

## WHAT IS CLAIMED IS:

1. An insulated passive solar house, building or skyscraper system with integrated aquaponics, greenhouse, and mushroom cultivation, comprising:

an insulated passive solar house, building or skyscraper with a glazing on a sun facing side at an angle to maximize winter sunlight, and housing:

a fish tank housed within the passive solar house, building or skyscraper;

a plant growing area housed within the passive solar house, building or skyscraper;

a mushroom growing area housed within the passive solar house, building or skyscraper;

a shop, apartment or office area housed within the passive solar house, building or skyscraper;

a water wall thermal mass housed within the passive solar house, building or skyscraper;

and

a natural air ventilation system housed within the passive solar house, building or skyscraper,

wherein the water wall is disposed between the plant growing area, and the mushroom growing area, the fish tank, and the shop, apartment or office area,

wherein the natural air ventilation system is configured to provide misted air into the mushroom growing area, the fish tank, and the shop, apartment or office area, and

wherein O<sub>2</sub> generated by the plant growing area is received by the natural air ventilation system and provided to the mushroom growing area, the fish tank, and the shop, apartment or office area, and CO<sub>2</sub> generated by the mushroom growing area, the fish tank, and the shop, apartment or office area is provided to the plant growing area.

2. The system of claim 1, further comprising:

a plurality of grow beds coupled to the fish tank and also housed within the house, building or skyscraper in the plant growing area; and

a hard filter coupled to the fish tank.

3. The system of claim 1, further comprising:

a desalination system disposed under the plant growing area for generating fresh water for use in the house, building or skyscraper.

4. The system of claim 1, further comprising:

a spectral analyzer based sensor having a gas probe disposed within the house, building or skyscraper to measure gas parameters of the house, building or skyscraper including temperature, humidity, O<sub>2</sub>, and CO<sub>2</sub> levels in the house, building or skyscraper, and a water probe disposed within the fish tank to measure water parameters of the fish tank water including dissolved oxygen, PH, nitrate, nitrite, ammonia, and electrical conductivity (EC) levels of the fish tank water, and

a computer coupled to the spectral analyzer based sensor and configured to control one or more of the air and water parameters based on the measured air and water parameters levels.

5. The system of claim 1, further comprising:

solar panels disposed on top of the house, building or skyscraper; and

a solar panel cleaning device disposed on the solar panels and configured to clean dust or sand on the solar panels.

6. The system of claim 1, further comprising:

louvers provided on the house, building or skyscraper configured to provide light or shade to the shop, apartment or office area.

7. The system of claim 1, further comprising:

a utilities box provided on house, building or skyscraper configured to store electrical, wind power and/or solar power equipment.

8. The system of claim 1, further comprising:

wind power generation equipment on the house, building or skyscraper configured to capture wind energy.

9. The system of claim 1, further comprising:

balconies leading from the shop, apartment or office area disposed within the water wall to provide a view of an atrium in the plant growing area.

10. The system of claim 9, further comprising:

multi-level shops disposed within the atrium in the plant growing area.

11. The system of claim 9, further comprising:

elevators leading from the shop, apartment or office area disposed within the water wall to provide access to the atrium in the plant growing area.

12. The system of claim 1, further comprising:

multi-level shops, apartments or offices disposed within the shop, apartment or office area.