

PONERA BMS

Intelligent building
management system



Purpose of the system



Energy efficient building operation



Microclimate sustention in the premises



Efficient operation of engineering systems



System security monitoring



Energy efficient operation

Application of machine learning algorithms to develop energy consumption profiles based on historical data



Automatic choice of energy source, based on economic efficiency



Use of blockchain in payment transactions with subcontractors through the system of smart contracts



Automatic load shutdown in the absence of users



Forecast of energy consumption depending on the building occupancy and the season



Lighting management depending on the actual level of natural light and presence of employees in the premises

OPEX

Reduction of operating costs
Forecast OPEX&CAPEX

Perimeter security monitoring

Integration of all security systems in one information space



Use of computer vision to recognize faces and identify patterns of dangerous behavior



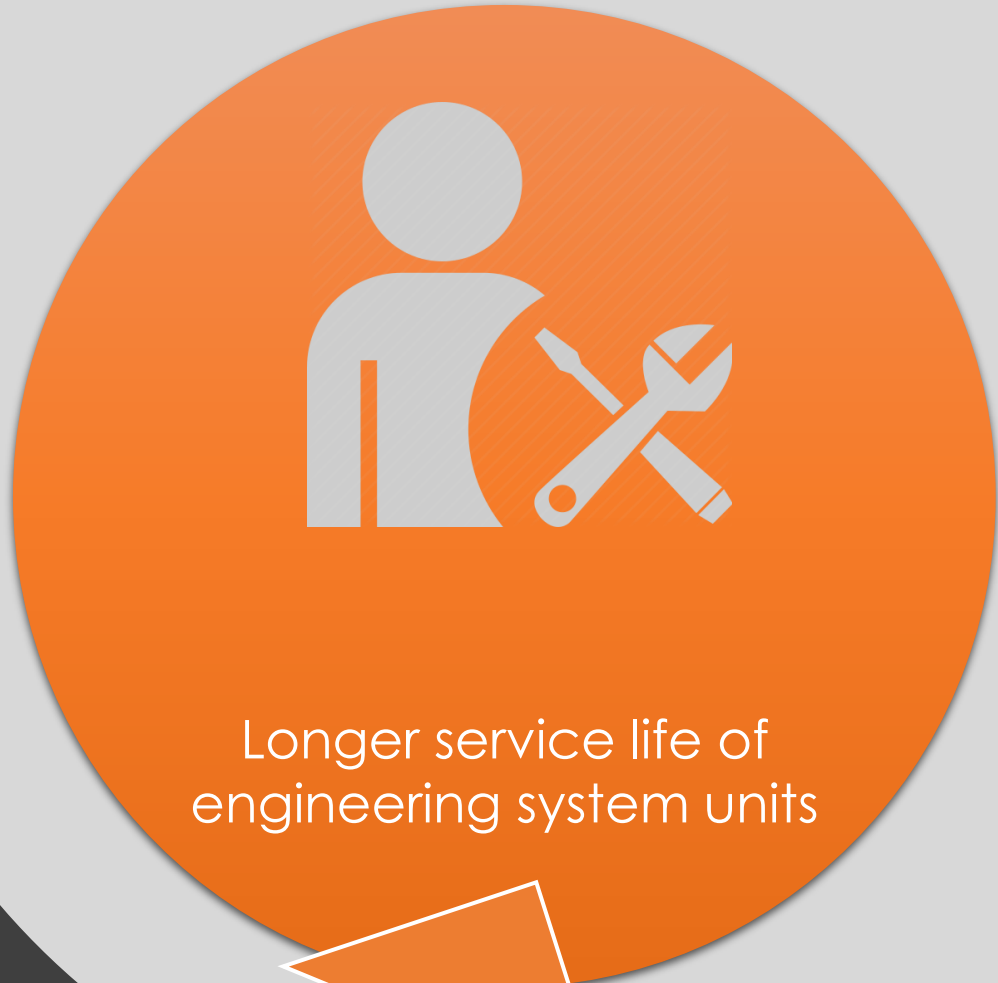
Data analysis algorithms for construction of behavioral models and detection of anomalies

Suppression of unauthorized entry and prevention of emergency situations



Efficient operation of engineering systems

- + Reduced load due to the use of intelligent system management algorithms
- + Automatic quality control and maintenance timing
- + Electrical power quality control according to GOST 29322-2014
- + Monitoring of the time spent by service organizations on site
- + Minimization of the human factor in operation
- + Automatic SLA control for subcontractor services
- + Use of predictive analytics to prevent equipment failure
- + Computer vision for analysis of heat losses (cold losses) in the building



Longer service life of engineering system units



Preset microclimate sustention

- + Climate control depending on the inside / outside temperature and weather forecast
- + Color temperature and light intensity control
- + Air humidity control
- + Ventilation system control depending on CO2 level
- + Noise level measurement in the premises
- + Individual climate for each room
- + Selective climate control in large rooms



Comfortable environment for employees and guests

System capabilities

Automatic detection of engineering system components

Fast and scalable monitoring subsystem (up to 100 metrics / sec from one site)

Remote manual control of devices and rule setting for automatic control

Graphical user interface built on dashboards and widgets to form your own set of observable parameters

Unlimited horizontal scaling possibilities due to the microservice architecture of the application

Graphical interactive model of the building with the option to display the plan of each floor / office and plot the points where incidents occurred

Report generator with graphical report designer

Integration with SAP и 1C

System capabilities

Climatic systems



- Control and automatic maintenance of temperature and humidity in the premises
- Control and management of electric and water heat curtains
- Individual climate for each room
- Selective climate control in large rooms

Power supply systems



- Condition of incoming switches
- Presence of power at input terminals
- Battery level of the UPS
- Condition of automatic transfer switch units
- Diesel generator unit operating mode
- Fuel level in diesel generator unit
- Indication of emergency modes
- Current network settings
- Power quality analysis

Lighting systems



- Lighting control according to the schedule and light sensors
- Floor lighting adjustment at a specific time, depending on the work schedule
- Lighting units located near the windows automatically switched off during sunny weather
- Sun blinds management
- Monitoring of lighting condition
- Facade and street lighting management
- Emergency and evacuation lighting control

Water supply and sewerage systems



- Regulation and monitoring of temperatures in all circuits of the central heating station
- Monitoring of pumps condition, valve position
- Monitoring of the coolant pressure in all the circuits of the central heating station
- Control of data from water, heat meters
- Control and management of the domestic and firefighting water supply system
- Leakage control
- Control and management of domestic, storm water and groundwater drainage systems

System capabilities

Ventilation systems



- Monitoring of supply and exhaust fans and circulation pumps condition
- Control and automatic pressure maintenance in the air supply duct
- Protection of pumps in heating, cooling and humidifying circuits against dry running
- Control over the position of outside air dampers
- Monitoring of carbon monoxide level in parking lots
- Ventilation system dispatching control, depending on carbon monoxide level

Access control and movement control systems



- Integration with access control systems installed on site
- Calculation of the number of people in the building and on the floors in real time
- Access control system unlock in the event of an emergency
- Tracking the location of especially important objects (documents, valuables) within the building, including outside the office
- Localization of targets accurate to the room

CCTV systems



- Monitoring of security camera performance
- Image quality control
- Assessment of lens contamination and integrity
- Video analytics through recognition of events (window breakage, violation of law and order in the building, vandalism)
- Recognition of complex behavioral patterns (target making a phone call, taking out weapons)

Vertical transport systems



- Control over the position of elevators and escalators
- Dispatching control of vertical transport (elevators, escalators and travolators)
- Voice communication with elevator cabs
- Vertical transport management in case of fire

Analog equipment integration



- Position of toggle switches and knife switches
- Pointer instrument indications
- Textual information readout and recognition

Results of implementation

Retail



An unclosed door to the chilling room led to an increase in temperature and pushed the compressor output to its maximum capacity

Warehouse



It was possible to prevent the loss of goods caused by defrosting of cooling chests

Business center



Electricity costs were reduced by effectively switching between different energy sources

Operating company



A discrepancy between the actual power supply parameters and the ones declared by the supplier was recorded. An incident of SLA violation by the energy company was registered

Data center



It was possible to prevent overheating and failure of servers due to the timely detection of an accident in the cooling system

Office space



Reduction of electricity costs by 13% was registered

Economic effect



Reduction of staff costs



Reduction of operating costs



Saving resources

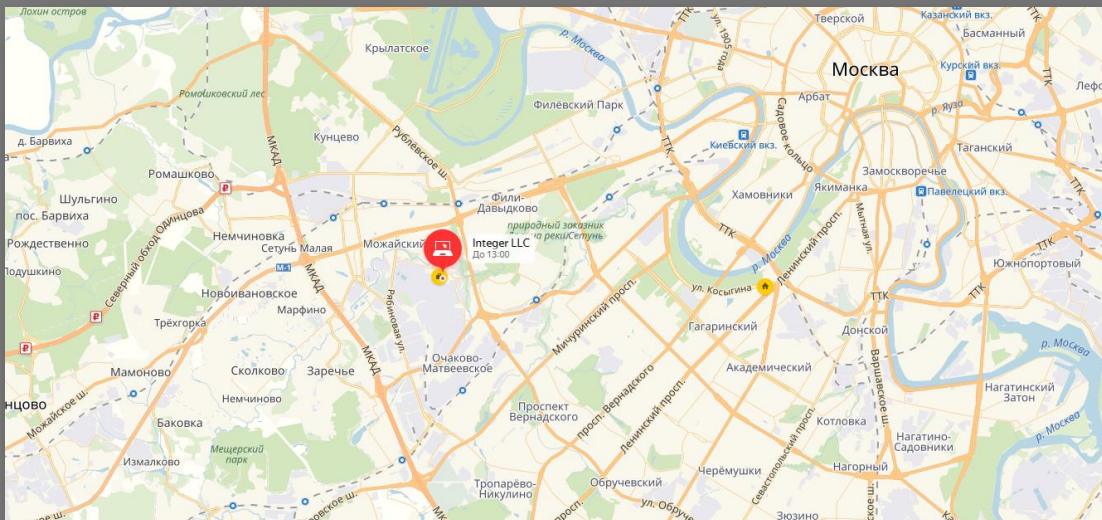


Possibility to formalize the KPIs for building operating efficiency and automatically track them



Minimization of indirect losses associated with engineering equipment failure

Contacts



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