THE USE OF MODERN ENGINEERING SOLUTIONS FOR THE DESIGN OF REFRIGERATION SYSTEMS AS A WAY OF ENERGY CONSERVATION AND EFFICIENCY

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The research paper is devoted to the problem of finding ways to save energy resources during the cooling equipment operation.

At present the preservation and saving of energy is the burning problem. Many industries such as steel industry, fuels and lubricants industry and others are powerful consumers of energy. Refrigeration systems are also powerful energy consumers. In this context the refrigeration industry is faced with the problem of finding ways to improve the efficiency and productivity of both components and the system as a whole.

Not only the designers and developers of refrigeration components which constantly improve and modernize existing equipment, but also operatives which improve algorithms and computer programs to develop integrated management systems in order to optimize work and increase efficiency depending on various modes of operation are involved in solving of this problem.

Three systems of supplying the coolant to consumers during the central cooling systems design are considered and analyzed.

The first scheme which is most often used in circuit solutions of central cooling systems is direct boiling of refrigerant in the evaporator of cooling devices of each consumer. However, such schemes have their drawbacks are problems with "allocation" and "accumulation" of oil and it is associated with long mains of coolant. Engineering solutions of this problem are complex systems of control and returning oil to the compressors.

The second scheme is cooling systems with pump supply of coolant. However, under using of such scheme a lot of nuances must be taken into account. It is not always very convenient and profitable.

The third scheme in our view is the simplest solution (especially for average temperature systems) it is the application of systems with intermediate coolant pump supply which eliminates the loss of compressors productivity. Supermarkets, large offices and hotel complexes often use such systems ("chiller - fencoil").

Thus, under solving of refrigeration systems energy consumption problems it is necessary to solve number of issues in total: the choice of highly efficient refrigerant and optimal coolant, the minimum amount of refrigerant in the system, specifics of transportation of coolant to
consumers. Solving of these problems allows always expecting of reduce both capital and operating costs.

**Keywords:** refrigerant, intermediate coolant, direct boiling, pump feeding, cooling system, engineering solutions.