



## Quarterly report - covers the period from 01/07/2020 to 30/09/2020

### **1. Task 1. Organisation of scientific visits for UTP employees and students and Partner representatives**

In connection to SARS-CoV-2 pandemic, UTP University of Science and Technology has introduced the Regulation of UTP Rector (No. Z.110.2019.2020 from 11/03/2020) regarding: preventing the spread of SARS-CoV-2 virus among the academic community of UTP University of Science and Technology. The Regulation suspended all international mobilities.

On September 17<sup>th</sup> a meeting in the International Relation Office took place with the Vice-Rector for Evaluation and Science, PhD Eng. B. Ligaj in attendance. University's authorities informed participants about the possibility of mobilities done within the project scope, mobilities may happen with the proviso that the consent of the Rector must be preceded by a letter and declaration that the person participating in the mobility is aware of the risks connected to SARS-CoV-2 pandemic and is willing to participate in the mobility on his/her own free will. Therefore, on September 21<sup>st</sup> the employees of Faculty of Civil and Environmental Engineering and Architecture were sent an email about resuming recruitment for mobilities. Faculty of Animal Breeding and Biology employees were also informed about this possibility. The provided message contained the information that Tarleton State University (TSU) suspended foreign trips of its employees and visits to TSU of scientists for a period of 1 year i.e. until the end of August 2021 (based on the information forwarded by B. Lambert on 10/07/2020).

At present, due to the epidemiological situation, contact with Partners is carried out only remotely.

### **2. Task 2. Subsidising common scientific publications.**

In the III quarter of 2020, meetings of Publications Assessment Team were organised online. As a result of these meetings, the following applications were approved:

- PhD Eng Ewa Grochowska, prof. UTP: „Association of a polymorphism in exon 3 of the IGFIR gene with growth, body size, slaughter and meat quality traits in Colored Polish Merino breed”, which has been published by the journal Meat Science; <https://doi.org/10.1016/j.meatsci.2020.108314> (IF=3,644; 140 points)
- MSc Eng. Jakub Biesek: „The Effect of Various Protein Sources in Goose Diets on Meat Quality, Fatty Acid Composition, and Cholesterol and Collagen Content in Breast Muscles “, which has been published by the journal Poultry Science; <https://doi.org/10.1016/j.psj.2020.08.074> (IF= 2,659; 140 points)

Moreover, Phd Eng. Magdalena Dobiszewska, prof. UTP has published the following article with the Partner prof. Ahmet Beycioğlu from Adana Alparslan Türkeş Science and Technology University, Adana, Turkey:

- Dobiszewska M., Beycioğlu A. 2020. Physical Properties and Microstructure of Concrete with Waste Basalt Powder Addition. Materials 13(16):3503; <https://doi.org/10.3390/ma13163503> (IF=3,057, 140 points)

Publication fees for that article were financed from a different source.

Furthermore, at the moment another 3 articles written in cooperation with Partners are in reviews in various scientific manuscripts.

### ***3. Task 3. Subsidising UTP employees' participation in international conferences combined with presentation of achievements in form of a lecture or a poster.***

#### Faculty of Civil and Environmental Engineering and Architecture

1-5.09.2020 - International conference **WMCAUS 2020 5<sup>th</sup> World Multidisciplinary Civil Engineering – Architecture – Urban Planning Symposium** took place. WBAiŚ employees took part remotely.

The following works were presented during the conference:

- PhD Iga Grześkow – *Shaping the cultural space of a city on the example of history of the Lock IV Theatre in Bydgoszcz* (presentation)

- PhD Iga Grześkow – *The role of green public spaces of the Old Canal in downtown Bydgoszcz and its impact on the city's cultural landscape in 1773-1971* (presentation)
- PhD Eng. arch. Monika Trojanowska – *Health-promoting places. Architectural variety* (presentation)
- PhD Eng. Monika Trojanowska – *Health-promoting places. Rain gardens and sustainable water management* (presentation)
- PhD Alina Lipowicz-Budzyńska – *Visual interference in the glass facade* (poster)

Detailed information on the conference is available on the project website: <http://ecaset.utp.edu.pl/2020/09/22/wmcaus-2020/>

**5<sup>th</sup> WMCAUS 2020**  
**World Multidisciplinary Civil Engineering - Architecture - Urban Planning Symposium**  
 15-19 June, 2018 - Prague (Czech Republic)

**VISUAL INTERFERENCE IN THE GLASS FACADE**

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**Introduction**

Intentional use of visual interferences has been on the rise in art and architecture. Its popularity stems from the search for ever newer forms of expression with simultaneous return to minimalism and geometric layouts. The seeking of an increasingly more advanced and processed form of art is linked to the fascination with physics and maths. The objective of this publication is to examine visual interferences that occur in architecture and to determine their effects on how the building is seen and on the architectural space.

Figure 1. An image composed of stripes – interference patterns resulting from: A – angular rotation; B – change in the density of one of the layers; C – change in the shape of one of the image layers. Source: Author's study.

**Material and Methods**

The research material includes realizations on a different scale. At the beginning, small installations, glass walls and facades with the phenomenon of visual interference were mentioned. The phenomenon will be examined based on buildings created over the past two decades.

**Discussions & Conclusions** Smaller installations create decorative, visually mobile arrangements, which can be used in an interior as a component that either moves or is permanently connected with the building. Interference patterns can be made using surfaces with varying degrees of transparency. On the outer layer, the image is placed on a glass plane; while the inner layer can be made up of another opaque material covered with graphical features, which simultaneously acts as the wall's cladding. An enamel layer is a unique decorative element, in which reception depends on the location relative to the façade plane and the distance from the front of the building. Graphical features can be seen properly from a few to over ten metres. The image of the raster and interferences can be seen from half a meter to less than ten metres, depending on the raster's size.

Figure 2. The entrance hall with the view of the glazing, Baker Street, London (artist: Alexander Beleschenko, 2013). Photo: Alexander Beleschenko.

Figure 3. Part of the triptych (Alina Budzyńska, 2015), sandblasting and painting. Photos: by the author.

Figure 4. The University Library, Cottbus: A – building's facade; B – interference patterns from up close. Photos: by the author.

**Discussions & Conclusions**

Interference patterns constitute an additional element that integrates the building's façade; graphical features composed of fine elements remove divisions in the glazing, and provide a partial cover for the structure enclosed in the space between the graphical layers. Surfaces made of small, repetitive texture elements or a raster provide a unique aesthetic feature, both on the façade side as well as inside the building. Despite the use of opaque enamels, a glass façade creates a semi-transparent veil that makes it impossible to see through from either side. And the layer also looks different when seen from one side or the other. From the lit side, the image is seen in colour; and from the other side, when backlit, opaque pixels provide a dark cover and the image is the negative of that seen from the outside. The distance created between the images provides a buffer inside an architectural structure. In double glazing, it boosts the sunlight protection and affects the building's thermal protection. Additionally, the building is protected against noise.

Figure 5. Institute for Hospital Pharmaceuticals, Basel, Switzerland (Herzog & de Meuron, 1998). A – the section of the building on the street side; B – elevation structure and graphical features. Photo: Maarten Helte.

**Results** Visual interferences can be effectively used in the interior, as a decorative element, or in the outer partition, as part of façade's integration strategy. The removing of the two graphical layers from each other results in the occurrence of a visually mobile layer, and creation of a buffer layer, which is used for the thermal and sunlight protection of the building. The double graphical layer becomes a unique decorative element, the reception of which depends on the location relative to the façade. Two independent images are created, and they filter through each other to produce a new single image. In the raster image, the screen print layers seen from the interior overlap, creating visual interferences. An advantage that this solution provides is sunlight protection as well as effective see-through protection. This provides control over the integration of the external space with the building's interior, and also more effective protection of the building against noise.



#### Faculty of Animal Breeding and Biology:

EcoSET project assumed the participation of 2 people in the EAAP conference (70<sup>th</sup> Annual Meeting of the European Federation of Animal Science) in August 2020, however, due to Covid-19 pandemic the conference was postponed to December 2020 and will be held remotely. 4 topics were submitted and accepted to the conference; they will be presented in the form of posters.

Conference 16<sup>th</sup> World's Poultry Congress 2020, which was due in August 2020 was postponed to August 2021. 2 people were enrolled.

#### **4. Task 4. Organisation of a closing conference to sum up the Project.**

No action was taken in the third quarter of 2020.

#### **5. Other activities:**

- ✓ 14/05/2020 – a partial report was submitted to the Polish National Agency for Academic Exchange via the online system. On July 15<sup>th</sup> Assessment sheet No. 1 was sent back in which, apart of the acceptance of some points of the report, enquires were made regarding additional expenses in some tasks, moreover, the selection of documents was checked via the “behind the desk” procedure. The answer was sent on July 24<sup>th</sup> via online system. On August 3<sup>rd</sup>, the Polish National Agency for Academic Exchange sent Assessment sheet No. 2, in which all explanations and documents were approved.
- ✓ 28/08/2020 – a question was sent to the current NAWA Project Supervisor Mr. Radosław Podgrudny regarding changes to the project that could be included in the Change Card and which would be a response to the low activity of employees in the project mobilities due to SARS-CoV-2 pandemic. Received answer included the following information: it will be possible to introduce changes in the scope of the project by adding new Partners and thus increase publishing activity. The representatives of WBAiŚ and WHiBZ took steps to include other universities in the project.
- ✓ 21/09/2020 – Information was sent to the Head of the International Relation Office Ms. Monika Wnęk, and Magdalena Kapela about the planned trips under the project in



October-December 2020. The information was related to the tender procedure won by Up Hotel, a firm that expects UTP to use a specific pool of funds for plane tickets. Due to the epidemic situation, the previously planned amount will not be used.

- ✓ One of the effects of the cooperation with Partners under the EcoSET project is OVOBIOM project, which has been qualified for full financing by the National Science Centre under OPUS programme (2 207 760 PLN). The author and manager of the project is PhD Eng Katarzyna Stadnicka, Prof. UTP who prepared the project with the Partner from University of Molise.
- ✓ The summary of costs in the III quartal broken down by Faculties and tasks was prepared (as of 30/09/2020).