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SADRŽAJ

Stručni radovi

- Opća pozicija željeznice u kontekstu troškova vezanih za zaštitu okoliša (dr.sc.Žarko Dragić)
- Uvođenje vlakova s nagibnom tehnikom na postojeće pruge (Stipe Šošo, ing.građ.)
- Postupci za povećanje kvalitete digitalne komunikacije s osvrtom na prijenos poruka kod radio – dispečerskog sustava (mr. sc. Zoran blažević, Joško žunić)
- Ususret korisnicima željezničkih usluga (Saša Hirnig, dipl. inž.)
- Povećavanje svijetlog profila u starim dvokolosiječnim tunelima (Stipe Šošo, ing.)
- Modernizacija interijera dizel-motornog vlaka serije HŽ 7 121 (Helena Alfirević Arbutina, dipl.inž.)
- Nadzor nad monoblok kotačima u prometu (Zvonimir Pajić, dipl.inž.)

Prenosimo iz stranih stručnih izdanja

Kako male željeznice mogu slijediti razvoj tehnike? (Krunoslav Tušek u *Signal + Draht* br. 10/2003.)

ITHŽ aktivnosti

(iz rada Društva inženjera i tehničara HŽ)

- Ususret savjetovanju u Opatiji (20.- 21. 03. 2003.g.)na temu: Investicije u modernizaciju Hrvatskih željeznica
- U Klubu Inženjera i tehničara 19. studenog 2002.održane promotivne svečanosti:
 - Promocija novog stručnog časopisa inženjera i tehničara Hrvatskih željeznica *Željeznice 21*
 - Promocija novih auditora za zvanje Europski željeznički inženjer - EURAILING
- Okrugli stol:
 - Mogućnosti definiranja optimalnog željezničkog povezivanja Srednje Dalmacije
 - Mogućnost uključivanja grada Velike Gorice u sustav željezničkog javnog gradskog i prigradskog prijevoza
- UEEIV/DITHŽ: Plan međunarodnih stručnih sajmova i kongresa u 2003. godini

SAŽETCI

OPĆA POZICIJA ŽELJEZNICE U KONTEKSTU TROŠKOVA VEZANIH ZA ZAŠTITU OKOLIŠA

Iako su fokus ovoga rada troškovi vezani za ekološku zaštitu okoliša i poziciju željeznice unutar toga, nije se moglo izbjeći razmatranje bitnih čimbenika ekološkog onečišćenja okoliša, jer su oni u stvari generatori ekoloških troškova. Zbog toga materija je sistematizirana tako da se u prvom dijelu analitički razmatraju čimbenici, odnosno akteri ekoloških troškova segmentirani u tri osnovne skupine, i to: društveno-gospodarske djelatnosti po NKD, kao primarni uzročnici onečišćenja okoliša, zatim neposredni izazivači (agensi) onečišćenja, i na kraju elementi okoliša kao nositelji posljedica onečišćenja. U drugom dijelu rada razmatraju se pojedini aspekti ekoloških troškova, koji se izvode iz ekoloških šteta od onečišćenja okoliša, te iz aktivnosti na ime obustave ili smanjenje emisija onečišćenja. Budući da su ekološki troškovi pretežnim dijelom u eksternoj sferi, to se razmatraju postupci i procesi njihove internalizacije i uključivanja gdje se koriste

komplementarne mogućnosti između standardnih ekonomskih i autentičnih ekoloških učinaka, kojih primjera ima u praksi naših poduzeća i koji mogu biti dobar uzor željeznici.

UVOĐENJE VLAKOVA S NAGIBNOM TEHNIKOM NA POSTOJEĆE PRUGE

U članku je opisana problematika uvođenja vlakova s nagibnom tehnikom na postojećim željezničkim prugama koje su u prošlosti bile građene za brzine manje od 120 km/h. Glavni problem za vlakove s nagibnom tehnikom u pogledu povećanja brzine na tim prugama predstavljaju prekratke prijelazne rampe koje ne omogućuju da suvremeno konstruirani vlakovi u potpunosti iskoriste mogućnosti vožnje u luku s bitno većim bočnim ubrzanjem (1,8 m/sek²) od klasičnih vlakova (0,65 m/sek²). Kod odabira nadvišenja u luku, a time i nagiba rampe treba paziti da se s izabranim nadvišenjem ne smanji postojeća brzina za klasične vlakove. Bez obzira što su vlakovi s nagibnom tehnikom u osnovi napravljeni za veće brzine njihove prednosti na prugama sa manjim brzinama su (iako ne u potpunosti) dosta iskorištene. Koeficijent povećanja vozne brzine vlakova s nagibnom tehnikom (u usporedbi s drugim konvencionalnim putničkim vlakovima) je to veći, što je veća postojeća maksimalna brzina na određenom pružnom odsjeku.

POSTUPCI ZA POVEĆANJE KVALITETE DIGITALNE KOMUNIKACIJE S OSVRTOM NA PRIJENOS PORUKA KOD RADIO – DISPEČERSKOG SUSTAVA

U ovom tekstu opisane su sheme za poboljšanje kvalitete digitalnih komunikacija s pomoću digitalnih kutnih modulacija i kodiranja za zadanu širinu pojasa i brzinu prijenosa. Analizirani su odnosi efikasnosti pojasne širine i omjera energija bita – spektralna gustoća snage štoma te utjecaj primijenjene modulacije i kodiranja. Dan je i primjer prijenosa upravljačkih poruka kod radio – dispečerskog sustava na kojeg je primijenjena opisana analiza.

USUSRET KORISNICIMA ŽELJEZNIČKIH USLUGA

Predmet ovog rada je usmjeren na nužnost krajnjeg približavanja korisnicima prijevoznih usluga rukovodeći se njihovim potrebama uz pružanje usluge takve kvalitete koja će u cjelosti odgovoriti njihovim zahtjevima te tako osigurati dugoročan tržišni rast i dobit koji su danas conditio sine qua non opstanka i daljnjeg kvalitativnoga razvoja Hrvatskih željeznica. Svrha rada je ukazati na značenje komunikacije na relaciji korisnik prijevozne usluge – prodajno osoblje – poslovodstvo, uz potrebito preuzimanje odgovornosti “podređenih” za uspješnost poslovodstva.

Za izradbu rada korištena je metoda analize raščlambom “servisa isporuke” rukovođenog interesima korisnika prijevoznih usluga. Također su korištene: metoda istraživanja za stolom - prikupljanjem sekundarnih podataka iz stručne literature i publikacija te metoda istraživanja na terenu - prikupljanjem primarnih podataka od korisnika prijevoznih usluga u putničkom prometu. Sukladno tomu dat je prikaz rezultata istraživanja do kojih su došli učenici ŽTŠ-Moravice anketiranjem oko 2 000 putnika u putničkim i IC-vlakovima glede njihovog stava spram Hrvatskih željeznica.

“Habit is habit, and not to be tossed out the window by any man; but coaxed down the stairs one step at a time”. – Mark Twain

MODERNIZACIJA INTERIJERA DIZEL-MOTORNOG VLAKA SERIJE HŽ 7 121

Osuremenjivanje dizajna interijera dizel-motornih vlakova serije 7121 opisala je autorica samog projekta tako da je opisan i projektantski pristup i sama izvedba.

Koncept kojim su bile vođene projektantske ideje bio je taj da je prijeko potrebno mijenjati vizualnu percepciju Hrvatskih željeznica, jer će putnici najviše od svega primjetiti poboljšanje u kvaliteti materijala i udobnosti putovanja.

Prostorni koncept putničkog dijela motornog vlaka ovim zahvatom nije se mogao u potpunosti mijenjati iz ekonomskih razloga, no svi pojedinačni elementi dizajna interijera revidirani su detaljno.

Unutar definiranja kompozicije bilo kojeg dijela interijera posebna je pozornost posvećena sukladnosti pojedinih boja i njihovoj međusobnoj interakciji.

Kombinacija pojedinih boja uskladila je inače posve različite elemente interijera i dovela ih u sklad.

POVEĆAVANJE SVIJETLOG PROFILA U STARIM DVOKOLOSIJEČNIM TUNELIMA

Tuneli Križiški, Jurgovec i Ležeški dugi su niz godina predstavljali usko grlo na željezničkoj pruzi Ljubljana – Sežana, gdje je neodgovarajući svijetli profil u tunelima prouzrokovao svakodnevne smetnje i zastoje u prometu.

U prošlosti se više puta pokušalo povećati svijetli profil u tunelima, ali ni jedan pokušaj u potpunosti nije bio uspješan. Radi toga su 1995. godine bila izvršena detaljna mjerenja profila i kolosijeka u tunelima. Na osnovi tih mjerenja izrađen je projekt optimalizacije kolosiječne osi u tunelima i na potrebnoj dužini izvan tunela s ciljem povećanja gabarita uz što manja rezanja bokova tunela. Navedenim projektom je osiguran zahtijevani gabarit UIC GB i P/C 412 uz manja rezanja u bok tunela koja nisu zahtijevala dopunske sanacije tunela.

NADZOR NAD MONOBLOK KOTAČIMA U PROMETU

Na europskim željeznicama ima velika količina monoblok kotača kod kojih je tijekom životnog vijeka utvđena pojava velikih unutarnjih napetosti u vijencu kotača.

Unutarnje napetosti su direktno povezane s pucanjem monoblok kotača.

Opisane su metode i propisi u vezi nadzora stanja kotača kako nebi dolazilo do ugrožavanja sigurnosti prometa.

SUMMARIES

Željeznice 21 No 1/2003

THE GENERAL POSITION OF THE RAILWAYS IN THE CONTEXT OF COSTS CONNECTED TO THE ECOLOGICAL PROTECTION OF THE ENVIRONMENT

Although the costs connected to the ecological protection of the environment and the position of the Railways in this context are the focus of this work, it is impossible to avoid considering the key factors of environmental pollution, as these are the true generators of ecology-related costs. For this reason, the material is systematised so that the first part contains an analysis of the factors, in other words, the ecology-related costs broken down into three basic groups: the socio-economic activities acc. to the National Classification of Activities, as the primary causes of environmental pollution, the direct agents of pollution and finally, the environmental elements as bearers of the consequences of pollution.

The second part of this work contains an overview of the individual aspects of ecology-related costs which occur as a consequence of the damages from environmental pollution and activities aiming to stop or reduce emissions. Since the ecology-related costs are for the most part in the external sphere, this work discusses the procedures and processes of their internalisation and inclusion into areas where complementary possibilities between standard economic and authentic ecological effects are used, of which there are numerous examples in practice among our companies and which may serve as good models for the Railways.

THE INTRODUCTION OF TILTING TRAINS ONTO EXISTING TRACKS

The article describes the problems connected to the introduction of tilting trains onto existing railway tracks that were in the past built for speeds less than 120 km/h.

The main problem for tilting trains as far as a speed increase on these tracks is concerned lies in the short transition ramps which prevent newly-constructed trains in fully making use of the possibilities of running on a curve with a much greater sideways acceleration (1.8 m/sec^2) than conventional trains (0.65 m/sec^2). In the selection of the superelevation of the track on a curve, and thus the gradient of the ramp, care must be taken that the existing speed for conventional trains is not decreased with the selected superelevation. Despite the fact that tilting trains are basically made for greater speeds their advantage on lower speed tracks are (although not fully) made good use of. The coefficient of the increase of tilting train running

speeds (in comparison with conventional passenger trains) thus increases as the existing maximum speed on a particular permanent way district increases.

SCHEMES FOR INCREASING DIGITAL COMMUNICATION QUALITY WITH REFERENCE TO CONTROL MESSAGE TRANSFER IN RADIO-DESPATCHERY SYSTEM

In this paper, the schemes for increasing the quality of a digital communications system with digital angle modulations and coding for a given bandwidth and bit rate have been described. The relationships between bandwidth efficiency and bit energy-to-noise spectral density ratio have been analysed, as well as the influence of the applied coding and modulation scheme. An example is given of a control messages transfer in RD system on which the described analysis has been applied.

MEETING THE WISHES OF RAILWAY SERVICES CUSTOMERS

The subject of this paper is focused on the necessity for meeting the needs of transport services customers by conforming to their needs and providing services of such quality which will satisfy their requirements to the full and thus ensure a long-term market growth and profit which today are conditio sine qua non of the survival and further qualitative development of Croatian Railways. The aim of this paper is to point out the significance of communications between the railway services customer, the sales personnel and the management, together with the necessary takeover of responsibility by the "subordinates" for the success of the management.

The analysis method used in the elaboration of this paper was the breakdown of "delivery services" guided by the interests of transport services customers. Other methods used were: "at table" research (collation of secondary data from text books and publications) and field research (collation of primary data from transport services customers in passenger traffic). A presentation is also included of the research results obtained by pupils of the Railway-Technical School in Moravice who conducted a public opinion poll by interviewing about 2000 passengers on passenger and Inter-City trains concerning their attitude toward Croatian Railways.

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THE MODERNISATION OF THE INTERIOR OF DMU'S SERIES HŽ 7121

The modernization of the interior of DMU's series 7121 is described by the author of the project itself so that both the design approach and the realisation are described. The concept with which the design ideas were guided was that it was urgently necessary to change the visual perception of Croatian Railways as passengers are likely to notice improvements in the quality of materials and travelling comfort more than anything else.

The spatial concept of the passenger part of the motor unit could not fully be changed with this procedure for financial reasons, however, all the individual elements of the interior design were revised in detail.

Within the definition of the composition of any part of the interior special attention was paid to the coordination of individual colours and their interaction.

The combination of colours brought together the otherwise completely different elements of their interior and harmonised them.

ENLARGEMENT OF STRUCTURE GAUGES IN OLD DOUBLE-TRACK TUNNELS

The tunnels of Križiški, Jurgovec and Ležeški have for many years represented bottlenecks on the Ljubljana – Sežana railway line, where the unsuitable structure gauges in the tunnels have caused daily impediments and delays in traffic.

In the past there were several attempts to enlarge the structure gauges in the tunnels but none of the attempts were successful. For this reason in 1995 a detailed measuring of the

gauges and the tracks in the tunnels was carried out. On the basis of these measurements a project was devised to optimise the centre of the track inside the tunnels and at the necessary length outside the tunnels with the objective of enlarging the gauge with as few excavations to the tunnel sides as possible. The above mentioned project provided the required gauge of UIC GB and P/C 412 with fewer excavations into the tunnel sides which did not require additional tunnel rehabilitation.

CONTROL OF MONOBLOC WHEELS IN TRAFFIC

European railways have large quantities of monobloc wheels on which, during their lifespan, considerable internal tension in the wheel flange was discovered. The internal tension is directly connected to the fracturing of the monobloc wheel. Methods and regulations in regard to the control of the condition of the wheel are described so as to avoid putting traffic safety in jeopardy.