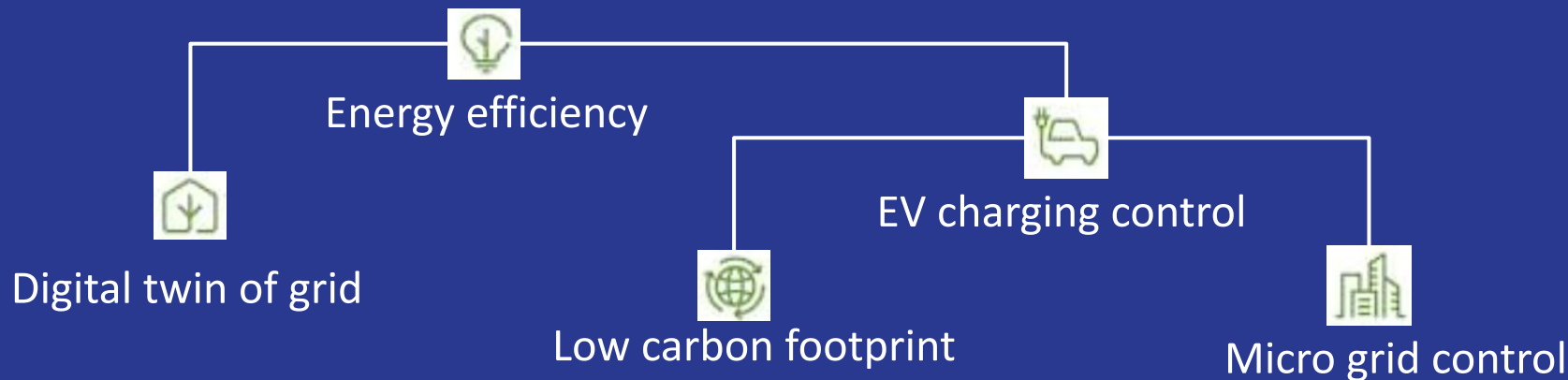


AdiKs | Energy

power losses optimization system for low voltage grids



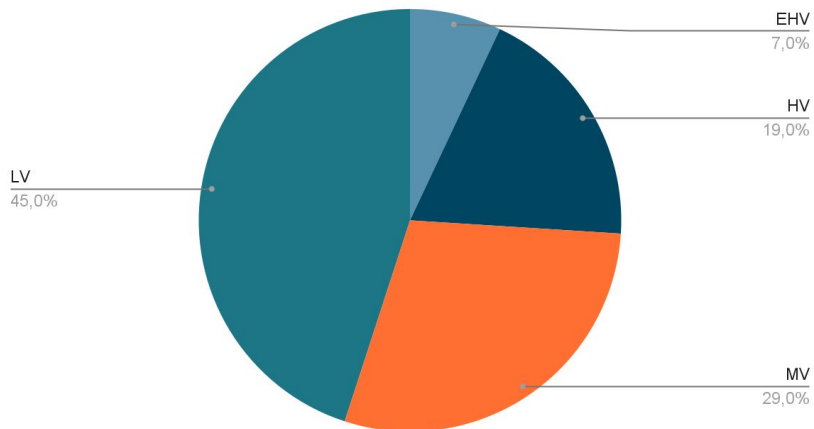
Power losses

ADMS Energy can save your energy and money

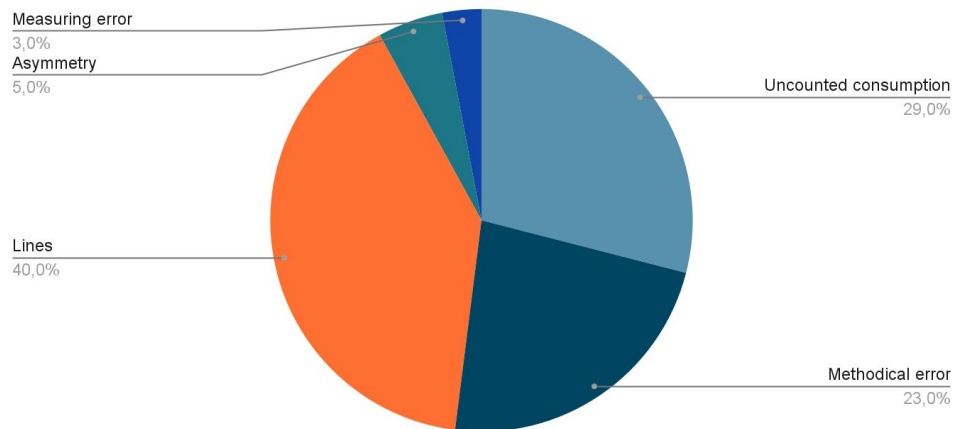
For example total absolute annual power losses in Russian electric grids are about **100 billion kWh** - this is more than **3 billion \$** per year.

That is not only money, but it is also a harm to the environment!

Power losses structure by voltage



Power losses structure in low voltage grid



Solution

Unique technology:

- Uncounted consumption identification and localization
- Consumer phase identification
- Operative calculation of the main grid parameters based on typical data from meters
-

The effect:

- Power losses reduction for LV grids more than 50%
- Online grid monitoring
- Operating costs reduction
- Automatic grid reconfiguration
- Payback time for an average DSO is less than 1 year

	Current power losses structure	ADMS Energy
Uncounted consumption	29% →	3%
Methodical error	23% →	5%
Lines	40% →	30%
Asymmetry	5% →	1%
Measuring error	3% →	3%

Results

Tested with



SUENKO



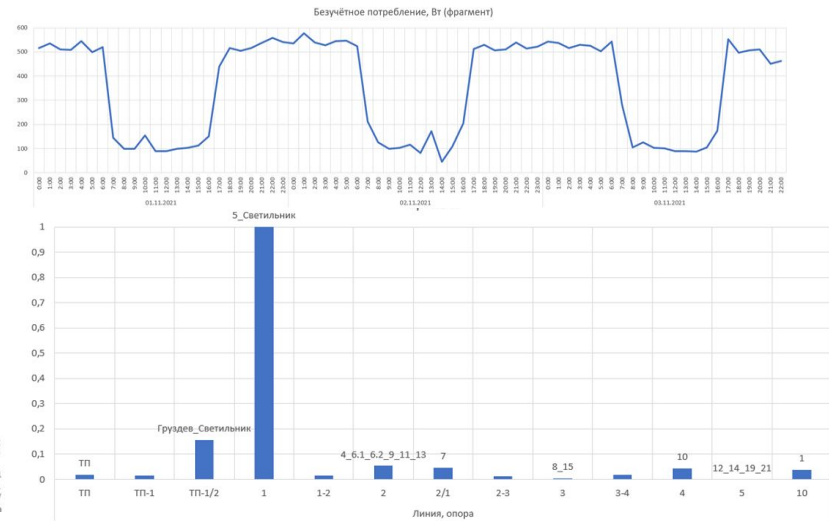
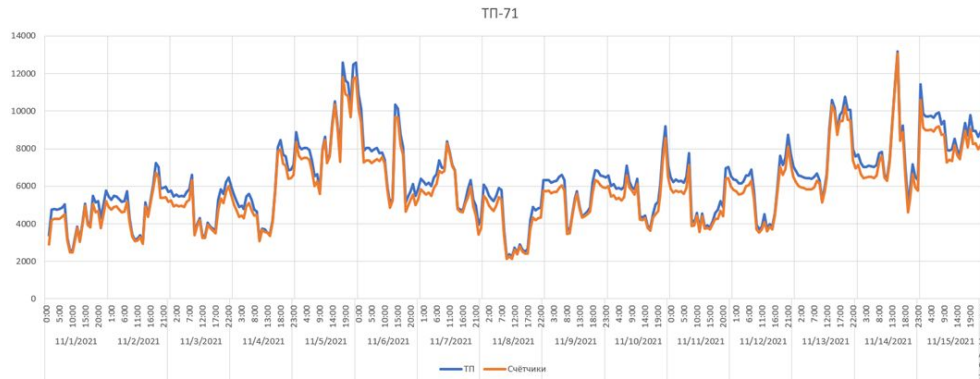
Detected
unaccounted consumptions
saved 75% of total losses



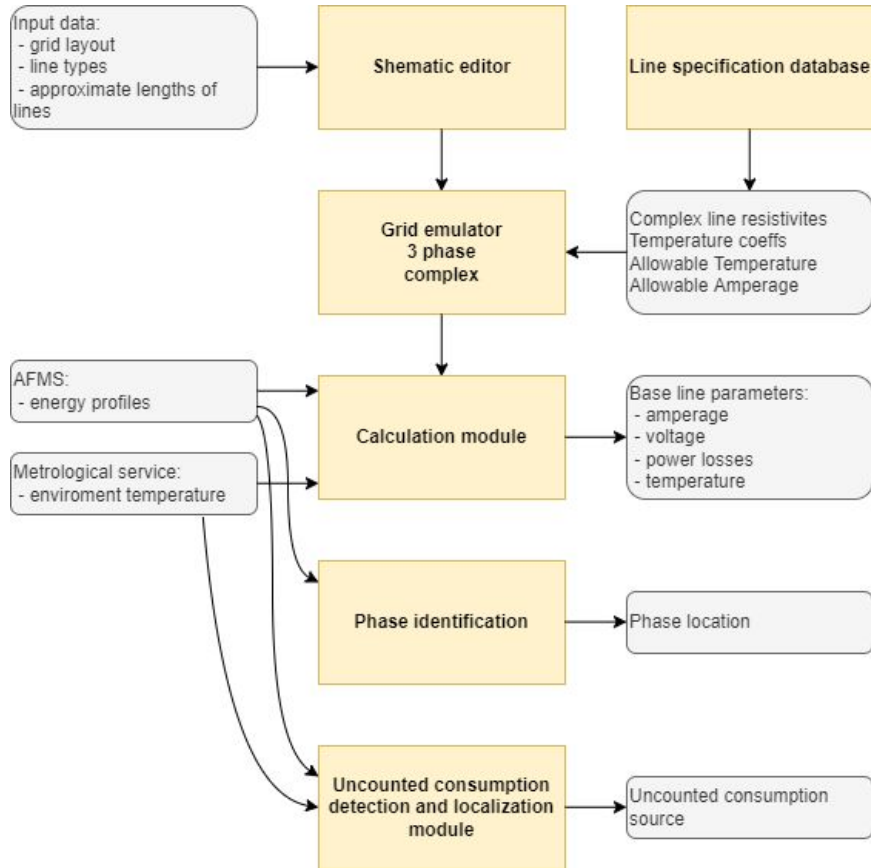
Use cases

ADMS Energy is a cloud service for collecting and processing data from consumers and transformers power meters, which allows:

- Digital twin creation
- Detect and eliminate points of technical and commercial losses
- Perform online grid monitoring for early detection of malfunctions
- Reconfiguration: microgrid voltage balancing and EV charging control
- Ecology: carbon footprint reducing



Technology



Schematic editor is used for topology digitalization and development of grid digital model.

Three phase grid emulator is used for grid and parameters modeling, test and research of algorithmic modules, missing data generation and invalid data replacement.

Calculation module counts grid currents and voltages based on numerical analysis. **Wire resistance** dependence accounting is a technique based on the linearization of the non-linear and implicit dependence of the cable temperature based on its design, the current flowing through it and the ambient temperature.

Uncounted consumption detection and localization module finds the fact of uncounted consumption by calculation of the current unbalance and localizes uncounted consumption by using an original algorithm based on the calculation of a temperature-independent metric from an array of measuring information and the grid diagram.

Phase identification module is using a unique method for fast selection of subscriber phases based on the maximum likelihood estimation and enumeration completion criteria, which is a solution for a non-trivial problem and depends on measurement errors and the proportion of loads in their sum.

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