**MILAN EXPO HORIZONTAL FARM**

**The lack of lands is the main problem of a big city.** City constructioninevitably leads to destruction of nature and agricultural grounds around cities. All these facts influence the quality of products and human life in general. Until recently, the problems of food production had only indirect relation to a city planning. The purpose of the project is the creation of a special city building for agricultural activity. Our main task is to organize an all-year supply of fresh and high quality products.

**The main concept is that our building has not only agricultural function, but it is also an apartment building with public units.** The building gives a chance to grow food inside a megalopolis, using the closed cycle of production, including the processing of products and then, the realization. Modern energy-efficient buildings reproduce all the resources for energy consumption. This project develops this idea, too. We want to create a closed-loop system of life support in a city. Vertical farms can supply products for a certain amount of people**. We plan to provide 1000 people, living in the same area with such products as meat, poultry, vegetables and herbs.**

**The main functionally binding part of the building is aninclinedstaircase and elevator section, penetrating the entire building trough.** Here you can find elements of vertical pipelines and other supply lines. Besides the functional part, this section is a constructive part of the building. Using panoramic elevators, we can see everything that happens on a farm. This is obviously would cause the interest of visitors.

Height restriction spurs to divide the building into 2 parts vertically. The superstructure unit combines living and public functions, and the substructure unitconcentrates the main technological processes. The superstructure unit has five stores. The substructure unit has eight underground stores. The superstructure unit includes offices, public areas and living space. The substructure unit hides all the agricultural technologies. The first superstructure level has classrooms for students, laboratories and a meeting hall. The first level also provides some space for an exhibition about the vertical farm. The second level has a public function. Here there are shops, cafes, media museums, administration offices, sport centre, a play area for children and quiet rest areas. **The cafes would use the farm products.** People can easily get the place they want thanks to a circled system of functions layout.

Levels from 3-5 include student dormitories, rest halls, learning rooms, computer rooms, kitchens and welfare facilities. This helps students live together comfortably and have a private space at the same time.

**The substructure unit includes the farm itself and small packaging, picking and cleaning works, and meat production unit.** The first substructure level has food-growing areas and people can see the plants through the glass panels from the first superstructure level. This level also has some special units for temporary kept animals, delivered from a city. The level below is for preslaughter treatment of poultry and cattle. The next three substructure levels are for growing of vegetables and mushrooms. There is also a food processing work.

At the 6th substructure level there is a meat processing work, including the primary processing of meat, sorting and packing. The 7 and 8 levels are for technical rooms, warehouses, refrigerating appliances, units for hay storing, compost and silage pits.

**In this building, we uses modern energy saving technologies: using of surplus heat from greenhouses for heating, the biomass remaining for energy production, sewage watering.** Hydroponics and aeroponics are used for water saving. The lighting of substructure unit is made with the help of artificial light. In the animals pens there is also a natural light from the hatch under the square in front of the building. The green roofs help to safe heat. **We also plan to use power effective technologies such as solar panels, rain water collecting, low power ventilation systems for comfort of the farm animals.**

Site area is 6.568 m2

Total area is 27.621 m2., including: inhabited – 4.467 m2, public – 5.359 m2,

producing works and agricultural – 13.440 m2, technical – 2.767 m2, auxiliary – 1.588 m2

Building area is 3120 m2

Total structural volume of 103 811 m3, including superstructure unit – 39 679 m3,

substructure unit – 64 132 m3

The number of floors in superstructure unit – 5, substructure – 8

Height of the building is 20 m, depth of the underground part of the building 38,6m