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Location

1. The Moscow Tire Factory (Moskovski Shinny Zavod) is located in the Zhdanov Raion of Moscow. The factory is situated near, and to the north of, the First State Bearing Factory imeni Kaganovich and west of Boinya Railway Station, between Novo Ostapovskaya Street and Dubrovski Proyezd. A special branch line known as the Dubrovskaya line connects the factory with Boinya Station.

Control

2. The factory is controlled by the Ministry for Chemical Industry (Ministerstvo Khimicheskoi Promyshlennosti) and is directly subordinate to the Chief Directorate of the Tire Industry (Glavnoye Upravleniye Shinnoi Promyshlennosti or Glavshinprom).

History

3. The construction of the Moscow Tire Factory commenced at the end of 1943 while Moscow was still subjected to enemy air raids. By autumn 1945 all the main shops had been completed. These included the rubber mixing shop, calender shop, rolling shop, vulcanizing shop, inner tube shop, and assembly shop. In addition two large water tanks, a complex steam conveying system, and a water cooling system were installed. About 225 km of piping were laid and artesian wells sunk. In October 1945 automatic and mechanical equipment of the latest type was introduced into all shops of the factory under the supervision of Engineers Koperovski and Moshchny. About 1,300 machine tools, aggregates, and special machinery of a total weight of about 12,500 tons, in addition to 1,600 motors, were installed in the shops, as well as about 11 km of conveyor belts.

4. In December 1945, before the factory buildings had been completed and all equipment installed, experiments had already taken place in the production of

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tubes and tires. About 50 specialists, including engineers, technicians, and foremen, from the Yaroslavl Tire Factory were temporarily attached to the factory to organize production. As early as 1944 specialists from the Moscow Tire Factory had been sent on a course to be trained in the various aspects of tire manufacture and were then sent to other factories, mainly the Yaroslavl Tire Factory, for further training. Experimental production continued over a period of two months, during which time engineers and workers were becoming familiar with the new machinery and methods of production.

5. The first orders, which were received in February 1946, were for tires for M-1 light cars manufactured by the Gorki Automobile Factory imeni Molotov and for tires for ZIS-150 trucks.

6. During this period the design bureau of the factory under E. P. Kapustina, a chemical engineer who since 1930 has been employed on tire construction at the Krasny Treugolnik Factory at Leningrad, drew up designs for tires of new types for other motor vehicles.

7. During 1946 the output of tires, inner tubes, and flaps (flep) increased monthly. At first the quality of the tires and inner tubes was satisfactory; but during the drive to increase output negligence crept in, and consequently the quality of the work suffered. During June, July, and August 1946 first-grade tires amounted to 75 percent, second-grade to 20-22 percent, and the remainder were rejects.

8. A commission consisting of members of the Chief Directorate of the Tire Industry and members of the Scientific Research Institute of the Tire Industry was appointed to ascertain the reason for the deterioration in the quality of the tires and to put forward suggestions to improve their quality. The commission was headed by E. Yevstratova, the chief of the Scientific Research Institute of the Tire Industry. As a result of the findings of the commission, stricter methods to carry out accurately the various technological processes were adopted, more attention was paid to cleanliness, especially in the preparation and rubber mixing shops, and controls were tightened. A small piece of rubber was cut off every sheet of rubber received from the sheeting rollers. This piece of rubber was then sent by pneumatic tube to the laboratory, where it was tested and a decision given as to whether it should be used or rejected. Particular attention was paid to warming rubber during various processes, especially in the calender shop, and to preventing rubber cooling during transit as this caused the edges of the tires to separate into layers.

9. As a result of these and other measures, a great improvement took place in the quality of tires and inner tubes produced. The output of first-grade tires and tubes reached 90 percent and later 95-99 percent of the total output. At the end of 1949 the Chief Directorate of the Tire Industry ordered that the percentage of first-grade truck tires should not fall below 95 percent and first-grade light car tires 97 percent. The percentage of rejects in 1949 fell to 0.8 percent and 0.5 percent in 1950.

10. In 1950 the Party organization and the factory administration did everything possible to gain the title of Stakhanov for the factory. Several meetings were held at which all personnel pledged themselves to achieve this title. By the end of 1950 three-quarters of the factory shops had earned the title Stakhanov, and the output was still on the increase. At this stage, however, owing to the curtailment of supplies of rubber from abroad, the factory had to manufacture tires and tubes from synthetic rubber of home manufacture or produced in countries under Soviet domination. Prior to this, part of the tire was made from synthetic rubber and part from natural rubber.

11. Owing to the shortage of natural rubber, experiments in the production of inner tubes from synthetic rubber was started early in 1950, and by the middle of 1950 inner tubes thus manufactured had undergone tests with satisfactory results. In November 1950 the production of tires from synthetic rubber was started. This required soot, cord, and fabrics, etc, of different types in addition to alterations in the quantities contained in the mixtures. Apart

from this, the manufacture of tires took longer than previously, and the workmen had to acquire a new technique.

12. By July 1951 the factory was producing tires of all types with the exception of aircraft tires, special tires for racing cars, tires for ZIS-150 three-axle trucks and ZIS-253 trucks.

13. The quality of the tires deteriorated, and the percentage of rejects increased at times to 2 percent. Owing to the larger number of tires produced, a 2 percent rejection amounted to 2,500-3,000 completely rejected tires a month. Complaints were received from customers that after a short period of use the tread of the tire peeled off from the breaker (breker) or from the framework and sometimes the framework itself split up into layers.

14. As the factory was not fulfilling the requirements of a Stakhanov enterprise, the Zhdanov area Party organization investigated the reason for the deterioration in the quality of the output, and the director Chesnokov, although a Communist, was severely criticized by the factory Party organization. Chesnokov was, however, defended by the factory trade union organization headed by Kashchev and retained his post. He was also defended by the factory Party organization, headed by K. N. Ignatiyev.

15. The technical branch of the factory in collaboration with the Scientific Research Institute of the Tire Industry carried out exhaustive experiments both in the central laboratory of the factory and also in the experimental shop. New materials were introduced in the rubber mixtures, and alterations made in the methods of production. This brought about an improvement in the quality of the tires, and it is hoped that the quality of tires produced in the near future will be in no way inferior to those manufactured in the past from a mixture of natural and synthetic rubber.

16. Since 1946 there has been a considerable annual increase in the output of tires, and in 1950 the output equalled that of the Yaroslavl Order of Lenin Tire Factory No. 736, which is the largest tire factory in the USSR.

Methods Employed in the Factory

17. Soot and other materials are loaded into mechanical carts which are raised in special elevators to the preparation shop (podgotovitelny tsekh), situated on the fourth floor, where soot is unloaded into machinery such as bunkers, sieves, and pipes and is subsequently transported by conveyors to the rubber mixing shop.

18. Mixing of materials for rubber such as soot, sulphur, rosin, etc, is done by machinery. Measuring out is done automatically. Special scales, which have been previously adjusted, weigh and apportion soot for rubber of a particular type.

19. Cutting of rubber is done by hydraulic cutters.

20. In the calender shop rubber is moved about the shops on conveyor belts, while cord and fabrics are moved by motors which run on rails suspended from the ceiling.

21. Tires are moved from the assembly shop on a conveyor to the vulcanizing shop, where they are automatically thrown off the conveyor. While in transit to the vulcanizing shop, the tires go through a special process during which they are given the required shape. Vulcanizing is carried out in separate moulds (water temperature 180 degrees, compression 30 atm). This operation is done automatically, and workers are only required to remove the finished article.

22. There is a very large inner tube shop with round presses equipped with hot steam pipes and fitted with measuring and control devices. Cutting of the inner tube is effected with the aid of a photoelectric cell.

Types of Tires Produced, with Their Markings

23. Two categories of tires are produced. One of these is for light cars and is known as the ordinary (obyknovenny) and the second for trucks, motor buses, and trolley buses and is known as the giant (gigant). This division of tires was officially abolished after the war but is nevertheless used by all tire factories and motor vehicle organizations.

24. Dependent on construction and air pressure, tires are subdivided as follows:

High-pressure tires (pressure 5-7 atm)
Low-pressure balloon tires (pressure 1.75-5 atm). These tires have greater width than depth.
Super-balloon tires (pressure 0.8-1.75 atm). The width of these tires is greater than that of the low-pressure balloon tires.

25. In the USSR the sizes of tires are given in inches, as in the USA. A high pressure tire with an external diameter of 34 inches and a width of 7 inches would be described as size 34 x 7. The width and depth of a high-pressure tire is assumed to be equal, so a 34-inch diameter high-pressure tire would fit a wheel of 20-inch diameter. Low-pressure balloon tires are described differently. A tire marked 6.50-20 would signify a tire with a depth of 6½ inches fitting a wheel with a 20-inch diameter rim. The size of the tire, name of the manufacturing factory, and date of production are shown on the side of the tire. Prior to and during the war this information was given in code. For instance a tire might be marked YAKV. YA would indicate that it was produced by the Yaroslavl Tire Factory, K would indicate 1939, and V stood for February. This information is now given openly. MKI 48 5.00-16 indicates that the tire was manufactured at the Moscow Tire Factory in November 1948 and is a low-pressure tire with a 16-inch rim and depth of 5 inches. Latterly MShZ has been substituted for M.

26. A detailed description of tires produced between 1946 and 1951 follows:

a. Low-pressure balloon tires 7.00-16 for GAZ M-1 light cars. These tires had four layers of cord (thick twisted cotton thread covered with rubber) in the frame work of the tire. Since 1948 cotton cord has been replaced in some tires by viscose cord or other cord impregnated with a special heat-resisting composition.

b. 34 x 7 tires for ZIS-5, ZIS-8, and ZIS-11 trucks. These tires contain 10 layers of cord and two metal cores. They have various tread designs including the "Ground-grip" design. In 1946 the cost of one of these tires at the factory was about 300 rubles.

c. 4.50-16 tires for Moskvich light cars; four layers of cord.

d. 9.00-20 tires for ZIS-5, ZIS-8 and ZIS-16 vehicles; nine layers of cord and two metal cores.

e. 10.5-20 tires for ZIS-154 trucks and motor buses; ten layers of cord.

f. 7.50-15 tires for ZIS-110 light cars; six layers of cord.

g. 7.50-20 tires for 2.5-ton GAZ-51 motor vehicles; eight layers of cord. The tread has Volna and Shashka designs. (wave and checker).

h. 9.00-20 tires for ZIS-150 three-axle trucks and for ZIS-253 trucks; 10 layers of cord. A tire of this type differs from those of the same size for ZIS-5 trucks.

i. 40 x 8 tires for five-ton motor vehicles YaAZ-4 and YaAZ-6 produced by the Yaroslavl Automobile Factory; 12 layers of cord and two metal cores.

j. 12.00-20 and 11.25-20 tires for 5-ton and 7-ton YaAZ-200 motor vehicles; 14 layers of cord and two cores.

k. 7.50-17 tires for ZIS-101 light cars; six layers of cord.

l. 6.00-16 tires for GAZ-M-20 (Pobeda); four layers of cord.

m. 6.50-15 tires for GAZ-67 B; six layers of cord.

n. 6.50-20 tires for GAZ-AA; six layers of cord.

o. 5.00-16 tires for racing cars; made of special material and natural rubber.

In addition to the above, the factory produces aircraft tires of six types and motorcycle tires of one type which are supplied to the Moscow Motorcycle Factory.

27. The life of some first- and second-grade tires is fixed at 40,000 km and for light cars at 25,000 kms. In 1948, however, the Moscow Tire Factory commenced issuing guarantees with their tires. These included a 30,000 km guarantee for tires for the Moskvich light car and a 40,000 km guarantee for tires for ZIS-150 trucks, of which the standard life is 30,000 kms.

28. Output in round figures is as follows:

	Tires of All Types
1946 (March to December)	230,000
1947	525,000
1948	900,000
1949	1275,000
1950	1515,000
1951 (January to June)	800,000

1946 to 1950 the factory turned out 445,000 tires and 5,200,000 inner tubes.

Miscellaneous Output

29. The factory also produced a considerable number of flaps. A flap is a ring-shaped rubber band with a hole to take the tube valve. The flap is fitted to wheels of trucks and motor buses to prevent the inner tube from rubbing against the surface of the rim.

30. The waste utilization shop (tsekh ispolzovaniya zavodskikh otkhodov) produces a large number of tire repair outfits (avtoaptechka), overshoes, and small rubber consumer goods of several types.

31. Prior to 1950 the factory produced some tire repair outfits of these types: APK-1, APK-1R, and AK-2. The first two sets were for repairing tires and tubes under field conditions, and the third was for repairing inner tubes only.

32. In 1950 the factory produced a new standard repair outfit known as the AR-4, which was made up of the following:

a. Rubber mushrooms (greyebka) or metal and rubber mushrooms for repairing nail punctures.

b. Patches consisting of strong double rubberized fabric (avtopneu), 200 x 250 mm or 350 x 250 mm, for repairing tires.

c. Sets of vulcanized rubber 0.6-1.5 mm thick and 1.5-3.00 mm thick, for tube repairs.

d. Set of crude rubber patches of 45 and 55 mm diameter for use in the vulcanization of tubes.

e. Metal vulcanizing cups.

f. Briquettes consisting of compressed paper impregnated with saltpeter or some other substance suitable for easy combustion. These briquettes are used for vulcanizing.

g. Metal roller for treating patches.

h. Slides (zolotnik) and caps for valves.

i. Emery paper No 1 and No 2.

j. Metal brushes.

k. Rubber solution packed in tins.

l. Talcum (150 grams).

Personnel

33. Chief personnel are as follows:

Director Vladimir Petrovich Chesnokov. He had held this appointment since 1945.
Chief Engineer: A. M. Saltykov
Deputy Chief Engineer: V. I. Vlasov
Chief Power Supply Engineer: (Glavnay Energertik) K. V. Myasnikov
Chief of the Central Laboratory: G. P. Barteniyev
Chief of the Design Bureau: Chemical Engineer E. P. Kapustina
Designers: Engineers Mishnev, Polyakov, Shilegodskaya, Varlamov

34. Number of personnel employed is possibly between 3,500-4,000, working in three shifts.

Shops

35. The factory has eight main shops and eight auxiliary shops. A description of some of the shops follows:

a. Main Shops

Raw Material Preparation Shop (Tsekh Podgotovki Syriya)
Chief - Engineer Yurovski.

Preparatory Shop (Podgotovitelny Tsekh): Chief - Mukhanov. Prepares all substances, both dry and liquid, for the rubber mixing shop.

Rolling Shop (Valtsovy Tsekh): Chief - Poluchistikov.

Calender Shop (Tsekh Kalandrov): Chief - Donskoi. In this shop fabrics moving on conveyors are treated with rubber in layers. In addition this shop produces tire treads. For this purpose, the shop is equipped with two very long tread aggregates (protektorny agregat).

Rubber Mixing Shop (Rezinosmesitelny Tsekh): Acting Chief - Engineer Rolzenburd. The shop is equipped with special machines for eliminating foreign matter from rubber mixtures.

Vulcanizing Shop (Tsekh Vulkanizatsii): Chief - Semenov.

Inner Tube Shop (Kamerny Tsekh): Chief - Vilents. This is the second largest shop in the factory.

Assembly Shop (Sborochny Tsekh): Chief - Engineer V. A. Us. Us became a Stalin Prize winner for working out, in conjunction with other engineers, machine tools of a new design and a new method of assembling tires. The Assembly Shop is the largest shop in the factory.

b. Auxiliary Shops

Electrical Shop (Elektricheski Tsekh).

Waste Products Utilization Shop (Tsekh Ispolzovaniya Zavodskikh Otkhodov).

Engineering and Repair Shop (Remontno-Mekhanicheski Tsekh).

Transport Shop (Transportny Tsekh).

Experimental Shop (Eksperimentalny Tsekh), etc.

36. In addition to the shops mentioned above, the factory has a large central laboratory and a testing stand for tires (ispytatelny stend dlya shin). The stand has a large steel wheel with a rough uneven surface. A tire under test, which rotates on a second wheel, is pressed tightly against the steel wheel. The steel wheel is then rotated at varying speeds, and the tire under test is thus subjected to jolting, friction, etc.