

DEVELOPMENT OF DESIGN PROJECTS IN KAZAKHSTAN

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Abstract. The article presents the main problems of technological development in Kazakhstan. The issues of training professional personnel for the aerospace and machine-building industry were discussed. The relevance of creating aerostatic unmanned and manned aerial vehicles of the middle class and large payload is described. The main tasks of the implementation of experimental design work in Kazakhstan are described.

РАЗВИТИЕ КОНСТРУКТОРСКИХ ПРОЕКТОВ В КАЗАХСТАНЕ

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Ключевые слова: авиация, космос, промышленность, аппаратура, проект.

Аннотация. В статье представлены основные проблемы технологического развития Казахстана. Обсуждались вопросы подготовки профессиональных кадров для аэрокосмической и машиностроительной отрасли. Описывается актуальность создания аэростатических беспилотных и пилотируемых летательных аппаратов среднего класса и большой полезной нагрузки. Описаны основные задачи реализации опытно-конструкторских работ в Казахстане.

At the present time, thanks to the creation of new construction materials, the development of microelectronics and microprocessor technology, the improvement of the process of computer design in many countries, the airship and aircraft formation have been revived.

Air balloons are being built in the United States, Great Britain, France, Germany, Canada, Australia, New Zealand, China and Russia. The first place among the states - manufacturers of balloon flying machines are occupied by the United States of America.

In the list of devices offered to buyers by American companies, you can find thermo-airships, small air taxis, hybrid devices, cargo airships.

Currently, there are no serial models of similar devices on the market. There are only laboratory samples of separate countries; for example, USA, Germany, China and other countries. Researchers from more than a dozen countries are working hard to develop the designs of experienced models.

In the Republic of Kazakhstan (RK) there is no aviation industry, but there is a need for these enterprises in the industry [1-4].

At the same time, one of the reasons for the slowdown in the creation of the aerospace industry is the personnel issue. Therefore, the need for training of professional personnel for the creation of aviation and aerospace industry for the Republic of Kazakhstan was noted.

All this has a very negative impact on the training of aerospace specialists in Kazakhstani universities. There is no professional base for passing technological and pre-diploma internships, work equipment in accordance with the received professional education.

On the other hand, it will be purposeful for the creation and development of aerospace technology, to allocate the aerospace industry to an independent department. The lack of constant profits and stable cash flow in machine-building enterprises directly affected the process of renewal of professional staff. To solve these problems, it is necessary to reorient machine-building enterprises to the production of promising products needed in the world market.

These devices at an altitude of 15-35 km can very successfully keep under control a certain, rather large region of the earth, depending on the tasks set, using mini-sized: optical, infrared and radar remote sensing systems.

These vehicles do not require complex, expensive airfield facilities (a rather small runway 50-100 m long and small hangars), no launch complexes, etc.

The spacecraft can be over a certain region for 3-5 minutes before the next orbit. And stratospheric unmanned aerial vehicles and aerostatic aircraft can perform barrage, circling in high-altitude flight over a certain region from 1 to 240 hours.

US engineers have created a high-altitude monoplane aircraft with an electric motor for stratospheric monitoring of the earth's surface with a non-stop flight of up to five years. Comparison of these types of vehicles in many technical, operational and economic parameters will not be in favor of space vehicles.

In addition, there is no massive demand in the world for the results of space systems for remote sensing of the earth. Only a small number of specialized research organizations and government agencies need them.

Taking into account the above all the unsaid in the SDTB ASSE (Fig. 1-3), we began to study, conceptual and pre-sketch design of small aircraft, where aerospace technologies will be applied, including manned multicopters and high-altitude aerostatic aircraft. Any modern technology without basic components is doomed to failure. For success, you need to develop technologies in your home [1-4].

Any science, including fundamental science, must first of all solve applied problems, bring concrete benefits to scientific and technological progress, people and society.

When considering and expert evaluation of projects, the main criterion should be correctness, fairness, fruitful and mutually beneficial cooperation.

The presence and strengthening of human resources is a prerequisite for the development and successful implementation of ambitious projects in mechanical engineering and the country's economy.



Fig. 1. Discoplan design of SDTB ASSE



Fig. 2. Tethered balloon design

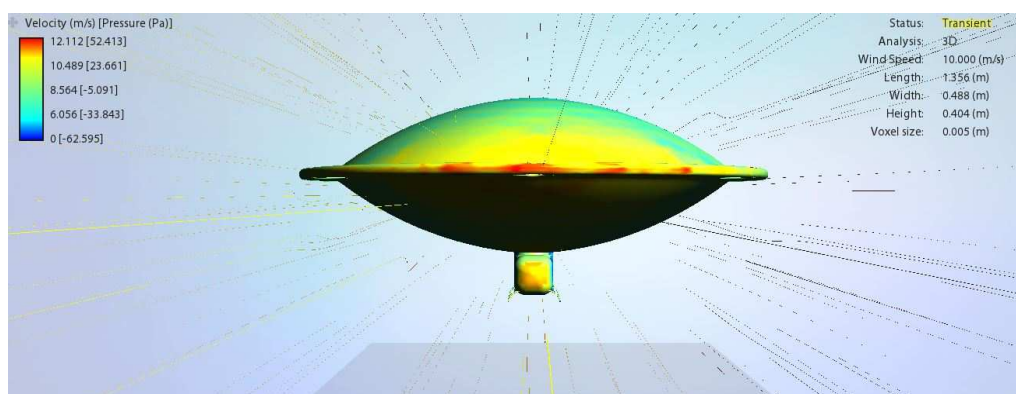


Fig. 3. Test in the virtual program Autodesk Flow

For projects providing for serial production of products, the amount of necessary funding should take into account the specifics of serial machine-building production with design and technological preparation of industrial production, taking into account the additional acquisition of the necessary technological equipment, as well as participation in co-financing of others; financial, business organizations and industrial enterprises.

In the Republic of Kazakhstan, there are real prerequisites for the development of engineering industries, defense and aerospace activities, and aerospace technologies are included in the six priority directions of the state policy of the Republic of Kazakhstan in the development of science and technology, since they are of particular importance for Kazakhstan with its geographic location and scale.

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