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RESEARCH, INNOVATION, RESULTS



**TOSHKENT DAVLAT  
TRANSPORT UNIVERSITETI**

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# TASHKENT STATE TRANSPORT UNIVERSITY

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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.

## Improvement of technologies for the technical inspection of locomotives in TS-2

Sh.A. Umrzokova<sup>1</sup> 

<sup>1</sup>Tashkent state transport university, Tashkent, Uzbekistan

**Abstract:** The main need to reduce operating costs and reduce the cost of transportation in a competitive environment encourages managers of locomotive facilities of railways to actively seek opportunities to increase the efficiency of the maintenance system and reduce the cost of maintaining locomotives in good technical condition. The existing planned preventive maintenance system mainly ensures high traffic safety, reduces the number of accidental failures compared to the time of repair (depending on the need), and also provides a high coefficient of technical readiness of locomotives, different loading times of repair equipment and crews. For this, the main - most important parts and assemblies are determined, the condition of which is associated with traffic safety, reliability of operation of locomotives, and they are grouped by operating time, by the number of failures and the volume of repair work.

**Keywords:** plan repair, aggregate, traffic safety, technological process, structure, mechanical equipment, electrical equipment

## Lokomotivlarni TXK-2 texnik ko'rigidan o'tkazish texnologiyalarini takomillashtirish

Umrzoqova Sh.A.<sup>1</sup> 

<sup>1</sup>Toshkent davlat transport universiteti, Toshkent, O'zbekiston

**Annotatsiya:** Raqobat sharoitida ekspluatatsiya xarajatlarini kamaytirish va tashish tannarxini pasaytirishning asosiy zarurati temir yo'llarning lokomotiv obyektlari rahbarlarini texnik xizmat ko'rsatish tizimining samaradorligini oshirish va lokomotivlarni yaxshi texnik holatda saqlash xarajatlarini kamaytirish imkoniyatlarini faol izlashga undaydi. Mavjud rejali profilaktik ta'mirlash tizimi asosan yuqori harakat xavfsizligini ta'minlaydi, texnik holatga (zaruratga qarab) ta'mirlash vaqtidagiga qaraganda tasodifiy nosozliklar sonini kamaytiradi, shuningdek, lokomotivlarning texnik tayyorgarligining yuqori koeffitsientini, ta'mirlash uskunolari va brigadalarini turli xil yuklash vaqtlarini belgilab beradi. Buning uchun asosiy - eng muhim qismlar va agregatlar aniqlanadi, ularning sharti harakat xavfsizligi, lokomotivlarning ishlashi ishonchligi bilan bog'liq bo'lib, ular ish vaqti bo'yicha nosozliklar va tiklash ta'mirlash ishlarining hajmi bo'yicha guruhlanadi.

**Kalit so'zlar:** rejali ta'mirlash, agregat, harakat xavfsizligi, texnologik jarayon, tortuvchi harakat tarkibi, mexanik uskunalar, elektr uskunalar

### 1. Kirish

Lokomotiv xo'jaligi temir yo'l transportining eng muhim tarkibiy qismidir, chunki tovar aylanmasi sohasida ishlab chiqarish jarayonini davom ettirib, umuman jamiyat ishlab chiqarishining samaradorligiga sezilarli ta'sir ko'rsatadi.

Lokomotiv xo'jaligining asosiy vazifasi - yuk va yo'lovchilar tashish uchun zarur bo'lgan yuk va yo'lovchilarni tortish vositalari bilan ta'minlash va ushbu vositalarni to'liq xavfsizligini va poyezdlar harakati jadvaliga to'liq rioya etilishini kafolatlaydigan soz holatda saqlashdir. Ushbu funktsiya temir yo'lning boshqa xo'jaliklari faoliyati bilan uzviy bog'liq bo'lib, sanoatning iqtisodiy ko'rsatkichlariga sezilarli ta'sir ko'rsatadi.

Lokomotivlarga texnik xizmat ko'rsatish TXK-2 da bajarilishi shart bo'lgan ishlar hajmi ushbu texnologik

jarayon, elektrovozlarni joriy ta'miri va texnik xizmat ko'rsatish qoidalariga asosan o'rnatiladi.

Lokomotiv xo'jaligining asosiy vazifalari lokomotiv xo'jaligi korxonalarini va uning bo'linmalarining ishlab chiqarish faoliyatining eng yuqori iqtisodiy samaradorligiga erishish uchun barcha tortuvchi harakat tarkibi (TRS) ish rejasini to'liq va sifatli bajarish, eng samarali ishlashini ta'minlash va ta'mirlash uchun texnik resurslardan tejamkor foydalanish hisoblanadi. Bunga keng qo'llaniladigan uskunalar va agregatlarga rejali profilaktik xizmat ko'rsatish tizimi (PPR) yordam beradi. Tashishning kutilayotgan hajmidan kelib chiqib, texnik xizmat ko'rsatish (TO) va joriy ta'mirlash (TR) dasturi rejalashtirilgan, ta'mirchilarning mehnat xarajatlari, materiallar va ehtiyot qismlarning sarflanishi, ta'mirlanayotgan TRSning to'xtab qolish muddati va uning narxi standartlashtirilgan, ta'mirlash qoidalariga, ko'rsatmalariga va belgilangan texnologik reglamentlarga mos keladigan deponing texnologik jihozlari tartibga solinadi. PPR tizimi TRSni yaratish va ishlatish

 <https://orcid.org/0009-0002-7644-3257>





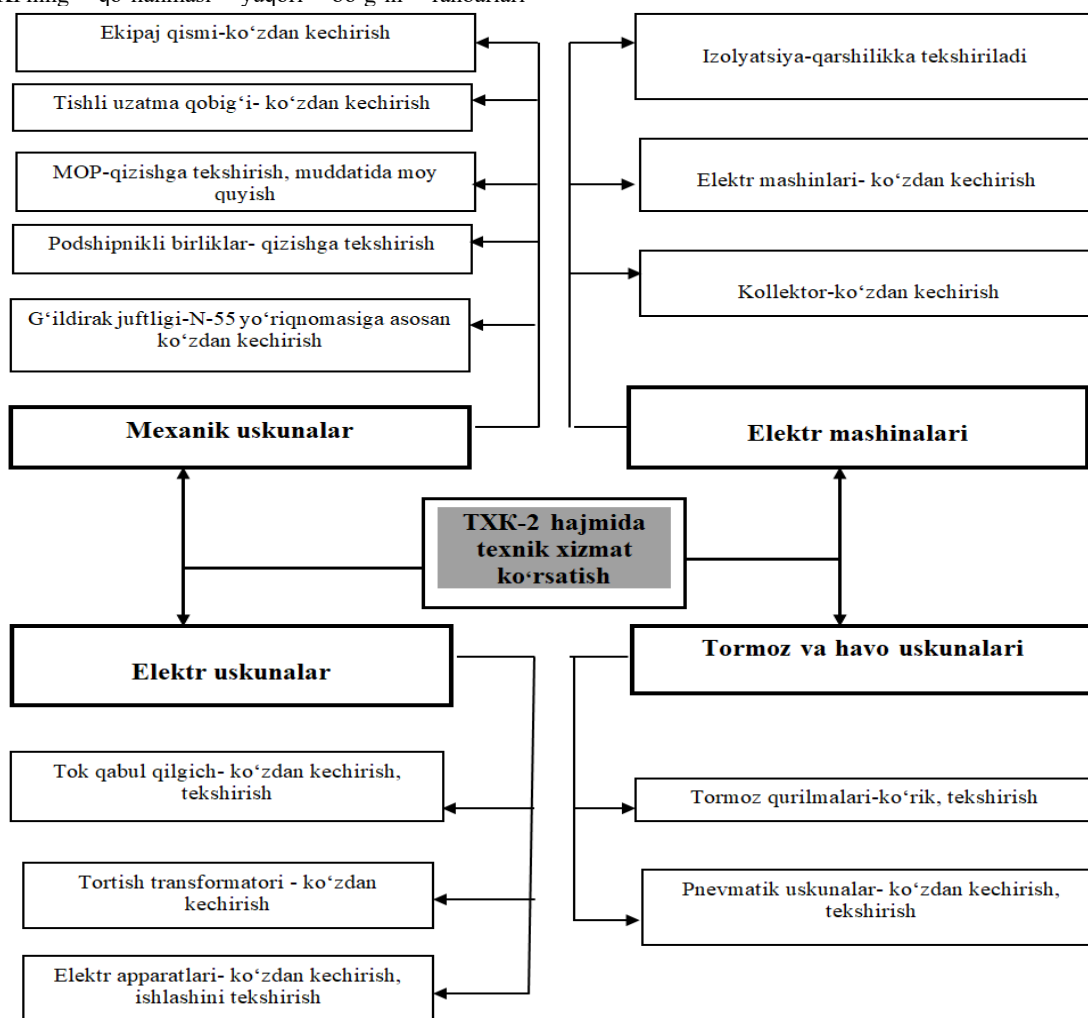
sohasida o'ziga xos standart ro'lini o'ynaydi. Yangi TRSni loyihalashda PPRning asosiy qoidalari agregatlar va elektr zanjirlarining resurslarini belgilangan ta'mirlash davrlariga va belgilangan TO va TR turlariga moslashtirish zarurati hisobga olgan holda qo'llaniladi.

LTXXP (lokomotivlarga texnik xizmat ko'rsatish punkti) ning umumiy tashkiliy va texnikaviy qo'llanmalari asosiy depo boshlig'i tomonidan amalga oshiriladi va kerak bo'ladigan qurilmalar, yuqori malakali ishchilar, materiallar, extiyot qismlar, asbob va uskunalar bilan butlashni ta'minlaydi. [1, 3].

## 2. Tadqiqot metodologiyasi

TXK-2ni bajarayotgan chilangar va boshqa ishchilar soni bir vaqtning o'zida ko'rilayotgan lokomotivlarning rusumi va xizmat ko'rsatishning davomiyligi inobatga olinib "O'TY" AJ ning me'yoriy xujjatlariga asosan belgilanadi.

"O'TY" AJ ning amaldagi buyruqlariga asosan LTXXPning qo'llanmasi yuqori bo'g'in rahbarlari



1-rasm. "O'z-Y" rusumli elektrovozlariga TXK-2 hajmida texnik xizmat ko'rsatishning tarmoq tizimi

Dizel dvigatellari va lokomotiv agregatlarining ekspluatatsiyasidagi nuqsonlarni dastlabki bosqichda ekspluatatsiya qilish jarayonida aniqlash lokomotivning yo'lda nosozlik holatlarini bartaraf etish, rejadani tashqari ta'mirlash xarajatlarini kamaytirish, dizel dvigatellarining

tomonidan tayyorlanadi. Bu shaxslar tasdiqlangan texnik jarayon va texnologik karta asosida o'zgaruvchan to'kli VL80s, VL60k, O'z-Y, O'z-EL, O'z-ELR, 2O'z-ELR, O'zbekiston rusumidagi elektrovozlariga TXK-2 jarayonini bajarish uchun ishlarni tashkillashtirishlari shart. O'z-Y rusumli elektrovozlariga texnik xizmat ko'rsatish (TXK-2) quyida ko'rsatilgan asosiy shartlar asosida amalga oshirilishi mumkin (1, 2-rasmlar) [1-2]:

-O'z-Y rusumli elektrovozlariga TXK-2ni, tasdiqlangan texnologik jarayon asosida kompleks brigadani zamonaviy asbob-uskunalar, materiallar va extiyot qismlar bilan ta'minlashni tashkillashtirish;

-ishlab chiqarishni boshqarish va rejalashtirish, kompleks avtomatlashtirish va mexanizatsiyalashtirishni keng qo'llagan holda mexnat va ishlab chiqarishga qaratilgan ilmiy tashkilotlarni jalb etish;

-TXK-2 sifatini yuqori mahsulдорlik bilan amalga oshirish uchun barcha bo'limlar, ish joylari minimal mexanizatsiyalash vositalari va qurilmalar bilan ta'minlanishi.

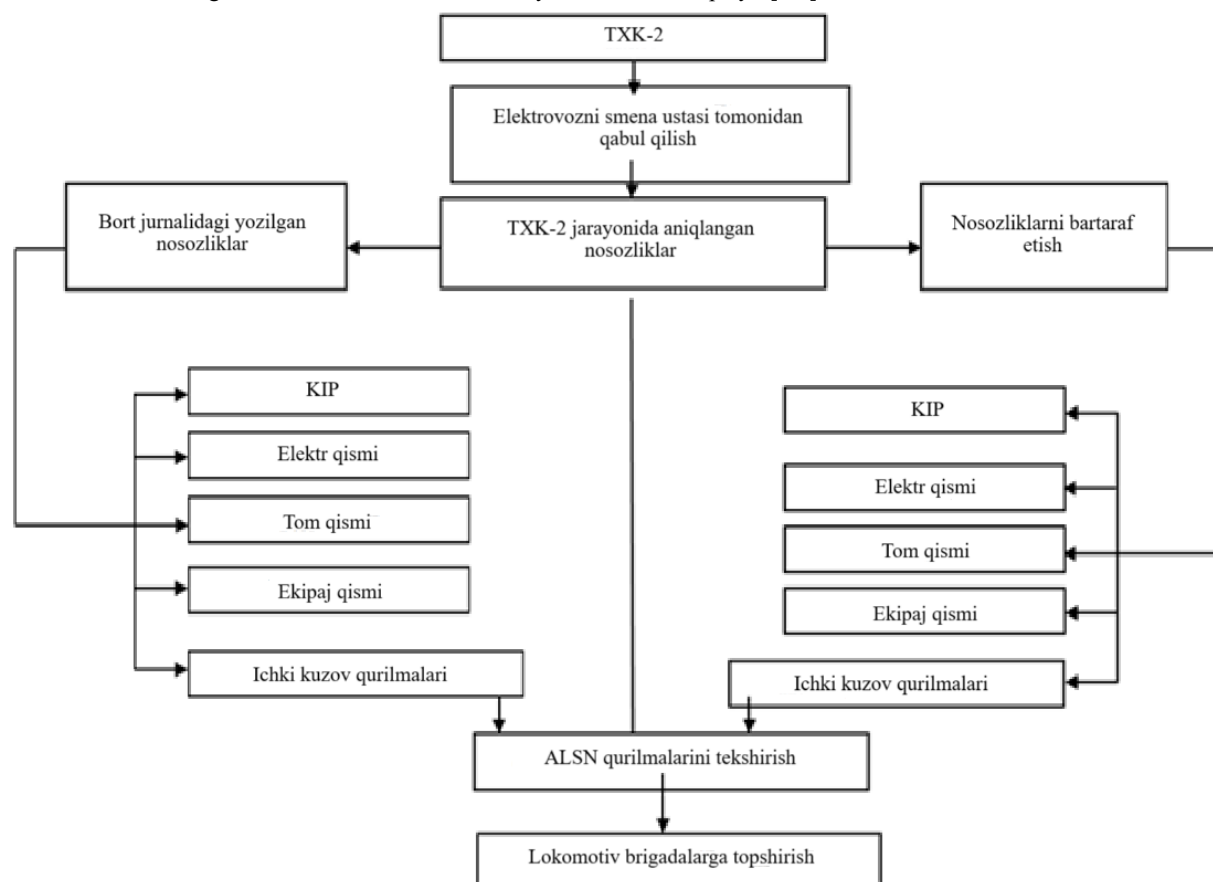
ish samaradorligini va poezdlar harakati xavfsizligi darajasini oshirish imkonini beradi.

Teplovozni texnik xizmat ko'rsatish va ta'mirlashdan qabul qilish belgilangan tartibda texnik diagnostika vositalaridan foydalangan holda amalga oshiriladi.



Teplovozda texnik xizmat ko'rsatish va ta'mirlash vaqtida bajarilgan ishlar to'g'risidagi ma'lumotlar (ta'mirlash turi, sanasi, ish vaqti, kirish-chiqish diagnostikasi natijalari, bajarilgan qo'shimcha operatsiyalar ro'yxati va bajarilmagan rejali texnik xizmat ko'rsatish) yagona ma'lumotlar bazasiga kiritiladi. U tekshirish bo'yicha

tavsiyalarning bajarilishi yoki bajarilmasligi, diagnostikaning uni demontaj qilish natijasida aniqlangan qurilmaning haqiqiy holatiga muvofiqligi yoki nomuvofiqligi, texnik xizmat ko'rsatish va ta'mirlash vaqtida aniqlangan nosozliklar to'g'risida ma'lumotlarni to'playdi[3-4].



2-rasm. “O‘z-Y rusumli elektrovozlarni TXK-2 xajmida texnik ko‘rik tarmoq diagrammasi

Shuni ta’kidlash kerakki, ishlab chiqarishning o‘tgan yillarida ishlab chiqarilgan lokomotivlar sinovdan o‘tishning juda past darajasi bilan ajralib turadi. Bu tayyorgarlik ishlarining sezilarli davomiyligi va mehnat zichligiga olib keladi, diagnostika jarayonini murakkablashtiradi va uni tegishli blokni ta’mirlash jarayoniga vaqt, mehnat xarajatlari va boshqa. xarajatlarga yaqinlashtiradi [5-6]. Aynan lokomotivlarning sinovga chidamliligini oshirish texnik xizmat ko'rsatish tizimini takomillashtirish bo'yicha ishlarning birinchi bosqichining asosiy vazifasi hisoblanadi. Bu yo'nalishdagi hal qiluvchi qadam barcha yangi ishlab chiqarilgan lokomotivlarni bortli diagnostika quyi tizimi bilan jihozlashdir.

Hozirgi vaqtda temir yo‘l tarmog‘ida lokomotivlarni amaldagi texnik holatiga qarab xizmat ko'rsatish tizimiga bosqichma-bosqich o'tish uchun shart-sharoitlar yaratildi, bu amalga oshirilgan va uzoq vaqt davomida sinovdan o'tgan PPR tizimining ijobiy tomonlarini rivojlantirish va ijodiy anglashning natijasi bo'lishi kerak hamda ko'plab

nazariy va amaliy tadqiqotlarning natijalariga asoslanishi kerak. Birinchi bosqichda tortish birliklarining navbatdagi TR yoki TOga qo'yilish muddati dastlab belgilangan ta'mirlash davrlari normalariga muvofiq rejalashtiriladi; keyinchalik esa, ta'mirlash ustaxonalarining kutilayotgan yuklanishiga va ushbu temir yo'l lokomotivining amaldagi texnik holatini baholash natijalarini hisobga olgan holda, u o'zgartirilishi mumkin. Bunday baholash uchun ma'lumot manbai sifatida asosiy cheklovchi bo'g'inlarning ishlangan vaqti, qoldiq resursi va nosozlik ehtimoli, ushbu lokomotivning oldingi davrdagi ishlash ishonchligi va poezdnlarni tortish uchun lokomotivning o'rtacha energiya sarflariga oid ma'lumotlar yagona lokomotiv depo ma'lumotlar bazasida saqlanadi.

Lokomotivlarga texnik xizmat ko'rsatish punktlarida zarur jihozlar, uskunarlar va moslamalar bo'lishi kerak. Kerakli namunaviy uskunalarning ro'yxati 1-jadvalda keltirilgan.

Lokomotivlarga texnik xizmat ko'rsatish sexida zaruriy qurilma va uskunalar ro'yxati

| Uskuna va moslamalar nomi                                                                                    | Chizma raqami qurilma turi | Soni, donasi |
|--------------------------------------------------------------------------------------------------------------|----------------------------|--------------|
| Lokomotivlarni olib kirish va chiqarish uchun kuchlanishi kamaytirilgan yarim o'tkazgichli rostlovchi uskuna | ТЭЛП № 452                 | 1            |
| Himoya to'siq bilan jihozlangan ko'rik maydonchasi                                                           | ТЭЛП № 501-189             | 6            |
| Buksalarni ko'tarish uchun yuk ko'taruvchanligi 10-15 tonnalik domkrat                                       | ПП771                      | 2            |
|                                                                                                              | ПП1086                     | 2            |
| Lokomotivlarga dizel yoqilg'isini quyish qurilmasi                                                           | A1066.02                   | 6            |
| Lokomotivlarga dizel moyini quyish qurilmasi                                                                 | A1062.03                   | 6            |
| Harakatlanuvchi tortuvchi tarkibning uzal va detallarini Moylash-moylash ishlari uchun moslama               | A655.01                    | 3            |
| Elektr distillyator                                                                                          | A468                       | 1            |
| Distillangan suv uchun vanna                                                                                 | A226                       | 1            |
| Elektrolit uchun idish                                                                                       | A225                       | 1            |
| Akkumulyatorlarga suv quyish uchun olib yuriladigan jo'mrakli idish                                          | ПП-1064.01                 | 3            |
| Tokarlik-vintni kesadigan dastgohi                                                                           | 1M61                       | 1            |
| Vertikal-parmalaydigan dastgoh                                                                               | 2H118                      | 1            |
| Charxlaydigan-silliqlaydigan dastgoh                                                                         | 3B632                      | 1            |
| Parmalaydigan ctolga qo'yiladigan dastgoh                                                                    | 2M-112                     | 1            |
| ALSN va avto to'xtatish qurilmalari ishlashini tekshiruvchi pult-stativ qurilma                              | ГТСС № 15625-00-00         | 2            |
| Sinov bo'linmasi (shleyf)                                                                                    | ГТСС №12862 и № 12863      | 3            |
| Chilangar ish stoli (verstak)                                                                                | P35.11.00                  | 5            |
|                                                                                                              | A363                       | 5            |
| Ehtiyot qismlar va moslamalar uchun stol                                                                     | P35.14.00                  | 1            |
| Gazli suv avtomati                                                                                           | AT-100C                    | 1            |
| Dizel tizimini sovutishda quyish uchun suv tayyorlash inshooti                                               |                            | 1            |
| Elektrokara                                                                                                  | ЭК-2                       | 1            |

Lokomotivlarga texnik xizmat ko'rsatish punkti (LTXXKP) chilangarlarining malaka darajasi kamida to'rtinchi razryad bo'lishi kerak. LTXXKPning chilangarlari, ushbu seriyadagi lokomotivlarni joriy ta'mirlashni amalga oshirishda tajribaga ega bo'lishi kerak. Brigadaning kamida 70% ishchilari TXK-2 davomida bajariladigan barcha turdagi majburiy va qo'shimcha ishlarni bajarishi shart [7-11].

### 3. Xulosa

Texnik xizmat ko'rsatish va ta'mirlash turlarining to'plami tegishli tuzilma va davriylik bilan tavsiflangan ta'mirlash siklini tashkil qiladi. Shunday qilib, lokomotivlarni ta'mirlash va texnik xizmat ko'rsatish xarajatlarini kamaytirish imkoniyati ta'mirlash muddati va hajmini rejalashtirishda ularning haqiqiy texnik holatini aniq hisobga olgan holda amalga oshiriladi. Bu imkoniyatni amalga oshirish uchun ko'plab lokomotiv depolari turli lokomotiv agregatlarining texnik holatidagi o'zgarishlarni kuzatish va prognozlashning zamonaviy texnik vositalari

bilan jihozlangan. Tortish kuchi birliklarini texnik xizmat ko'rsatish va ta'mirlash uchun qabul qilingandan so'ng ularning obyektivligi va nuqsonlarining chuqurligini oshirish, texnik xizmat ko'rsatish va ta'mirlash bo'yicha ish hajmini lokomotivning haqiqiy holatiga muvofiq asoslash mumkin bo'ladi.

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### **Mualliflar to'g'risida ma'lumot/ Information about the authors**

|                                                       |                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Umrzoqova Shohzoda Axrorjon qizi / Shohzoda Umrzokova | Toshkent davlat transport universiteti, “Temir yo'ldan foydalanish ishlarini boshqarish” kafedrası tayanch doktoranti<br>E-mail: <a href="mailto:umrzoqovashahzoda22@gmail.com">umrzoqovashahzoda22@gmail.com</a><br><a href="https://orcid.org/0009-0002-7644-3257">https://orcid.org/0009-0002-7644-3257</a> |
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