

## **FEATURES OF ARCHITECTURAL-PLANNING ORGANIZATION OF MEDIUM-RISE HIGH-DENSITY RESIDENTIAL HOUSING**

Constant population growth creates demand for land resources including residential space. Population growth requires certain density of city environment and architecture with the correspondent qualities. Under the conditions of high density, architectural forms may be the most viable models of future architecture in general and residential buildings in particular.

Taking into account the sequences of the economic crises, number of families that can afford a detached house with a backyard hits its minimum. Moreover, low-rise residential buildings do not create the correspondent population density and can be located at the outskirts of the modern city. High-rise buildings in their turn undermine the city visual perception, its historical parts and have negative influence on people.

Mankind strives for life that is more comfortable and the residential environment of the highest quality not only beyond the city limits but also in the centers of urban areas. New concepts of high density residential buildings ideally may achieve balance between a detached house and city housing taking into account the actual economic capabilities of their future residents.

Density, in a broad sense, is the number of units for certain area. Population density measures how it is spread at the specific area. Intensive settlement of the territories always brought positive and negative sides with it. On the one hand, the planning based on the high-density principles is more compact and allows saving land resources with short distances for transportation and, as a result, using of energy; that makes it the best effective model. There is also assumption that densely populated districts are the sources of diversity, facilitate intensity, provide for close contacts and ideas exchange. On the other hand, there are certain disadvantages directly connected with noise growth, decrease of privacy and such a nuance as when the confluence (crowds of people) becomes the stress source.

The national and foreign experience of planning high-density residential buildings has been generalized to formulate the basics principles of the increase of housing density:

1. Reduction of facade area without the increase of the storeys number;
2. Expansion of the housing in depth on account of atrium spaces or arrangement of entryway with overhead lights;
3. Various space-planning solutions for buildings (planned use of complicated configurations sections: L-type, T-type, X-type);
4. More dense and non-standard composition for the breaks reduction between insolation norm;

5. Division of traffic and pedestrian passages at different levels (arrangement of underground passages and parking lots).

High-density housing system is characterized by:

- Effective planning and maximum engagement of land fund;
- Clear division of traffic and pedestrian zones, absence of automobiles access into inner yards;
- Modern infrastructure which is not dominant;
- Housing blocking which separates public and private spaces;
- Public function, trade facilities and welfare support on ground floors;
- Flat planning is based on flexible principles and is individual for every resident.

The following directions may be considered to be vastly prospective in the domain of high-density housing use:

- a) Development of the sites with complicated landform;
- b) Use of non-housing stock roofs;
- c) Housing stock tightening within available housing units at account of high-density.

Thus, we have analyzed national and foreign experience of increasing residential housing density and detected modern planning features of high-density medium-rise residential buildings.

### References

1. Kieran Mcinerney. Big City Life: High Density Pleasure. An international study of high-density mid-rise environments. Paper 145. – 2014. – 54 p.
2. The Design Catalogue: Successful examples of high-density urban development in Europe. – London. – 213 p.

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### **CORRELATION-EXTREME SYSTEM OF INERTIAL DEAD RECKONING CORRECTED BY LINEAR LANDMARK**

*The purpose of the work* is to solve the problem of external orientation by searching linear landmarks on images of geophysical field, received from UAV.

Currently existing navigation systems of unmanned aerial vehicles (UAVs) are characterized by a high dependency on the information received from the satellite navigation system (SNS), such as GPS/GLONASS. Application of these