



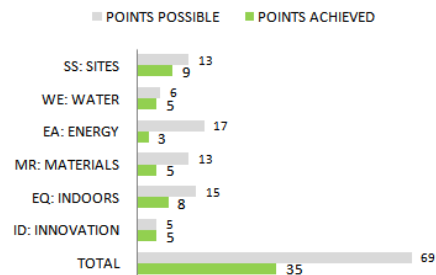
CASE STUDY: MODINE THERMAL SYSTEMS FACTORY



KEY PARAMETERS

Occupancy Type	Factory
Built up area	60,000 Sq. ft
Completed	July 2009
Location	Chennai
Owner	MODINE THERMAL SYSTEMS
Green consultant	En3 Sustainability Solutions
Rating System	LEED India NC version 1.0
Rating Achieved	SILVER

LEED SCORES



Modine Thermal Systems a leading international manufacturer in heat transfer technology has made another major step in their sustainability efforts by achieving LEED certification for their new office and factory buildings in Chennai, India. The office building has achieved LEED Gold certification while the factory building has achieved LEED Silver certification. Both the buildings incorporate several green measures including water and energy savings, environment-friendly materials and resources and above all enhanced indoor environment for the office as well as factory staff. En3, as green and sustainability consultants have worked closely with MODINE to incorporate various energy efficient and sustainable features in the project.



SITE SUSTAINABILITY FEATURES

- Stacking and protection of top soil onsite and reusing the same for landscaping.
- Detention basins for storm water Channel.
- Provision of battery charging stations in an effort to promote use of alternative & low emitting vehicles.
- Car pooling spaces provided on site to promote ridesharing thereby reducing transportation pollution.
- Provision of bus lines to all the employees.
- Effective Rainwater Harvesting adapting storm water design providing recharge pits and wells of 2009 cu.m /hr.
- Covered parking and Tata bluescope – sunfist roofing reduce urban heat island effects.
- Reduced light pollution.

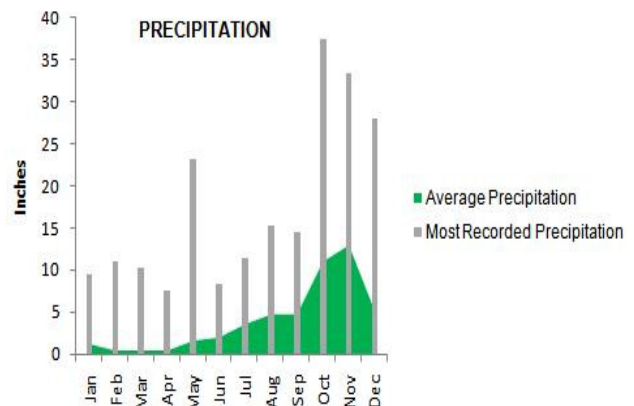
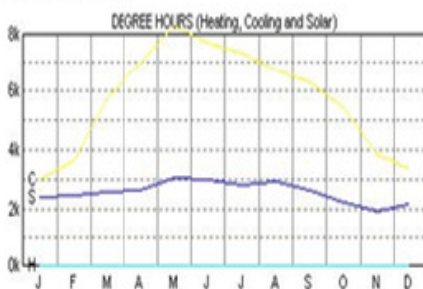
WATER EFFICIENCY

- 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 entire rain water on-site is captured and stored in huge rain water harvesting
- 100% of the treated water on-site shall be reused for landscaping and toilet flushing 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 36.54%.

ENERGISING THE BUILDING

- In line with international standards, the refrigerants used in the air conditioning system are environmentally friendly and have very low ozone depleting and global warming potential
- A detailed metering system ensures adequate measurement and monitoring of all building systems to continuously monitor the building post-occupancy as well
- 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 HVAC systems and CFL, T5 and LED based low energy lighting systems

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 57.55% 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 10.81% of total material by cost thereby reducing virgin material exploitation.
- About 57.39% of materials have been extracted and manufactured locally/regionally thereby reducing the pollution associated with transportation.

INDOOR ENVIRONMENTAL QUALITY

- In order to support enhanced IAQ and long-term well-being of all occupants, 30% more than adequate fresh air is provided in line with international ASHRAE standard.
- Co2 sensors and air flow monitor monitors the design fresh air
- The entire building interior is a non-smoking space thereby ensuring the health and safety of all its occupants
- 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.
- Resins used are free from urea formaldehyde.
- 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
- Majority of the occupants of the building will have control over their lighting and air conditioning set points thereby giving them the flexibility to control their own environment

NOVELTIES

Eco friendly house keeping chemicals are used. The office building proves exemplary credit in using regional materials, good transportation management and adapting non roofs to reduce heat island effect. The building has been designed by En3 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.

KEY DISTINCTIONS

- The Modine Thermal factory, Chennai is the 2nd factory building in the country to achieve LEED certification.

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.