ENGINEERING SCIENCES

THE CONCEPT OF MEASURING MECHANICAL QUANTITIES IN «SMART HOME» TECHNOLOGY

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Today there is a decisive transition from individual measuring instruments to intelligent measurement systems of the future generation. In such systems can simultaneously provide coordinate services, weather forecast, and calorie measurement (based on what distance people overcame and at what speed).

Over time, cloud service access for historical data analysis, processing, and creation of metrics has also been added for further research (for example, Microsoft Azure Cloud Services).

Among this diversity of services one important problem is highlighted: the need for the rapid implementation of a measuring system, which will include both a monitoring system, an information flow management system, and a system that will be responsible for collecting and processing data for them in a professional interaction (shared use for better coordination of actions).

A good solution for such different requirements is the computerized measurement system. They consist of geographically distributed autonomous devices and their intelligent sensors related to them: temperature, sound, vibration, time positioning, etc., they can freely compete with existing measurement systems, and also serve as an addition to any existing measurement system with a professional interactions.

One of the advantages of computerized measurement systems is that a cloud-based metering server collects data from multiple sensors located in a particular area [4, p. 2; 10, p. 5].

Thus, one can determine the measurement error of each of the sensors, relative to the average. If it is known that at present, there are no factors on certain areas of this territory that can affect the parameter under study.

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The computerized system of measuring mechanical quantities makes it possible to construct a measuring space for the organization of a monitoring and management system, combining the possibility of removing indicators from sensors, unification of the interface of measuring devices, and the continuous monitoring of the state of those buildings of technical or strategic importance. Sensors measuring various chemical, biological and physical quantities use a wide range of methods of sensing.

The action of the probing creates an output signal, using the transduction process, which must be processed and transmitted to the network. Sensors that are able to recognize, measure and output data through a bus are commonly regarded as intelligent sensors in one package.

Possibilities of such intelligent sensors can be further increased taking into account functions: radio communication, remote control and intelligent sensor systems management. Sensors measuring various chemical, biological and physical quantities use a wide range of methods of sensing [2, p. 3; 7, p. 5].

Sensory computerized systems for measuring mechanical magnifications extend the capabilities of intelligent sensors by adding additional features such as communication (wired and wireless), display, cabinets and fasteners, remote control and security.

The main purpose of this work is to develop a concept for deploying technology «smart home» for professional interaction (family members).

One of the most popular fields of technology «Internet of Things» is a computerized system for measuring mechanical quantities «Smart house» [1, p. 1].

Any person in the house, apartment or office is important to feel comfortable and safe. It is these two tasks, plus the aesthetics of the appearance of devices – and there are the main target installations, which are oriented system «Smart Home». Intelligent automation controls all engineering systems in the house, allowing a person to centrally establish a comfortable one for him – temperature, humidity, illumination in rooms, zones, and provides security [8, p. 2].

The Intelligent Home system provides a mechanism for centralized control and intellectual management in residential, office or public premises.

The Intelligent Home system should include the following automation objects.

– Lighting management.
– Electric drives.
– Climate control.
– Ventilation system management.
Centralized system management.
– Home theater.
– Multiroom.
– CCTV systems.

– Security and fire alarm.

– Access control systems.

– Load control and emergency conditions.

– Management of engineering equipment with touch panels.

– Management server.

The system should be able to.

– Manage the necessary system (lighting, climate, video surveillance, etc.).

– Get access to information on the status of all life support systems at home (inside or out).

The general scheme of the management system is as follows.

– Central control processor / main control unit.

– Sensors (temperature, illumination, smear, movement, etc.).

– Control devices (dimmers, relays, IR-emitters, etc.).

– Control Interfaces (push-button switches, IR and radio pulse panels, touch panels, web / wap interface).

– Own management network that combines the above elements.

– Controlled devices (fixtures, conditioners, home theater components, etc.).

– Auxiliary networks (Ethernet, telephone network, distribution of audio and video).

– Project software.

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