

The contents of preventive and corrective actions is to prevent suicides. Therefore, for this it is necessary to carry out primary prevention, main task of which is the dissemination information about the typical signs of suicidal behaviour in adolescents. The efforts of the social educator should be primarily aimed at improving relationships in families. Adolescents need individual psychotherapy, i.e. change of relations in the social microenvironment; group aimed at the acquisition of knowledge and skills of behaviour in crises; family psychotherapy, i.e. clarifying the characteristics of the relationship of adolescents and parents; social assistance.

Therefore, the problem of social-pedagogical prevention and correction of suicidal behaviour among adolescents is becoming more acute and requires urgent attention.

*Scientific supervisor: Maksymovych G.O.,  
Senior Lecturer*

UDC 629.735.048 (043.2)

**Pernatij O.Yu.**

*National Aviation University, Kyiv*

## **AIR CONDITIONING SYSTEMS**

The **Dornier 328** air-conditioning system supplies the flight compartment and the passenger compartment with a sufficient quantity of air for fresh air ventilation, temperature control and pressure control. Bleed air shall be supplied by the engines or by the optional APU. A portion of the cabin exhaust air is directed through the air conditioning system for recirculation. The system comprises two ECS (environmental control system) packs with identical functions which operate using the “air cycle” principle. Each pack mainly consists of a cooling turbine (air bearing type), a dual heat exchanger, a condenser/water extractor (high pressure water separation system) and various control and regulating subsystems. The ECS packs shall be installed in the unpressurized area on top of the fuselage centre section. Windshield demisting outlets are installed in the flight compartment together with air outlets at floor and ceiling level. The passenger compartment is supplied with a continuous flow of conditioned air through ceiling and floor level outlets. Each seat is supplied with conditioned air by an adjustable air outlet. Exhaust air will be extracted through floor level openings, fitted at each side of the passenger cabin. Pressurization shall be automatically controlled by a digital electro-pneumatic cabin pressure control system (CPCS), with a manually operated pneumatic system as a back-up. The system includes two independent outflow / safety valves, a control unit, digital controller, selector for landing altitude, the manual controller, an ejector pump as a vacuum source and a manual back-up indication.

The **Boeing 737** air-conditioning system consists of two independent air-cycle cooling systems, a cabin temperature control system, an air distribution system, recirculation system, and a pressurization system. The air-conditioning system is capable of supplying a total ventilation rate of 1,900 cubic feet per minute (CFM) on the 737-300/-500, and 2,100 CFM on the 737-400, up to the maximum certified operating altitude of the airplane. The system has sufficient capacity to maintain adequate cabin conditions to allow dispatch with any one subsystem inoperative. The cabin air cooling portion of the air-conditioning system has two individual cooling packs located in an accessible unpressurized compartment under the wing centre section. Each cooling pack consists of a primary and secondary heat exchanger, modulated ram air duct system, air cooling turbofan, air cycle machine, water separator, anti-icing system and associated controls and ducts. Air from the pneumatic system first passes through the primary heat exchanger where the cooling process begins. The air then enters the compressor of the air cycle machine, is cooled again as it passes through the secondary heat exchanger. On the 737-300/-500 temperature is greatly reduced as the air expands across the turbine stages, which also drives the compressor of the air cycle machine. The excess moisture from the cooled air is removed by the water separator. The water separator is protected from freezing by a thermostatically-controlled warm air supply, which is obtained by by-passing the air cycle machine. On the 737-400 the air passes through the high pressure water separator (condenser, water extractors, and reheater) where the excess moisture is removed prior to entering the turbine, air expands across the turbine greatly reducing the temperature and driving the compressor stage of the air cycle machine. Freezing in the condenser is prevented by passing warm air around the air cycle machine through the stand-by pack temperature control valve. For in-flight operation the heat exchangers are cooled by ambient airflow into the ram-air inlet. For ground operation, or in-flight with the flaps extended, a turbofan in the ram-air duct is driven by pressurized air, from the pneumatic supply, to provide cooling flow. In-flight flow of ram-cooling air is controlled automatically by a control system.

*Scientific supervisor: Budko L.V.,  
Assistant Professor*

UDC 629.73.02 (043.2)

**Pidkuyko O.G.**

*National Aviation University, Kyiv*

## **ENERGY SOURCES IN MODERN AIRCRAFT**

All aircraft widely use electrical energy. The power requirements for the simultaneous actuation of the electrical equipment of modern heavy aircraft are up to several hundred kilowatts. The widespread use of electrical energy due to