
AUTOMATED CONTROL OF HYDRAULIC MOUNTING COMPLEX FOR CONSTRUCTING OVERHEAD POWER TRANSMISSION LINES

A.V. Kartovenko

challacha@mail.ru

Bauman Moscow State Technical University, Moscow, Russian Federation

Abstract

We propose a hydraulic automated mounting complex for constructing overhead power transmission lines. We present the structure of the automated complex, screenshots of the control program, a block diagram of an automated system and the control program algorithm. Finally, we give recommendations for the object automation

Keywords

Hydraulic mounting complex, automation of hydraulic systems, computer experiment

© Bauman Moscow State Technical University, 2016

References

- [1] Glazov A.A., Monakov I.A., Ponkratov A.V. Stroitel'naya, dorozhnaya i spetsial'naya tekhnika [Building, road and specialty machinery]. Moscow, AO "Proftekhnika" Publ., 2008. 640 p. (in Russ.).
 - [2] GOST 839-80. Provoda neizolirovannye dlya vozдушных линий электропередачи. Tekhnicheskie usloviya [State standard 839-80. Aerial non-insulated cables. Full product specifications]. Moscow, Izdatelstvo standartov Publ., 2002. 22 p. (in Russ.).
 - [3] Shcherbakov N.A. CAN network: microcontrollers of all the countries, unite. *Inzhenernaya mikroelektronika*, 1998, no. 12, pp. 35–42 (in Russ.).
 - [4] Robert Bosch GmbH. CAN Specification Ver. 2.0, 1991.
 - [5] Etschberger K. CAN - grundlagen, protokolle und profile, bauteine und anwendungen. Munchen, Hanser-Verlag, 1998.
 - [6] Etschberger K. CAN-based higher layer protocols and profiles. *Proc. of the Fourth International CAN Conference (iCC 97)*. CiA, Erlangen, Germany, 1997.
 - [7] Khazarov V.G. Integrirovannye sistemy upravleniya tekhnologicheskimi protsessami [Integrated system for human resources management]. Sankt-Petersburg, Professiya Publ., 2009. 591 p. (in Russ.).
 - [8] Nesterov A.L. Proektirovanie ASUTP. Kniga 1 [SCADA engineering. Vol. 1]. Sankt-Petersburg, DEAN Publ., 2009. 552 p. (in Russ.).
 - [9] Meshcheryakov I.I. Provoda i trosy vozдушных линий электропередач [Open wires and aerial cables]. Shkola dlya elektrika: website. URL: <http://electricalschool.info/main/kabel/630-provoda-i-trosy-vozdushnykh-linij.html> (accessed 23.07.2013) (in Russ.).
 - [10] Fedorov Yu.N. Poryadok sozdaniya, modernizatsii i soprovozhdeniya ASUTP [SCADA construction, modernization and maintenance order]. Moscow, Infra-Inzheneriya Publ., 2011. 576 p. (in Russ.).
 - [11] Nazemtsev A.S., Rybal'chenko D.E. Pnevmaticheskie i gidravlicheskie privody i sistemy. Chast' 2. Gidravlicheskie privody i sistemy. Osnovy [Pneumatic and hydraulic drives and systems. P. 2. Hydraulic drives and systems. Fundamentals]. Moscow, Forum Publ., 2007. 304 p. (in Russ.).
 - [12] Prokladka kablya VOLS [FOCL cable routing] Flalink: website.
URL: <http://www.flylink.ru/info/articles/491/953> (accessed 09.08.2013) (in Russ.).
-

-
- [13] Natyazhnaya mashina, lebedka LSI.45NM s tyagovym usiliem 45 kN [Tension machine, windlass LSI.45NM with motive force 45 kN]. ZAO "SI" website. URL: <http://www.zaosi.com/natyazhnye-maschiny-lebedki-vols-vok-lep-vl/49-natyazhnaya-mashina-lebedka-lsi15nm-s-tyagovym-usiliem-15-kn.html> (accessed 18.08.2013) (in Russ.).
 - [14] Dimentberg F.M., Shatalov K.T., Gusalov A.A. Kolebaniya mashin [Machinery oscillations]. Moscow, Mashinostroenie Publ., 1964. 308 p. (in Russ.).
 - [15] Metod montazha LEP «pod tyazheniem» [ETL assembly method “under tension”] Wikipedia: free encyclopedia. URL: http://ru.wikipedia.org/wiki/%D0%9C%D0%B5%D1%82%D0%BE%D0%B4_%D0%BC%D0%BE%D0%BD%D1%82%D0%B0%D0%B6%D0%B0_%D0%9B%D0%AD%D0%9F_%C2%AB%D0%9F%D0%BE%D0%B4_%D1%82%D1%8F%D0%B6%D0%B5%D0%BD%D0%B8%D0%B5%D0%BC%C2%BB (accessed 15.10.2013) (in Russ.).
 - [16] Celevtsov L.I. Avtomatizatsiya tekhnologicheskikh protsessov [Process flow automation]. Moscow, "Akademiya" Publishing center, 2014. 352 p. (in Russ.).
 - [17] Tsel'tvanger Kh. Outward glance on CAN principles. MKA, 1996, no. 3, pp. 34–39 (in Russ.).
 - [18] Chernov L.B. Osnovy metodologii proektirovaniya mashin [Framework methodology of machine designing]. Moscow, Mashinostroenie Publ., 1978. 148 p. (in Russ.).
 - [19] Kartovenko A.V. Modelirovanie dinamicheskoy sistemy «Kabel' – Lider-tros» [Simulation of “cable/leader-wire” dynamical system]. *Effektivnye metody avtomatizatsii podgotovki i planirovaniya proizvodstva. 9-ya ezhegodnaya konferentsiya: sbornik nauchnykh trudov* [Effective methods of production preparation and planning. Proc. 9th Int. conf.]. Moscow, "Spektr" Publishing house, 2012. Pp. 34–39 (in Russ.).
 - [20] Nesterov A.L. Proektirovanie ASUTP. Kniga 1 [SCADA engineering. Vol. 1]. Sankt-Petersburg, DEAN Publ., 2009. 944 p. (in Russ.).
 - [21] Yanpol'skiy A.R. Giperbolicheskie funktsii [Hyperbolic functions]. Moscow, Fizmatgiz Publ., 1960. 195 p. (in Russ.).

Kartovenko A.V. — post-graduate student of Department of Computer Manufacturing Automation Systems, Bauman Moscow State Technical University, Moscow, Russian Federation.

Scientific advisor — E.V. Arbuzov, Cand. Sc. (Eng.), Assoc. Professor of Department of Computer Manufacturing Automation Systems, Bauman Moscow State Technical University, Moscow, Russian Federation.