

# Computer Modeling Electro-Technical and Electro-Power Subsystems for System "Smart House"

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**Abstract** - In these theses the displayed substantive supplies of a technique and a task of modeling of electro-technical both electro-power subsystems and grounding for the system "Smart house".

**Keywords** - Modeling, Power Supply, Grounding, Smart House.

## I. INTRODUCTION

Electro-technical and electro-power subsystems control facilities in the system "Smart house" are developed on the basis of the certain platform, among which the most widespread are C-Bus, X10, LanDrive, UBI, Helvar. Nevertheless any of these technologies does not give the complete decision of the concrete project of the automated system "Smart house".

Realization of projects of a smart house demands special methods of designing. The system approach to designing is the guarantee of a successful outcome of creation of system "Smart house". Realization of the system approach to designing allows to take into account all necessary essences (objects) and the relations between them (communications) and to provide modeling all necessary means of power supply and grounding of system "Smart house".

## II. TECHNIQUE OF MODELING AND CALCULATION OF PARAMETERS OF POWER SUPPLY AND GROUNDING

The Smart house is a building that provides productive and economically effective environment by means of optimizing four elements: structure, service systems, control and their interconnections [1]. The subsystems of the system Smart house includes engineering infrastructure, technological systems and security system.

Power supply of the Smart house is provided by three main systems – common energy supply system (CES), uninterrupted energy supply system (UES), guaranteed energy supply system (GES).

There are two demands concerning grounding system in the Smart house: inhabitants defense against electrical shock, and equipment and communication lines defense against disturbances that may appear in electrical networks.

The technique of modeling and calculation will consist of the following stages:

1. Modeling of a subsystem of the common energy supply from an energy providing organization.

2. Modeling of a subsystem of the uninterrupted energy supply that gives electrical supply in case the main sources of external electrical supply are in off-state. It is a temporary measure until the external electrical source is renewed or reserve sources are switched on.

Modeling of a subsystem of the guaranteed energy supply, an electrical device that provides the consumers with electrical power from reserve diesel electrical station in case the main power sources are switched off.

The generalized model of the electro-technical and electro-power subsystems of the system Smart house is as follows :

$$\text{Model}=(E_1,E_2,E_3,T)$$

where  $E_1$  – common energy supply system,  $E_2$  – uninterrupted energy supply system,  $E_3$  – guaranteed energy supply system,  $T$  – grounding system.

The designing of the energy supply and grounding systems is realized according to two classes of criteria: technical criteria (power, current, voltage, resistance, grounding) and economical criteria, for example, a total value of ownership.

## III. CONCLUSION

One of the most important problems in providing a functioning of the system Smart house is analysis, design, and construction of the energy-supply and grounding tools. To realize this task the modern methods of calculation and support of energy-supply and grounding are used.

That is why the problem of creating the methods for calculation and modeling the parameters of energy supply and grounding for the system Smart house is extremely actual under the modern development and promotion levels of the system Smart house.

## REFERENCES

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