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THE PRINCIPLES OF ORGANIZING THE MATERIAL-TECHNICAL SUPPORT OF THE ELECTRIC MACHINE-BUILDING COMPLEX OF THE UKSSR IN 1920-1925

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ОРГАНІЗАЦІЙНІ ЗАСАДИ МАТЕРІАЛЬНО-ТЕХНІЧНОГО ЗАБЕЗПЕЧЕННЯ ЕЛЕКТРОМАШИНОБУДІВНОГО КОМПЛЕКСУ УСРР У 1920–1925 РР.

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In this article re-create the historical picture of the process of forming the material and technical component of Ukrainian electric machine engineering during 1920-1925. Clarified that it took place in the context of policies of concentration of production in the public sector of the economy and centralization of the republican industry management at the Union level, and that fully corresponded to the concept of the USSR government regarding the conduct of electrification of the country. During the study period, the order of material and technical support of electric machine-building became the main and most effective way to achieve the objectives set by these policies in the Ukrainian segment of the Union industry. Electrification of production processes became one of the cornerstones of the Soviet government's industrialization of industry, the beginning of which he laid in the second half of the 1920s. This moment has determined the leading role of electrical engineering in the period of total transition to mechanization of production processes, as the development of this industry directly affected the composition of their characters and, accordingly, the consumption of electricity through the production of its conversion into mechanical and vice versa. Meanwhile, as early as the early 1920s, the domestic sphere of electric machine production was in a deep crisis, connected primarily with the consequences of the civil war (1918–1921). However, given the scale of the tasks set before it within the Soviet concept of electrification of the country in the middle of the same decade, its scientific and technological potential at this time was strong enough to at least achieve such tasks. However with it, the principles of filling the material-technical component of the scientific-technical potential of the electric machine-building complex, formed at that time, complicated this component future optimization, since they were based on the preventive increase in the absolute value of production capacities, without taking into account both the dynamics of the expansion of the range of electric machines and the development of means and technologies for their production.

Keywords: electrification, electric machines, industrialization, scientific-technical potential, new economic policy

Introduction. Electrification of production processes became one of the cornerstones of the Soviet government's industrialization of industry, the beginning of which he laid in the second half of the 1920s. This moment has determined the leading role of electrical engineering in the period of total transition to mechanization of production processes, as the development of this industry directly affected the composition of their characters and, accordingly, the consumption of electricity through the production of its conversion into mechanical and vice versa. Meanwhile, as early as the early 1920s, the domestic sphere of electric machine production was in a deep crisis, connected primarily with the consequences of the civil war (1918–1921). However, given the scale of the tasks set before it within the Soviet concept of electrification of the country in the middle of the same decade, its scientific and technological potential at this time was strong enough to at least achieve such tasks. At least, even with the weakness of scientific, organizational and personnel support, its material and technical component should have allowed to immediately undertake the implementation of the received production plans, because otherwise, even their adoption would be meaningless. Thus, the 1920s in the history of Ukrainian electrical engineering were marked by the fact of its rapid exit from the crisis with the concomitant strengthening of the material and technical base, which could not be done without the establishment of appropriate support at that time. Thus, the results of the research conducted within the chosen topic acquire the character of knowledge about the organization of post-crisis development of the most knowledge-intensive industries in the conditions of abrupt growth of demand for their products, which makes the provided scientific work relevant.

In the historiography of the development of electrical engineering in Ukraine, the issue of its logistics during 1920-1925 is practically not covered, although it should be acknowledged that there is little historiographical material on Ukrainian electrical engineering in this period. Hence, the second part of the collective work "Essay on the History of the Kharkiv Electromechanical Plant" [1], in fact, is the only historical study where the state of the material and technical base of the Ukrainian segment of the Soviet sphere of electric machines in 1920-1925. Relevant information is contained in Chapter 2 ("Transition to Peaceful Construction"), in which the logistics of the Kharkiv Electromechanical Plant (HEMZ) is considered in some areas: fuel and energy resources, raw materials and semi-finished products, means of production, capital construction. However, the authors of [1] avoided as much as possible specifics in covering the ways of its implementation and providing assessments of the results of relevant measures, limiting themselves to absolutely generalized quantitative criteria and not applying qualitative ones at all. However, the information provided in the study [1] relates to only one, albeit very powerful, electrical engineering company, when the Ukrainian SSR inherited from the tsar at least seven factories, in the range of products of which in 1920 were electric machines [2, p. 2]. In addition, since pre-Soviet times, there has been a fairly extensive network of electromechanical workshops in Ukraine engaged in piecemeal and small-scale production, as well as overhaul of electric machines, which resumed their activities in the USSR in the early 1920s new economic policy (NEP) and formed a certain segment of the industry.

Thus, in view of the above, we can state the lack of research on the history of electrical engineering in Ukraine any complete information on the issue, at least - sufficient to reproduce the historical picture of the organizational foundations of the process of filling the material and technical component of industry scientific and technical potential during 1920-1925 and providing a general assessment of the degree of their compliance with the chosen policy of electrification of the country, which are the objectives of this scientific work. The purpose of the latter is to clarify the degree of influence that exists during the selected chronological shade of the order of logistics of Ukrainian electrical engineering on the further development of the industry.

Main part. First of all, it should be noted that the establishment of Soviet power was accompanied by the nationalization of the qualifying industry, according to which all enterprises with more than 15 employees. in the presence of a mechanical engine and more than 30 people. without this passed to state ownership [3, p. 113]. Thus, the main and, practically, determining share of the material and technical base of Ukrainian industry was at the disposal of the state, which since the early 1920s was carried out through a hierarchically structured network of territorial councils of the national economy (RNG). According to the established

procedure, the management of the material and technical component of the scientific and technical potential of the most developed industry-forming enterprises in the USSR was assigned to the Supreme RNG (VRNG) of the RSFSR, and the Ukrainian authorities were assigned only supervisory functions. The Republican RNG of the USSR (URNG, Ukradnarhosp) was entrusted with the management of the material and technical base of medium-sized, but well-equipped with modern means of production plants, the activities of each of which, however, did not dramatically affect the performance of relevant industries as a whole. Less industrialized qualifying enterprises, as well as non-qualifying industries came under the control of provincial (provincial farms) and county RNG, but in 1921 the latter, as obviously redundant, were liquidated. Thus, in the early 1920s, a three-tier system of organization of management of Ukrainian industry and, accordingly, its logistics was formed. Management of the main (central) level was concentrated in Moscow in initially Russian, and after the formation of the USSR - union economic structures, the other two levels were controlled by the republican government through a system of administrative bodies of sales and supply URNG and local soviet economies. At the same time, direct filling, control and accounting of regional material and technical resources of industry was carried out by provincial farms, which, however, did not give them the right to dispose of them without approval of appropriate measures by higher republican authorities, in turn agreed with allied economic authorities [4, p. 3-5].

In the above way, a high degree of efficiency was achieved in taking into account the material and technical base of Ukrainian industry, for which the entire 1920 and early 1921 took place in a fuel crisis that began at the turn of 1917-1918, against the background of socio-political transformations led to its almost complete paralysis with the corresponding scattering of the remains of unused material and technical resources in numerous industrial establishments. At the same time, the concentration of administrative functions in relation to the latter at the central level allowed limiting excessive consumption by small enterprises to local situational needs, which in the absence of the process of recovery of material and technical resources threatened the final depletion of raw materials and fuel reserves for large industries. degradation followed by a very problematic recovery [5, p. 1]. For example, as a result of paralysis of domestic industry and focused exclusively on solid fuel of the electricity sector, the need for electrical engineering products in the early 1920s was minimal and amounted to about 4% of consumption of electric machines on the eve of World War I [6, p. 36]. Therefore, the simultaneous involvement of all existing electrical engineering facilities in Ukraine would undoubtedly lead to the prosperity of small specialized workshops, but, at the same time, to the actual complete shutdown

of large and medium-sized electromechanical enterprises.

Given the uncertainty of the duration of the crisis, any prolonged downtime of large and medium-sized electromechanical plants could lead to critical losses of qualified personnel, which, even with the preservation of fixed assets, clearly would not allow to quickly resume production. Meanwhile, in the early 1920s, the process of electrification of domestic industry no longer had an alternative - that is, its implementation acquired historical urgency and irreversibility and had to begin at the same time weakening the crisis in the economy. At the same time, the degree of economic necessity of electrification of the industry reached such a magnitude that the start of this process in the already Soviet Ukraine could not have been other than rapid. This factor made it impossible to meet the expected, even at the initial stage, consumer needs for electric machines with the corresponding total production capacity of existing small businesses. Because of this, maintaining the efficiency of electrical engineering plants in the economic crisis was the only guarantee of achieving comparable growth rates of production and consumption of electric machines at the time of a sharp increase in demand for the latter after the country emerged from the crisis.

Taking into account the above argumentation, the Supreme Soviet of the RSFSR on July 6, 1920, decided on the logistics of subordinate to the Russian (at that time - the central) economic bodies of Ukrainian electromechanical enterprises on the same basis with military plants [7, p. 20]. At the same time, according to the same supply, the republican and locally subordinated electric machine-building plants maintained the general order for all nationalized factories and plants for the production of civil products. Prior to that, the current situation with fuel did not allow centrally subordinated enterprises to gain an advantage in their production activities over local and republican subordinate enterprises. Thus, due to the actual shutdown in 1918 of the coal complex, the main type of fuel in Ukrainian industry began to be firewood, the sources of which (forests) were under the full control of local authorities. Thus, the provincial economies were able to influence the priority supply of firewood to their subordinate enterprises, and secondly - the republican, ignoring the relevant requirements of the Supreme Economic Council under the pretext of lack of labor in the procurement of firewood. As a result, electric machine-building plants of central subordination were forced to send their production personnel to harvest firewood in the amount of up to half of the available industrial and production personnel [8, p. 19]. In addition, the areas designated by the local authorities for the plants of central subordination for firewood were located at a considerable distance from the transport communications, which made it quite problematic for them to deliver firewood in a prostitute [9]. Hence, due to the diversion of considerable effort and time to provide themselves with fuel resources, centrally

subordinated electromechanical institutions lost their advantage over the national and local enterprises, provided to them by the quantity and quality of industrial capacity.

In fact, the combined productivity of the enterprises of each of the three groups of the hierarchically distributed electrical engineering industry, which was equalized by the method of fuel supply, allowed all of them to receive an equal supply of raw materials and components by the mid-1920s, the volumes of which were regulated by productivity indicators. Therefore, despite the fall in consumer demand for electric machines, the number of qualifying electromechanical institutions in the USSR at that time remained at the pre-revolutionary level (within comparable territories) [10, p. 4]. At the same time, powerful enterprises worked on the verge of their shutdown, and small - in their usual mode chaotically distributed over time, but stable corresponding to the overall production capacity of demand. To remedy the situation in favor of large plants, from mid-June 1920 the Industrial Bureau of the VRNG (Promburo) in Ukraine at its territorial electrical departments organized special warehouses of raw materials and components for the centrally subordinate electrical industry, which included the Kharkiv Electromechanical Plant of the former (RT) "ZEK" (until the summer of 1917 - "ZKE"), which was named "Electrosila № 1" [11, p. 8]. The filling of these warehouses took place both due to the alienation of the share of the respective funds controlled by the Gubradnarhozes in proportion to the current production costs, and due to the targeted addressing of the imported components inherited from the Civil War and received by the Soviet government after the American and Japanese electricity companies. enterprises of former Russian firms [12, p. 54]. Together with the stocks of raw materials and semi-finished products accumulated at the central and republican subordinate electromechanical plants in the pre-crisis period, the formed reserve of material and technical means allowed this group of enterprises to form a significant handicap on the market of electric machine manufacturers.

Meanwhile, 1921 was marked by the continuation of the crisis and a further twenty percent drop in demand for electrical engineering products, which, however, took place in the already radically different conditions of logistics of the profile industry of the USSR [10, p. 89]. Therefore, a number of electromechanical enterprises, which had no reserves of raw materials and components, ceased to exist, and the total number of electrical engineering industrial institutions in the Ukrainian SSR decreased from 49 to 31, or 36.7% [10, p. 4]. However, it should be acknowledged that the number of closed institutions includes not only deprived of material and technical resources plants and workshops, but also those whose production was stopped in order to maintain the efficiency of more technically and staffed enterprises in the region. Thus, based on this goal, the work of the

republican subordinate electromechanical plant of the former Russian Society (RT) "Siemens-Schuckert" and the locally subordinate electromechanical plant of the Russian-French society were stopped in Kharkiv. In this way, the degree of supply of orders for the best technically equipped and staffed electromechanical plant "Electrosila № 1" increased [13, p. 6]. In Nikolaev, for more dense loading by orders of locally subordinated workshops of the Building bureau of former RT "ZEK" the newly built, but incomplete with machine equipment republican subordinated electromechanical plant "Temvod" was preserved [13, p. 6; 14, p. 7]. Thus, during 1921 the material and technical base of the electrical engineering subordinated to the republican economic bodies turned out to be completely preserved, and the local ones - half. Of the state-owned enterprises subordinated to the Gubradnarhozes, the unfinished Vickers plant in Katerynoslav, the electromechanical plant in Kyiv, the railway alarm plant in Odesa, and the workshops of the Construction Bureau of the former RT ZEK in Kharkiv and Mykolayiv remained operational [10, p. 90]. The rest of the locally subordinated qualifying electromechanical industry consisted of small private and cooperative institutions, the technical equipment of which was quite weak, and the logistics - spontaneous.

Due to the rather confusing policy of the state on the development of industrial cooperation, with the introduction of the NEP in 1921, enterprises with this form of ownership did not become widespread, forming even after the settlement by 1923 the order of cooperative relations only 28% of non-state industrial sector [15, p. 44]. Thus, private enterprises in 1921–1922 accounted for more than 70% of non-state electrical engineering or 18 out of 25 qualifying electromechanical institutions in this sector of the Ukrainian profile industry. In the absence of specific data, but taking into account the criterion of eligibility, the estimated number of employees in private electrical engineering at that time should be at least 270 people, and in general in the non-governmental - 375 people, which corresponded to at least a quarter of the total number of employees. industries in the republic. However, despite such a significant indicator in the balance of distribution between the state and non-state sectors of the economy employed in electrical engineering, the non-state sector could not compete with the state in the production of electric machines. This was hindered by the political involvement of the Soviet government, whose ideology a priori ruled out the possibility of dominance of the private sector in any sphere of state activity. Because of this, private enterprises had access to material and technical resources concentrated in the state through the previously mentioned measures, thirdly - after the institutions of the state and cooperative sectors of the economy. Given that the private sector had the same priority of access to credit resources and even four times more than the state, for five times less credit terms and the need to provide 25% more credit security, the

process of strengthening the material -technical base of non-state electrical engineering was doomed to pass at a much slower pace than the state [16, p. 66].

At the same time, the large-scale process of conservation of non-operating enterprises launched in 1921–1922, followed by the transfer of the withdrawn active share of fixed assets to operating plants, was very large, but officially concerned only the public sector, which further confirms the secondary logistics of non-state enterprises. sector of non-alternative state sources in this matter [17, p. 16]. And while we cannot deny the unofficial supply of non-state electrical engineering by means of production and ancillary equipment removed from non-operating enterprises, its volumes, due to this "informality", could not be significant to make the industrial sector competitive with industrial capacity. Because of this, the flow of orders for new electric machines was directed to state-owned enterprises, which, unlike private ones, were able to provide the required performance without the involvement of associates, even when producing large volumes of rather complex samples of this type of equipment.

Due to the situation, in 1922 almost all private and cooperative industrial institutions refocused exclusively on the repair of electromechanical equipment, completely freeing the market for the production of new machines for the public sector. However, the demand for electromechanical products remained low, as a result of which there were conditions for the development of competition in the relevant market already between the governing bodies of the centrally subordinated industry and local government agencies. To strengthen the position in this struggle, the central government in 1922 conducted an additional concentration of management of its subordinate electrical industrial facilities, resulting in the creation of the Central District Electrotechnical Trust (ETCR) with a board in Moscow [18, p. 76]. This step allowed to improve coordination in the organization of logistics of the respective enterprises, which, in turn, led to their more rhythmic work. As a result, the placing of orders for the manufacture of electric machines at these plants became even more attractive, and given that the number of customers was also dominated by industry-forming enterprises of central subordination, ETCR managed to monopolize the entire domestic market of this equipment. Thus, in 1923, the local subordinate state Ukrainian electrical engineering found itself in the same conditions of sporadic production as non-state. Meanwhile, if the latter due to its organizational flexibility managed to maintain at least some profitability, the cumbersome organizational scheme of state-owned industrial institutions in these conditions led to the complete loss of locally subordinate enterprises, which led to the final shutdown of this sector of Ukrainian electrical engineering.

Taking advantage of these circumstances, as well as the subsequent downtime of the republican subordinate electromechanical plants, ETCR in 1922 - 1924 conducted procedures for the alienation of

suspended Ukrainian electrical engineering facilities, resulting in his department got: local subordinate Nikolaev and Kharkiv Construction Bureau of the former R; republican subordinate plants "Temvod" in Nikolaev and the former "Siemens-Shukert" in Kharkov [13, p. 7]. The total capacity of these enterprises fully met the existing needs of consumers in electrical machines of the technical level that they could produce, and the corresponding equipment of a higher class - was imported. Certain current fluctuations in domestic demand for electric machines were small and were extinguished by the non-state electrical engineering sector. plant "Gerlyakh and Pulst" in favor of "Elektrosila № 1" in Kharkov [19, p. 96].

Thus, by 1925 the state electromechanical plants of republican and local subordination lost any prospect of their own development in the field of production of electric machines without significant infusions into their material and technical base. However, due to the periodic refusals of the Union government to allocate working capital to Ukrainian industry since 1923, both the budget of the USSR in general and the budgets of local governments in particular lacked funds for these infusions, which led to the transformation of such enterprises. in the category of relevant "budget ballasts" [20, p. 129]. Therefore, the share of Ukrainian electric machine-building plants of republican and local subordination, which was in conservation, was transferred to the balance of allied economic structures, and operating electromechanical establishments - or repurposed to manufacture those electrical products, competition with allied enterprises did not require significant current financial costs. , or leased to the local private manufacturing sector. However, the last step did not lead to a significant strengthening of the material and technical component of the scientific and technical potential of private electrical engineering of the USSR in 1925, because under the pretext of the administrative-territorial reform, as a result of which the provincial division of territories was replaced by district, provincial funding bodies. were eliminated [21, p. 27]. At the same time, their district counterparts were not created, so the only source of logistics in the industry were previously formed centrally subordinated supply institutions. Hence, the locally managed non-governmental sector of electrical engineering became completely and absolutely dependent in its logistics on the union branch structure - the State Electrotechnical Trust (DET), organized in 1925 to replace the ETCR.

Using its monopoly position on this issue, DET further limited the ability of non-state electromechanical enterprises to strengthen the active share of their fixed assets, allowing them to sell only obsolete equipment that had already exhausted its resources and required significant repair costs. At the same time, the branch supply organizations were required to confirm the inexpediency of using the equipment offered to non-state enterprises at state-owned plants. The planned funding of material and technical resources for non-state electrical engineering by DET was not carried out at all,

as a result of which its supply of raw materials and components was carried out situationally - depending on the extent to which the public sector performed current production tasks.

Conclusions. Thus, we can say that the implementation of the policy of centralization of management of Ukrainian electrical engineering during 1920-1925 took place, first of all, by transforming the order of its logistics. This method became an effective means of concentrating industrial capacity in the state subordination to the allied economic structures, which is fully consistent with the Soviet concept of electrification of the country. However, the principles of filling the material and technical component of the scientific and technical potential of the electrical engineering complex formed at this time complicated its future optimization, as they were based on the principles of preventive concentrated increase of absolute production capacity, without taking into account both the dynamics of means and technologies of their production.

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- В даній статті відтворено історичну картину процесу формування матеріально-технічної складової українського електромашинобудування впродовж 1920–1925 рр. З'ясовано, що він проходив у контексті політик концентрації виробництва в державному секторі економіки та централізації управління республіканською галуззю на союзному рівні, і що повністю відповідало концепції уряду СРСР стосовно провадження заходів з електрифікації країни. Упродовж досліджуваного періоду порядок матеріально-технічного забезпечення електромашинобудування став головним і самим ефективним способом успішного досягнення поставлених указаними політиками завдань

в українському сегменті союдної галузі. Однак разом з тим, сформовані в цей час засади наповнення матеріально-технічної складової науково-технічного потенціалу електромашинобудівного комплексу ускладнили її майбутню оптимізацію, оскільки ґрунтувалися на принципах превентивного концентрованого нарощування абсолютної величини виробничих потужностей, без урахування як динаміки розширення номенклатури електричних машин, так і розвитку засобів та технологій їх виробництва.

Ключові слова: електрифікація, електричні машини, індустріалізація, науково-технічний потенціал, нова економічна політика

Анненков И. А. Организационные принципы материально-технического обеспечения электромашиностроительного комплекса УССР в 1920–1925 гг.

В данной статье воссоздано историческую картину процесса формирования материально-технической составляющей украинского электромашиностроения в течение 1920–1925 гг. Выяснено, что он проходил в контексте политики концентрации производства в государственном секторе экономики и централизации управления республиканской отраслью на союзном уровне, и что полностью соответствовало концепции правительства СССР относительно проведения мероприятий по электрификации страны. В течение исследуемого периода

порядок материально-технического обеспечения электромашиностроения стал главным и самым эффективным способом достижения поставленных этими политиками задач в украинском сегменте союдної отрасли. Однако вместе с тем, сформированные в это время принципы наполнения материально-технической составляющей научно-технического потенциала электромашиностроительного комплекса усложнили ее будущую оптимизацию, поскольку основывались на превентивном наращивании абсолютной величины производственных мощностей, без учета как динамики расширения номенклатуры электрических машин, так и развития средств и технологий их производства.

Ключевые слова: электрификация, электрические машины, индустриализация, научно-технический потенциал, новая экономическая политика

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