CLAIMS

1. An air handling unit comprising a U-shaped air treatment arrangement, which U-shaped air treatment arrangement extends between longitudinal walls, floor and ceiling of the air handling unit, thereby defining an air intake zone and an air outflow zone within the air handling unit, which U-shaped air treatment arrangement comprises,

beginning at a first longitudinal wall of the air handling unit, a first secondary bypass wall, connected perpendicular to the first longitudinal wall,

the first secondary bypass wall is connected in a perpendicular manner to a first primary air path wall running parallel to the first longitudinal wall,

the first primary air path wall is connected via a first corner connection piece to a primary bypass wall which is positioned perpendicular to the first primary air path wall and distal from the first secondary bypass wall along the first primary air path wall,

the primary bypass wall is connected via a second corner connection piece perpendicular to a second primary air path wall running parallel to the first primary air path wall and a second longitudinal wall of the air handling unit,

the second primary air path wall is connected in a perpendicular manner to a second secondary bypass wall, which second secondary bypass wall is connected in a perpendicular manner to the second longitudinal wall,

wherein, in conjunction with the floor and ceiling of the air handling unit, the afore-described U-shaped air treatment arrangement completely divides the air handling unit into an air intake zone and an air outflow zone, and wherein the bypass wall are equipped with bypass dampers, and optionally air filtration or air conditioning component(s), and the primary air path walls are equipped with air conditioning components and air filtration, and optionally face dampers.

2. The air handling unit of claim 1, wherein the bypass walls are parallel to terminal walls at each end of the longitudinal walls, while the primary air path walls are substantially parallel to the longitudinal walls.

3. The air handling unit of claim 1, wherein symmetrical construction along the longitudinal center line facilitates even airflow distribution in each primary air flow path.

4. The air handling unit of claim 1, which exhibits reduced airflow face velocity across primary air conditioning components and independently adequate sized bypass air flow paths within a reduced unit footprint compared to a conventional air handling unit with primary air treatment arrangements installed perpendicular to the airflow.

5. The air handling unit of claim 1, which provides independent airflow paths through primary air path walls, and bypass walls, thereby enabling the air handling unit to be multi-functional under various operating strategies and to be more energy efficient.

6. The air handling unit of claim 1, wherein both the primary air face dampers and the bypass dampers are modulated together to provide greater levels of climate control.

7. The air handling unit of claim 1, wherein, in one application, the primary air path walls are used for primary air flow conditioning, and the bypass walls are used for bypass airflow.

8. The air handling unit of claim 1, wherein primary air flow conditioning is staged by closing one of two face dampers.

9. The air handling unit of claim 1, wherein air filters are installed in parallel juxtaposition to the air conditioning device facilitating pressure equalization and enabling even airflow distribution through air conditioning device.

10. The air handling unit of claim 1, wherein in one application the primary air path walls are used for cooling, while the bypass walls are used for heating, and vice versa.