



CK.Advanced Metering HES

for Energy Resource Accounting and Management

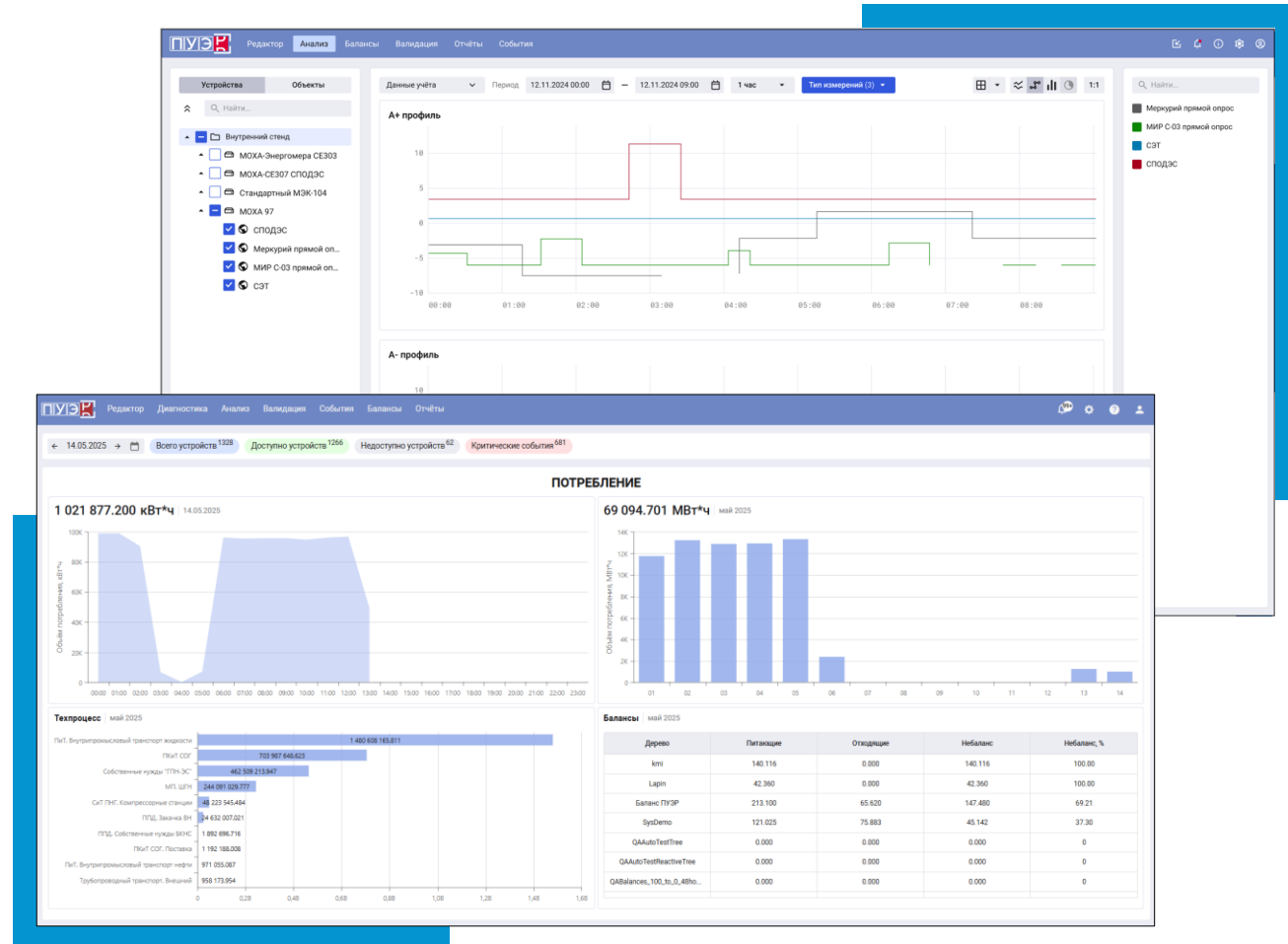


Technical Metering & Resource Accounting



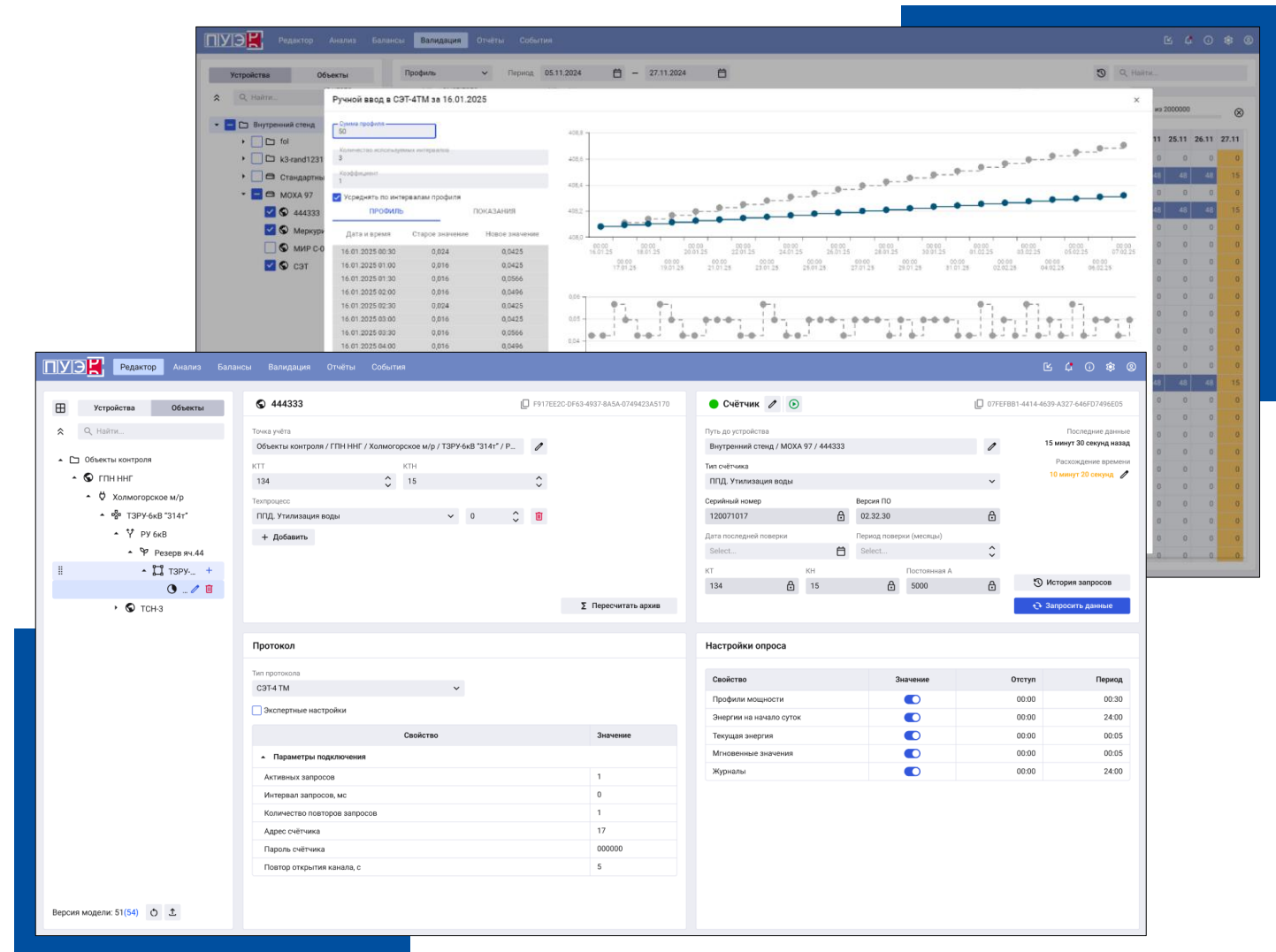
Core Features & Value Proposition

- multi-utility resource support (electricity, gas, water, steam, etc.)
- reduction of OPEX for data collection and processing
- system health monitoring & diagnostics (including emergency modes)
- consumption allocation by process
- analysis of irrational usage and losses
- consumption planning & forecasting



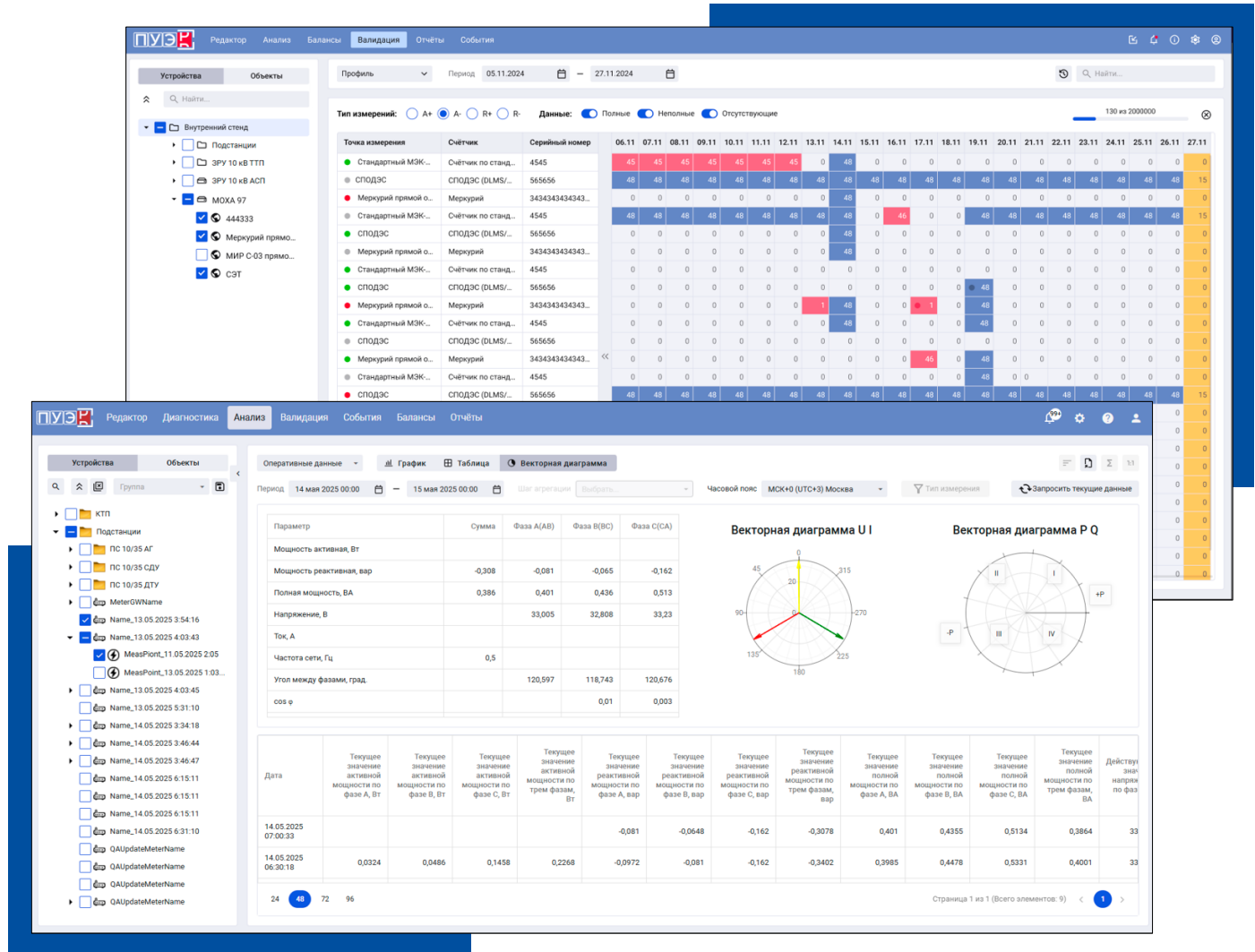
Meter Data Management & Integration

- seamless synchronization with CK-11 (no duplicates, no data collisions)
- configurable polling periods and on-demand re-querying
- plug-and-play meter onboarding via pre-configured templates
- AI-assisted calculation of missing intervals (data imputation)
- audit-proof manual overrides with full traceability



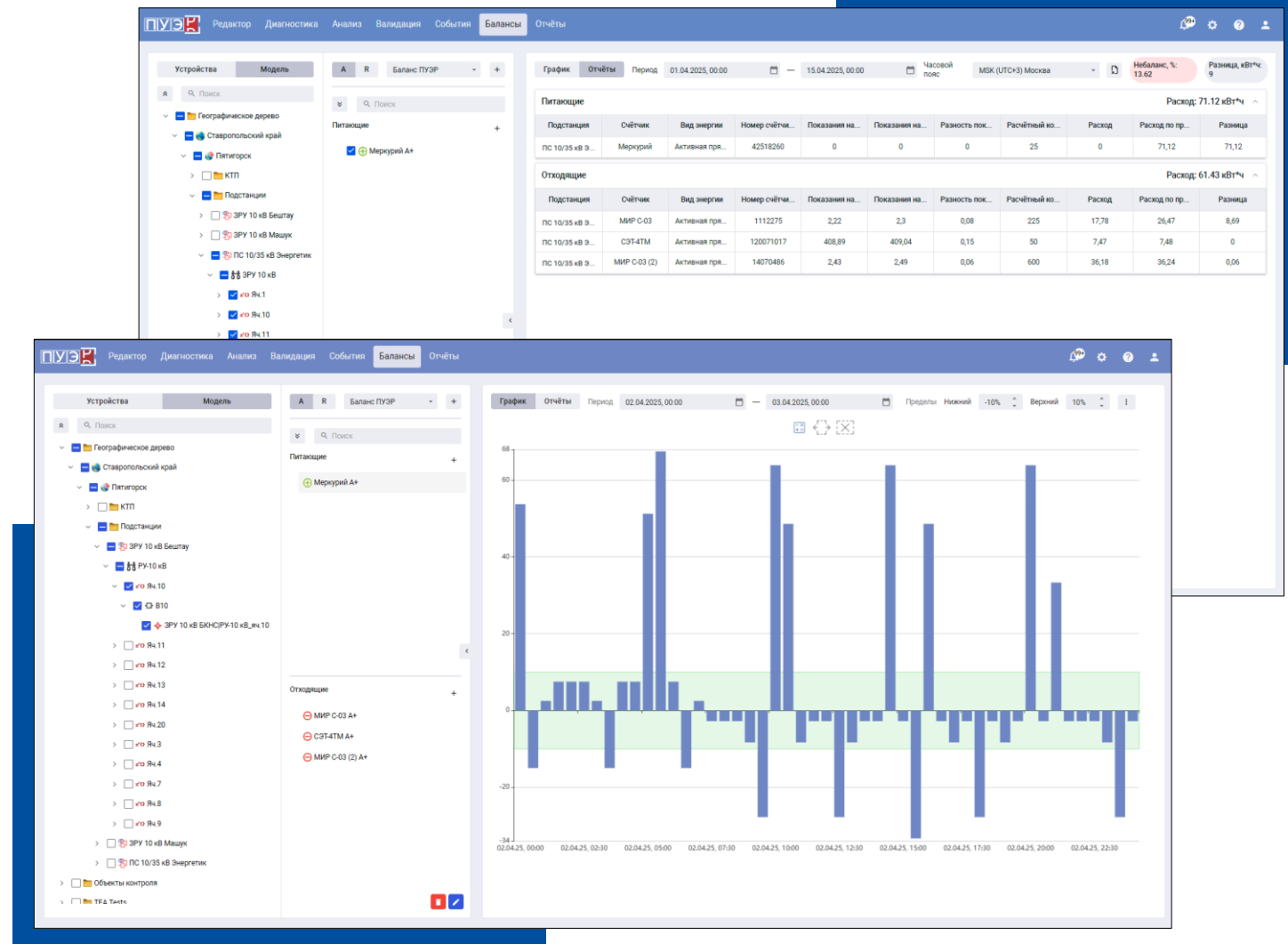
Data Processing & Advanced Analytics

- validation of power profiles and consumption readings for selected intervals
- data completeness heatmaps for assessing data completeness and distribution
- historical storage of process-specific consumption data
- flexible filtering and custom data representation
- multi-format visualization: graphs, tables, and phasor diagrams



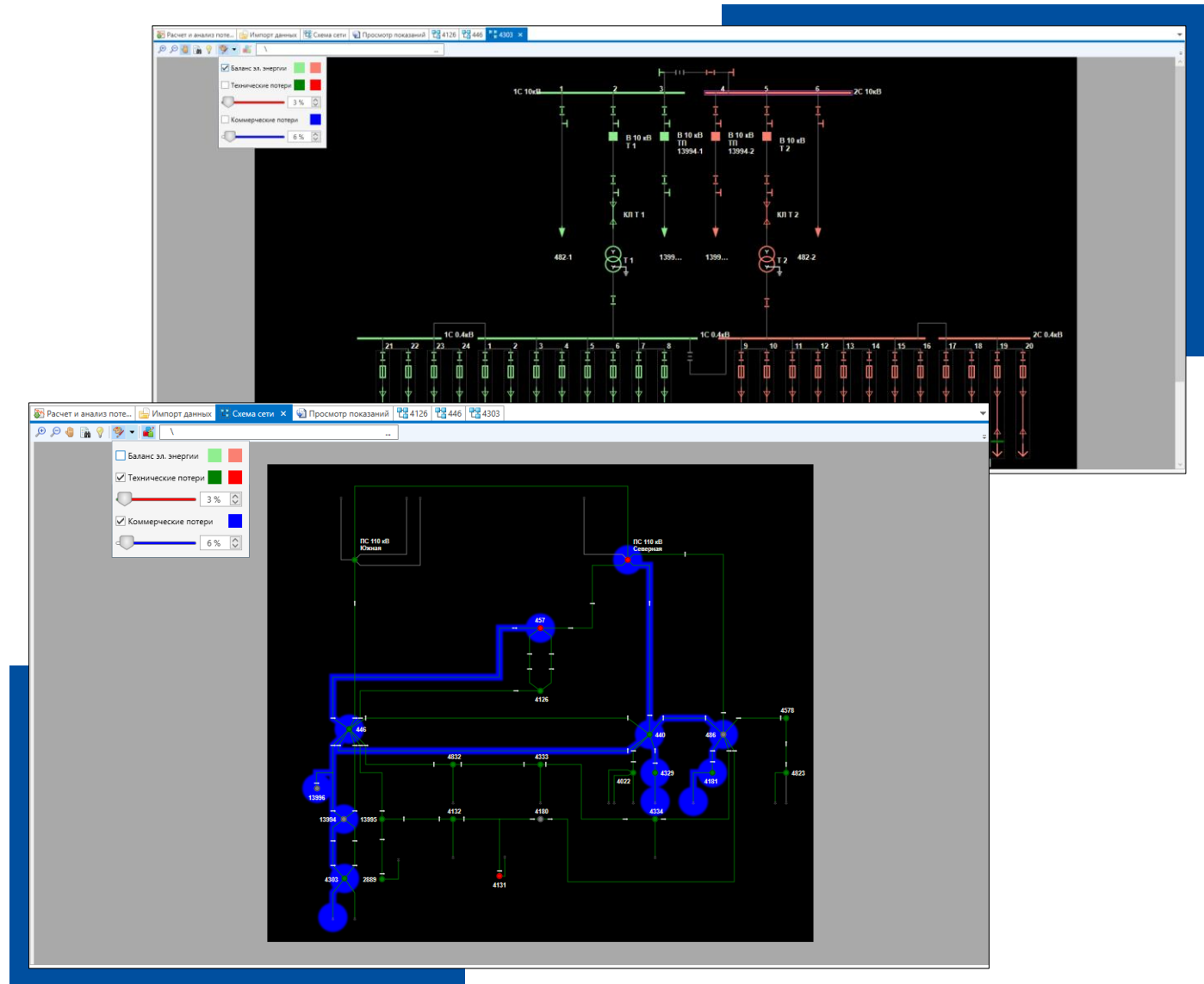
Power Balance & Energy Accounting

- automated calculation of active and reactive power imbalance
- real-time alerts for exceeding the calculated imbalance threshold
- topology-based imbalance calculation (via one-line diagrams or meter hierarchy)
- graphical and tabular representation of the imbalance



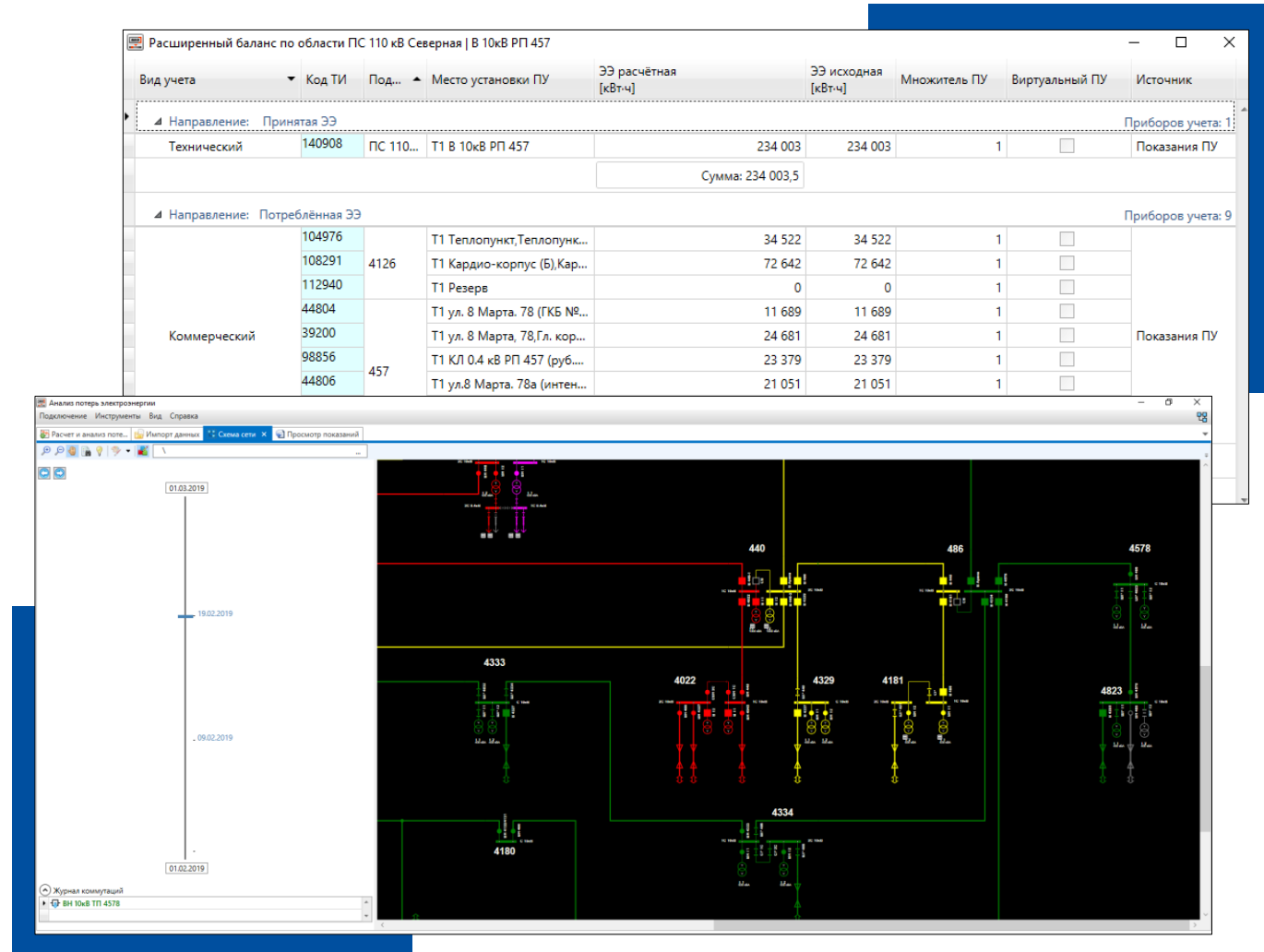
Power Loss Analysis

- calculation and display of technical vs. commercial losses
- granular analysis by region, electrical installation, and voltage level
- visual display of the energy balance and aggregated power profiles
- results presented in both tabular format and directly on the one-Line diagram



Power Loss Analysis

- identification of blind spots (areas with missing meter readings) linked to current operational modes
- automatic consideration of switching events (network reconfigurations) during the calculation period
- dynamic time-slicing: splitting the analysis interval according to switching operations
- detailed breakdown report for every loss type per equipment (by voltage class)





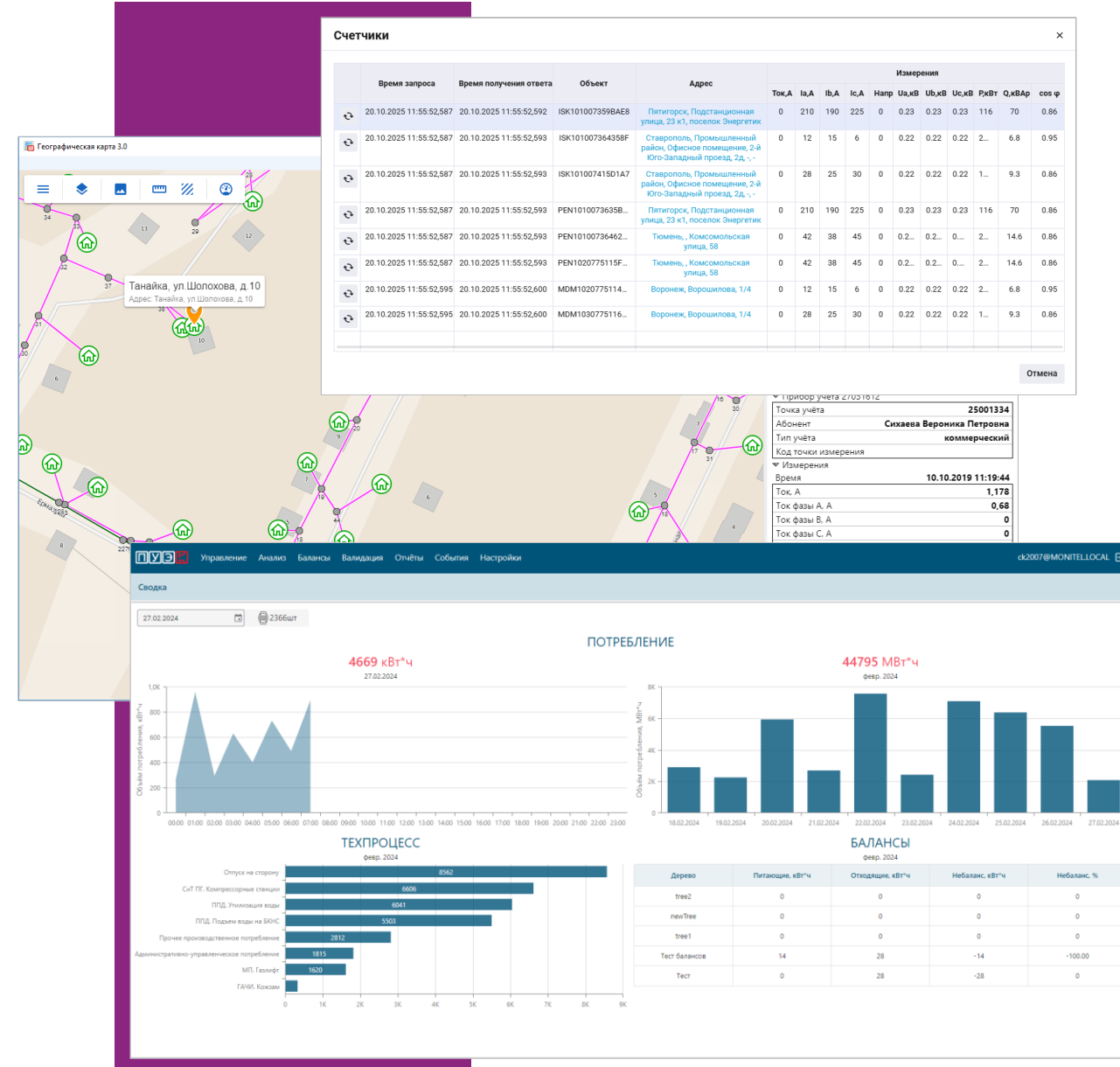
Enhancing Grid Observability



High-Speed Meter Data Acquisition (The Observability Problem)

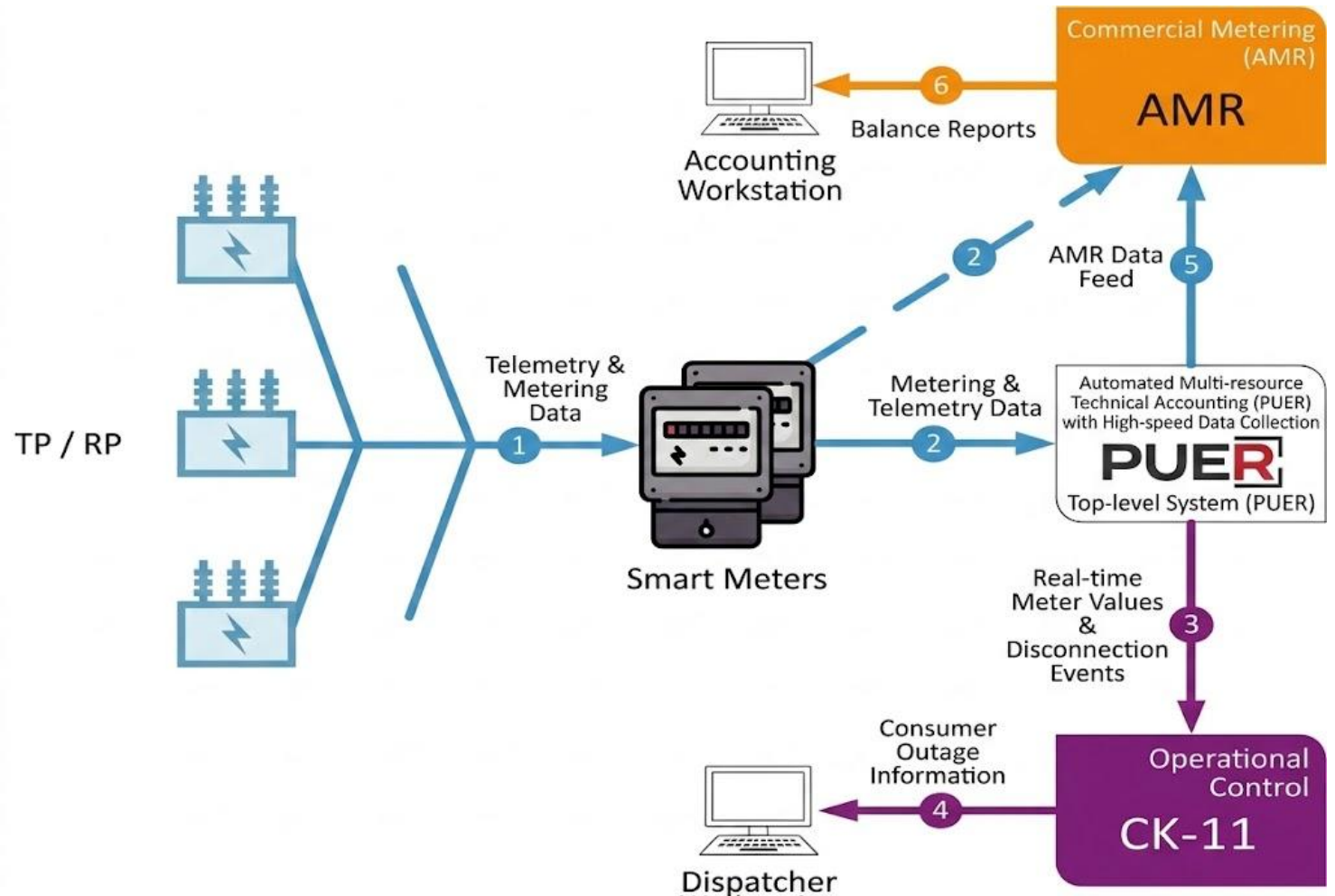
- Challenge: distribution grids are 'blind', manual inspections are performed only twice a year
- Obstacle: classic SCADA/Telemechanics is effective but prohibitively expensive for deep distribution levels
- Limitation: standard meter data is usually 'too slow' for operational use

Our Solution: deploy a High-Speed HES (Head-End System) built on the AMI Management Platform



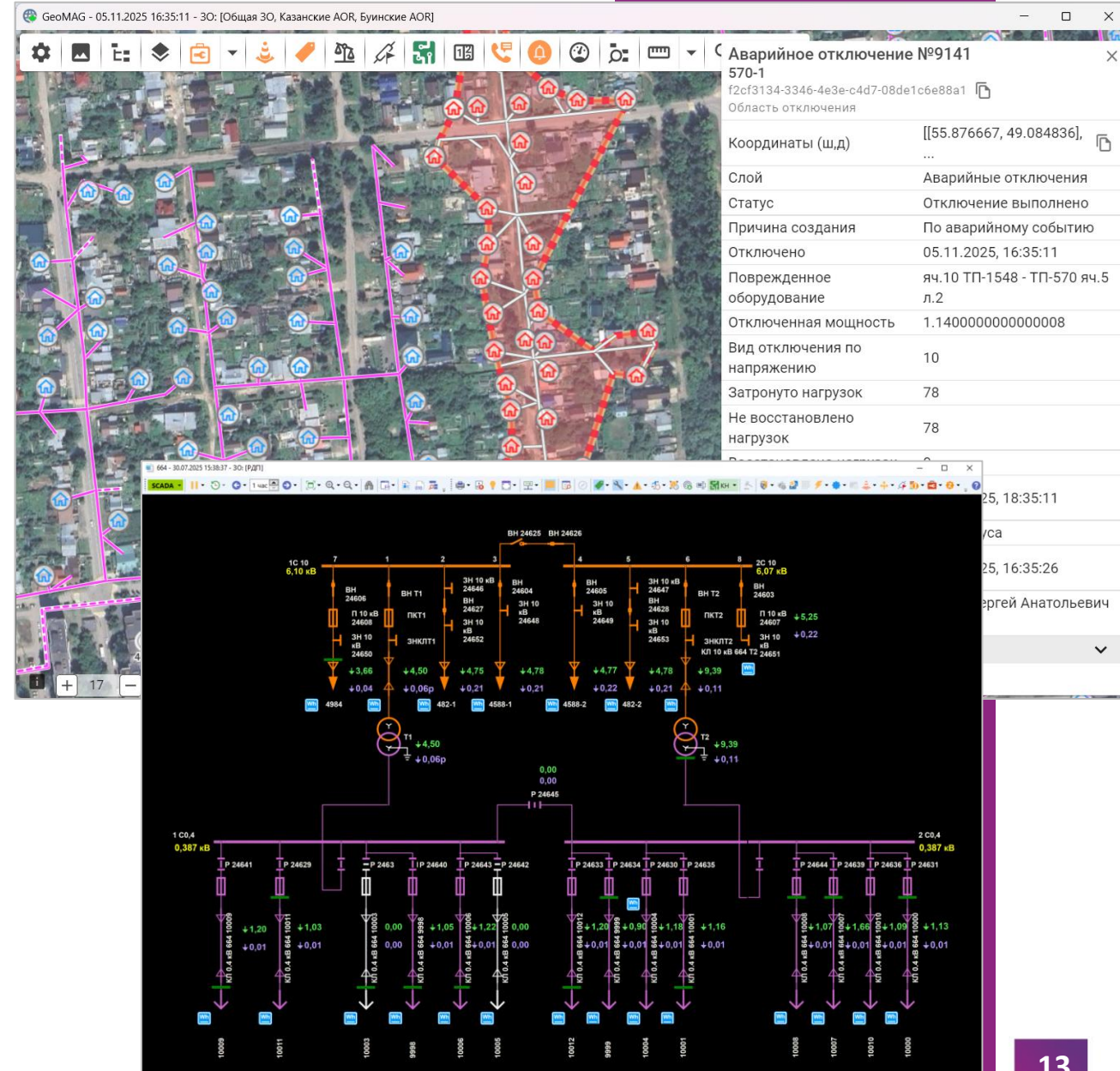
Architecture & Data Flow

- Advanced Metering HES sits between the Meters and the existing billing system
- High-speed operational data (actual current/voltage) AND meter availability status are fed into CK-11 to determine line voltage and detect consumer outages
- Commercial (billing) data flows in parallel via Advanced Metering HES or through a separate stream



Business Impact & Operational Effects

- Observability: distribution grids (0.4 kV) become visible WITHOUT expensive telemetry hardware
- Situational Awareness: dispatchers see real-time currents and voltages on the DP(distribution point)/TS(transformer substation) one-line diagrams, updated every polling cycle
- Outage Management: the system identifies an outage BEFORE the customer calls (using multi-stage analysis: topology + sequential polling)





THANK YOU FOR YOUR ATTENTION!

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