



CASE STUDY: GRUNDFOS PUMPS FACTORY



KEY PARAMETERS

Occupancy Type	Factory
Built up area	60,000 Sq. ft
Completed	July 2011
Location	Chennai
Owner	GRUNDFOS PUMPS FACTORY
Green consultant	En3 Sustainability Solutions
Rating System	IGBC Green Factories
Rating Achieved	GOLD

IGBC SCORES



Grundfos is the world's largest pump manufacturer and headquartered in Denmark recently completed their new factory in Chennai which received Gold certification under IGBC Green Factories Rating System. Their office building in Chennai is already LEED Gold certified and now their factory buildings are also Gold certified further reiterating their commitment to sustainability and green development. The factory buildings incorporate several green measures including water and energy savings, environment-friendly materials and resources and above all enhanced indoor environment for all its factory staff. En3 has worked very closely with GRUNDFOS PUMPS PVT LTD. to achieve IGBC Green Factories Gold certification by incorporating energy, water and materials efficiency measures in addition to providing a superior indoor air quality and overall environment for all its employees.



SITE SUSTAINABILITY FEATURES

- Stacking and protection of top soil onsite and reusing the same for landscaping. The construction was done minimizing soil erosion and site disturbance as much as possible
- Building design incorporates several user friendly features for differently-abled people like preferred parking spaces, ramps in factory area, easy accessibility to the entrances etc.
- Non-Fossil fueling facility for 6% of the total parking capacity in an effort to promote use of alternative & low emitting vehicles.
- Effective Rainwater Harvesting through provision of harvesting tanks and recharge pits throughout the site has been done to conserve water as much as possible
- 75% of parking spaces are covered parking and 100% of the Roof area is covered with high SRI material, thus reducing the urban heat island effects.
- Reduced light pollution through design of external lighting fixtures with no upward lighting and also ensuring that the overall lighting power densities are much lower than the norms as per green standards.

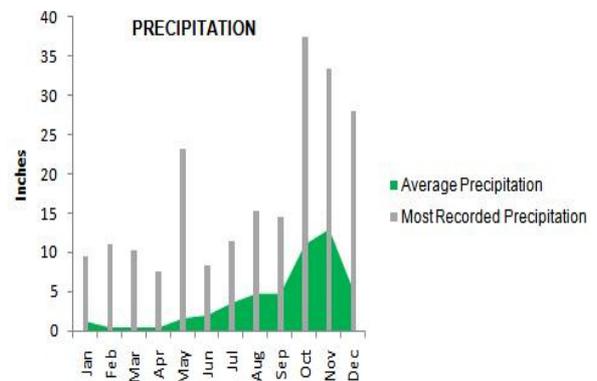
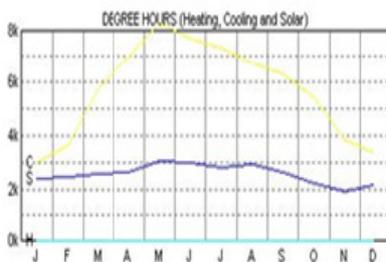
WATER CONSERVATION

- Water efficiency is an integral part of the sustainability initiatives. Special efforts have been taken to minimize water use by installing water efficient fixtures, effective rainwater harvesting and sewage treatment plant to treat 100% of onsite waste water for reuse
- The rain water harvesting or storage system designed for the project captures 97.98% of runoff volumes from the roof and non roof surfaces
- 100% of the non-process waste water is treated on-site and shall be reused for landscaping and thereby minimizing the use of potable water for all these applications
- Low flow dual-flush toilets, sensor based urinals and other low flow fixtures have been installed to reduce potable water consumption by over 49.7%.

ENERGISING THE BUILDING

- In line with international standards, the refrigerants used in the air conditioning system are environmentally friendly and low warming potential
- Separate meters for process and non process loads have been installed for continuous monitoring of energy and water consumed within the factory building
- A detailed energy analysis and modeling has been done to ascertain various options for energy savings with cost-benefit/payback analysis including high performance glazing, low u-value walls and roof, energy efficient VRV systems for air conditioning and LED based low energy lighting systems
- The generator sets provided in the factory building meets criteria of use of CPCB certified DG sets for emissions and noise compliance.

NAME: Chennai-Madras LATITUDE: 13.0"
 LOCATION: IND LONGITUDE: 80.2"
 DESIGN SKY: not available TIME ZONE: +5.5hrs
 ALTITUDE: 16.0m





RESOURCE MANAGEMENT

- The project has ensured up to 96% of total construction waste of debris has been recycled or reused thereby diverting them from landfills.
- The project has achieved a combined recyclable content value of 27% of total material by cost thereby reducing virgin material exploitation.
- About 87% of materials have been extracted and manufactured locally/regionally thereby reducing the pollution associated with transportation.
- The project has used salvaged materials for 17% of the building materials by cost. The salvaged materials include salvaged containers and storage bins reused for storing materials to reduce virgin material exploitation
- 100% of wood used in the project has been FSC certified

INDOOR ENVIRONMENTAL QUALITY



- Non air conditioned areas have been well naturally ventilated with significant ratio of openings to the carpet area. Additionally for all air-conditioned areas in order to support enhanced Indoor Air Quality and long-term well-being of all occupants, 20% more than adequate fresh air is provided in line with international ASHRAE standards.
- The entire building interior is a non-smoking space thereby ensuring the health and safety of all its occupants
- The project has provided outdoor break out spaces for at least 5% of the regular employees per shift. A gymnasium has been provided to cater a minimum of 2% of occupants in the factory campus
- Adhesives, sealants, paints and coatings used in the building are low VOC (volatile organic compounds) thereby having minimum organic emissions that are harmful to humans.
- The composite wood products used have been purchased to ensure that they do not contain urea formaldehyde that can be potentially harmful for occupant health

NOVELTIES

The factory building achieves exemplary performance credits in using effective waste management techniques, water use reduction and reduction in virgin material consumption. Grundfos, Denmark inaugurated its training academy, called 'The Satellite Poul Due Jensen academy' in India at Grundfos Green Building, Chennai. The academy is first of its kind in India wherein different segments of industry, including, Green Building & water services would be educated and trained by experts & professionals on Environmental aspects. The building has been designed to showcase various green and sustainability measures and practices and the effort is to use this building to create greater awareness on green concepts and sustainability to all its visitors and occupants & spearhead the green movement in the state and the country.

En3 would be glad to answer any queries or questions you have on any green or sustainability related topics. Feel free to contact us at info@en3online.com and for more information visit us at www.en3online.com.