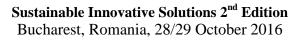
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Sustainability of Real Estate Portfolios: A Programme Management Tool for Assessment and Optimisation

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ABSTRACT

The rising demand for a lifecycle-oriented assessment of real estate is especially recognizable in the existing buildings sector. In order to achieve a high level of comparability, sustainable buildings certification has become an issue of high importance in strategic real estate management. This article provides an introduction to portfolio certification, including the latest developments in the field proposed by the German Sustainable Building Council (DGNB¹).

KEYWORDS: sustainability, optimisation, real estate, portfolio, certification

REFERENCES

- [1] Hill, A. V. (2012), *The Encyclopedia of Operations Management: A Field Manual*, FT Press, New Jersey
- [2] Hutter Tobias (2015), *Nachhaltigkeitsoptimierung von Immobilienportfolios*, Unpublished Master Thesis, Graz and Vienna University of Technology
- [3] Lakenbrink, S. and Oebbecke T. A. J. (2014), *DIFNI Position Paper on BREEAM Stock Portfolio Certification*, unpublished document, Frankfurt am Main
- [4] Martino J. P. et al. (1993), *Technological Forecasting for Decision Making*, McGraw-Hill, Inc., New York
- [5] Reinhart, C. M. and Rogoff, K. S. (2010): Dieses Mal ist alles anders: Acht Jahrhunderte Finanzkrisen, Finanzbuch Verlag, 3. Auflage, München

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¹ http://www.dgnb.de/

- [6] Schneider, D. (2013): *Modell für das nachhaltige Immobilienportfoliomanagement*, Unpublished Master Thesis, Karlsruhe Institute of Technology, Karlsruhe
- [7] World Commission for Environment and Development (1987), *Our Common Future*, Oxford University Press, Oxford

Websites

Web-1: http://www.difni.com/, accessed 12th July 2016

Web-2: http://www.bre.co.uk/, accessed 1st May 2016

Web-3: http://www.usgbc.org/, accessed 16th February 2016

Web-4: http://www.dgnb.de/, accessed 12th July 2016





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Charge Pump Supply and Voltage Reference Considerations

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ABSTRACT

In the sub micrometer technologies, everything that is scalable needs to be scaled down (Toumazou et al, 2002). However, for some circuits is a real battle to follow this rule. This is the usual case of the analog circuits. One of those circuits is the charge pump. The purpose of this paper is to take a closer look not only on the supply lines, but also on some other signals that influence the proper behavior of a charge pump. Also, in this paper, there will be discussed some possible improvements that should be taken into account.

KEYWORDS: charge pump supply, voltage reference

REFERENCES

- [1] Gray P., Meyer R., Hurst P., Lewis S. (2000), Analysis and design of analog integrated circuits, John Wiley & Sons, Inc, pp. 299-323
- [2] Pan F., Samadar T. (2006), Charge pump circuit design, McGraw-Hill, pp. 41-46.
- [3] Toumazou C., Moschytz G., Gilbert B.(2002), *Trade-offs in analog circuit design*, KLUWER ACADEMIC PUBLISHERS, pp. 100-105



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Reactive power flow in modern low-voltage electrical installations

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ABSTRACT

The paper presents the main electrical loads that require reactive power, evaluating also its value in different operating states of the industrial installation (permanent sinusoidal or distorted). Also, the effects of reactive power flow in the networks are quantitatively estimated and accordingly a series of specific power quality indicators (e.g. power factor, crest factor, total harmonic distortion) are highlighted. Different types of solutions dedicated to reduce the level of reactive power are also suggested. The proper design of the power factor correction systems is directly correlated with the consumer power quality parameters. A case-study will round up the work, underling the major importance of the reactive power flow in modern electric installations.

KEYWORDS: reactive power, power factor, power quality, harmonics

- [1] Saeed Anwar, Ali Elrayyah, Yilmaz Sozer (2014), Efficient single phase power factor improvement strategy for microgrid operation, Applied Power Electronics Conference and Exposition (APEC) 2014 Twenty-Ninth Annual IEEE, pp. 972-977, 2014.
- [2] J. Dixon, L. Moran, J. Rodriguez, R. Domke (2005), *Reactive power compensation technologies: state-of-the-art review*, *Proceedings of the IEEE*, vol. 93, no. 12, pp. 2144-2164, Dec. 2005.
- [3] A. Pana, A. Baloi, F. Molnar-Matei (2010), *Load balancing by unbalanced capacitive shunt compensation A numerical approach*, Harmonics and Quality of Power (ICHQP) 2010 14th International Conference on, pp. 1-6, 2010.
- [4] S. Krishnamurthy, G.F. Noudjiep Djiepkop (2015), *Performance analysis and improvement of a power system network using a Unified Power Flow Controller*, Industrial and Commercial Use of Energy (ICUE) 2015 International Conference on the, pp. 306-312, 2015.
- [5] Uday B. Mujumdar, Jayant S. Joshi (2011), *Optimal reactive power compensation under non sinusoidal conditions using current minimization method*, Power and Energy Systems (ICPS) 2011 International Conference on, pp. 1-6, 2011.
- [6] Rashid H. M. (2013), *Power Electronics: Circuits, Devices & Applications*, Prentice Hall; 4th Edition, 2013.

- [7] Bisanovic S., Hajro M., Samardzic M. (2014), One approach for reactive power control of capacitor banks in distribution and industrial networks, International Journal of Electrical Power & Energy Systems, vol. 60, pp. 67, 2014.
- [8] Hofmann W., Schlabbach J., Just W. (2012), Reactive Power Compensation: A Practical Guide, John Wiley & Sons, 2012.
- [9] Schneider Electric (2016), Electrical Installation Guide, 2016.
- [10] Ferracci, Ph. (2001), Power Quality, Schneider Electric, Cahier Technique no. 199, 2001.
- [11] ABB (2008), Power factor correction and harmonic filtering in electrical plants, Technical Application Paper, 2008.
- [12] Dugan, R. C., McGranaghan, M. F., Santoso, S., Beaty H. W. (2012), *Electrical Power Systems Quality*, McGraw Hill Professional, 2012.
- [13] Cazacu E. (2016), *Instalații electrice moderne* (in Romanian), Editura Matrix-Ronm, 2016.
- [14] Cazacu E., Petrescu L. (2014), *Expertiza sistemelor electrice industriale* (in Romanian), Editura Printech, 2014.
- [15] Carnovale D. J., Dionise T. J., and Blooming T. M. (2003), *Price and performance considerations for harmonic solutions*, in Proc. Power Syst. World, Power Quality Conf., Long Beach, CA, 2003.
- [16] Emanuel A. E. (2011), *Power Definitions and the Physical Mechanism of Power Flow*, John Wiley & Sons, IEEE Press, 2011.
- [17] Bettega, E., Fiorina J-N. (1999), *Active harmonic conditioners and unity power factor rectifiers*, Schneider Electric, Cahier Technique no. 183, 1999.
- [18] Chauvin Arnoux Corporation (2008), C.A 8335 Qualistar Plus *Three-phase electrical networks analyser Operating manual*, 2008.



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Automation, digitization and digitalization and their implications for manufacturing processes

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ABSTRACT

Recent developments in manufacturing raised the importance of digital elements as well as fully automated processes on a strategy, planning and shop floor level. Although the number of publications in this field increases, many scholar and practitioners lack a differentiated use of the related terms of "digitization", "digitalization" and "automation". In this paper we offer analyses regarding differences and communalities of these terms as well as their implications on a shop floor level. We found that the term digitalization thereby finds its use mostly in the field of social science describing the social and cultural effects of digital elements. The terms digitization and automation on the other hand are well applicable on the field of manufacturing research. Although these two concepts influence manufacturing processes differently, we conclude that they have to be analysed in integrated manners as one requires the other.

KEYWORDS: Digitization, digitalization, automation, manufacturing

- [1] H. Kagermann, W. Wahlster, and J. Helbig, "Deutschlands Zukunft als Produktionsstandort sichern. Umsetzungsempfehlungen für das Zukunftsprojekt Industrie 4.0-Abschlussbericht des Arbeitskreises Industrie 4.0," DFKI und Deutsche Post, 2013.
- [2] OED Online, "digitization, n," Oxford University Press, Sep. 2016.
- [3] S. Brenner and D. Kreiss, "Digitalization and Digitization," 2014.
- [4] OED Online, "automation, n," Oxford University Press, Sep. 2016.
- [5] M. P. Groover, *Automation, production systems and computer-integrated manufacturing*, 2nd ed. Upper Saddle River, NJ: Prentice Hall, 2001.
- [6] T. Feldman, An introduction to digital media. London; New York: Routledge, 1997.
- [7] R. Pepperell, *The posthuman condition: consciousness beyond the brain*, New ed. Bristol, UK; Portland, OR: Intellect, 2003.
- [8] D. Robinson, "Analog.," in *Software Studies: A Lexicon, edited by Matthew Fuller*, Cambridge: MIT Press, 2008, pp. 21–31.
- [9] T. J. Pinch and F. Trocco, *Analog days: the invention and impact of the Moog synthesizer*, New ed. Cambridge, Mass.: Harvard Univ. Press, 2004.

- [10] M. Castells and M. Castells, *The rise of the network society*, 2nd ed., With a new pref. Chichester, West Sussex; Malden, MA: Wiley-Blackwell, 2010.
- [11] R. Wachal, "Humanities and Computers," *North Am. Rev.*, pp. 30–32, 1971.
- [12] J. van Dijk, *The network society: social aspects of new media*, 2nd ed. Thousand Oaks, CA: Sage Publications, 2006.
- [13] S. Verhulst, "About Scarcities and Intermediaries: the Regulatory Paradigm Shift of Digital Content Reviewed," in *L. A. Lievrouw & S. Livingstone (Eds.), The Handbook of New Media*, London: Sage Publications, 2002, pp. 432–477.
- [14] S. Sassen and K. A. Appiah, *Globalization and its discontents: [essays on the new mobility of people and money]*. New York, NY: The New Press, 1998.
- [15] R. Parasuraman, T. B. Sheridan, and C. D. Wickens, "A model for types and levels of human interaction with automation," *IEEE Trans. Syst. Man Cybern. Part Syst. Hum.*, vol. 30, no. 3, pp. 286–297, May 2000.
- [16] J. Frohm, V. Lindström, M. Winroth, and J. Stahre, "Levels of Automation in Manufacturing," *Ergon. Int. J. Ergnomics Hum. Factors*, vol. 30, no. 3, 2008.
- [17] M. Vogelsang, *Digitalization in open economies: theory and policy implications*. Heidelberg, London; New York: Physica-Verlag, 2010.
- [18] P. N. Edwards, *The closed world: computers and the politics of discourse in Cold War America*. Cambridge, Mass: MIT Press, 1996.
- [19] M. Manoff, "The Materiality of Digital Collections: Theoretical and Historical Perspectives," in *The Materiality of Digital Collections: Theoretical and Historical Perspectives*, Johns Hopkins University Press, 2006, pp. 311–325.
- [20] N. Negroponte, "Being Digital," Alfred A. Knopf, New York, 1995.
- [21] T. Gillespie, "The Relevance of Algorithms," in *Media Technologies*, T. Gillespie, P. J. Boczkowski, and K. A. Foot, Eds. The MIT Press, 2014, pp. 167–194.
- [22] N. K. Hayles, "Translating Media: why we should rethink textuality," *Yale J. Crit.*, pp. 263–290, 2003.
- [23] K. Knorr Cetina and U. Bruegger, "Global Microstructures: The Virtual Societies of Financial Markets," *Am. J. Sociol.*, no. 107, pp. 905–950, 2002.
- [24] F. Machlup, Knowledge Industry. 1962.
- [25] J. R. Beniger, *The control revolution: technological and economic origins of the Information Society*, 5. print. Cambridge, Mass.: Harvard Univ. Press, 1997.
- [26] K. B. Jensen, "Definitive and Sensitizing Conceptualizations of Mediatization: Definitive and Sensitizing Conceptualizations," *Commun. Theory*, vol. 23, no. 3, pp. 203–222, Aug. 2013.
- [27] Y. Benkler, *The wealth of networks: how social production transforms markets and freedom.* New Haven London: Yale University Press, 2006.
- [28] T. Sauter, "Integration Aspects in Automation a Technology Survey," 2005, vol. 2, pp. 255–263.
- [29] J. Sterne, *The audible past: cultural origins of sound reproduction*. Durham: Duke University Press, 2003.
- [30] L. Lessig, *Remix: making art and commerce thrive in the hybrid economy*. New York: Penguin Press, 2008.
- [31] B. Groys, "From Image to Image File—and Back: Art in the Age of Digitalization," Art Power, 2008, pp. 83–91.
- [32] E. Brynjolfsson and A. McAfee, *The second machine age: work, progress, and prosperity in a time of brilliant technologies*, First Edition. New York: W. W. Norton & Company, 2014.
- [33] R. Mansell, *Imagining the Internet: communication, innovation, and governance*. Oxford: Oxford University Press, 2012.
- [34] L. DeNardis, *The global war for Internet governance*. New Haven: Yale University Press, 2014.

- D. Bell, *The cultural contradictions of capitalism*, 20th anniversary ed. / with a new afterword by the author. New York: Basic Books, 1976.
- [36] T. Storsul and A. Fagerjord, "Digitization and media convergence," in *The international* encylopedia of communcation, 2008.
- B. Bimber, C. Stohl, and A. J. Flanagin, "Collective Action in Organizations: Interaction and Engagement in an Era of Technological Change," Volunt. Int. J. Volunt. Nonprofit Organ., vol. 25, no. 3, pp. 847-848, Jun. 2014.
- W. L. Bennett and A. Segerberg, "THE LOGIC OF CONNECTIVE ACTION: Digital media and the personalization of contentious politics," Inf. Commun. Soc., vol. 15, no. 5, pp. 739– 768, Jun. 2012.
- International Standard Industrial Classification of All Economic Activities, "definition: [39] manufacturing." 1990.
- [40] OED Online, "manufacturing, n," Oxford University Press, Sep. 2016. [41] L. Koste, "A theoretical framework for analyzing the dimensions of manufacturing flexibility," *J. Oper. Manag.*, vol. 18, no. 1, pp. 75–93, Dec. 1999.



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The dynamic regime of the induction motors in electrical installations – electric drive solutions

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ABSTRACT

Due to their robustness and reliability, induction (asynchronous) motors are the electric loads with the highest incidence in any industrial electric installation (it is assumed that over 70% of total energy used in those facilities is dedicated to the electric motor drives). The paper quantitatively analysis the dynamic regime of such motors, that occurs at their energizing. The waveforms features of these inrush currents are predicted mainly by solving the associated differential equations that describe the transient phenomena. The modern electric drive solutions for the asynchronous motor that provides also inrush current limitation are also presented.

KEYWORDS: asynchronous motor, inrush current, transient state

- [1] Chapman, S., *Electric Machinery Fundamentals*, Mcgraw Hill Higher Education; 5th Edition, 2011.
- [2] Krause, P. C. et al., *Analysis of Electric Machinery and Drive Systems*, Wiley-IEEE Press, 3rd edition, 2013.
- [3] Bose, B. K., *Power Electronics And Motor Drives: Advances and Trends*, Academic Press, 1st Edition, 2006.
- [4] Schonek, J., Nebon, Y., LV protection devices and variable speed drives (frequency converters), Schneider Electric, Cahier Technique no. 204, 2002.
- [5] Clenet, D., *Electronic starters and variable speed drives*, Schneider Electric, Cahier Technique no. 208, 2003.
- [6] Bruce, F. M.; Graefe, R. J.; Lutz, A. & Panlener, M. D., Reduced-Voltage Starting of Squirrel-Cage Induction Motors. IEEE Transactions on Industry Applications, Vol. IA- 20, No. 1, pp. 46-55, January/February 1984.
- [7] Baurand, G., Moliton, V., *The protection of LV motors*, Schneider Electric, Cahier Technique no. 211, 2007.

- [8] Nevelsteen, J. & Aragon, H., Starting of Large Motors Methods and Economics, IEEE Transactions on Industry Applications, Vol. 25, No. 6, pp. 1012-1018, November/December 1989.
- [9] Nied, A.; Dias, R. P.; de Oliveira, J.; Campos, R. de F & Marques, L. C. de S., *Soft Starting of Induction Motor with Torque Control*, Proceedings of Industry Applications Society Annual Meeting, Edmonton, Canada, 2008.
- [10] Cazacu E., *Instalații electrice moderne* (in Romanian), Editura Matrix-Ronm, 2016.
- [11] Holtz, J., *Drift-and Parameter-Compensated Flux Estimator for Persistent Zero-Stator-Frequency Operation of Sensorless-Controlled Induction Motors*. IEEE Transactions on Industry Applications, vol. 39, No. 4, pp. 1052-1060, July/August, 2003.
- [12] Nied, A.; de Oliveira, J.; de Farias Campos, R.; Dias, R. P., *Soft Starting of Induction Motor With Torque Control*, IEEE Transactions on Industry Applications, Vol. 46, No. 3, (May/June 2010), pp. 1002-1010, 2010.
- [13] Colleran, P. J. & Rogers, W. E., *Controlled Starting of AC Induction Motors*, IEEE Transactions on Industry Applications, Vol. IA-19, No. 6, pp. 1014-1018, November/December 1983.
- [14] Xu, X. & Novotny, D. W., *Implementation of Direct Stator Flux Orientation Control on a Versatile DSP Based System*. IEEE Transactions on Industry Applications, Vol. 27, No. 4, pp. 694-700, July/August 1991.
- [15] Zenginobuz, G.; Cadirci, I.; Ermis, M. & Barlak, C., *Soft-Starting of Large Induction Motors at Constant Current with Minimized Starting Torque Pulsations*, IEEE Transactions on Industry Applications, Vol. 37, No. 5, pp. 1334-1347, September/October 2001.



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Statistical Applications for Mobile Devices

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ABSTRACT

A short analysis of some new developments in the area of the statistical applications for mobile devices, especially for mobile phones is a focus of interest. The strong competition induced by the globalisation imposed necessary developments of the quality, fixed by ISO 9001-2015. The huge availability of the mobile devices renders necessary new software efforts for applications, especially for Android. The paper presents mainly a short overview of a few practical applications, especially for the quality assurance, starting from the acceptance sampling conditions to the statistical process control and control charts. It can be considered a prior direction for education in the field of quality.

KEYWORDS: statistical applications, quality, mobile devices

REFERENCES

- [1] Paris A. S., Tarcolea C. (2016), *Rechnerunterstützte Anwendungen der statistischen Verteilungen*, Workshop Empirische statistische Verteilungen-Anwendungen / Repartitii statistice empirice si aplicatii, Coordonatori: AS Paris, C Dragomirescu, C Tarcolea, C Mustata, 26 mai 2016, FILS, UPB
- [2] Paris A. S. (2016), *Some statistical software applications for Taguchi methods*, The 9th Symposium Durability and Reliability of Mechanical Systems SYMECH 2016, Runcu, 23-24 may 2016, In vol.: Fiabilitate si Durabilitate Fiability & Durability, Issue No 1/2016 Editura "Academica Brâncuşi", Târgu Jiu, ISSN 1844 640X, pp. 67-73

Websites:

Web-1: https://play.google.com/store/apps/details?id=com.google.android.apps.docs. editors.sheets&hl=ro, accessed 3 February 2015.

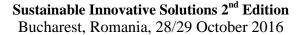
Web-2: https://play.google.com/store/apps/details?id=com.lifein50mm.aql, accessed 18 July 2015.

Web-3: https://play.google.com/store/apps/details?id=com.snatlabs.statistical-processcontrol, accessed 22 July 2016.

Web-4: https://play.google.com/store/apps/details?id=com.bmgi.ControlCharts, accessed 1 August 2016.

Web-5: http://www.vertex42.com/ExcelTemplates/control-chart.html accessed 2 August 2016.







Innovative Learning using Natural User Interfaces

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ABSTRACT

The Natural User Interfaces are gaining momentum in the framework of Human Computer Interaction. They can be used naturally, unlike the other Human Computer Interfaces, which needs special training. Natural interfaces are intuitive and similar with the manner people interact with the world. This kind of interfaces started to be used in an extended way in real life, which makes them attractive as learning instruments and qualify them to targets for design and development in engineering. The paper presents the general ideas and devices in the domain, as well as our experience in the field and some predictions for its development.

KEYWORDS: Human Computer Interfaces, Natural Users Interfaces, Kinect, Leap Motion Controller

- [1] Han J., Shao L., Xu D. and Shotton J. (2013), *Enhanced Computer Vision with Microsoft Kinect Sensor: A Review*, IEEE Trans. on Cybernetics (T-Cyb), October 2013, pp. 1318-1334
- [2] Hilfert T. and König M. (2016), Low-cost virtual reality environment for engineering and construction, Visualization in Engineering, 2016, 4:2
- [3] Jagodzinski P., Wolski P. (2015), Assessment of Application Technology of Natural User Interfaces in the Creation of a Virtual Chemical Laboratory, J Sci Educ Technol, 2015, 24, pp. 16–28
- [4] Jiang J., Awadallah A. H., Jones R., Ozertem U., Zitouni I., Kulkarni R. G. and Khan O. Z. (2015), *Automatic Online Evaluation of Intelligent Assistants*, WWW Conference 2015, May 18–22, Florence, Italy
- [5] Juanes J. A., Gómez J. J., Peguero P. D. and Ruisoto P. (2016), *Digital Environment for Movement Control in Surgical Skill Training*, J Med Syst (2016) 40, pp/ 133
- [6] Lo S.-Y. and Huang P.-H. (2016), Realization of sign language motion using a dual-arm/hand humanoid robot, Intel Serv Robotics, 2016, 9, pp.333–345
- [7] Luna P. (2011), *Controlling machines with just the power of thought*, The Lancet Neurology, Volume 10, No. 9, September 2011, pp. 780–781

- [8] Ma M., Fallavollita P., Habert S., Weidert S. and Navab N. (2016), Device- and system-independent personal touchless user interface for operating rooms, Int J CARS (2016) 11, pp. 853–861
- [9] Miles R. (2012), Start Here Learn the Kinect API, O'Reilly Media
- [10] Mustata, C. (2014), *The "General Management II" Business Simulation Game in Classroom*, Proceedings of The 10th International Scientific Conference eLearning and software for Education, Bucharest, April 24-25, Vol 1, pp. 346-349
- [11] Ogura T., Sato M., Ishida Y., Hayashi N. and Doi K. (2014), Development of a novel method for manipulation of angiographic images by use of a motion sensor in operating rooms, Radiol Phys Technol, 2014, 7, pp. 228–234
- [12] Trifan L., Mustata C. (2015), *Inducing Entrepreneurial Behaviour by Business Management Simulation Games*, Proceedings of the 7th International Conference on Education and New Learning Technologies, July 4-8 2015, Barcelona, Spain, pp. 6426-6433

Websites:

Web-1: https://www.webdirections.org/resources/august-de-los-reyes-predicting-the-past/, accessed 25 September 2016.

Web-2: https://www.quora.com/How-does-the-fire-the-gun-where-you-look-aiming-system-on-the-Apache-helicopter-work, accessed 25 September 2016.

Web-3: http://www.kinecteducation.com, accessed 25 September 2016.



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Statistical Bias and Consistency of Questionnaires

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ABSTRACT

The study proposes a comprehensive description of a computer aided procedure for the analysis of the consistency and reliability of questionnaires. The paper details the conditions and meaning of a questionnaire using special Cronbach's alpha index. An important index of measurement quality is the degree to which a test score is consistent. The quality of the questionnaire as a whole is assessed by estimating its internal consistency (reliability) and is statistically associated with positive organizational performance. Surveys analysis is especially valuable in improving questions which will be used again in later tests. The numerical results were obtained on different software ways of data processing and were comparable.

KEYWORDS: Cronbach's alpha, questionnaire, consistency, reliability

- [1]***(2012), North Atlantic Treaty Organization, Nato Standardization Agency AAP-6 *Glossary of terms and definitions*, p. 43.
- [2] Bazeley P. (2013), e-Study Guide for Qualitative Data Analysis: Practical Strategies, Cram101 Textbook Reviews Editor, New York.
- [3] Cronbach L. J. (1951), Coefficient alpha and the internal structure of tests, Psychometrica, 16, pp. 297–334.
- [4] Dreger C., Kosfeld R. and Eckey H-F. (2014), Ökonometrie Grundlagen Methoden Beispiele, Springer Gabler Verlag, Frankfurt.
- [5] Iacobucci D. and Duhachek A. (2003), *Advancing Alpha: Measuring Reliability, With Confidence*, Journal of Consumer Psychology, 13 (4) pp.478–487.
- [6] Krippendorff K. (2012), Content analysis: An introduction to its methodology. Sage, Singapore.

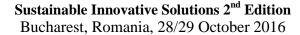
- [7] Paris A. S., Târcolea C. and Dumitraş M. (2015a), *Statistical analysis of questionnaires consistency*, In vol.: S. Ghimisi, L. Luca (Eds.), Proceedings of the 8th Symposium Durability and Reliability of Mechanical Systems SYMECH 2015, Rânca, Fiabilitate si Durabilitate Fiability & Durability, Editura Academica Brâncuşi, Târgu Jiu, Suppl. No 1, pp. 265-269.
- [8] Paris A. S., Târcolea C. and Dragomirescu C. (2015b), *Statistische Ausbildung der Fragebogen für die Lernfragen*, Workshop "Vergleich der europeischen und rumänischen mathemathischen Bücher für Schüler", 19.06, Univ. Politehnica Bucharest, FILS.
- [9] Vijesh J. (2013), Measuring intra-country level of comfort among subcultures in Italy, EMI, Vol. 5, Issue 1, pp. 1-15.
- [10] van Zyl J.M., Neudecker H. and Nel D.G. (2000), On the distribution of the maximum likelihood estimator of Cronbach's alpha, Psychometrika, 65, pp. 271–280.

Websites:

Web-1: http://documentation.statsoft.com/STATISTICAHelp.aspx?path=reliability/ Indices/
Reliabilityamp ItemAnalysis_HIndex, accessed 5 July 2016.

Web-2: http://www.gifted.uconn.edu/siegle/research /instrument%20reliability%20and% 20 validity/reliability. htm, accessed 18 July 2016.







SMART GRIDS – CHALLENGES, OPPORTUNITIES AND BENEFITS TOWARDS LONG TERM INNOVATION AND SUSTAINABILITY

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ABSTRACT

The original aspects of this paper consists in the presentation of different evaluations and applications of challenges, opportunities and benefits towards long term Innovation and Sustainability in smart grids projects. New opportunities will be harnessed in order to solve some specific problems of the electrical distribution networks. Focus topic is the intelligent behavior of some network elements and their optimization.

KEYWORDS: innovation, sustainability, smart grids, energy efficiency

- [1]. Arrillaga Jos; Smith Bruce C.; Watson Neville R.; Wood Alan R. (1997), *Power System Harmonic Analysis*, Wiley–Blackwell, 1997
- [2]. European Commission (2006). European Smart Grids Technology Platform, Vision
- [3]. Europäische Kommission (2008). Mitteilung der Kommission an das Europäische Parlament, den Rat, den Europäischen Wirtschafts- und Sozialausschuss und den Ausschuss derRegionen. Zweite Überprüfung der Energiestrategie EU-Aktionsplan für Energieversorgungssicherheit und SolidaritätGellings Clark W. (2009), The Smart Grid, Taylor & Francis, CRC Press 2009
- [4]. Heyder Ulrich, Lazarou Elisabeth, Mustata Cristian (2013a), *Wirtschaftsethik und soziale Marktreform*, Die Wissenschaftliche Konferenz "WIRTSCHAFT UND TECHNOLOGIE IM DIENST DER GESELLSCHAFT", 21-22 November 2013 Sofia, Bulgaria, pp 97-127

- [5]. Heyder Ulrich, Lazarou Elisabeth, Mustata Cristian (2013b), *Moderne Ansätze des nachhaltigen Wirtschaftens*, Die Wissenschaftliche Konferenz "WIRTSCHAFT UND TECHNOLOGIE IM DIENST DER GESELLSCHAFT", 21-22 November 2013 Sofia, Bulgaria, pp 50-63.
- [6]. KEMA (2008). The U.S. Smart Grid Revolution. KEMA's Perspectives for Job Creation.
- [7]. National Energy Technology Laboratory (2010). *Understanding the Benefits of the Smart Grid. Smart Grid Implementation Strategy*
- [8]. Shelton Chris (1996), *Advanced Electrical Installations*, Pearson Education, Harlow, United Kingdom, Longman, 1996

Websites

Web-1: "Smart Grids Week Salzburg 2010", 22-25 June 2010, http://143.130.16.34/edz_pdf/events/20100625_smartgridsweek_salzburg_programm_konferenz.pdf accesed 18 September 2016

Web-2: http://smartgrid.ieee.org/nist-smartgrid-framework accessed 12 September 2016

Web-3: http://smartgrid.ieee.org/ieee-smartgrid-news/67-introducing-ieee-smart-grid-world-forum accesed 28 September 2016

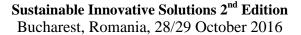
Web-4: http://www.slideshare.net/Standardizare/reele-electrice-inteligente-sau-smart-grids accesed 28 September 2016

Web-5:

http://www.asro.ro/romana/noutati/2009/lucrariConfStdoct2009/C/smart%20grid_standarde.pdf accesed 29 September 2016

Web-6: http://www.das.psu.edu/research-extension/dairy/dairy-digest/articles/dd201004-01-accesed 30 September 2016







Human-centred Elements in Modern Enterprises

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ABSTRACT

In the light of the current events of the world we live in today, an upgrade to the industry – 'the economic organ of the society' (McGregor, 1968) – is needed. The industry possesses the fundamental know-how to make proper use of the physical sciences and technology for the material benefit of mankind. The paper analyses the potential use of human-centred elements deriving from Maslow's hierarchy of needs in modern enterprises.

- [1] Maslow, A.H. (1943), A theory of human motivation, Psychological Review. **50** (4): pp. 370–96
- [2] McGregor D. (1968), *Leadership and Motivation*, The MIT Press, Cambridge, Massachutes The Human Side of Enterprise, pp. 314 -324
- [3] Mustata C. (2016), *Innovation and Creativity in the Bucharest INTEGRAL Management Model*, Proceedings of The Innovation and Sustainability International Scientific Conference, Interdisciplinary Approach of Innovation as a progress factor, 1st Edition, Bucharest, October 30-31 2015, pp. 45-49.
- [4] Mustata C., Dragomirescu C., Lazarou E., Trifan L., Mustata I. (2015), Das Bukarester Modell des Integralen Managements als potentielles Instrument der Personalentwicklung in Unternehmen und Universitäten, Scientific Conference: 25 Jahre FDIBA German Engineering: Made in Bulgaria, 27.11.2015, Sofia, Bulgaria, pp. 13-17.
- [5] Mustata C. (2015), Social, cultural and ethical dimensions of the Bucharest Integral-Management Model implemented with the General Management II Business Simulation Game, Proceedings of The 11th International Scientific Conference eLearning and software for Education, Bucharest, April 23-24, ELSE 2015, Vol 2, pp. 522-526.
- [6] Mustata C., Niculescu A. (2016), Work-Life Balance in Management Decisions, Jurnal: Faima Business & Management Journal, Vol. 4, Issue 2, June 2016, ISSN 2344-4088, pp 70-82.

[7] Mustata C., Dragomirescu C. (2011), Ethische Grundlagen, Vision und Leitbilder als strategische Fortschritts- und Wettbewerbsfaktoren im Innovationsprozess, im Rahmen der internationalen Konferenz "Innovationen und Wettbewerbsfähigkeit" Sofia, 24-25 November, Sofia 2011.

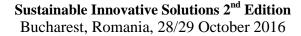
Websites

Web-1: www.merriam-webster.com/dictionary/enterprise accesed 18 September 2016

Web-2: <u>www.smallbusiness.chron.com/motivating-employees-maslows-hierarchy-needs-11828.html</u> accesed 22 September 2016

Web-3: www.managementisajourney.com/motivation-applying-maslows-hierarchy-of-needs-theory/ accesed 28 September 2016







Innovative organisation management dimensions yesterday and today: a comparison between scientific management and principles of virtual Organisations

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ABSTRACT

The work of Taylor gave new impulses to the way work was organized in enterprises in the beginning of the 20st century and it still has influence in some enterprises today. The model of virtual organizations made its way into the business world shortly before the beginning of the 21st century, encouraging more companies to work together in different projects in order to achieve greater results and to help each other learn and grow at the same time. The paper analyzes these two solutions in the perspective of the business environment today.

KEYWORDS: Taylorism, virtual Organisations.

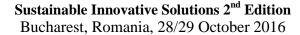
REFERENCES

- [1] Kern A. (2006), The use of Key Figures and Its Impact on Activity: The Case of a Hospital. Lang Fr. Am Main 2006.
- [2] Taylor F. W. (1911), *The Principles of Scientific Management*. Cosimo New York 2006 (originally published by Harper&Brothers 1911).
- [3] Schuh G., Millarg, K., Göransson, A. (1998), Virtuelle Fabrik: neue Marktchancen durch dynamische Netzwerke, Hanser Verlag.

Websites:

- Web-1: https://www.mindtools.com/pages/article/newTMM_Taylor.htm accessed 25 October, 2016.
- Web-2: https://lupa4eve.wordpress.com/2010/10/23/f-w-taylors-scientific-management-theory-in-modern-day-workplace/ accessed 26 October 2016.
- Web-3: http://www.yourarticlelibrary.com/organization/what-is-virtual-organisation-definition-characteristics-and-types/35533/ accessed 25 October 2016







The virtual Enterprise

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ABSTRACT

The authors chose this subject because they find The Virtual Enterprise interesting and a model of a real life business. Even though the company is virtual, the products developed are very real. Such an enterprise is the end result of a collaboration between independent companies specialized in different fields (such as marketing, production, sales, logistics).

The most important requirement of this collaboration is intensive communication between the companies. It is also necessary for the members to work like a team and trust each other for a better cooperation. Depending on the nature of the project, the structure of the enterprise as well as the combination of companies may vary.

If you would like to find more information and details about The Virtual Enterprise you can read the following article.

KEYWORDS: virtual Organizations, virtual enterprise.

- [1] Afsarmanesh, H.; Camarinha-Matos, L. M. (1997), Federated Information Management for Cooperative Virtual Organizations, Proc. DEXA'97, Sth Int. Conf. on Databases and Expert Systems (LNCSI30S, Springer Verlag), Toulouse, France, Sept 97.
- [2] Browne, J.; Sackett, P.J.; Wortmann, I.C. (1994), *The system of manufacturing: A prospective study*, Report to the DG XII of the CEC, 1994.
- [3] Byrne J., Brandt R., Port O. (1993), *The virtual corporation*, Business Week, February 8, pp. 98-102

- [4] Camarinha-Matos, L. M.; Afsarmanesh, H.(1998), *Virtual Enterprises: Life cycle supporting tools and technologies*, in Life Cycle Engineering Handbook, A. Molina, A. Kusiak, A. Sanchez, Kluwer Academic Publishers, 1998.
- [5] Camarinha-Matos, L. M.; Afsarmanesh, H.(1999), *Infrastructures for Virtual Enterprises*, *Networking Industrial Enterprises*, IFIP TC5 WG5.3 / PRODNET Working Conference on Infrastructures for Virtual Enterprises (PRO-VE'99) October 27–28, 1999, Porto, Portugal
- [6] Rabelo, R., Camarinha-Matos, L. M. (1996), *Towards Agile Scheduling in Extended Enterprise*, Proc. of BASYS'96: Balanced Automation Systems II, Camarinha-Matos L.M., Afsarmanesh H. (Eds.), Chapman & Hall, Jun 1996, pp.413-422.
- [7] Walton, 1.; Whicker, L. (1996) *Virtual Enterprise: Myth & Reality*, 1. Control, Oct. 96. Websites:

Web-1: The NIIIP Reference Architecture, 1996, http://www.niiip.org. accessed 7 October 2016.