

PAHARPUR BUSINESS CENTRE

ENERGY CONSERVATION ACHIEVEMENTS

AIR QUALITY INITIATIVES

The Indoor Air Quality within PBC™ - STIP conforms to the parameters defined by the ASHRAE standards (American Society of Heating, Refrigerating and Air-conditioning Engineers). Bio -Technology is also used to improve Indoor Air Quality.

PBC™-STIP is an environment friendly service industry and does not emit any pollutants to the land, air & water. So no environmental sensitive targets around the organization are identified. “We Care for Environment”. Measures taken to abate / mitigate pollutants – Indoor Air Quality (IAQ) is one of our USPs at PBC™ - STIP conforming to ASHRAE Standards. Toxin removing plants like, the Areca Palm and Sansevieria Trifasciata are used. There are more than 1600 plants in the entire building.

A positive pressure is maintained in the building. Air curtains are installed at all exit and entry points to reduce Infiltration of hot and polluted air. All incoming material is thoroughly cleaned before it enters the building. Wall-to-Wall carpets are vacuumed to reduce the SPM level in the building AHU filters are cleaned on a daily basis to reduce energy consumption.

A dedicated IAQ team does a 24X7 monitoring of Oxygen level, Humidity etc. And above all it is a big business for us – We sell CleanAir™ – IAQ services by offering consulting services, analysis of ambient & indoor air, etc. We surely can help & are helping other large corporates in creating a mountain fresh environment in their respective offices as well.

A View of Green House at PBC™-STIP



LOW VOC MATERIAL

VOC stands for Volatile Organic Compounds that occur in the form of gases and can have a negative health impact if inhaled. When exposed to VOCs people may experience a wide range of symptoms that can include nose and throat discomfort, headache, allergic skin reaction, dyspnea (uncomfortable breathing), nausea, fatigue, and dizziness.

Low VOC-Tiled Interface Carpets: The carpet odor that people usually smell is a VOC called 4-phenylcyclohexene (4-PCH), which is a byproduct of the latex binder used to secure the "tufted" fibers to the backing. This odor is relatively harmful and can lead to any of the above-mentioned symptoms if inhaled. PBC™-STIP & ConferenceSpa being aware of these potential dangers, opted for healthy environment and good indoor air quality by installing low-VOC or "eco-friendly" Tiled Interface carpets.

Zero VOC Paint: It is now a established fact that Indoor Air is three times more polluted then the outdoor air and according to the EPA is one of the top five hazards to human health. Paints and finishes release low-level toxic emissions into the air for years after application. The source of these toxins is varieties of VOC's (Volatile Organic Compounds), which are harmful and can lead to a wide range of health problems.

Considering these aspects PBC™-STIP & ConferenceSpa opted for low or zero VOC paints, which use water as a carrier instead of petroleum based solvents. From an environmental perspective also the Low VOC paint reduces landfill, groundwater and ozone depleting contaminants.

Benefits of Low or Zero VOC paints:

- a. Lower levels of ozone pollution.
- b. Fewer emissions of smog forming chemicals.
- c. Reduce incidents of eye and respiratory irritation from fewer fumes.
- d. Better indoor and outdoor air quality.
- e. And last but by no means the least at it makes us feel like a responsible citizen.

ENERGY CONSERVATION INITIATIVES

- Installation of Heat Recovery Wheels
- Installation of Air Washer
- Use of Compact Fluorescent Light, Next Generation Tube light and Electronic Chokes
- Motion Sensors Installed at Toilets
- Solar Films
- Green Mesh
- Heat Reflecting Paints
- Mist Fans installed on rooftop to cool down the roof. This helps in bringing down the temperature by 4-6 degrees Celsius and saves energy consumed for cooling.
- The company also chills water at night to use for cooling during the day.
- Power consumption is monitored and units recorded at strategic points for analysis.
- Good Quality stabilizers are used and a power factor of 0.99 is maintained.
- Separate DG Sets are installed as per load requirement to save on energy and for optimizing the use of DG sets.
- High Efficiency Super Diesel is used for all GD sets to reduce pollution.
- Stack height has been increased for the DG set emissions as government norms.

HEAT RECOVERY WHEEL (HRW)

In Paharpur Business Centre we follow the ASHRAE Standards. According to these standards 20 cfm of fresh air should be supplied for each occupant in a close air-conditioned building. At PBC, we suck fresh air from the optimum height where the pollution level is comparatively lesser than the air at the lower level. As the fresh air during the summer season is very warm e.g.- If the ambient temperature is 42 degrees and if the same is pumped into the building as per the number of occupants then the pressure on the chiller would be very high to maintain the temperature in the building. Therefore, to reduce the pressure on the chillers we have installed a Heat Recovery Wheel, which is designed as per the specifications fixed by ISHRAE, The Indian Chapter of ASHRAE.

HRW is basically, used for exchanging the heat from the incoming air sucked from the ambient to the outgoing air from the building, while the coolness of the outgoing air is transferred to the incoming fresh air.



Heat Recovery Wheel

AIR WASHER

We have installed an air washer on the top of the building at the air suction point. The main function of the air washer is to remove the Suspended Particulate Matter (SPM) from the fresh air and increase the moisture level in the air as a result of which the temperature of the incoming air drops down. Due to this technology, the load on the chillers is reduced to a great extent.

USE OF COMPACT FLUORESCENT LIGHT, NEXT GENERATION TUBE LIGHT AND ELECTRONIC CHOKES

CFL

Initially at PBC, we were using 406, 40 W GLS bulbs, in order to maintain 350 LUX level at the work place as per the ASHRAE Standards which was consuming 16,240 W. Now, we have replaced all the 40 W bulbs to 9 W CFL which straightaway saves 31 W per bulb. Details of all the Bulbs replaced by CFL's are mentioned below:

Currently PBC is Using CFL

(A) Equivalent GLS Lamps required for same lumens

(B) Fixed Quantity in use

(C) Power Saving Per hour

(B – A) x C 9 Watts 40 Watts 406 12,586

10 Watts 60Watts 135 6,750

11 Watts 60 Watts 99 4,851

Total Energy saved 24,187

The total energy saving due to the change is of 24,187 W per hour.

NEXT GENERATION TUBE LIGHT AND ELECTRONIC CHOKE

At PBC, we have replaced 1536 traditional tube lights with 1162 next generation Tube lights and all the old copper chokes were replaced with the electronic chokes while maintaining the LUX Level as per the ASHRAE Standards.

We were able to save 35,345 W per hour.

MOTION SENSOR

We have installed motion sensor lights in the bathrooms and lobbies throughout the building in order to control the misuse of electricity. These sensor lights automatically gets switched on as soon as it senses the human presence, rest of the time it remains off.



Motion Sensors

GREEN MESH

The Total West side facing glasses in PBC is of 3,360 sq ft. We have placed Green Mesh in the balconies in order to reduce the heat gained from sunrays. By placing green mesh we have noticed a substantial drop in temperature inside the room, the temperature differential observed between ambient and balcony (between the green mesh and the window) is between 3-4 degree C. The temperature differential between the balcony and inside the room is between 5-6 degree C.

We have placed green mesh in all our west facing balconies in order to stop the direct sunlight into the rooms in turn reduces the load on the chiller similarly, we remove the green mesh during the winter season in order to allow direct sunlight inside the rooms to reduce the load on the heater.



Green Mesh

SOLAR FILMS

All the windows at PBC have solar films on it; this has primarily been done in order to reduce the heat penetration into the building.



Solar Films

As a result of all energy efficient practices PBC has been able to reduce it's MDI from 735 KVA to 552 KVA

WATER CONSERVATION INITIATIVES

- Installation of Drip Irrigation
- Using of Soap Free Water for Gardening
- Installation of waterless urinals.
- Installation of Dish Washer
- Rainwater Harvesting
- Water Sensors Installed at Toilets

DRIP IRRIGATION

All our balconies in our building also have a large number of plants with drip irrigation, which helps to reduce the heat as it increases moisture in the air.



Drip Irrigation

USING OF SOAP FREE WATER FOR GARDENING

After an extensive research we have come to a conclusion that we have approximately 150 liters of soap free waste water going into the drains. Looking at the scenario we decided to reuse the wastewater by channeling the flow towards the garden for irrigation purpose. This not only helped us in saving water but also saving electricity as now we do not use pumps for gardening purpose.



Soap free water pipeline going to the garden

WATERLESS URINALS

After the installation of water less urinals we observed that the frequency of filling the common water tanks has reduced substantially. This in turn has resulted into energy saving, as the pumps consumed a large amount of energy.

We have installed motion sensors for automatic Flush Control System but now as Waterless Urinals has been installed the electricity consumed by these automatic flush control systems is also saved.



Waterless Urinals

RAIN WATER HARVESTING

Concerned with the depleting water resources, PBC collects the rainwater from the roof with a total catchment area of 4,684 square meters (concreted) with an investment of Rs. 0.50 Lakhs and through pipes it goes to an underground tank where we filter the collected water and recharges it back into the ground.

We made feedback structures with 100mm dia. As per the average rainfall of 211 mm at New Delhi from 2004 to 2007 and a 'run off' factor of 0.90 on, the average water than back to soil is 8,894.91 **Liters / year**. This technology has been provided by: Centre For Science And Environment, New Delhi. The surface water from the surrounding areas is diverted to a well in the NPG park from where the ground water is recharged. Ground water level increases and the total water available for use increased.

Due to raise in water level, the working head of the pumps reduces and takes less pumping power. Quality of water improves due to the reduction in hardness. Eco systems enhanced with more ground water availability



WATER SENSORS INSTALLED AT TOILETS

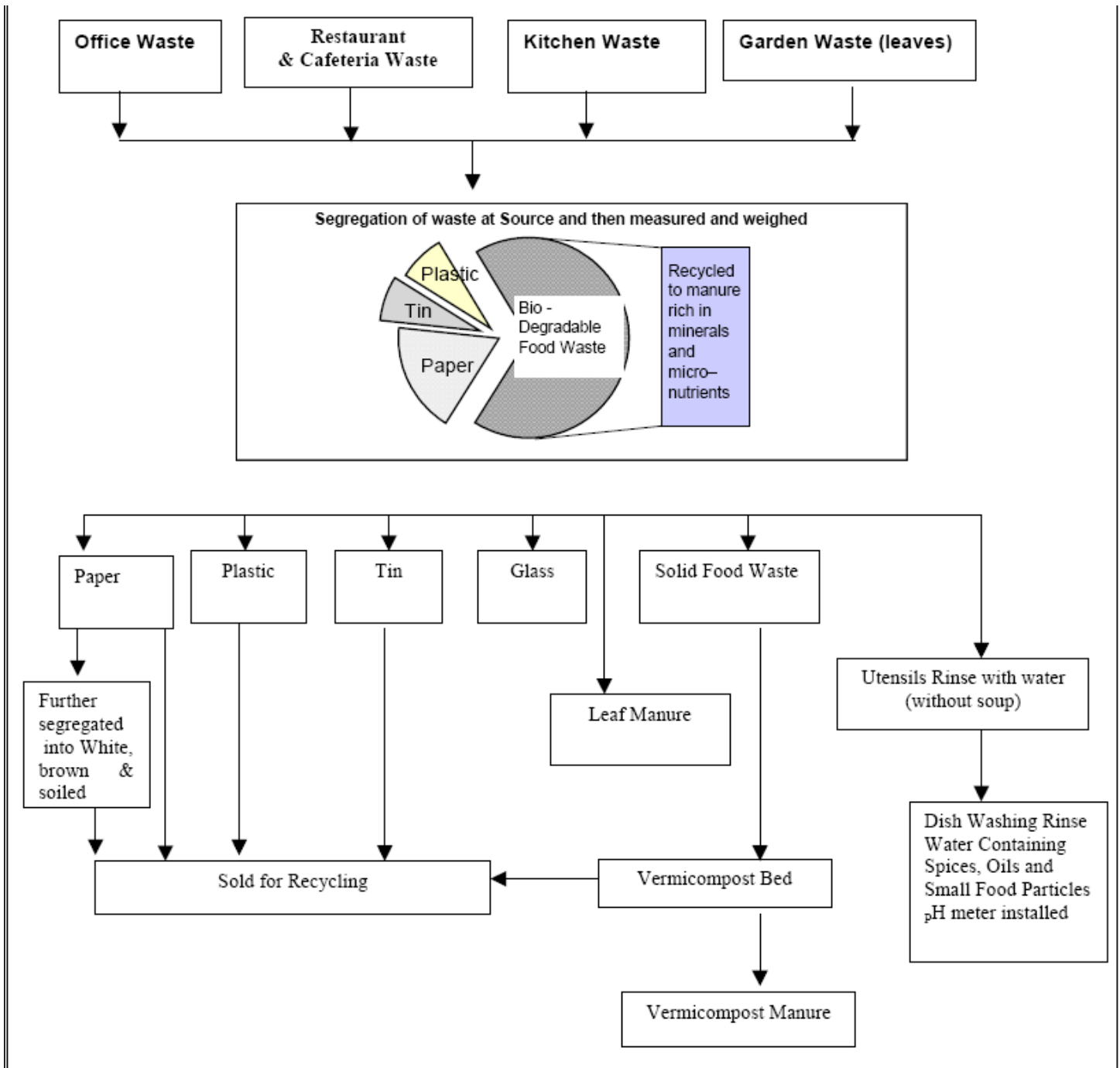


Water Sensors

SOILD WASTE MANAGEMENT

- Use of internal electronic mail for correspondence- towards a paperless office
- Reuse of one-sided paper
- Recycling of all paper waste
- Reuse of plastic bottles
- Segregation of waste at source
- Vermi-composting

Aiming for Zero Solid Waste



TRAINING & AWARENESS PROGRAMMES ON ENERGY SAVINGS

PBC™ - STIP also organized various training & awareness programmes based on Energy Efficiency for our team members, in which we created awareness & promoted the use of CFL & Energy Efficient Lighting Options. We encouraged our Team Members, including our crew members to use these at home and also provided soft loans to them to replace atleast two GLS lamps with 2 CFL lamps. Subsequently we also took an undertaking from each employee on replacement of GLS bulbs with CFL bulbs at their homes.



Training programme conducted for crewmembers

We also conduct regular training programs for vendors & suppliers to guide them about the policies and standards of PBC™-STIP



Training programme for vendors & suppliers

We also invited School children to sensitize them to the various issues relating to Environment & how each individual can take small steps to save our planet – “Earth” from the imminent dangers of Global warming. As we feel that care for the environment has to be nurtured & taught to each child from the very beginning in order to create responsible corporate citizens for the future.



Students from Delhi Public School keenly observing the presentation made for them on Earth Day



Students watching Al Gore's "An Inconvenient Truth" a stirring documentary focusing on Global Warming