STATISTICAL MODELS OF MECHANICAL MILKING DURATION (p. 4-7)

Volodymyr Kucheruk, Yevhen Palamarchuk, Pavlo Kulakov, Tatiana Gnes

The need for developing a new statistical model of the mechanical milking duration, which allows increasing the accuracy of determining the productivity of a milking machine at its design or upgrade stages, has been specified. In addition, the model development will allow working out a technique for designing data-measuring systems of milk production process parameters. The basic operation algorithms of modern milking machines have been considered in the paper. Based on the conducted experimental studies it has been estimated that the distribution of duration for preparing animals for milking equals to a chi-square distribution, the distribution of the milking time when employing milking machines with no milking control function and the distribution of random milking time intervals using the milking control function equals to a gamma distribution.

A statistical model of a mechanical milking duration using a milking robot, a milking machine without the milking control function, a milking machine with the milking control function, which takes into account the minimum operation duration of a milking machine, has been developed

Keywords: milking duration, animal preparation duration, mechanical milking, statistical model

References

1. Tsoy, Y. A. (2010). Processes and equipment of milk departments of farms. M.: GNU VIESH, 424.
2. Catalogue of products and services DeLaval (2011), 372.
3. De Monmollen, N. (1973). The "man-machine" systems. M.: Mir, 256.
4. Bilibin, E. B. (1977). Guidelines for technological calculation of industrial type conveyor milking machines of dairy farms. M.: VIESH, 32.
5. Viktorova, I. N., Paleckov, E. N. (1974). Estimation of some characteristics of conveyor milking machines. Mechanization and electrification of socialist agriculture, 4, 19-21.
6. Bilibin, E. B. (1978). Guidelines for technological calculation of industrial type milking machines "Spruce" of dairy farms. M.: VIESH, 32.
7. Gelshteyn, Z. I., Vilcans, A. Y., Laure, A. R., Lusis, M. Y. (1973). Revised calculation performance of milking machines. Mechanization and electrification of socialist agriculture, 10, 18-23.
8. Krashakov, I. S. (1973). Performance of milking machines "Carousel". Mechanization and electrification of socialist agriculture, 10, 24-28.
9. Tihonov, V. I. (1982). Statistical radio engineering, Radio and communications, 624.
10. Koroluk, V. S., Portenko, N. I., Skorohod, A. V., Turbin, A. F. (1985). Handbook of probability theory and mathematical statistics. Science, 640.
11. Novickiy, P. V., Zograf, I. A. (1991). Estimation of errors of measurement results. Energoatomizdat, 304.

THE OPTIMIZATION OF IDENTIFYING THE TECHNICAL STATE OF GAS COMPRESSOR UNITS USING ENTROPY ESTIMATES (p. 8-11)

Mykhailo Horbiychuk, Marian Slabinoha

The paper is devoted to the problem of optimizing the identification process of compressor units using entropy estimates. The developments in the identification of technical states and diagnosis of malfunctions are examined in the paper, the theoretical foundations of the concept of diagnostic value and its application in other industries are described as well.

The feasibility of using the methods, which use a diagnostic value for optimizing the process of identifying technical states of gas compressor units, was proved. The concept of the software developed for studying the subject matter as a functional module was given, the process of algorithm performance was considered. The results of algorithm performance with real diagnostic data were obtained and analyzed.

The conclusion about the applicability of the diagnostic value methods for optimizing the diagnostic process of technical malfunctions and the technical evaluation of gas compressor units, was made

Keywords: diagnostic process, entropy estimates, technical condition, diagnostic value, functional module

References

1. Cheeseman, P. (2004). On The Relationship between Bayesian and Maximum Entropy Inference. AIP Conf. Proc. 735, 443-460.
2. Sokolov, V. A. (2010). Building solutions for the technical condition assessment of structural systems of buildings and structures using probabilistic methods of recognition. Construction Engineering Journal, 6(16), 48-57.
3. Chang, T. (2012). Vibration Fault Diagnosis of Rotating Machine Based on the Principle of Entropy Increase, Advanced Materials Research, 530, 109-114.
4. Sukhov, A. V. (2010). Optimal control of a technical condition of production facilities in the information space using the covering entropy. Compressors and Pneumatics, 4, 60-78.
5. Chilin, S. A. (2004). Gas compressor unit as the diagnostics object. Moscow, Russia: Gazprom, 130.
6. Birger, I. A. (1978). Technical Diagnostics. Moscow, USSR: Mechanical engineering, 240.
7. Hughes, J. M. (2010). Real World Instrumentation with Python. Sebastopol, USA: O'Reilly, 622.
8. McKinney, W. (2012). Python for Data Analysis. Sebastopol, USA: O'Reilly, 470.
9. Downey, A. (2012). Think Python. Sebastopol, USA: O'Reilly, 300.
10. Dyakonov, V. (2002). Matlab: Signal and image processing. Sankt-Peterburg, Russia: Piter, 608.

DEFINITION OF OPERATION TIME OF THE SHUTOFF VALVE OF GASIFIED PREMISES EXPLOSION SAFETY SYSTEM (p. 12-16)

Irina Moskvina

The results of experimental tests of springs of shutoff valve GSV-1, operating based on a signal, set by the gas protection system to the shutoff solenoid at an abrupt pressure increase in the inlet gas pipeline are presented in the paper.

Operation time of the mechanical part of shutoff valves at the pressure increase in the pipeline up to 50.6 kPa (0.5 atm.) ranges from 1,11 to 1,43 s.

Operation time at the signal setting from the gas protection system to the shutoff solenoid - from 1,04 to 1,22 s.

Statistical distribution functions of shutoff valves operating time do not contradict the Weibull distribution in terms of the Mann-Whitney U test that will allow to calculate the optimal time intervals of the valve operation.

Reasonable reliability parameters of the proposed solenoid shutoff valve and its diagnostics terms will ensure explosion protection of gasified premises and the desired safety level for people in them

Keywords: shutoff valve, methane air mixture, gas protection, experimental and analytical distribution function

References

1. Kovalev, A. P., Lehtman, I. I., Nagorny, M. A. (2011). Razrabotka tehnicheskih reshenij po predotvrashheniju vzryva bytovogo gaza v kvartirah. DVNZ «Donec'kij nacional'nij tehnichnij universitet». Serija «Elektrotehnika i energetika», 10(180), 64-67.
2. Kovalev, A. P., Lehtman, I. I. (2011). Razrabotka tehnicheskogo reshenija po obespecheniju vzryvobezopasnosti kvartir. Naukovij visnik UkrNDIPB, Kiïv, 1(23), 77-81.

3. Lehtman, I. I., Koval'ov, O. P., Ochkur, M. M., Bilousenko, I. V. (2012). Pristrij zahistu dlja zabezpechennja vibuhobezpeki primishhen', jaki ekspluatujut' pobutovij gaz. Patent Ukraine, № 201105092.

4. Mann, N. R., Fertig, K. W., Scheuer E. M. (1971). Tolerance Bounds a New Goodness – of – Fit Test for Two-Parameter Weibull or Extreme – Value Distribution. Aerospace Research Laboratories, Wright Patterson Air Force Base, Ohio, ARL 71 – 0077, Contact No, AF 33 (615), 70, 1216.

5. Wei-Chang, Y. (2006). A new algorithm for generating minimal cut sets in k-out-of-n networks. Reliability Engineering & System Safety, Vol. 91, № 1, 36-43.

6. Vega, M., Sarmiento, H. G. (2008). Algorithm to evaluate substation reliability with cut and path sets. IEEE Trans. on Industry Applications, Vol. 44, № 6, 1851-1858.

7. Yong, L., Singh, C. (2010). Reliability evaluation of composite power systems using Markov cut-set method. IEEE Trans. on Power Systems, Vol. 25, № 2, 777-785.

8. Kanur, K., Lamberson, L. (1980). Nadezhnost' i proektirovanie sistem. M. Mir, 604.

9. Chryssaphinou, O., Limnios, N., Malefaki, S. (2011). Multi-state reliability systems under discrete time semi-Markovian hypothesis. IEEE Trans. on Reliability, Vol. 60, № 1, 80-87.

10. Lozynsky, O. Y., Shcherbovskykh, S. V. (2009). Failure intensity determination using Markov reliability model for renewal non-redundancy systems. Przeglad Elektrotechniczny, Vol. 85, № 4, 89-91.

11. Shcherbovskykh, S. V., Lozynsky, O. Yu., Marushchak, Ya. Yu. (2011). Failure intensity determination for system with standby doubling. Przeglad Elektrotechniczny, Vol. 87, № 5, 160-162.

12. Svetushenko, S. G., Mokeev, M. Ju., Smirnov, Ju. A. (2006). Klapan-otsekatel. Patent RF 2285180, MPK8, F16 K17/04, 2006. 7.

QUALITY ASSURANCE OF HOLLOW CONTINUOUS CAST BILLETS FROM COPPER ALLOYS (p. 16-20)

Oleg Khoroshilov, Anna Pavlova

The research results of assuring the quality of hollow continuous cast billets from copper alloys are given in the paper. For this purpose, the design of a continuous casting machine mandrel of hollow billets from copper alloys by making cuts on its surface was improved.

It allows modifying the contact area in the "mandrel - billet" system and the extraction force of a billet from the mold respectively. Supporting them at a given level has allowed increasing stability of continuous casting.

As a result of the studies, dependencies of the influence of the step size and inner diameter of a hollow billet on the extraction force of the hollow billet from the mold were determined, and also limit values of the step size at a cyclical motion of the billet for various values of the internal diameter of the billet.

Changing the step size, when using a mandrel with cuts, allows changing extraction forces from the mold. It allows supporting the extraction force of the billet by increasing the step size not more than the critical force of a graphite mandrel fracturing. Thus, the possibility of maintaining stable operation of the continuous casting machine, used for manufacturing hollow billets from copper alloys, emerges

Keywords: quality assurance, hollow billets, continuous casting, process stability

References

1. Kushnerova, E. Yu., Bredykhyn, V. N., Maniak, N. A., Shevelev, A. Y. (2011). K voprosu matematycheskoho modelyrovanyia protsessa nepreryvnoho lytia v zakrytyi hrafytovyi formoobrazovatel. Donetskoho natsionalnoho tekhnichnoho universytetu. Seriia: Metalurhiia, 13(194), 92-98.

2. Lube, Y. Y. (2010). Yssledovanye y sovershenstvovanye tekhnolohyy horiachei prokatky trub yz nepreryvnolytoi zahotovky na ahrehatakh s nepreryvnym stanom, Moskva, 147.

3. Nepreryvnoe horyzontalnoe lyte polykh trubnykh zahotovok yz beskyslorodnoi medy. Rever-impex, h. Ekaterynburh. Available at: www.reversgroop.ru/stati.html.

4. Hryhorev, M., Kabakov, Z. K., Habelaia, D. Y. (2010). K voprosu modelyrovanyia hydrodynamycheskykh yavlenyi v krystallyzatore mashyny nepreryvnoho lytia zahotovok. Vestnyk Cherepovetskoho hosudarstvennoho unyversyteta, 3, 121-124.

5. Chernomas, V. V., Salykov, S. R. (2011). Tekhnolohycheskyi kryteryi poluchenyia kachestvennykh metalloyzdelyi na ustanovke nepreryvnoho lytia y deformatsyy metala. Uchenye zapysky Komsomolskoho-na-Amure hosudarstvennoho tekhnycheskoho unyversyteta, Vol 1, 7, 79-85.

6. Khoroshylov, O. N. (1999). Prochnost mednykh splavov v temperaturnom yntervale krystallyzatsyy. Lyteinoe proyzvodstvo, M., 12, 22- 23.

7. Cuypers, P. F. (1987). Continuous casting in the copper industry Eindhoven : Technische Universiteit Eindhoven, 61.

8. Khoroshylov, O. N., Prokopenko, E. A. (2001). Model dlia rascheta polozhenyia fronta zatverdevanyia v krystallyzatore pry razlychnykh parametrakh protsessa nepreryvnoho lytia. Protsessy lytia, K., 1, 22-28.

9. Lukianov, S. Y., Suspytsyn, E. S., Konovalov, M. V. (2011). Systema dyahnostyrovanyia mekhanycheskoho oborudovanyia elektropryvoda tianushchykh rolykov mashyny nepreryvnoho lyttia. Vestnyk mahnytohorskoho hosudarstvennoho tekhnycheskoho unyversyteta ym. H.Y. Nosova, 3, 23-25.

10. Khoroshylov, O. N., Ponomarenko, O. Y. (2006). Yssledovanye konstruktsyonnykh kharakterystyk srezov na dorne pry proyzvodstve polykh zahotovok yz tsvetnykh splavov. Lyte y metallurhyia, 2, 187 -189.

DYNAMIC RANGE EVALUATION OF THE IMMITANCE LOGIC ELEMENTS (p. 21-25)

Mykola Filinyuk, Ludmila Lischinskaya, Roman Chehmestruck, Svitlana Fursa

The parameters, characterizing dynamic range of immitance logic element (ILE) were substantiated in the paper. Since the dynamic ILE range evaluation has not been undertaken yet, the task to assess it was set. The methods for determining the noise factor, signal power, which allow to determine the ILE dynamic range, were considered.

The dynamic range of the element "NOT" of R and LC types, based on bipolar transistor was investigated. The ILE dynamic range is determined by the dependence of the ILE output immittance on the signal power and ILE input noise level.

For analytical evaluation of ILE dynamic range, the coefficient equal to the ratio of maximum signal power, at which the value of the converted immittance at the ILE output does not vary more than by 10 %, to the minimum ILE input noise power was proposed.

Numerical dynamic range evaluation of immittance logic elements "NOT" of R- and LC-type, based on bipolar transistor showed that their dynamic range is equal to 92 and 110 dB respectively, and can be increased by narrowing the noise bandwidth. These results allow to use the ILE in modern technology

Keywords: immittance logic element, dynamic range, noise factor, signal power

References

1. Mikushin, A. V., Sazhnev, A. M., Sedinin, V. I. (2010). Tsifrovye ustroistva i mikroprotsessory. BKhV-Peterburg. Moskva, 832.

2. Yu Huang, Xiangfeng Duan1, Yi Cui, Lincoln J. Lauhon, Kyoung-Ha Kim, Charles M. (2001). Logic Gates and Computation from Assembled Nanowire Building Blocks. Science, Vol. 294, № 5545, 1313-1317 DOI: 10.1126/science.1066192.

3. Kichak, V. M. (1999). Radioimpul'sni logichni NVCh elementi. Vinnitsya : UNIVERSUM-Vinnitsya, 240.

4. Jerome Bonnet, Peter Yin, Monica E. Ortiz, Pakpoom Subsoontorn, and Drew Endy Amplifying Genetic Logic Gates, Science, 599-603.

5. Lishchins'ka, L. B., Filinyuk, M. A. (2010). Imitansna logika. Informatsiini tekhnologiï ta komp'yuterna inzheneriya, №2(18), 25-31.

6. Golovin, O. V. (2002). Radiopriemnye ustroistva: uchebnik dlya radiotekhn.spets.sred.spets.ucheb.zavedenii. M. : Goryachaya liniya-Telekom, 384.

7. Lishchins'ka, L. B. (2010). Viznachennya, klasifikatsiya i parametri bagatoparametrichnikh uzagal'nenikh peretvoryuvachiv imitansu. Visnik Vinnits'kogo politekhnichnogo institutu, №5, 105-108.

8. Filinyuk, M. A., Voitsekhovs'ka, O. V. (2008). Elementi ta pristroï avtomatiki na osnovi neliniinikh vlastivostei dinamichnikh negatroniv: Monografiya. Vinnitsya: UNIVERSUM-Vinnitsya, 189.

9.   Lishchins'ka, L. B. (2011). Otsinka osnovnikh parametriv imitansnikh logichnikh elementiv. Informatsiini tekhnologiï ta kompyuterna inzheneriya, №3(22), 45-52.
10. Smogilev, K. A. (1972). Rezonansnye usiliteli na trekhpolyusnikakh. M. : Sov. radio, 304.
11. Sigorskii, V. P., Petrenko, A. I. (1967). Osnovy teorii elektronnykh skhem. Kiev:Tekhnika, 609.
12. Adams, D. K., Ho, R. Y. C. (1969). Active filter for UHF and microwave frequencies. IEEE transactions on microwave theory and techniques; V.M.TT – 17, N9, 662-670.

A GENERALIZED METHODOLOGY OF ESTIMATING EFFICIENCY OF UNDERWATER TECHNOLOGIES IN DEEP-SEA ARCHAEOLOGICAL PROJECTS (p. 25-29)

Olixandr Blintsov, Anatoly Nadtoshy

From the perspective of managing projects the trends of underwater and technical support of marine archaeological expeditions were set up, a scientific problem of estimating the efficiency of these trends was defined, and a global criterion for estimating the efficiency of using underwater technologies for the stage of drafting deepwater archeology projects was proposed. The urgency of the scientific problem lies in the presence of a large number of underwater objects in the territorial waters of Ukraine, which make up the underwater cultural heritage of mankind, and in the low activity of studies due to the lack of scientifically justified methods of choosing underwater technologies and techniques of their use at the stage of drafting marine expedition projects.

As a result of the studies, it was suggested computing a global criterion for estimating the efficiency of using a dimensionless safety criterion of carrying out operations for underwater archaeologists and environment, as well as dimensional criteria of productive efficiency of underwater techniques and price characteristics of their application.

For estimating criteria, a system of formal indicators and poorly formalized operating limitations in using underwater techniques and technologies, which take into account environmental factors and characteristics of wrecks, was developed.

The obtained results give a theoretical basis for a generalized methodology for estimating the efficiency of underwater technologies and modern diving, manned and fully robotic underwater techniques at the stage of drafting deep-water archeology projects considering environmental factors in an area of carrying out archaeological operations and features of submarine objects under investigation

Keywords: project drafting, deep-sea archeology, underwater technologies, estimating the efficiency, method, criteria

References

1.   Konvencija OON z mors'kogo prava (1999). Ratifikovana Zakonom Ukraini №728-XIV.
2.   Okorokov, A. V. (2008). Istorija otechestvennoj podvodnoj arheologii. M.: KnoRus, 160.
3.   Bowens, A. (2009). Underwater Archaeology: The NAS Guide to Principles and Practice. Nautical Archaeology Society UK, 226.
4.   Mizhnarodna Konvencija pro ohoronu pidvodnoï kul'turnoï spadshhini JuNESKO (2001). XXXI sesija (in Ukraine).
5.   Nazarov, V. V. (2003). Gidroarheologicheskaja karta Chernomorskoj akvatorii Ukrainy (pamjatniki antichnoj i srednevekovoj jepoh). Ctilos, 160.
6.   Zakon Ukraïni «Pro ohoronu arheologichnoï spadshhini» (2004). Vidomosti Verhovnoï Radi Ukraïni, № 26, art. 361.
7.   Bass, D. Podvodnaja arheologija. Drevnie narody i strany. M.: ZAO «Centrpoligraf», 202.
8.   Blincov, V. S., Voronov, S. O. (2010). Bazovi tehnologiï zastosuvannja pidvodnih aparativ-robotiv dlja zadach mors'koï arheologiï. Materiali mizhnarodnoï naukovo-tehnichnoï konferenciï. Innovaciï v sudnobuduvanni ta okeanotehnici. Mikolaïv: NUK, 389-391.
9.   Sagalevich, A. M. (2002). Glubina. M. : Nauchnij mir, 320.
10. Ruppe, C. V., Barstad, J. F. (2002). International Handbook of Underwater Archaeology. Springer US, 881.
11. Consensus Standards for Commercial Diving and Underwater Operations (2004). Association of Diving Contractors International USA– Published by: Best Publishing Company, 254.
12. Murielle, R., Raphaële, V., Alain-Xavier, W. (2003). Underwater Archaeology: History and Methodology. Periplus Editions (HK), Limited, 73.
13. Ballard, R. D. (2008). Titanic: The Last Great Images. Perseus Books Group, 191.
14. Staniforth, M., Nash, M. (2008). Maritime Archaeology: Australian Approaches. Springer, 222.
15. Majewski, T., Gaimster, D. (2009). Editors International Handbook of Historical Archaeology. Springer LLC, 698.
16. Cerullo, M. M. (2009). Shipwrecks: Exploring Sunken Cities Beneath the Sea. Dutton Children's Books, Penguin, 64.
17. Zelenko, S. M. (2008). Pidvodna arheologija Krimu. K.: VD «Stilos», 272.
18. Kozak, D. N. (2009). Stan ta perspektivi ohoroni i doslidzhennja arheologichnoï spadshhini v Ukraïni. K., 40. Aviable at: http://www.iananu.kiev.ua/newsstr/mouse/pubkozak.html
19. Okeanologicheskie issledovanija i podvodno-tehnicheskie raboty na meste gibeli atomnoj podvodnoj lodki „Komsomolec" (1996). M.: Nauka, 362.
20. Ballard, R. D., Princeton, N. J. (2008). Archaeological Oceanography. Princeton University Press, 283.
21. Blincov, V. S., Blincov, O. V., Voronov, S. O., Nadtochij, A. V. (2012). Naukovi zadachi upravlinnja proektami glibokovodnih arheologichnih doslidzhen'. Visnik NUK. Mikolaïv: NUK, 2.
22. Sagalevich, A. M. (2011). Podvodnye apparaty v nauchnyh issledovanijah i podvodno-tehnicheskih rabotah. Materiali XII Mezhdunarodnoj nauchno-tehnicheskoj konferencii. Sovremennye metody i sredstva okeanologicheskih issledovanij. M.: APR, 18-20.
23. Blincov, O. V., Burunina, Zh. Ju., Klimenko, P. G. (2012). Ocinka efektivnosti zastosuvannja pidvodnih aparativ-robotiv dlja poshuku zatonulih ob'ektiv. Visnik NUK. Mikolaïv: NUK, 1.
24. Kramorenko, A. V., Skakun, A. N. (2013). Kriterii sravnenija harakteristik podvodnyh apparatov s tochki zrenija vozmozhnosti vypolnenija imi podvodnyh rabot. Materiali HIII Mezhdunarodnoj nauchno-tehnicheskoj konferencii. Sovremennye metody i sredstva okeanologicheskih issledovanij. M.: APR, 316-319.
25. Vasilevs'kij, O. M., Podzharenko, V. O. (2010). Normuvannja pokaznikiv nadijnosti tehnichnih zasobiv: navchal'nij posibnik. Vinnicja : VNTU, 129.
26. Blincov, O. V., Nadtochij V. A. (2012). Ocinka rivnja avtomatizaciï samohidnih priv'jaznih pidvodnih sistem z manipuljatorami. NUK. Mikolaïv, 3-4, 66-70.
27. Gnatienko, G. M., Snitjuk, V. E. (2008). Ekspertni tehnologiï prijnjattja rishen. K. : McLaut, 444.

LOGICAL AND PROBABILISTIC MODELLING CONCERNING RISK OF SAFE FUNCTIONING VIOLATION OF HUMP YARD (p. 30-37)

Sergiy Bantyukov, Svitlana Bantyukova

When carrying out the technical process of breaking and making up trains as well as accumulating carriages on marshalling sidings plenty of dangerous situations may occur. Some of them can lead to safe functioning violation at a hump yard. One of the criteria of the high-quality hump yard control is identification and assessment of violation risks.

The development of logical and probabilistic risk model of safety violation at a hump yard for assessing and determining the hump yard safety level has been considered in the paper. The main types of safe functioning violations at a hump yard have been described. They have been served as the basis for working out possible occurrences and forming logical models of dangerous situations on the way of breaking up and making up trains. The obtained models allow determining probabilities of safety violations on separate sections of the way of breaking up and making up trains and throughout the entire route.

Comparing to the existing models, a logical connection of possible dangerous occurrences on different route sections of breaking up and making up trains has been taken into account. Hence, there exists a possibility of estimating the safest (or the most dangerous) route on a hump yard

Keywords: safety of functioning, risk, logical and probabilistic model, hump yard

References

1. Ohar, O. M., Bantiukova, S. O. (2008). Upravlinnia rizikami v sistemi «sortuval'na hirka». Informatsiino-keruiuchi sistemi na zaliznichnomu transporti, 4, 41-46.
2. Hruntov, P. S., Pishchik, F. P. (2001). Bezopasnost' dvizheniia na zheleznodorozhnom transporte: Textbook. Homel': BelIIZhT, 122.
3. Balalaev, S. V., Kolohrivaia, I. E. (2013). Bezopasnost' dvizheniia na zheleznykh dorohakh: Textbook in 2 parts. Khabarovsk: DVHUPS. Part. 1, 111.
4. Bezopasnost' dvizheniia na zheleznodorozhnom transporte: guidelines for students and course training. (2002). Novosibirsk, 50.
5. Kozachenko, D. M. (2011). Rozvitok teoretichnikh osnov otsinki tekhniko-ekspluatatsiinoi efektivnosti ta bezpeki funktsionuvannia sortuval'nikh hirok. «Ekspluatatsiia ta remont zasobiv transportu». Dnipropetrovs'k: 297.
6. Sokolov, O. I. (2000). Rozrobka metodiki otsinki rivnia bezpeki rukhu na zaliznichnomu transporti. «Ekspluatatsiia ta remont zasobiv transportu», Kharkiv: 21.
7. Khokhlov, A. A., Zhukov, V. I. (2009). Tekhnicheskie sredstva obespecheniia bezopasnosti dvizheniia na zheleznykh dorohakh. M.: UMTs ZhDT, 553.
8. Riabinin, I. A., Cherkesov, H. N. (1981). Lohiko-veroiatnostnye metody issledovaniia nadezhnosti strukturno-slozhnykh sistem. M.: Radio i sviaz', 264.
9. Riabinin, I. A. (2007). Nadezhnost' i bezopasnost' strukturno-slozhnykh sistem. SPb.: Izdatel'stvo Sankt-Peterburhskoho universiteta, 278.
10. Modin, N. K. (1985). Mekhanizatsiia i avtomatizatsiia stantsionnykh protsessov. Transport, 224.
11. Lisenkov, V. M. (1999). Statisticheskaia teoriia bezopasnosti dvizheniia poezdov. VINITI RAN, 332.
12. Modin, N. K. (1994). Bezopasnost' funktsionirovaniia horochnykh ustroistv. Transport, 173.

REDUCTION OF CONFLICT SITUATIONS AT HALTING POINTS OF PUBLIC MUNICIPAL PASSANGER TRANSPORT ROUTES (p. 38-42)

Tatyana Samisko, Irina Zlobina

The problem of conflict occurrence at halting points of public municipal passenger transport routes is considered in the paper. It was shown that a simultaneous driving over of municipal bus transport facilities at a halting point leads to significant time losses of a carrier as well as passengers, increase of costs for providing citizens with transport services by transport companies and, also can cause an emergency situation. In this regard, the service quality is diminished and the probability of a trip failure is increased. The necessity of reducing the number of conflict situations at halting points of public municipal passenger transport routes is discovered and substantiated.

Therewith, the conditions under which, a conflict between buses of different route at halting points of public municipal passenger transport may occur, are given. The method for calculating the amount of conflict situations at halting points of public municipal passenger transport is offered.

On the basis of the above-mentioned, the possible ways for reducing conflict situations at halting points of combined traffic areas of public municipal passenger transport are proposed.

Keywords: passenger transport, halting point, conflict situation, adjacent route.

References

1. Garrity, R. L. (1993). Bus Stop Accessibility: A Guide for Virginia Transit Systems and Public Entities for Complying with the Americans with Disabilities; Act of 1990. In Transportation Research Record 1390, TRB, National Research Council, Washington, D. C.
2. Kagaev, A. A. (2011). Modeling of movement GOTH with accounting download stopping points: proceedings of the XVII international. (twentieth Yekaterinburg) nauch.-practical. proc. «Socio-economic problems of development and functioning of transport systems of cities and areas of their influence» (16-17 June 2011). Ekaterinburg: Publishing house of the Ural. state Econ. Univ, 259-267.
3. Kagaev, A. A. (2012). Reduction of conflict situations at bus stops route networks of urban passenger transport. Publishing house of the URGU, 16.
4. Larin, A. N., Kagaev, A. A. (2011). Optimization of the route network of cities with accounting bandwidth limitations of the stopping points. Vestnik of OSU, 10 (129)
5. Larin, O. N. (2010). Education issues of conflict situations on the route networks of municipalities. Vestnik Brgtu. Physics, mathematics, computer science, 5 (65), 60-63.
6. Kagaev, A. A. (2011). Problems of modeling of movement of public transport in the municipalities. Transport Urals, 3(30), 24-27.
7. Zedgenizov, A. V. (2008). Increase efficiency of traffic at bus stops of urban passenger transport. Irkutsk, 128.
8. Bus Service Standards. (2001). 5 Singapore Public. Available at: http://www.ptc.gov.sg/bus_ser_std.htm.2001. Transport Concil.
9. Highway Capacity Manual 2000. (2000). Transportation Research Board, National Research Council. Washington, D. C., USA, 1134.
10. Choline, N. A. (1974). Technical conditions on location, parameters and equipment stopping points. Moscow, USSR: Department of scientific and technical information AKX.

PRINCIPLE CHARACTERISTICS OF «UNIVERSITY ADMISSION CAMPAIGN» PROJECT (p. 42-47)

Oleg Loginov

A project-oriented approach to the university admission campaign is offered in the paper. A systematic understanding of a project-oriented university was developed, and the possibility of a design approach to an admission campaign was substantiated. The essence and benefits of main stages of the project life cycle were defined.

The project benefit is the current admission. As the value, a financial result of an admission campaign, related to the payment for educational services, was defined. A methodological approach to estimating planned and actual values of the "University admission campaign" project was developed.

At the final stage of the project life cycle it is suggested evaluating the performance, i. e. the correspondence of an actual student admission rate to the planned one. The formula for evaluating the project performance, providing the equivalence of professions, forms and educational levels, as well as their university differentiation, was worked out.

Keywords: project, university, admission campaign, benefit, value, performance, life cycle, resources, risk

References

1. Bushuyev, S. D. (2010). Mechanisms of formation of values in the activities of design -oriented enterprises. Eastern-European Journal of Enterprise Technologies, 1/2, 4-9.
2. Rach, V. A. (2004). Project activities in the context of globalization and the knowledge economy. Project management and develop a production, 1 (devil), 55-62.
3. Weissman, V. A. (2009). Models, methods and mechanisms for the establishment and operation of project - driven organization. Kiev: Science, 146.
4. Oberemok I. I. (2003). Methods and tools for project-oriented management in higher education. Kiev: KNUBA, 17.
5. Colyada, O. P. (2008). Project-oriented formalization of a strategic component of the functional activity of higher education. Project management and develop a production, 3 (27), 81 - 87.
6. Colyada, O. P. (2010). Eastern-European Journal of Enterprise Technologies, 1/2 (43), 31 - 33.
7. Osik, O. O. (2008). The life cycle of development projects, higher education institution. Available at: http://www.nbuv.gov.ua/ portal/ natural/Uprv/2008_2/osik.pdf.
8. Glovatskaya , S. N. (2014). Evaluation value projects of the international activities of universities based on the theory of fuzzy sets. Available at: http://conference.nuos.edu.ua.
9. Grudzinski, A. O. (2004). Concept of project-oriented university. Professional entrepreneurial organization university. Nizhny Novgorod: Publishing House of UNN, 370.
10. Kozyar, M. M. (2010). Virtual University: prospects of a new type of education. Modern information technologies and innovative teaching methods in training: methodology, theory, experience, problems: Kiev, Vinnitsa: TOV FIRMA "Glider ", 23, 40-46.

11. Oborskiy, G. O. Gogunsky, V. G., Saveleva, O. C. (2011). Standardization and certification processes of the quality management education in higher education. Proceedings of the Odessa Polytechnic University, 1 (35), 252-256.

12. Panchenko, M. A. (2009). Model of integrated assessment of quality management system. News Khmelnytsky National University, 3, 1, 178-181.

ASSESSMENT OF QUALITY MANAGEMENT SYSTEM EFFICIENCY USING FUZZY LOGICS TOOLS (p. 47-53)

Irina Lazko

The necessity for improving the efficiency assessment system for design products quality management system (QMS) in case of fuzzy input data was caused by a number of objective reasons. A high portion of subjective assessments and quality characteristics at QMS assessment complicates greatly an objective assessment of the system state with conventional methods. Therefore assessment of the system by means of fuzzy logics tools was proposed. In the course of the research an efficiency assessment model for QMS using fuzzy set theory was proposed: at the first stage of the research justified selection of mathematical apparatus for QMS efficiency assessment was made; at the second stage a system analysis of business process of several design companies was carried out for the purposes of system efficiency assessment and process group, processes and subprocesses of QMS were identified; at the third stage a system efficiency assessment model was built. At that, using a fuzzy clustering method, possible states of design products QMS were identified, hierarchical architecture of fuzzy inference system for assessment of QMS efficiency was determined, input, output and intermediate assessment data were described in terms of fuzzy logics. The contents of input and output indicators were determined. A membership function was assigned to each of them. Fuzzy system knowledge bases were developed with the assistance of the experts from design companies. Aggregation operation by min-max method was used for all 18 created blocks of production rules. A fuzzy model characterized by hierarchical pattern that allows to eliminate the subjective factor at determination of the weightage of some indicators when assessing QMS efficiency was developed in the course of the research. Assessment of intermediate efficiency indicators for processes and process groups is provided for better visualization and transparency of calculations. The use of the developed model improves adequacy of management decision-making in the field of quality management

Keywords: fuzzy logics, quality management system, membership function, fuzzy inference system

References

1. Lazko, I. V. (2011). Do pytannia otsinennia rezultatyvnosti systemy upravlinnia yakistiu naukovo-doslidnykh ustanov. Eastern-European Journal of Enterprise Technologies, 5/3 (53), 21-25.

2. Lazko, I. V. (2012). Upravlinnia nevidpovidnostiamy v systemi upravlinnia yakistiu proektiv. Visnyk Natsionalnoho tekhnichnoho universytetu «KhPI». Zbirnyk naukovykh prats. Seriia «Novi rishennia v suchasnykh tekhnolohiiakh», 68 (974), 141- 145.

3. Lazko, I. V. (2013). Analiz ta otsinka suputnykh ryzykiv zabezpechennia yakosti proektnoi produktsii. Eastern-European Journal of Enterprise Technologies, 2/10 (62), 4-7.

4. Nastanova shchodo upravlinnia yakistiu v proektakh (ISO 10006:2003, IDT): DSTU ISO 10006:2005. (2007). Natsionalnyi standart Ukrainy, 27.

5. Zadeh, L. A. (1965) Fuzzy sets. Information and Control, Vol. 8, № 3, 338-353.

6. Bellman, R. (1976). Pryniatye reshenyi v rasplyvchatykh uslovyiakh. [v kn.: Voprosy analyza y protsedury pryniatyia reshenyi]. M.: Myr, 172-215.

7. Kofman, A. (1982). Vvedenye v teoryiu nechetkykh mnozhestv. M.: Radyo y sviaz, 432.

8. Leonenkov, A. V. (2005). Nechetkoe modelyrovanye srede MATLAB y fuzzy TECH. SPb.: BKhV Peterburh, 736.

9. Averkyn, A. N., Batyrshyn, Y. Z., Blyshun, A. F. (1986). Nechetkye mnozhestva v modeliakh upravlenyia y yskusstvennoho yntellekta. M.: Nauka. Hl. red. fyz.-mat. lit., 312.

10. Shtovba, S. D. (2007). Proektyrovanye nechetkykh system sredstvamy MATLAB. M.: Horiachaia lynyia. Telekom, 288.

11. Dubois, D. (1999). Fuzzy sets logics and reasoning about knowledge. Applied logic series, 15, 423.

12. Klir, G. J. (1988). Fuzzy sets, uncertainty, and information. N. J. Prentice Hall, Englewood Cliffs, 355.

13. Ptuskyn, A. S. (2008). Nechetkye modely y metody v menedzhmente: uch. Posobye. M.: Yzdatelstvo MHTU im. M.E. Baumana, 216.

14. Bojadziev, G. (1997). Fuzzy logic for business, finance and management. Advance in fuzzy systems – application and theory. Singapore: World Scientific Publishing, Vol. 12, 232.

15. Bien, Z. (1995). Fuzzy logic and its applications to engineering, information sciences and intelligent systems. Theory and decision library, 16, 481.

16. Asai, K. (1995). Fuzzy system for management. Amsterdam: IOS Press, 192.

17. Lootsma, F. A. (1997). Fuzzy logic for planning and decision making. Applied optimization, 8, 195.

18. Vyshneva, Y. V. (2010). Matematycheskye modely v systeme upravlenyia kachestvom vyssheho obrazovanyia s yspolzovanyem metodov nechetkoi logyky. Saratov: yzd-vo «Saratovskyi ystochnyk», 187.