THE OUTLOOK FOR SIGNIFINCANT EFFICIENCY IMPROVEMENT BY DEVELOPMENT OF SMALL-SCALE NATURAL GAS DISTRIBUTED POWER GENERATION IN RUSSIA

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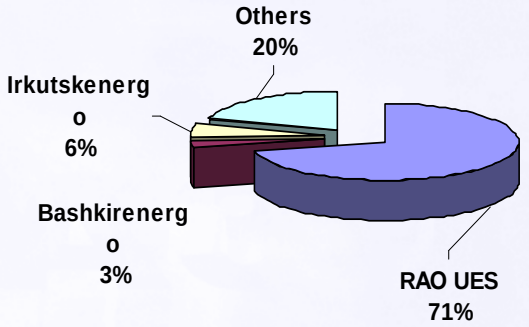
07 June 2006

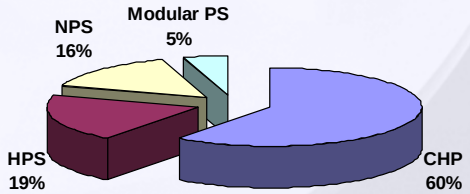
Power Industry in Russia: Existing Structure

- Over 700 big power stations, a few thousands of small stations (up to 30 MW)
- Unified Energy System (UES) provides for over 90% of Russian electricity supply
- More than 30% of UES capacities have outlived their service life
- More than 2/3 of Russian territories are not connected to UES grid
- Distributed generation (DG) share doesn't exceed 1% of total electric power production

Power generation

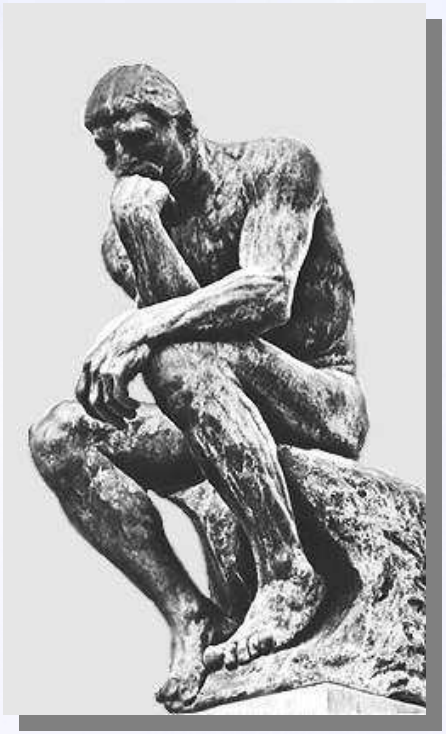


Generation by stations' type



Why So Small DG Share in the Electric Power Production?

- Government policy targeted at development of centralized electric power production
- Cheapness of energy
- Expensiveness of DG equipment



DG Development Drivers

- Impossibility to provide centralized energy supply for the whole country
- Consumer wish to have own energy supply sources
- Reliable and uninterrupted electric power supply
- High energy losses within the grids
- Deterioration of existing generating capacities

Ways of DG Development

- **Development of gas-fired distributed generation**
- **Development of distributed hydro-power generation (60 bln. kWh/yr)**
- **Development of unconventional power generation:**

  - solar energy
  - wind energy
  - nuclear energy

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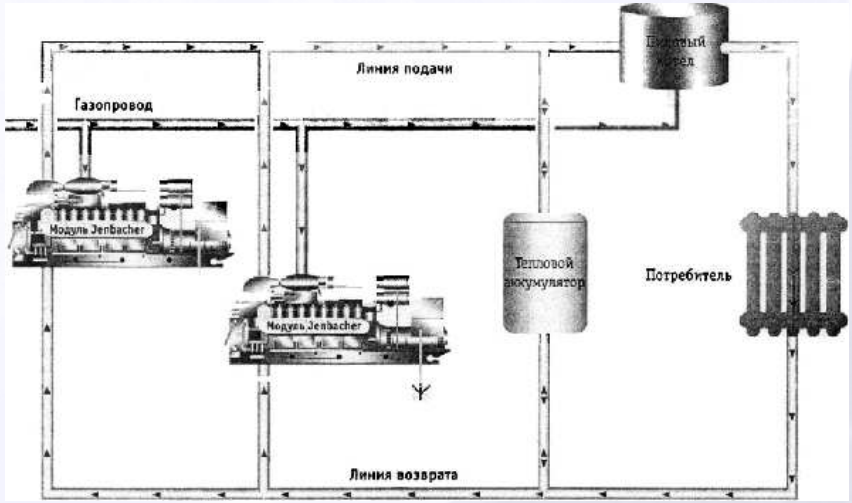
Major Problems

- No legislative basis
- Problems with connection to the grid
- Psychological investment barrier

Shopping Mall «Tri Kita»

- Constructed in 2000
- 4 units JMS 612 of 1,45 MW each
- Power production cost - 0.28 RUR (0.01 $US) versus 0.20 RUR for 1 kWh from the grid
- Benefits - 1,5 mln. $US in two years



Why Mini CHP: Curious Motivation Forces

- Oil company «Lukoil» - reduction of transmission facilities protection costs
- Moscow – decrease of dependence on RAO UES
- «Bashkirenergo» - desire to be pioneers in advanced technologies

OAO «Promgaz» Experience in the Astrakhan Region

- Distribution generation potential – 200 MW
- Business-plans for several settlements
- Feasibility studies for mini CHP stations constructions in the towns of Narimanov and Aktyubinsk

Conclusions

- DG-driven heat and power production tends to increase despite the existing barriers and constraints
- Government support to DG should be guided by energy efficient utilization criterion

Thank you for attention.

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