ENGINEERING SCIENCES

CURRENT PROBLEMS OF AUTOMATED DESIGN OF BORDER SEPARATE STATIONS

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According to [1], a border transfer station is a railway station located in front of the border with a neighboring state, which performs operations for the reception and transfer of cars, goods and passengers between neighboring countries with border, customs, sanitary and quarantine and other types of con- troll, registration of transportation documents required by law.

Modern border separate points of Ukraine were formed on the basis of intermediate (Dyakovo, Topoli, Yagodyn, Kozacha Lopan), precinct (Batyovo) and sorting stations (Chop, Uzhhorod), located on the border with neighboring countries after the collapse of the USSR.

From the standpoint of computer-aided design, the scheme of any separate point is considered as a dynamic structure with a background and prospects for development. Changes in design objects occur both at the micro level (increase in the number and length of tracks, restructuring of the neck structure) and at the macro level (change in the nature of the station, its role in the operation of the railway junction).

The main advantage of using automated systems (CAD) in the design of border crossing points based on CAGD-systems [2, p. 55] is the speed of implementation of design solutions. However, differences in the technology of such points, in the design and location of areas and devices for technological lines of passenger and freight traffic when moving across the border necessitate the processing and conversion of additional data that determine the nature of their work and increase design complexity.

Thus, border checkpoints can be designed both on the territory of border stations with location on station tracks, and outside their borders with own track development. In this case, the inspection tracks should be located exclusively on the straight sections of the tracks, and the width of the border points should ensure the placement of inspection bridges and wells at certain

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distances from these tracks. Such requirements should be related to the topographic design conditions, the location of the border station relative to the country's borders, the nature of its operation and the technological processing lines of trains.

As these factors do not have a clearly defined indicator and units of measurement, finding optimal solutions for the location and layout of basic devices at border stations based on logical, analytical or heuristic data in the process of computer-aided design can be difficult.

Therefore, the automation of the design of border stations is a difficult task that requires the involvement of powerful tools of intellectual analysis and active use of the experience of the designer.

In order to carry out high-quality and timely customs and border inspection, it is necessary to take into account modern requirements for the organization of state control in the introduction of means of inspection of goods in vehicles, the formation of customs zones and border checkpoints. The lack of possibility to use in computer-aided design a clearly defined knowledge base, built on the experience of the designer, causes the search for existing alternative solutions and reduces the level of automation due to the need for human intervention in some stages of development and construction of border crossings and customs warehouses.

Thus, the automation of the design of border transfer points requires the introduction of such intelligent systems that would allow to evaluate the variable parameters of objects that are not amenable to external representation and symbolic description, but reflect the characteristics and nature of the design objects.

References:

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