

5. Poplavko, U.M., Pereverzeva, L.P., Voronov, S.A. and Iakymenko U.I. (2007): Physical material science: tutorial handbook, Ch. 2: Dielectriki, NTUU «KPI», Kyiv, 392 p.
6. Fesenko A.I., Ishuk I.N. and Shteinbreher V.V. (2008): Methods and devices for the technical diagnosis of thermal protection and radio-absorbing coatings of aerospace vehicles, Mashinostroenie, Moscow, 200 p.
7. Clarke, A.R. and Eberhardt, C.N. (2007): Microscopy Techniques for Materials Science, Technosphaera, Moscow, 376 p.
8. Knotko, A.V., Presniakov, I.A. and Tretiakov, U.D. (2006): Solid State Chemistry, Izdatelskii zentr «Academia», Moscow, 304 p.
9. Kendziro, O., Lifshiz, V.G., Saranin, A.A., Zotov, A.V. and Kataiama, M. (2006): Introduction to surface physics: per. s angl., Nauka, Moscow, 490 p.

MULTIFUNCTIONAL POWER QUALITY CORRECTION SYSTEM

KOLB Andrii

Dnipro University of Technology, Dnipro, Ukraine

Purpose. Study the system of electric power quality control based on AVI with PWM in the systems of group feed of electromechanics with the direct-current unibus.

Methodology. The studies were carried out by modeling a power quality management system based on p-q instant energy theory using generalized vectors of current and voltage in the system of coordinates x, y , which rotates synchronously focused on vector voltage.

Findings. The multi-functional speed quality management systems in electric drives with capacitive storage, which allow to compensate inactive components of power and stabilize the voltage, based on AVI with PWM can be built.

High precision and maximum possible action of quality management electricity system is achieved, for a given energy resources, by using relay regulators and by formation of the current control parameter for the instantaneous value of power.

In three-phase symmetrical system of sinusoidal quantities generalized vectors in the plane of complex variable are represented by a vector, which rotates uniformly with angular frequency voltage.

From the results of the study follows that the proposed system compensates inactive components of the full power, practically without delay and with high precision, in case of practically sinusoidal current network. This is because currents that are needed to be compensated are used as the current tasks of relay regulators allocated without delay for the instantaneous value of power. Thus, we achieve the maximum possible performance of the automatic adjustment of power quality for a given power constraints.

Key words: electric power quality, energy saving, capacitive storage, electromechanics with the direct-current unibus

References

1. Милях А.Н., Шидловский А.К., Кузнецов В.Г. (1973) Балансировка однофазных нагрузок в трехфазных цепях. К.: Наук. Думка, 219 с.
2. Волков А.В. (2002) Electromagnetic processes analysis and active filter regulation improvement. *Electrical Engineering*. №12, 40-48.
3. Колб А.А. Энергосберегающая система группового питания электроприводов с общим преобразователем с двухсторонней проводимостью и емкостным накопителем энергии // *Вісник Кременчуцького державного політехнічного університету*: Вип. 2/2003 (19), т. 2, с. 135-143.
4. Белов И.П., Новиков В.А., Автоматизированный электропривод - современная основа автоматизации технологических процессов. *Электричество*. 2003, №5, 12-16.
5. Расчеты показателей электромагнитной совместимости : учеб. пособие / Г.Г. Пивняк, И.В. Жежеленко, Ю.А. Папаика ; М-во образования и науки Украины, Нац. горн. ун-т. – Д. : НГУ, 2014. – 113 с.

DEVELOPMENT OF HEATING DEVICES FOR IMPROVEMENT OF THE HEAT SUPPLY SYSTEM'S EFFECTIVENESS FOR RESIDENTIAL BUILDINGS AND CONSTRUCTIONS

SHKRABETS Fedir & FEDOROV Sergei
Dnipro University of Technology, Dnipro, Ukraine

The use of autonomous heat supply systems in housing and public utilities will reduce energy costs for 30-40%, and the total cost of heat supply by 20 - 30% compared to the heat supply from solid and liquid fuel boilers. Therefore, any energy-saving technologies in the heat power engineering for obtaining warm and hot water are very necessary and important. One of the promising technologies in the field of heating is induction heating. Induction heaters can be used in the following areas: autonomous and combined heating, accumulation of heat supply sources, hot water supply, etc.

It has been found that induction heaters have several advantages over the other heating sources such as: durability, fire safety, all-purposeness, automatic control, energy efficiency, electrical safety, ease of maintenance, etc.

A comparative analysis of the performance characteristics of induction and other types of heaters was carried out.

The conclusion was made on the expediency of the usage of induction water heaters in autonomous heat supply systems of villages, multistory houses, cottages and other objects of housing and public utilities.