Symphony air cooler is an example of evaporative air cooler (Swamp Cooler). When the outside warm air is drawn into the cooler, it passes through the water-moisture honeycomb cooling pads. As the air passes through the honeycomb cooling pad, water flowing through honeycomb pad absorbs heat from the warm air causing the water to evaporate. This gives rise to cooler moisturized air, which is then propelled into the room by the rotating fan. So, there is continuous flow of fresh, moisturized cool air while the old and stale air leaves the room through an open door or window or through exhaust ventilation.

MODIFICATIONS WHICH CAN BE DONE

* Maintenance of any device is the biggest deal. Honeycomb cooling pad has water retention compartments quite similar to beehives. The life time of a honeycomb cooling pad is around three years on the condition that it is cleaned periodically. Dust particles and salts gets deposited in the water retention compartments. If it is not cleaned periodically, there will be significant reduction in the cooling effect as it reduces the water retention capacity. So, we can think of designing an electronic circuit (something like ECU in vehicle) which after detecting/sensing certain level of deposition in the compartments, automatically cleans and removes the dust and salts deposited in the compartments.
* Honeycomb cooling pad is made of cellulose material. Good quality honeycomb pad is expensive and become unaffordable for common man. So, we can think of making the honeycomb cooling pad of some other material (which does not harm the environment i.e. environment friendly), which will reduce its cost and it becomes cost friendly.
* Evaporative air coolers work efficiently in areas that are dry and hot. It is less effective in high humidity areas (Relative humidity of outdoor air up to 70% is found to be suitable for stable function of evaporative air cooler). The reason is that the water won’t evaporate quickly enough to cause a major drop in temperature in your room. (The rate of evaporation is inversely proportional to the humidity of the surrounding area. When humidity is low, the air’s capacity to store water is very high and evaporation happens very quickly. When the humidity is high, though, the air is already saturated with moisture and its ability to absorb more water vapour is very low – evaporation happens slowly). So, to enhance the performance of evaporative air cooler in humid climates as well, we can think of installing some extra equipment in the evaporative cooler similar to dehumidifier next to where air enters the evaporative cooler. This will ensure high amount of dry air enter the system leading to excellent evaporation and thus good cooling effect (even at high humidity areas)

Usually, people prefer air conditioner at locations which have high humidity through out the year. But, if we modify the symphony air cooler in the way I have mentioned above, there may be the chance of the symphony air cooler becoming popular in high humidity areas as well. There may be increase in some cost because of installation of new system in the symphony air cooler, still the cost will be less than that of an air conditioner. So, being cheaper than the air conditioner, it will be within the reach of even common man residing at high humidity area.

* We can think of re-designing the Symphony air cooler and make it modular like that of Orient desert storm. For the ease of transport, it can be dismantled and can be boxed (occupy minimum space) while it is being transported. Later after reaching the destination, it can be unboxed and can be easily assembled and installed within 5-10 minutes. During off-season (e,g. during winter) it can be again dismantled and can be easily placed in the box, thus protecting it from dust and other factors.