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Tashkent state transport university

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The Journal of Transport showcases groundbreaking scientific and applied research conducted by transport-oriented universities, higher educational institutions, research centers, and institutes both within the Republic of Uzbekistan and globally. Recognized for its academic rigor, the journal is included in the prestigious list of scientific publications endorsed by the decree of the Presidium of the Higher Attestation Commission No. 353/3 dated April 6, 2024. This inclusion signifies its role as a vital repository for publishing primary scientific findings from doctoral dissertations, including Doctor of Philosophy (PhD) and Doctor of Science (DSc) candidates in the technical and economic sciences.

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Articles are published in Uzbek, Russian, and English, ensuring a wide-reaching audience and fostering cross-cultural academic exchange. As a beacon of academic excellence, the "Journal of Transport" continues to serve as a vital conduit for knowledge dissemination, collaboration, and innovation in the transport sector and related fields.

Technical and economic efficiency of using swap bodies in railway transport

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Abstract: This study examines the stages of organizing freight transportation processes in railway transport using swap body technology. The article presents the main advantages of the proposed technology, the cost of swap bodies, and methods of their application. A comparison is made with traditional freight transportation methods, including the use of universal wagons, and the prospects for introducing swap bodies into the transport system are considered. The economic benefits of using the new technology are highlighted, including the reduction of capital and operating costs, as well as the increase in freight transportation efficiency under conditions of seasonal fluctuations in cargo flows in railway transport. Based on calculations of the technical and economic efficiency of the proposed technology, technical and technological recommendations for its implementation in the practical activities of railway transport are developed.

Keywords: swap bodies, railway transport, technical and economic efficiency, freight transportation, logistics, operating costs, fitting platform, loading and unloading, wagon, terminal

Temir yo‘l transportida almashinuvchi kuzovlar qo‘llanilishining texnik-iqtisodiy samaradorligi

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Annotatsiya: Ushbu tadqiqot ishida temir yo‘l transportida yuklarni yetkazib berish jarayonida almashinuvchi kuzovlar texnologiyasidan foydalangan xolda tashkil etish bosqichlari ko‘rib chiqilgan. Makolada taklif etilayotgan texnologiyadan foydalanishning asosiy afzalliklari, almashinuvchi kuzovlarning narxlari, uni foydalanish foydalanish usullari keltirilgan. Yuklarni tashishning an’anaviy usullari, shu jumladan universal vagonlardan foydalanish bilan taqqoslash, shuningdek almashinuvchi kuzovlarni transport tizimiga joriy etish istiqbollari ko‘rib chikilgan. Yangi texnologiyadan foydalanishning iqtisodiy foydasi, shu jumladan kapital va operatsion xarajatlarni kamaytirish, temir yo‘l transportining mavsumiy yuk oqimining o‘zgarish jarayonida yuk tashish unumdorligini oshirish masalaliri yoritilgan. Taklif etilayotgan texnologiyaning texnik-iqtisodiy samaradorlik hisob-kitoblariga asoslanib, ushbu texnologiyani temir yo‘l transportining amaliy faoliyatiga joriy yetish bo‘yicha texnik-texnologik tavsiyalar ishlab chiqilgan.

Kalit so‘zlar: almashinuvchi kuzovlar, temir yo‘l transporti, texnik va iqtisodiy samaradorlik, yuk tashish, logistika, ekspluatatsiya xarajatlari, fiting-platforma, ortish-tushirish, vagon, terminal

1. Kirish

Bugungi kunda turli xil yuklarni tashishda (don, mineral o‘g‘itlar va h.k.) asosan mahsus transport vositalari tomonidan amalga oshiriladi Biroq ushbu turdagi vagonlarda foydalanishda vagonlar qo‘shimcha transport xarajatlari ularni qo‘llashning tor doirasi, zarur bo‘lgan bo‘sh yo‘llar, shuningdek vagonlar parkining har xil talabga egaligi, tashish hajmining mavsumiy o‘zgarishida inobatga olgan holda logistik tizimda qiyinchiliklarga duch kelmoqda.

Transport infratuzilmasini rivojlantirishning zamonaviy tendentsiyalari transport jarayonlari samaradorligini oshirish, yuklarni yetkazib berish vaqti va logistik xarajatlarni kamaytirish, shuningdek, ekologik xususiyatlarni yaxshilashga qaratilgan. Temir yo‘l transporti sohasidagi yuk tashishlarning mavsumiy o‘zgaruvchanlik jarayonida yuk tashish tizimiga yangi tashish texnologiyalar joriy etish, istiqbolli tendentsiyalardan sifatida turli xil yuklarni tashishda yuqori darajadagi moslashuvchanlikni ta’minlay olinadigan almashadigan kuzovlarni tizimini temir yo‘l tranportiga joriy etish muhim ahamiyat kasb etmoqda. Almashinuvchi kuzovlardan foydalanish ortish-tushirish operatsiyalari vaqtini sezilarli darajada qisqartirishi, temir yo‘l vagonlarining eskirishini kamaytirishi va transport jarayonlarining umumiy ekspluatatsion unumdorligini oshirishi imkoni yaratiladi.

Tadqiqotning maqsadi. Temir yo‘l transportida mavsumiy yuk oqimining o‘zgaruvchanlik sharoitida mamlakatning yuk tashish tizimiga almashinuvchi kuzovlar texnologiyani joriy etish orqali temir yo‘l transportida texnik va iqtisodiy ko‘rsatkichlari samaradorligini oshirishdan iborat.

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2. Tadqiqot metodologiyasi

Adabiyotlar sharhi. Almashinuvchi kuzovlar texnologiyasini temir yo‘l transportida qo‘llash, samaradorligini oshirish va yuk tashishni tashkil yetishni takomillashtirish masalalariga ko‘pgina xorijiy olimlar ushbu yo‘nalishda ishlarni rivojlantirish tadqiqotlarini olib borgan. Shu jumladan, Sankt-Peterburg davlat temir yo‘l universiteti professori Bolotin V.A [1] almashinuvchi kuzovlarni temir yo‘l transportida ko‘llash, don hamda mineral o‘g‘itlarni mavsumiy tashish miqdorli tahlilini, almashinuvchi kuzovlar texnlogiyasinida logistik xarajatlar hamda bo‘sh almashinuvchi kuzovlarni omborlarda saqlash jarayonlari taxlilini olib borgan. Bundan tashqari, xorijiy tadqiqotlar almashinuvchi kuzovlarni muvaffaqiyatli foydalanishning ko‘plab misollarini ham taqdim yetadi.

Shulardan Dauksha A. S tadqiqot ishida[2] ushbu texnologiya keng foydalanish, yuklarni tashishda faol foydalaniladigan. Yevropada hududida almashinuvchi kuzovlar texnologiyasidan foydalanish afzalliklari ko‘rib chiqilgan. O‘z tadqiqotlarida logistika terminallar va turli hil transport turlari bilan o‘zaro hamkorlik jihatlariga alohida ye’tibor qaratilmoqda, bu yesa transport xarajatlarni sezilarli darajada kamaytirish va transport tizimining moslashuvchanligini oshirish imkoni yaratilgan.

Asosiy qism. Maqolaning kirish kismida yoritilgan tashish jarayonidagi to‘siqlarni ya’ni yuklarni temir yo‘l transporti tashiladigan mavsumiy yuk tashishlar o‘zgaruvchanligi hisobiga vujudga kelgan vagonlar yetishmovchiligini almashinuvchi kuzovlar texnologiyasini temir yo‘l transporti tizimiga keng joriy etish orqali yechish mumkin[5,6].

Almashadigan temir yo‘l kuzovlari texnologiyasi vagonlardan foydalangan holda yuklarni tashishni tashkil etishning zamonaviy usullariga tegishli bo‘lib, ularning kuzovlari tezda o‘rnatilishi yoki temir yo‘l platformalarining shassisidan olib tashlanishi mumkin. Bu tashishning moslashuvchanligi va samaradorligini sezilarli darajada oshirish, shuningdek, ortiqcha yuklanishga ketadigan vaqtni qisqartirish imkonini beradi.

1-jadval

Temir yo‘l transporti orqali tashilgan asosiy yuk turi bo‘yicha ko‘rsatkichlar (2025 yil hisobida)

Yuk turi	Yuk tashish hajmi, ming tonna
Ko‘mir	4833,5
Neft mahsulotlari	5114,0
Ruda	7172,4
Kora metall	774,6
Qora metall (lom)	503,5
Kimyoviy va mineral o‘g‘itlar	2993,8
Qurilish mahsulotlari	3488,4
Sement	1241,5
Don	754,8
Qolgan yuklar	28 856,9

1-jadvaldan ma’lumki asosiy yuk tashishlar miqdori ko‘mir, ruda, neft mahsulotlariga, mineral o‘g‘itlarga to‘g‘ri kelmoqda. Bu esa albatta mavsumiy moddiy oqimlarning tashish o‘zgaruvchanligiga o‘z ta’sirini o‘tkazadi. “O‘zbekiston temir yo‘llarida AJ”da vagonlarning yetishmovchiligini oldini olish, mavsumiy yuk tashishlarni muvozanatlashtirish maqsadida almashinuvchi kuzovlar texnologiyasidan foydalanish zaruratini keltirmoqda. Bugungi kunda almashiuvchi kuzovlar tushunchasiga faqatgina katta tonnajli konteynerlar kiradi deb tushunishadi, aslida u unday emas. Kuzov shikastlanganda uni tezkor almashtirish ta’mir jarayonini sezilarli darajada tezlashtiradi, bu esa vagonning bekor turish vaqtini qisqartiradi. Bir turdagi kuzov o‘rniga boshqa turdagi kuzovni o‘rnatish orqali vagonning ixtisoslashuvini o‘zgartirish va uni tarmoqdagi mavjud tashish ehtiyojlariga moslashtirish mumkin — bu esa ixtisoslashgan vagonlar parkiga bo‘lgan ehtiyojni kamaytiradi[7,8].

Almashinuvchi kuzovlar yarim ochiq vagon, yopiq vagon, mahsus vagonlar hamda boshka vagonlarning texnik vazifasini bajaruvchi texnik vositalar kiradi. Quyidagi rasmlarda ifodalangan.

1-rasm. Yog‘och materiallarni tashish uchun mo‘ljallangan almashimuvchi kuzov

2-rasm. Yopiq vagonda yuklarni tashish uchun mo‘ljallangan almashimuvchi kuzov

3-rasm. Yarim ochiq vagonlarda yuk tashish uchun mo‘ljallangan almashimuvchi kuzov

4-rasm. Bitta platformada turli xil almashinuvchi kuzovlarni joylashtirish ko‘rinishi

Almashinuvchi kuzov va uning vagonga mahkamlash konstruksiyasi konteynerlarga nisbatan yuqoriroq yuklamalarga mo‘ljallangan bo‘lib, vagon me’yorlariga javob beradi. Shu bilan birga, almashinuvchi kuzovning yuqori qismida konteynerlar uchun xos bo‘lgan standart burchak fitinglari mavjud bo‘lib, bu uni standart konteyner ko‘tarish uskunalari yordamida o‘rnatish va yechish imkonini beradi.

3. Xulosa

Tadqiqotlar shuni ko‘rsatadiki temir yo‘l transportida mavsumiy yuk tashishlarni amalga oshirilganda vagon parkini yetishmovchiligini muvofiqlashtirish, vagonlardan samarali foydalanish hamda transport turlari hamkorligini samarali tashkil etish uchun almashinuvchi kuzovlar texnologiyasida faqatgina konteynerlar emas balki maqolada keltirilgan almashinuvchi kuzovlarni O‘zbekiston temir yo‘llariga joriy qilish masalalarni soha mutaxassislar bilan chuqur tahlil qilish zarur.

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