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“Minsk” Family of Computers

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During 10 years, from 1959 till 1969, several types of general-purpose computers had been developed in Belarus. These machines had become basics for the solved fleet of computers and their large-scale production was organized.

The Minsk machines actually faced no competition with other small general-purpose computers and easily became the basic model of this computer type. In 1956, upon completing the stage of development of the first computers, the resolution of the USSR Council of Ministers aimed at enforcing the expansion of computer production in the country was issued. In 1958, on the basis of the Ordzhonikidze factory in Minsk, a Special Design Department was organized to support and modernize the computers produced by the factory. Subsequently, it was transformed into an independent design and research company – NIIEVM working to this day. The first completely original project at the plant became a computer names “Minsk-1”. The Development of the device occurred in a fairly short time within 18 months. In parallel with the design of the machine, the Department also worked on preparing its series production.

Computer testing took place in September 1960, and the first production samples appeared in the same year. The speed of the computer was estimated at 2.5 thousand operations per second (for comparison: the speed developed by the Moscow Institute of Electronic Control Machines computer M-3 was about 30 operations per second). It was the “Minsk-1” model

(800 valves, 2500 instructions per second, a ferrite memory for 1KWord, 31-bit word length, a 2-addresses-for-operands instruction set, with point fixed before the highest bit, a peripheral memory on a magnetic tape for 64KWord, a punched tape input at 80 words per second, and a digital printing output at 20 words per second). Programming for this computer was carried out in machine code, but a library of 100 programs was supplied together with the machine. Also some of the world's first auto-programming systems – translators “Autocode Inzhener” and “Autocode Economist” – were developed for “Minsk-1”. Another competitive advantage of the machine was its relatively modest size. It took about 4 square meters of space to accommodate the entire system, while some other computers (for example, the Moscow BESM) took as much as 100 square meters. All this has allowed the computer “Minsk-1” in the first half of the 60's to become the leading type of tube production machines in the entire USSR. For four years, from 1960 to 1964, 230 “Minsk-1” computers were made, including a number modified for various industries.

“Minsk-1” had been produced up to 1964 and it had several fully inter-compatible versions: “Minsk-11” was designed for seismic data processing and for remote users. Eleven computers of this model were manufactured; “Minsk-12” had an extended main memory for 2048 KWord and tape drives for 100KWord. Five machines of this model were turned out; “Minsk-14” and “Minsk-16” were designed for telemetric data processing and equipped with appropriate reading devices. 36 “Minsk-14” machines and 1 “Minsk-16” machine were brought out.

“Minsk-100” was created by order of the Ministry of Interior of the USSR for the detection and storage of fingerprints and became the original fingerprint computer storage and retrieval system.

In parallel with the release of “Minsk-1” in 1960-1962, the second generation of the computer, “Minsk-2”, was developed, which represents the first semiconductor computer in the USSR.

The speed of the device was estimated at 5-6 thousand operations per second. It is important that it was “Minsk-2” that became the first computer in the whole of the USSR, which had the ability to enter and process textual information (before all machines worked exclusively with digital data).

In 1963, series production of “Minsk-2” was launched. In total, the plant produced 118 “Minsk-2” computers. A number of modified computers were also created on the basis of “Minsk-2”. “Minsk-26” and “Minsk-27” were intended, for example, for data processing, from meteorological rockets and Earth satellites “Meteor”. The most common model was the “Minsk-22” computer (734 devices were produced in total), which, in comparison with the base model, had several times more RAM and a tape drive. The device was extremely popular in the field of planning and economic calculations. But the most *breakthrough* model can be considered a computer “Minsk-23”, released in 1966. The speed of “Minsk-23” was about 7 thousand operations per second. It used many unique, technical developments, allowing the machine to work in multiprogram mode. At the same time, up to 3 working and 5 utility programs could be executed on the machine. The machine was fitted with a punched card reader (600 cards per second), a punched tape reader (1000 strings per second), an alphanumeric printer (400 strings per min), a card puncher (100 cards per min) and a tape puncher (80 characters per second). For the first time in the domestic computer history, “Minsk-23” was equipped with magnetic type drive – a rolled-type storage device which stored 32 bits per mm and was compatible with similar western drives. For this purpose, the machine was

supplied with the first in the USSR operating system “Dispatcher”.

Several large Soviet enterprises were based on the “Minsk-23” computer. The system, for example, was used in the Moscow association *Mosmoloko*, also based on it, a system was built for selling and reserving Aeroflot air tickets. But commercially successful “Minsk-23” can not be mentioned. Only 28 computers were manufactured. This failure, probably, derived from the fact that the underlying ideas of the computer were not transparent to users, there was no compatibility with the previous model, its performance was insufficient for scientific and engineering tasks, and the demand for business data processing was not developed at the enterprises and organizations.

“Minsk-32” computer came out in 1968 and absorbed all the best developments of previous models in the series. In addition to a significant increase in performance (the machine had a speed of about 30-35 thousand operations per second), the presence of a multiprogram operation system (up to four independent programs could work simultaneously) and the possibility of creating multi-machine systems based on it, the “Minsk-32” software compatibility with the previous computers of the “Minsk” family. The creation of complex and costly programs that operate only on a single hardware and software complex was common practice in the 1960s, so the implementation of such compatibility became a true innovation of “Minsk-32”, not only Soviet analogs, but also the majority of foreign computers. From 1968 to 1975, 2889 of these machines were produced, but despite such popularity, “Minsk-32” became the last representative of the entire family of the Minsk computer.

In 1970 the team of Minsk development engineers and manufactures, who had produced over 4000 computers were awarded with the USSR State Prize.