

UDC 332

Analysis of the mechanism for the introduction of innovative products in the lift industry

The paper points out that in order to increase the level of residential safety and energy consumption, as well as for further development of multi-storey construction it is necessary to introduce new innovative technologies in the lift industry. The paper studies the organizational and economic mechanisms by which the replacement of lifts used up their service life to modern, i.e. complying with the requirements of TR TS 011/2011 energy-efficient lifts in the existing building. Notes the use of administrative method for this, i.e., prohibition of operation of lifts that do not meet the standards of TR TS 011/2011 after 25.02.25 year. This measure stimulates the collection of funds from the owners of premises in apartment buildings and provides assistance of the Government of the Russian Federation and the regions to provide deferral of payments for the installed lift and payment of interest on the loan for the purchase of domestic innovative equipment in the period until the crisis of 2022. As a result of these measures in the 1st quarter of 2023 there was a significant increase in production of domestic modern lifts compared to the same period of 2022. It is noted that the supply of lift equipment under the new economic mechanism in the crisis, i.e. with 50 % payment and 50 % interest-free installment payment for 5 years, which increased in 2023 the purchase of lift equipment for replacement in apartment buildings. The paper has suggestions for the development of the domestic lift industry to include in the development of lift construction financing through a programme of "green bonds", which is a debt financial instrument to raise funds for the environmental project; in addition, to introduce advanced innovative technologies in the domestic lift industry to conclude an off-set deal with the leading lift manufacturer.

Keywords: lift, innovative technology, safety level, lift industry, green bonds

Production of innovative products increases the efficiency of the company and is a source of competitive advantage [1, 2]. Slow introduction of innovative technologies in production leads to technical lagging behind foreign lift manufacturers [3]. At the same time strict safety requirements are imposed on the operation of lifts and the operation period in the Russian Federation is set at 25 years, during which deficiencies from the implemented innovative solutions can appear, which can lead to a decrease in the level of safety in the operation of the lift [4]. Modern innovations in the lift industry, which use advances in electronics, computer technology, material science, make it possible to manufacture small-sized gearless winches with high control accuracy, which reduces noise, vibration, accuracy of stopping on the floor, smoothness of movement, which contributes to the comfort of the trip, because the passenger does not feel overloads, as well as reducing the load on the load-bearing mechanisms of the lift, which contributes to increasing their service life; in addition, it allows you to increase the speed of the lift. Additional advantages are the reduction of electricity consumption for operation, as well as reducing the size of the machine room or generally being able to do without it, therefore, new computer technologies have improved the quality of lift operation and minimized energy consumption¹. In addition, modern lift control systems organize optimal movement of the lift group at any changing passenger flows in the building, provide an opportunity to perform self-diagnostics and transmit to the dispatcher console

the nature of the malfunction, go independently into shutdown mode, etc. All this contributes to increasing the level of comfort and safety of living in a multi-storey building.

The main obstacle to the introduction of innovative developments in the lift industry, in the author's opinion, is the lack of monetary resources to implement these transformations. Due to the different financial capabilities of the Russian regions and the limited federal budget of the Russian Federation it is necessary to develop organizational and economic mechanisms for the implementation of socially oriented programmes for the replacement of lifts, based on the principle of mutual benefit of all stakeholders, taking into account the peculiarities of a particular region [5]. This paper analyzes the measures for the introduction of innovative developments in the lift industry, i.e. the gradual introduction (mastering) of new GOSTs (technical regulations)².

Scientific novelty lies in the study of financing and management mechanisms for the introduction of innovative lift products in crisis conditions, in order to further develop an organizational and economic mechanism to improve the efficiency of lift manufacturing enterprises.

Since all over the world there is a rapid introduction of innovative technologies, and to domestic manufacturer to be more competitive in the global market and to ensure their own sustainable development. Industrial manufacturers and the state of the Russian Federation need to solve the problems of rapid technological and organizational transformation to new

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1 Tall Buildings and Lifts. URL: https://fenix.tecnico.ulisboa.pt/downloadFile/395144589718/Thesis_Final.pdf
2 2025 — "Final stop" for lifts that do not meet the requirements of technical regulations. URL: <http://kr27.ru/press-center/novosti-fonda/2646/>

▶ innovative technologies [6]. Let us consider the main activities carried out in the Russian Federation to introduce (or contribute to the introduction of) innovative products in the lift industry. In modern conditions of technological progress, it is not enough to rely solely on market mechanisms, it is necessary to support the state policy [7]. The active position of the state in the innovation process can greatly accelerate the pace of development of industries³. The main administrative document that forces domestic lift plants to introduce innovative products and owners to finance the replacement of lifts is the order of the Council of the Eurasian Economic Commission⁴.

The main programme, from the funds of which the replacement of lifts, which have reached the end of their useful life, is the capital repair programme. Since 2014, apartment owners with the help of capital repair contributions themselves form the fund at the expense of which their building will be subsequently repaired⁵.

The problem of installation of new innovative lifts in existing apartment buildings under this programme is the insufficient level of savings, which does not allow to replace old lifts in a timely and one-time manner in all apartment buildings. To solve this problem, pilot projects on accelerated replacement of lifts were developed. The programme of accelerated replacement of lifts began to operate in 2017. According to it, the supplier of lift equipment supplies the lift, and the payment is received in installments of up to 36 months, as funds are accumulated through contributions from residents (tenants)⁶. The programme and short-term regional capital repair plans have increased the number of renewed lifts: in 2016–2020, about 74.7 thousand lifts were replaced in the country. However, the high cost of interest limited the possibility of participation in the programme for many capital repair operators⁷.

To improve the mechanism, the Government of the Russian Federation adopted Resolution No. 2202 (dated 21.12.2020), according to which the state will compensate the interest costs, and the installment payments are increased to 7 years. In 2021, 1.35 billion rubles were allocated for these needs. The state support was provided to apartment buildings under the following conditions: all lifts with expired service life should be replaced in the building, and the new equipment should be domestically produced with energy efficiency class not lower than B⁸. However, in 2022 the Ministry of Finance of the Russian Federation did not provide funding for the renewal of the lift fleet in apartment buildings [8].

The Commission of the lift industry together with the association "Russian Lift Society" (hereinafter — RLS) with the participation of the Association of Regional Repair Operators (hereinafter — ARRO) and with the support of the Ministry of Construction of Russia developed a project of accelerated replacement of lifts for owners of special accounts, allowing to replace lifts at a fixed price

(interest-free) installments with the possibility of installment payment of 50 % of the replacement cost for up to 5 years⁹.

The budget deficit forces regional authorities to purchase new lifts within the framework of the capital repair programme in installments. From January to mid-March 2023, regional authorities within the framework of the capital repair programme purchased 4.8 thousand lifts for the total amount of 17.1 billion rubles to replace obsolete equipment, which is 3.6 times more by 2022, but January – March 2021 was purchased 5.5 thousand lifts (for the amount of 13.4 billion rubles)¹⁰. Since the beginning of 2022, due to difficulties with the supply of components from abroad, the cost of lift equipment has increased on average by 30–40 %. The regions, which increased the purchase of new lifts, managed to do it due to the interest-free installment of their payment, and before the European sanctions, such a mechanism of mutual settlements was almost never used. Now the interest-free installment is also actively used in other industries¹¹.

Implementation of innovative developments in the domestic lift industry is also promoted by the import substitution programme in the Russian Federation. At the present time the strategy of innovative development of the Russian Federation is aimed at import substitution and creation of Russian technologies and production of appropriate materials and structures, corresponding or surpassing foreign analogues in their characteristics [9]. Thus, according to the Resolution of the Government of the Russian Federation No. 1485 in September 2021 lifts produced in the territory of the Russian Federation will receive support from the Ministry of Industry and Trade if they score the required number of points¹². Points are assigned depending on the number of elements that make up a lift manufactured at Russian enterprises. Moreover, if by the end of 2022, lift manufacturers had to achieve an indicator of at least 100 points, then starting from 2024 at least 130 points. The maximum number of points that can be scored according to the approved methodology in this Resolution 135, thus stimulating the gradual transition to its own innovative production. In addition, state support measures such as preferential taxation began to be used.

The Government of the Russian Federation in 2023 by order No. 1937-p included lifts in the approved list of high-tech products to provide tax incentives for procurement¹³. The characteristics of high-tech equipment according to this order include:

- the presence of a lift control system;
- availability of a frequency converter, etc.

Resolution of the Government of the Russian Federation in 2023 by the order No. 1083, according to which in the list of equipment, the supply of which is advanced in the amount of not less than 80 % of the contract price in public procurement delivered lifts¹⁴.

3 McKinsey and Company Innovation in Russia is an inexhaustible source of growth. URL: <https://www.mckinsey.com/>

4 Regulation of the EEC Council No. 33 of 17.10.2022 "Approval of the list of measures to optimize the mandatory requirements of the Eurasian Economic Union to products, including in terms of their mandatory conformity assessment with the established requirements". URL: <https://www.alta.ru/tamdoc/22s00033/> (rus.).

5 Methodological Recommendations and NLA of the Housing and Utilities Fund. URL: <https://dpr.pd/napravleniya-deyatelnosti/kapremont/metodicheskie-rekomendatsii/> (rus.).

6 The project of lending for accelerated replacement of lift equipment in residential buildings has become a priority departmental project of the Russian Ministry of Construction. URL: <https://www.minstroyrf.gov.ru/press/proekt-kreditovaniya-uskorennoy-zameny-liftovogo-oborudovaniya-v-zhilykh-domakh-stal-prioritetnym-ve/> (rus.).

7 In 2017–2021, sales of lifts in Russia increased by 20.6 %: from 39.4 to 47.5 thousand pcs. URL: <https://marketing.rbc.ru/articles/13409/> (rus.).

8 Resolution of the Government of the Russian Federation of December 21, 2020 No. 2202. URL: <http://publication.pravo.gov.ru/Document/View/0001202012230016> (rus.).

9 All-Russian webinar on accelerated replacement of lifts for special accounts. Moscow, 2022. URL: <http://rolift.ru/ru/press/news/sendvalues/more/1158/>

10 Lift Commission. URL: <https://www.minstroyrf.gov.ru/openworld/obshchestvennyj-sovet/working-committees-and-contacts/the-commission-lifts/>

11 Lifts follow with all stops. URL: <https://www.kommersant.ru/doc/5888068> (rus.).

12 Resolution of the Government of the Russian Federation of September 3, 2021 No. 1485 "On Amending Section VI of the Annex to the Resolution of the Government of the Russian Federation of July 17, 2015 No. 719". GARANT.RU Information and Legal Portal. URL: <https://base.garant.ru/402705193/> (rus.).

13 Order of the Government of the Russian Federation of July 20, 2023 No. 1937-p. GARANT.RU Information and Legal Portal. URL: <https://www.garant.ru/products/ipo/prime/doc/407315604/> (rus.).

14 Resolution of the Government of the Russian Federation of 30.06.2023 No. 1083 "Amending the Resolution of the Government of the Russian Federation of 24.12.2022 No. 2411". GARANT.RU Information and Legal Portal. URL: <https://base.garant.ru/407126014/>

The research revealed that the following set of measures is necessary for the implementation of the Programme of accelerated replacement of lifts:

1. In practice, an effective organizational and economic mechanism for the purchase and subsequent installation of modern innovative lifts is the mechanism of interest-free installments or the state compensates the interest for the loan for the supply of lifts.

2. Limited funds of the state and regions of the Russian Federation at present make it necessary to search for new organizational and financial mechanisms for the introduction of lift innovative products.

3. For additional attraction of funds to use a loan with the help of "green bonds" programme, for development and installation of energy-efficient (class A) and oil-free (environmentally friendly) lifts.

4. To the lift manufacturer supplying innovative lift equipment in interest-free installments to the region of the Russian Federation with limited financial resources, to provide tax benefits, to provide favourable long-term contracts.

5. If lift Russian manufacturers are currently technologically unable to produce some lift components, such as frequency converter, gearless winch, panels for high-speed lifts, etc., then to conclude offset deals for the life of the lift with leading foreign lift manufacturers.

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Анализ механизма внедрения инновационной продукции в лифтовой отрасли

В статье указывается, что для повышения уровня безопасности проживания и потребления электроэнергии, а также для дальнейшего развития многоэтажного строительства необходимо внедрять новые инновационные технологии в лифтовую отрасль. В статье проводится исследование организационно-экономических механизмов, при помощи которых осуществляется замена лифтов, отработавших свой срок эксплуатации, на современные, т.е. соответствующие требованиям ТР ТС 011/2011 энергоэффективные лифты, в уже существующую застройку. Отмечается использование для этого административного метода, т.е. запрета эксплуатации лифтов, не соответствующих нормам ТР ТС 011/2011 после 25.02.2025 г. Эта мера стимулирует сбор средств от собственников помещений в многоквартирных домах и также обеспечивает содействие Правительства РФ и регионов по предоставлению отсрочки платежей за установленный лифт и оплате процентов по кредиту на покупку отечественного инновационного оборудования в период до кризиса 2022 г. В результате этих мер в первом квартале 2023 г. был достигнут значительный рост производства отечественных современных лифтов, по сравнению на тот же период 2022 г. Отмечено, что поставка лифтового оборудования по новому экономическому механизму в условиях кризиса, т.е. с 50%-ной оплатой и 50%-ной беспроцентной рассрочкой на пять лет, увеличила в 2023 г. закупку лифтового оборудования для замены в многоквартирных домах. Предложены варианты совершенствования отечественного лифтостроения по включению в развитие лифтостроения финансирования за счет программы «зеленых облигаций», которые представляют собой долговой финансовый инструмент для привлечения средств экологического проекта; кроме того, для внедрения передовых инновационных технологий в отечественную лифтовую отрасль необходимо заключить офсетную сделку с ведущим лифтовым производителем.

Ключевые слова: лифт, инновационные технологии, уровень безопасности, лифтовая отрасль, зеленые облигации

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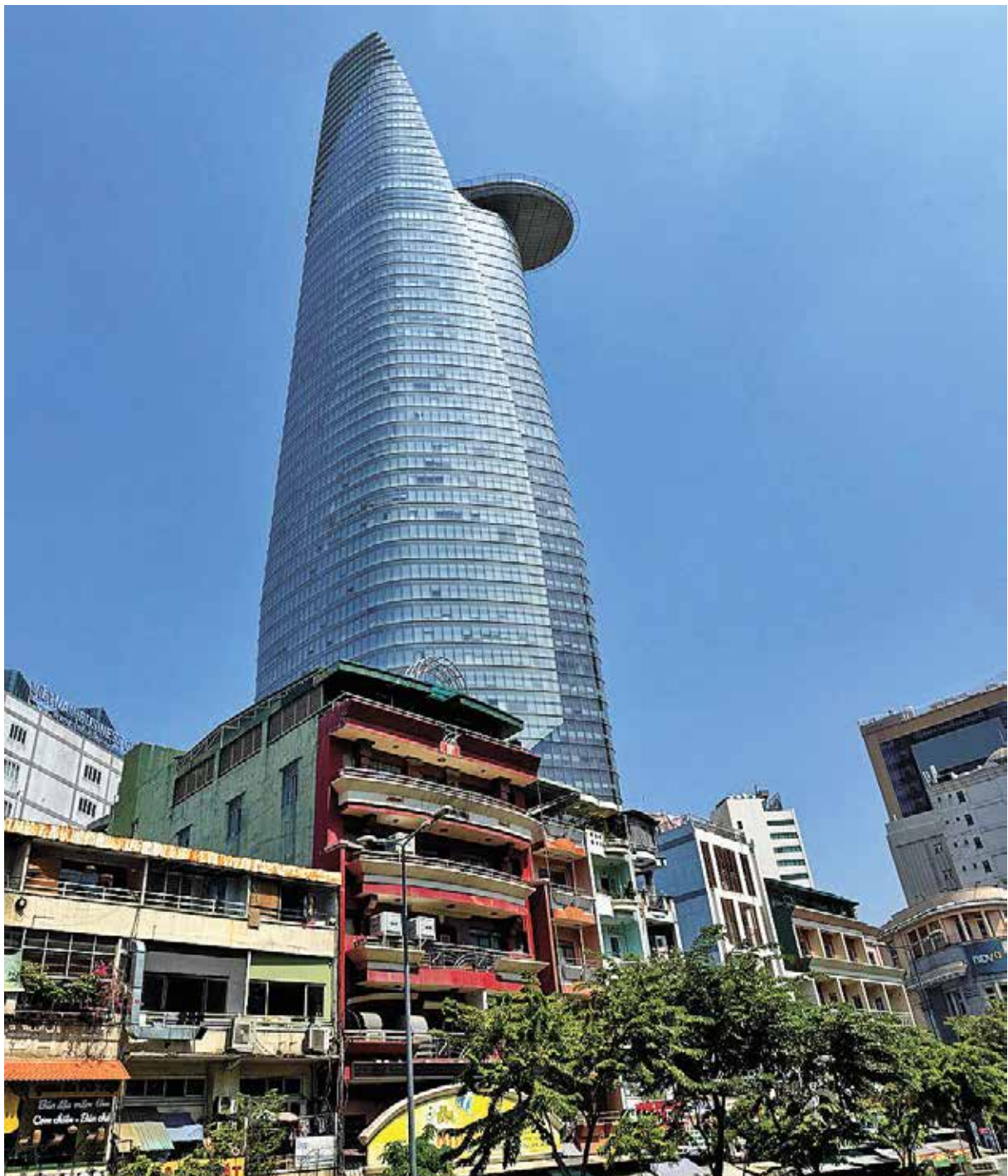
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