Engineers create drones based on digital twins
31 December 2019

According to the developers, the use of supercomputing technologies with methods of numerical modeling and virtual prototyping can significantly reduce the development and production process. This becomes a key factor in the market competition for such developments.

TSU scientists have already released the first laboratory copy of the UAV designed to monitor the environment. It will assess the state of the environment using an onboard gas analyzer. The drone will conduct surveys of a city and a region, and work to prevent new landfills and illegal dumping of waste. In the future, such an apparatus can be used to search for fires in the forests of the Tomsk Region.

The new approach and the virtual wind tunnel can be used to improve the performance of existing aircraft. To do this, a model is loaded into the cloud system, aerodynamic calculations are carried out, and problem areas are identified; then options for improving the characteristics of the product under development are proposed. This solution is embodied in a digital double (a 3-D-model) and scientists conduct virtual tests to determine the effectiveness of the changes.

"The system can also be used to solve engineering problems in the construction of new aircraft," says Kirill Kostyushin. - "Of course, our system will not replace the design bureau specialists, but it can significantly speed up their work."

Provided by Tomsk State University