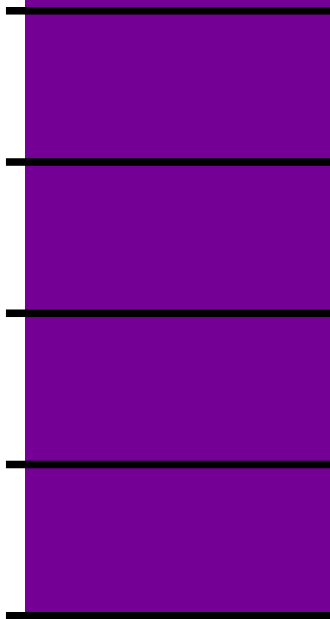


# Army Guide monthly



# **10** (1) October 2004

■ Chief Designer Who Was Well Ahead of His Time



## Defence Industry

### Chief Designer Who Was Well Ahead of His Time



The 29th of October 2004 will mark the 100th anniversary of Aleksandr A. Morozov, an outstanding tank designer of the 20th century, who was one of those who established tank design school, and after whom the Kharkiv Machine Building Design Bureau is named. The school in question is based on thorough analysis of solutions being used, low weight of vehicle designs, irreconcilability with temporary solutions and various luxuries, simplicity and reliability and, as a result, development of competitive examples of up-to-date armoured fighting vehicles.

#### Part 1

Aleksandr A. Morozov was born at a worker's family on 29 October 1904 in the town of Bezhitsa located in the Briansk District of Oryol Region. In 1914, the family moved to the city of Kharkiv, and Aleksandr D. Morozov, A.A. Morozov's father, got a job at the Kharkiv Locomotive Plant. Aleksandr A. Morozov started his career on 2 March 1919 as a copyist of technical documents at the Technical Office of the Kharkiv Locomotive Plant. In May 1923, he was promoted to the position of draftsman/designer. In November 1926, Aleksandr A. Morozov was ordered to active duty in the Red Army. He served in the army as a soldier at the 20th air squadron deployed in Kiev.

Having been released from the army in 1928 году, Aleksandr A. Morozov returned to the plant. On 18 October 1928, he started to work at the Tank Design Team headed by I.N. Aleksenko. At the time, Morozov took an active part in development of T-12 and T-24 tanks. During a period of two years, he combined his work with instruction by correspondence at the Moscow Lomonossov Correspondence Mechanics Institute and then at the Mechanics College of the Kharkiv Locomotive Plant. In 1933, Aleksandr A. Morozov began to study at the Military Training Section of Red Army House. On 1 May 1934, he completed the BT-series tank commander course.

This military training, albeit of a small scope, considerably influenced his views as an armament vehicle designer.

#### Part 2

On 29 July 1936, Aleksandr A. Morozov became the Head of New Design Department. As the Head of the De-partment, Aleksandr A. Morozov became acquainted with Mikhail I. Koshkin, who was appointed the Chief De-signer of the Tank Design Bureau of the Kharkiv Locomotive Plant in 1937.

Koshkin, who could easily make people out, began to

appreciate Morozov quite quickly and appointed him as his deputy. At that time, based on a requirement of the Armoured Vehicle Directorate of the Red Army, the Tank Design Bureau started to work on development of a new wheeled/tracked fast tank designated the A-20. Analysis of the design of the A-20 showed clearly that the tank gave only little advantage over the BT-7M tank as to its combat characteristics. Therefore, the Design Bureau, on its own initiative, started to work on development of an entirely new tracked tank called the A-32. As a result of purpose-oriented improvement of the A-32 prototype tank, the Design Bureau succeeded in developing a new tank called T-34, which became later on the main tank of the Soviet Army during the war against the Nazi Germany and was arguably the best tank of the Second World War.



#### Part 3



From October 1940, after the death of M.I. Koshkin, Aleksandr A. Morozov was appointed the Chief Designer of the Design Bureau.

At that time he was only 36 years old. When the war against the Nazi Germany broke out, the Design Bureau, together with the Plant, shifted to the town of Nizhny Tagil, in which tank production facilities were reestablished. In October 1941, Aleksandr A. Morozov was appointed the Chief Designer of the Urals Tank Plant. In 1943, he was awarded the title of Hero of Socialist Labour for his outstanding achievements in arranging production, development and improvement of tanks.

The military insisted on enhancing the firepower of tanks, and the designers of the Design Bureau had to work hard to fulfil the requirement. Their efforts resulted in successful development of the T-34-85 tank, which was on a par with the new German heavy tanks as to their fighting capabilities. On 22 January 1945, Aleksandr A. Morozov was given the rank of Major General of Tank Engineer Corps by the Decision of the Council of People's Commissars of the USSR for his efforts in development and continual improvement of

the T-34 tank.

Towards the end of the Second World War, the Design Bureau, headed by Aleksandr A. Morozov, developed the T-44 medium Tank, with the T-54 tank being developed in the post-war period. Aleksandr A Morozov was given State Awards for his participation in the development of the afore-mentioned tanks. On 13 November 1951, Aleksandr A. Morozov was ordered by the Minister to move to Kharkiv to work at his native plant. In Kharkiv, Morozov immediately started to work on development of a new, more capable tank. As early as October 1963, these efforts resulted in the T-64 tank which was decades in advance of any other vehicles existing elsewhere in the world at the time.

The T-64 became the basis for subsequent development of other tanks including the T-72, the T-80, etc.

#### Part 4



Although being quite busy with his professional work, Aleksandr A. Morozov was always involved in public work. In particular, he was repeatedly elected a member of the Communist Party's District and Regional Committees, and in 1976 he was elected a delegate to the 25th Congress of the Communist Party of the Soviet Union.

Aleksandr A. Morozov was renowned for the fact that he always prepared thoroughly for any kind of work he had to do, even the most insignificant. The same approach was used by him in his relationships with employees. Morozov always listened carefully to them and, whenever it was possible, he helped them and supported them in difficult situations. In so doing, he could not bear commonplace phrases, vague statements, uncertain or indistinct wordings.

In the 1960s, Aleksandr A. Morozov turned out to be not only an outstanding designer, but also a scientist. He carried out a profound analysis of trends in tank design and development and, based on the widest production experience and gained technical information, he wrote a scientific thesis. The High Examination Board gave a high appreciation of the thesis as well as giving Morozov a scientific degree of Doctor of Philosophy on 5 May 1972.

In 1974, Aleksandr A. Morozov was given the Order of Lenin and, once again, the title of Hero of Socialist

Labour by the Edict of the Presidium of the Supreme Council of the USSR for his outstanding achievements in the country's tank design and development. This was also dedicated to Morozov's seventieth anniversary.

On 4 June 1976, Aleksandr A. Morozov retired from the position of the Chief Designer and Head of the Design Bureau due to his worsened health. But his relationship with the Design Bureau did not cease, and, for many years later on, he had been an adviser of the Design Bureau and member of the Scientific and Technical Council of the Ministry up to his death on 14 June 1979. But whichever position Aleksandr A. Morozov occupied, he continued to be first of all Designer, always and everywhere.

Aleksandr A. Morozov dedicated more than 50 years of his life to improvement of our country's defence. He was given the following titles and awards:

- Hero of Socialist Labour (twice);
- Lenin Award;
- State Award (three times);
- Honoured Mechanician of the Ukrainian Soviet Socialist Republic;
- Order of Lenin (three times);
- Order of October Revolution;
- Order of Suvorov (Second Degree);
- Order of Kutuzov (First Degree);
- Order of Labour Red Banner;
- Order of Red Star;
- a lot of other medals of the Soviet Union.

In order to immortalize the memory of Aleksandr A. Morozov, the Government took a number of decisions:

- the Design Bureau, at which Morozov had worked for more than 50 years, of which 36 years as the Chief Designer, was named after Morozov to become the Morozov Design Bureau;
- the Kharkiv Mechanical College, which Aleksandr A. Morozov had been one of the first graduates of, was named after him;
- the Yumtovskaya Street of Kharkiv was renamed Morozov Street;
- bronze busts of Morozov were erected in the town of Briansk and at the plant where Aleksandr A. Morozov had worked.

Besides, the memory of Aleksandr A. Morozov still lives and will live in the dozens and hundreds of T-34 tanks installed on pedestals in many cities as well as in up-to-date tanks T-64, T-72 and T-80.

#### Part 5



The traditions of the Morozov's school are still to be found in the minds and activities of Ukrainian tank designers. This is proved by

availability of competitive armoured combat vehicles, which are much in demand, developed by the State-owned Enterprise Kharkiv Morozov Machine Building Design Bureau (SOE KMDB).

Today the SOE KMDB is the leading enterprise of the defence industry branch of Ukraine that deals with development of armoured fighting vehicles. The Design Bureau is a multi-profile organisation involved in the design, development, manufacture and trials of new and upgraded prototypes of armoured vehicles and relevant equipment. A considerable event in the activities of the SOE KMDB occurred in 1997 when a contract for supply of 320 T-80UD tanks to the Islamic Republic of Pakistan was concluded. The successful fulfilment of the contract enabled the Ukraine to strengthen its positions as a leading armoured combat vehicle developing and producing country.

The new developments that have been put in production in co-operation with the enterprises that are members of the concern Armoured Vehicles of Ukraine include the following: Ukrainian BM Oplot tank that features the latest achievements of science and technics in the field of tank design and development; a version of the BM Oplot tank called BM Yatan and fitted with a NATO-standard 120 mm gun (this tank underwent comparative evaluation trials); BREM-84 armoured repair and recovery vehicle; upgrade packages for T-54, T-55, T-59, T-62 and T-72 tanks to meet the requirements of potential foreign customers. For the Armed Forces of the Ukraine, the Design Bureau has developed an upgrade package for the T-64B tank, which, when upgraded, is re-named the BM Bulat.

The upgrade package enables the T-64B to acquire main combat characteristics up to the level of modern tanks. A comprehensive re-design of the T-72 tank carried by the Design bureau has made it possible to turn the T-72 into a heavy infantry fighting vehicle designated the BMP-T. The vehicle features a troop compartment for five infantry soldiers as well as characteristics of protection, armament and mobility equal to those of a battle tank.

The SOE KMDB also develops new light tracked and wheeled armoured vehicles (infantry fighting vehicles, armoured personnel carriers, armoured scout cars, etc.) as well as upgrading existing vehicles of this class. For example, an up-to-date baseline armoured personnel carrier has been developed under the designation BTR-3; upgrade packages have been developed for BTR-50/BTR-60/BTR-70 series and M113 series armoured personnel carriers.

An up-to-date fighting module has been developed under the designation BM Grom to be installed on armoured personnel carriers and infantry combat vehicles. Also have been developed and are now under trials the multi-purpose car called Dozor-A and armoured personnel carrier called Dozor-B.

The Design Bureau has also become involved in the design, development and manufacture of state-of-the-art training aids. These aids include video films, integrated dynamic armoured fighting vehicle crew training

simulators which realistically simulate not only the crew stations and combat situations but also real crew workload.

Nowadays the wide experience and expertise of the SOE KMDB, headed by the General Designer of Armoured Vehicles and Artillery Systems of Ukraine, Doctor of Philosophy and Hero of Ukraine Lt Gen Mikhaylo D. Borysyuk, enable it to retain its position among the world's leading companies involved in tank design and development and to be worthy of the glory of the man it is named after – Aleksandr A. Morozov.

