

## Energy saving in ventilation and air conditioning systems

Electricity in ventilation systems is spent on the operation of supply and exhaust fans, and circulating pumps of heat utilization systems for ventilation emissions. Rational use of [energy-saving](#) solutions will significantly reduce the energy consumption of ventilation systems.

Measures to save electricity in ventilation systems:

1. Replacement of fans of old types with efficiency of 50-63% to modern fans with efficiency of 80-86% gives the economy of the electric power of up to 20-30%.
2. Regulation of exhaust ventilation by gates on a workplace instead of regulation on injection gives the economy of the electric power of up to 10%;
3. Replacement of general exchange shop ventilation systems with local individual recuperative exhaust systems located in areas of harmful emissions saves up to 50% of electricity;
4. The use of adjustable frequency drive of fans, as well as multi-speed electric motors saves up to 20-30% of electricity;
5. Automatic control of ventilation systems is done by:
  - installation of blockage of individual exhaust systems on inclusion when they only work when mechanisms of an emission source also start working, gives the economy of the electric power of up to 25-70%;
  - automatic regulation of temperature of the [heat carrier](#) of heaters of supply chambers depending on ambient temperature allows to save up to 10-15% of the electric power;
  - switching to "working hours" - "non-working"; "Weekend mode" with the help of relays 2RVM, BP-44, etc .;
6. Implementation of ventilation schedules - shutdown at lunchtime, after work - saves up to 20%;
7. Elimination of defects of the ventilation systems received at unqualified assembly, installation and repairs of ventilating installations. Such defects include:
  - removing the fairing before entering the impeller reduces the efficiency by 10%;
  - shortened diffuser reduces efficiency by 6%;
  - the wheel of the axial fan is turned over, the efficiency of the fan is reduced by 20-40%;
  - the increased backlash between an impeller and a soaking-up branch pipe of the centrifugal fan;
  - poor-quality manufacturing and installation of branches, tees, knees, bad plaster of channels, dents (these defects increase hydraulic resistance of the system).
8. The introduction of highly economical radial fans with forward-curved blades increases the efficiency of the installation by 10-12%.

The following materials were used in the article:

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