Energy systems and operating technologies of the site

I. ENERGY SYSTEMS AND OPERATING TECHNOLOGIES

(1) **Water**

The main water meter manhole is located outside the building at the access ramp to the underground garage. The main water shut-off and fire water shut-off are located on the 1st underground level of the building.

(2) **HV, LV distribution, backup sources**

a) The complex is powered from the HV substation and transformers located in the 1st underground floor to the main substations located there, and minority by photovoltaic system without connection to the distribution network (PV panels are located on the roof of the building). The consumption in the building is divided into a part of computer technology and a part of building electrical installation.

b) Uninterrupted power supply of selected technologies (data halls, equipment with fire function, etc.) is provided by spare sources in the 1st underground floor (diesel generators and dynamic UPS).

c) Disconnection of the buildings from the power supply can be done with the CENTRAL STOP 1, CENTRAL STOP 2, TOTAL STOP buttons at the building reception. The disconnection is carried out only by an authorised person or by the Fire Brigade's intervention commander.

d) Selected offices, lecture halls, laboratories and technical rooms are equipped with back-up socket circuits. CVT technicians are responsible for connecting appliances to the back-up electrical circuits.

e) The building is equipped with a panic and emergency escape lighting system.

(3) **Natural gas**

Natural gas is not introduced to the premises.

(4) **Heat**

a) The primary source of heat is a hot-water heat exchanger station located on the 1st underground floor, the secondary source is heat pumps. The heat distribution in the individual rooms is provided by plate heaters, partly by steel pipework.

b) In buildings A and S, the heating radiators are equipped with thermoelectric heads, where the intensity of heat supply is controlled by the building measurement and control system (hereinafter referred to as MaR); for user control of the control head, see the user manual for the technology - Annex 8.

c) In buildings B, C and D, the heating radiators are equipped with thermostatic heads, where the intensity of heat in the heating period is set and adjusted by the user.

(5) **Ventilation**

a) The air handling units treat and distribute centrally forced conditioned fresh air to selected indoor spaces in the buildings and at the same time remove the polluted air (forced ventilation). In addition, there are HVAC units installed in the buildings of the complex providing only forced air extraction from selected areas (garages, kitchens, toilets, etc.), units providing forced air supply or displacement of air in ventilated areas (garages, staircases) or HVAC units working with circulating air (heat curtains, FC units).

b) The HVAC units are controlled by the parent MaR system, partly by local buttons (kitchenettes) and motion sensors (toilets).

c) The building also has HVAC units with fire function (ventilation of escape routes, fire lift shafts and garages).

d) Ventilation of other parts of the building interior is without forced air exchange (air exchange is realized through windows and doors).

(6) **Cooling**

a) Cooling in Buildings A and S is provided by the concrete core activation system controlled by the MaR system (see Annex 8 User Manual) and by cooling the supply air in the air handling units.

b) Some areas (teaching, technical, etc.) of buildings A and S, B, C and D are further cooled by independent cooling systems with gaseous refrigerant or cold water circuits, and some are cooled only by outside air (substations).

(7) **Telephone network**

The FI telephone network is part of the Masaryk University telephone network. Service and repairs are provided by the Institute of Computer Technology of MU via CVT FI. Users send reports of faults and malfunctions to tech@fi.muni.cz.

(8) **Computer network, HW and SW users**

Operation, service and repairs of the backbone IT networks of the FI is provided up to the standard HW and SW of individual users of the CVT FI. Special technologies, customer servers, HW and SW operated at the FI and in specialised laboratories are managed by an authorised person designated by the head of the department. Users shall send reports of faults and malfunctions to tech@fi.muni.cz, or to win@fi.muni.cz if the report concerns Windows OS software, or to unix@fi.muni.cz if the report concerns UNIX OS software or a computer network.

(9) **Audiovisual technology**

The operation of AV technologies of individual FI auditoriums is provided by CVT FI. Users send reports of faults and malfunctions to avt@fi.muni.cz.

II. SECURITY SYSTEMS

(1) **Electrical safety signalling (hereinafter referred to as EZS)**

a) All key areas of the FI are equipped with EZS elements, which allows authorized persons to encode and decode areas or individual rooms and thus secure them against unauthorized entry. The control of the EZS can also be centrally managed from the reception desk by a receptionist. The access rights of authorised persons are handled by a designated CVT FI employee to the extent required by the heads of departments. Contact: tech@fi.muni.cz.

b) In the event of a breach of the encrypted area, an alarm is signalled at the FI reception. In this case, the reception staff shall follow the FI Reception Shift Rules.

c) Part of the EZS is the so-called Panic button. It is a white box with a red button, which is placed in selected rooms (disabled toilet outside building D). In the event of an emergency, the user presses this button to raise an alarm at the FI reception and thus summon help. The alarm is cancelled by the receptionist.

(2) **Electrical fire alarm system (hereinafter referred to as EPS)**

a) Electrical fire alarms are installed throughout the building except in areas with no fire risk. Automatic (optical-smoke, thermal and combined) detectors are located on the ceiling of individual rooms, linear detection cables on the ceiling of the garage, in the double floors

and push-button detectors at all exits to the open air, at entrances to protected escape routes and at the point of operation of technological equipment. EPS control panels are located in the reception area. The EPS control panels also control (switch on or off) technological equipment to the extent specified in the valid project documentation or fire safety design.

b) The fire alarm is announced in the buildings by fire alarm radio (buildings A+S) or fire sirens (buildings B, C, D). The actions of persons during an alarm are described in detail in the Fire Alarm Regulations.

c) The evacuation routes are plotted in the Fire Evacuation Plans posted on each floor for this purpose.

d) The fire alarm system can also be used to evacuate people from the building in other life-threatening situations. The Faculty Secretary decides whether to authorise its use in a given situation. Start-up is provided by the reception staff.