstract---Today, Ukraine, like the whole world, is going through difficult times, the state of the economy is affected by such problems as war, pandemics. However, even greater losses are caused by often ill-considered actions, there is no strategy for the development and planning of construction and reconstruction of existing multifunctional stadiums at both the regional and national levels. The article reviews the condition of several existing multifunctional stadiums inherited from Soviet times. The fate of these stadiums is different and similar at the same time. After holding the EURO-2012 football championship, years have passed and the authors of the article are interested in the question: has anything changed for the better in the field of design and reconstruction of multifunctional stadiums. The article considers both the newly made project according to modern requirements (“CSC ZSU” stadium in Kyiv), reconstructed for EURO-2012 (“Metallist” Stadium in Kharkiv), and the stadium that needs urgent action to implement the reconstruction project (“Metallurg” Stadium in Kryvyi Rih). An analysis of the results of the competition STEEL FREEDOM is also given as an example of a modern approach to the design of new modern stadiums.

Keywords---development, football, investments, new projects, sports facilities.

Introduction

It is determined that modern tendencies in the design and construction of modern stadiums in the world and Ukrainian practices are the innovation of constructive and volumetric-spatial solutions, the use of light and color in the conceptual decision of the stadium, the application of traditional regional forms, and ornaments in the solution of the image. The study of foreign recommendations for

the construction of modern stadiums, a comparative analysis with domestic legislation, the factors influencing the reconstruction of existing stadiums are identified: unimpeded access to the stadium, segregation of various categories of spectators and participants, measures for the safe evacuation (including emergency) of spectators, changing requirements to the comfort of the spectator and types of services, a reduction in government funding and an increase in the share of commercial self-service in the provision of stadiums, etc. As a result of previous studies, the principles of reconstruction of a multifunctional stadium, which are the basis for working with an object with its unique history, were the result.

A large number of publications by both Ukrainian and foreign scientists are devoted to the problems of studying and researching the reconstruction of existing stadiums. The most relevant are the studies of scientists from Germany, such as: [Klos \(2012\)](#); [Güppert \(2012\)](#); [Schöne & Arndt \(2012\)](#); [King & Mungall \(2012\)](#), and others. [Kutsevich \(2014\)](#); [Chub \(2017; 2018\)](#); [Chub & Kreizer \(2019; 2020\)](#), and others were engaged in research of reconstruction of the existing Ukrainian stadiums. It should be noted that the last modernization of the domestic regulatory framework was in the form of Annex No. 1 from 1.10.2010 to the State building codes “Sports and sports facilities” (DBN V.2.2-13-2003..., 2003). This allowed for partial harmonization of Ukrainian design requirements with European ones for stadiums, two of which were built and two were reconstructed to participate in the European Football Championship in EURO-2012. Stadiums, of course, had to be certified for these competitions according to the requirements and criteria set before European sports facilities, which were set out in Union of European Football Associations (UEFA) regulations, in particular the Green Guide (The Guide to Safety at Sports Grounds..., 2018). As a positive phenomenon, we should mention the appearance among the current regulations of the “Regulations of stadium infrastructure and safety measures for football defects” (2013), which is developed to further harmonize with the provisions of Fédération Internationale de Football Association (FIFA) and UEFA, which are more demanding than current state building codes of Ukraine. The document was developed by the Ukrainian Football Association and does not have the status of mandatory state requirements, but non-compliance with these requirements will lead to the lack of stadium certification for competitions of the appropriate level. Almost ten years have passed since EURO-2012. What changes have taken place in the field of designing new and reconstructing existing multifunctional stadiums?

History of construction and reconstruction of the “Metallurg” stadium in Kryvyi Rih

Today, work continues in the framework of cooperation between the Athletics Federation of Ukraine and the Ministry of Defense of Ukraine on the construction of a new athletics infrastructure as part of the reconstruction of the Kyiv stadium “CSK ZSU”, located on Povitroflotsky Avenue, 6 in Kyiv ([Chub & Kreizer, 2020](#)). The history of the stadium, the reasons for its immediate reconstruction, the main components of the project, the authors described in detail at last year's conference, as well as in their article ([Chub & Kreizer, 2020](#)). The purpose of the stadium is declared as: sports of the highest achievements (athletics, football,

modern pentathlon and so on); physical training of servicemen; physical and physiotherapeutic rehabilitation of combatants; holding competitions in the system of the International Council of Military Sports; development of children's and youth sports. That is, according to the above, in addition to the national level, it is a competition of European or world level. The infrastructure of the stadium is designed mainly for competitions of the appropriate level of athletics. Requirements for such sports facilities are set out in the documents of the International Athletics Federation (IAAF) (IAAF Track and Field Facilities Manual..., 2008).

This stadium, located in the center of the Ukrainian capital, together with a training running complex, a complex for training in javelin throwing, discus, shot put, etc. can become the main base for training the national team of Ukraine, athletes of Kyiv, and a place of high-quality championships of continental and domestic levels. In addition to total preparation and special training of ZSU servicemen in the program of purely military training, rehabilitation of employees and their families, training of high-class army athletes, it is very important to increase the level of total funding for training high-class army athletes, as well as renewal and reconstruction of unique Olympic bases. are subordinate to the Defense Ministry (Van Belle et al., 2010; Blocken & Persoon, 2009).

The stadium must comply with the IAAF category, which will allow to host-level competitions for the European Championship and the European Cup inclusive. Also, let's not forget about the ambitious plans of the army to hold the Invictus Games in Ukraine – Igor Neskorenykh (see Figure 1).



Figure 1. The concept of construction of the central arena of the stadium of the central sports club of the armed forces of Ukraine

Kryvyi Rih stadium “Metallurg”, once a successful multifunctional sports facility, is now overgrown with grass and weeds. The last reconstruction was at the stadium in 1999, on the 225th anniversary of Kryvyi Rih. Then, according to

UEFA requirements, individual plastic seats and a VIP box were installed at the stadium. While the “Kryvbas” football club was alive and matches were held in the arena, the stadium was more or less well-groomed. Stars performed here and held concerts dedicated to the City Day and the Metallurgist's Day.

In the spring of 2013, Kryvbas ceased to exist. FC “Girnyk” played at the stadium for some time, but soon the team moved to its base. Then the players of the “Girnyk” rugby club trained and played here, but the team ceased to exist in November 2019. Today the sports facility belongs to the Kryvyi Rih City Council and is on the balance of one of the city's sports schools (Mei & Qu, 2016; Woods et al., 2017). There are no people in the staff of CYSS No. 1 who would take care of the football field. And there is no money in the communal school for the maintenance of such a huge stadium either. The stadium has not been repaired for several decades; it is in disrepair. Athletes are forced to practice and compete in halls with moldy walls and perforated bridges (see Figure 2; Figure 3).

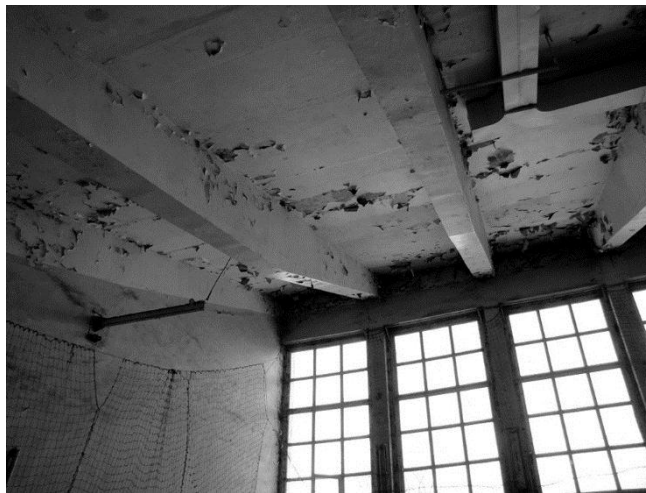


Figure 2. Emergency condition of the hall of “Metallurg” stadium



Figure 3. Unsatisfactory condition of the tribune covers the unsatisfactory condition of the tribune cover

The return of big football in the city of miners and metallurgists are looking forward to. Fans are ready to support even the renamed project to restore the former glory of the main team of the city and re-immense themselves in the emotions of football battles (see Figure 4; Figure 5). Recently, the city of Kryvyi Rih was nominated in the private competition European Capitals and Cities of Sport Federation for the title of “European Capital of Sport”.



Figure 4. Kryvyi Rih stadium “Metallurg” (current state)

The Department of Capital Construction of the Dnipropetrovsk Regional State Administration has announced the purchase of services for the reconstruction of the main sports arena of Kryvyi Rih. The project was taken as a basis, the development of which was ordered in 2015-2016 by the Department of Capital Construction of Kryvyi Rih in the project organization of the State Enterprise PPKTI “Kryvyi Rih BUDPROJECT” (Karch, 2020). Project documentation for the overhaul of the stadium was rejected by the State Architectural and Construction Inspection as inconsistent with the new construction standards. Today, the project is undergoing another adjustment in the regional administration.



Figure 5. Kryvyi Rih stadium “Metallurg” (current state)

Analysis of the current state of the “Metallurg” Stadium in Kryvyi Rih and further prospects for reconstruction

In April 2020, repair work began at the “Metallurg” Stadium. But the much-needed building repairs began with the facade, the design solution was developed separately (see Figure 6). And it seems that this will be the only work that will be carried out at the stadium. The facade of the stadium, of course, looks bad, but the emergency basement, with falling plaster, covered with mold and fungus, look much scarier. In addition, in Kryvyi Rih it was decided to place architectural lighting on the not yet repaired facade (The Guide to Safety at Sports Grounds..., 2018).



Figure 6. Design solution for the restoration of the facade of the stadium with lighting

Given the current situation at the Kryvyi Rih stadium “Metallurg”, we can conclude that, unfortunately, among city officials, as well as in the Ministry of Youth and Sports there is no strategy for development and planning of construction and reconstruction of existing multifunctional stadiums at both national and at the regional level (Peter, 2015; Nyandra et al., 2018). The fate of Kharkiv's “Metalist” Stadium (see Figure 7), which also lacks its own team today, maybe similar shortly and, as a result, its constant operation. “Shakhtar's” training and games took place at the stadium for some time. “Metalist's” financial

problems began in late 2014, after a change of ownership (Black et al., 2019; Can et al., 2011). There were big debts to the players and the coaching staff. Eventually, the “Metalist” team ceased to exist and in 2017 did not compete in any of the all-Ukrainian competitions. Debts to players have not yet been repaid and were considered by FIFA and the Sports Arbitration Referee in Lausanne in favor of the plaintiffs. Now in Kharkiv, there are two versions of the team's rebirths: “Metalist 1925” (created in 2016 by fans, plays in the First League) and “Metal” (created in 2020 by a functionary of “Metalist” under V. Yaroslavsky Eugene Krasnikov, Second League). Both clubs are not “Metalist's” successors yet.

Now businessman V. Yaroslavsky, former president of the “Metalist” team from 2006 to 2012 (with him the team won the bronze medal of the Ukrainian Championship eight times, reached the 1/4 of the Europa League), puts forward a proposal to revive the team, but on its terms. It is becoming clear that such large multifunctional buildings require large financial costs that cannot be covered from local budgets, require investment, additional financial infusions, and better yet, strategic plans and measures that could help prevent the negative consequences of cost-effective construction projects (Azazzi, 2020; Kalynychenko et al., 2021).

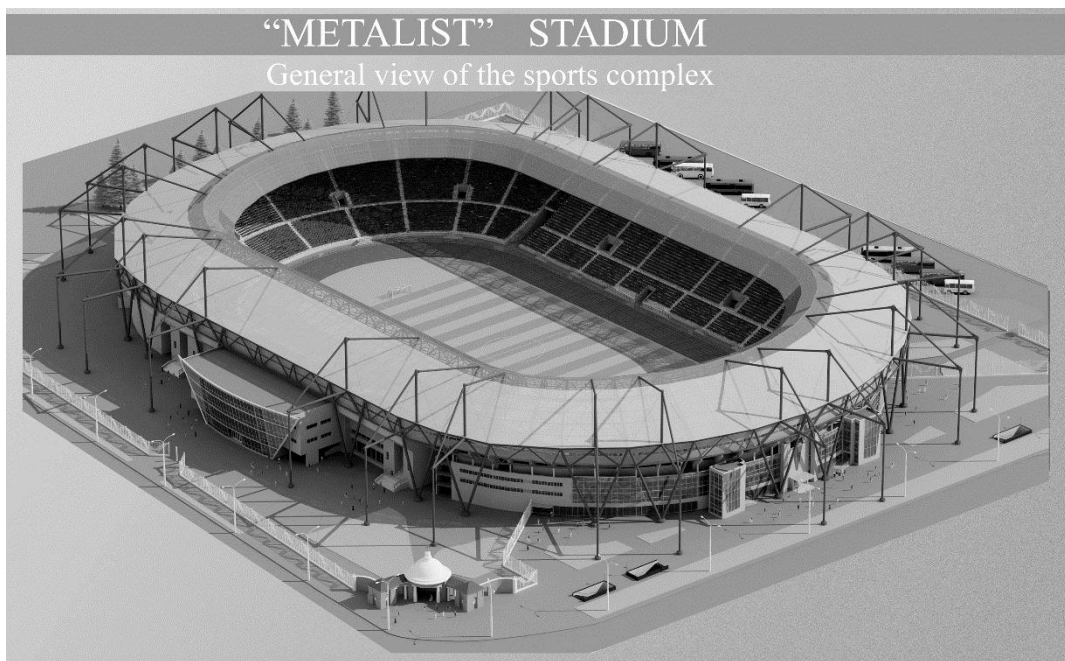


Figure 7. Reconstruction project for “Metalist” stadium in Kharkiv

In October-November 2020, the STEEL FREEDOM competition was held among Ukrainian students of architecture and construction, organized by the Ukrainian Center of Steel Construction Association, whose mission is to promote steel as a predominant material in the construction and reconstruction of real estate. The general partner of the competition is Metinvest Group. The competition was

supported by the National Union of Architects of Ukraine. In the technical task STEEL FREEDOM of 2020 two categories of competitive projects were declared:

- creation of a stadium project in Mariupol. The customer of the project is Mariupol City Council;
- creation of a project of multifunctional sports and educational complex in Ivano-Frankivsk. Developer of the DC Evolution project.

The review of the projects submitted to the competition showed modern views on the formation and functional organization of stadiums and sports complexes, interesting were the solutions of structures, the organization of the environment (Marijon et al., 2015; Pascual et al., 2009). The issues of long-term existence and planning of measures to maintain the proposed architectural solutions were not raised by the organizers and, as a result, were not addressed by the participants. It should be determined by the results of the competition that it is necessary to involve in the future in the design task and the jury of architects and sports managers who are specialists in the design of modern stadiums and sports facilities (Fenil et al., 2019; Artuso & Santiangeli, 2008).

Conclusion

In the future, Ukrainian cities will continue to invest in the design of new and reconstruction of existing multifunctional sports complexes to maintain their prestige and secure a place on the country's sports map. However, as a conclusion, as well as recommendations, it should be noted that unwanted financial waste can be prevented only by sustainable planning measures in the creation of sporting and mega sporting events. It is necessary to apply the principles of planning:

- Forecasting of sports events.
- Forecasting long-term use.
- In case of not long-term use of object it is necessary to lay down measures on rigid economy, or as an option – transformation or adaptation to other types of sports activity.
- Continuous monitoring of existing multifunctional stadiums, as declared by current building codes.

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