25th National Award for Excellence in Energy Management 2024

MEPZ - Chennai

September 2024

Contents

cognizant

Cognizant overview

Cognizant is one of the world's leading professional services companies with a vision to become the preeminent technology services partner to the Global 2000 C-Suite.

Snapshot

In January 2024,we celebrated
30 years
of serving our clients.

approximately **3,47,700**
employees.**1,33,600**
women employees.

Operations in nearly **50**
countries.

Three strategic pillars

- Accelerate growth
- Become an employer of choice
- Simplify our operations

Four business segments

- Financial services
- Health services
- Products and resources
- Communications, media and technology

Facility Overview

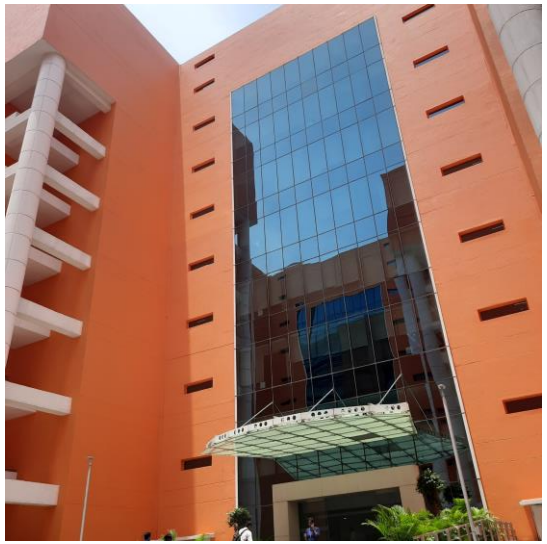
- Owned facility is at MEPZ. The operations commenced from 2008.
- Campus area: 14.45 acres.
- Total built-up area: 1,87,890.14 square meters.
- Ground coverage in square meters: 21,750.89
- Soft green area in square meters: 7,432
- Area of the terrace in square meters: 1,383.51
- Five blocks (SDB1, SDB 2, SDB 3, SDB 4 MLCP and cafeteria).
- Exclusive medical center with ambulance service.
- Seating capacity: 13,207.
- BAU head count: 11,558 associates.
- Present head count: 10,800 (As of Aug 2024).
- Certified for ISO 45001 and ISO 14001.

Campus Layout

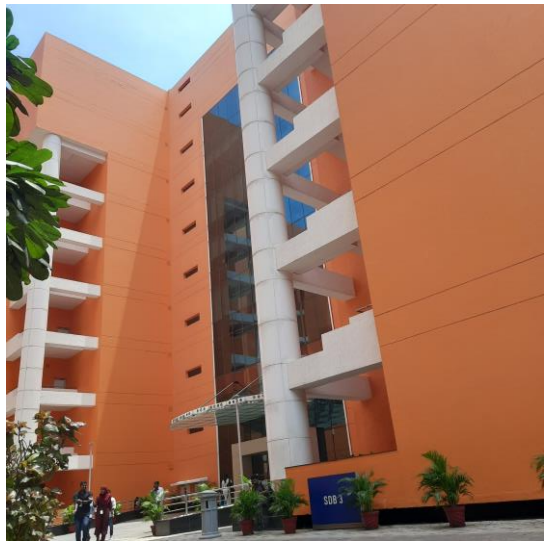
Passive design features

SDB-1 & Cafeteria

SDB 2



SDB 3



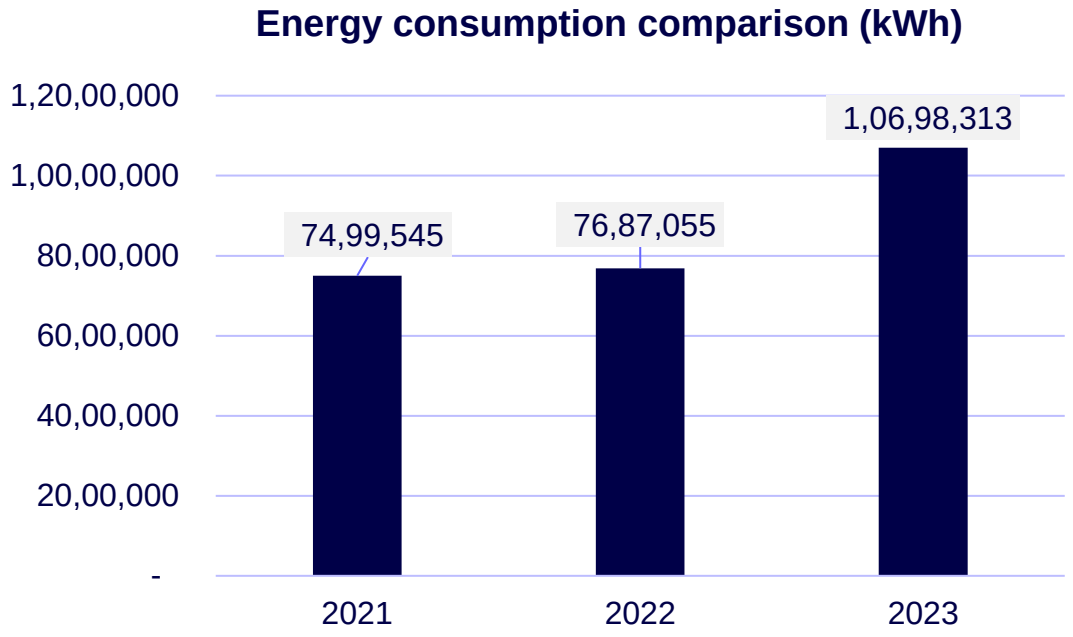
SDB 4

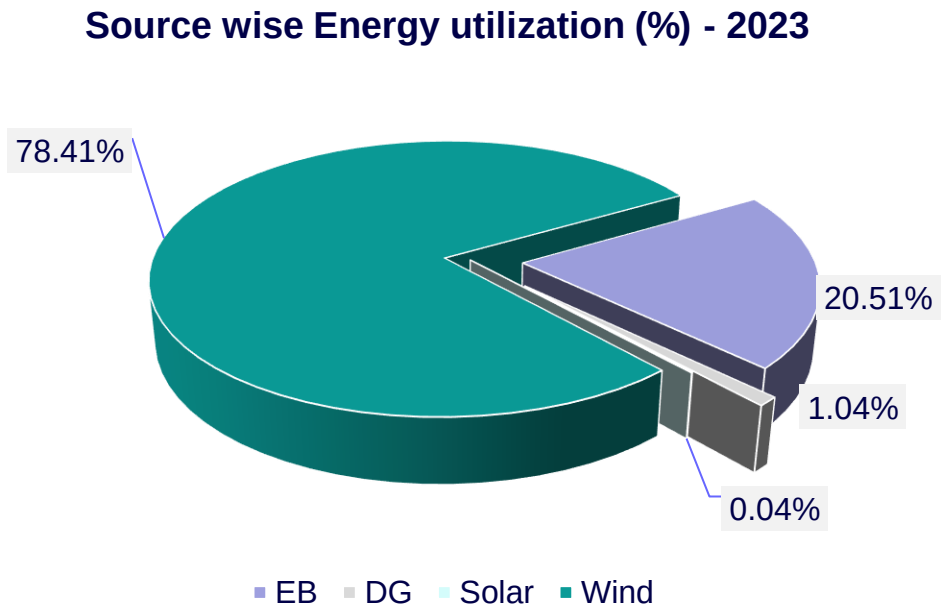
- ❑ IGBC - LEED India for New Construction - Gold
- ❑ Building orientation: North - South
- ❑ Solar heat gain coefficient (SHGC) of glass: 0.25
- ❑ Visual light transmittance (VLT): 31
- ❑ Super insulated envelops
- ❑ Healthy Indoor Air Quality Environment
- ❑ Heat reflection tiles installed in the roof of building
- ❑ 3M Sun Film glasses sheet placed in the window
- ❑ Day lighting strategies incorporated
- ❑ Natural ventilation for fresh air supply to AHU

Utility overview

Description	Specification / capacity	Break up
Substation Incomer supply: 33kV / 433 V.	EB demand: 14,200 kVA	Phase I : 8,400 kVA | Phase II : 5,800 kVA
	Transformers capacity: 18,250 kVA	2,500 kVA x 1 No's| 2,000 kVA x 4 No's| 1,750 kVA x 4 No's| 750 kVA x 1 No
Diesel generators	Total capacity: 14,625 kVA	1,500 kVA x 8 No's| 2,000 kVA x 1 No's| 625 kVA x 1 No's
UPS	Total capacity: 4,510 kVA	500 kVA x 2 No's | 200 kVA 2 No's | 300 kVA – 1No's| 250 kVA – 1No's 150 kVA – 16 Nos | 80 kVA – 2 Nos
Chillers	Total capacity: 4910 TR	Water cooled chiller: 420 TR x 5 No's
		Air cooled chiller: 375 TR x 4 No's| 200 TR x 1 No's| 155 TR x 2 No's| 110 TR x 2 No's| 90 TR x 2 No's| 70 TR x 2 No's| 65 TR x 4 No's
Sewage treatment plant (STP)	Capacity: 535 KLD	535 KL x 1 No
Water treatment plant (WTP)	Capacity: 480 KLD	20 KL per Hour x 15 Hour / Day operation currently
High speed diesel (HSD)	Capacity: 70 KL	35 KL x 2 No's
Raw water sump	Capacity: 672 KL	Phase I – 422 KL | Phase II – 250 KL
Rainwater sump	Capacity: 400 KL	200 KL x 2 No's
Rooftop Solar PV plant	Capacity : 10 kW	10 kW x 1 No

Energy consumption overview - 2021 to 2023

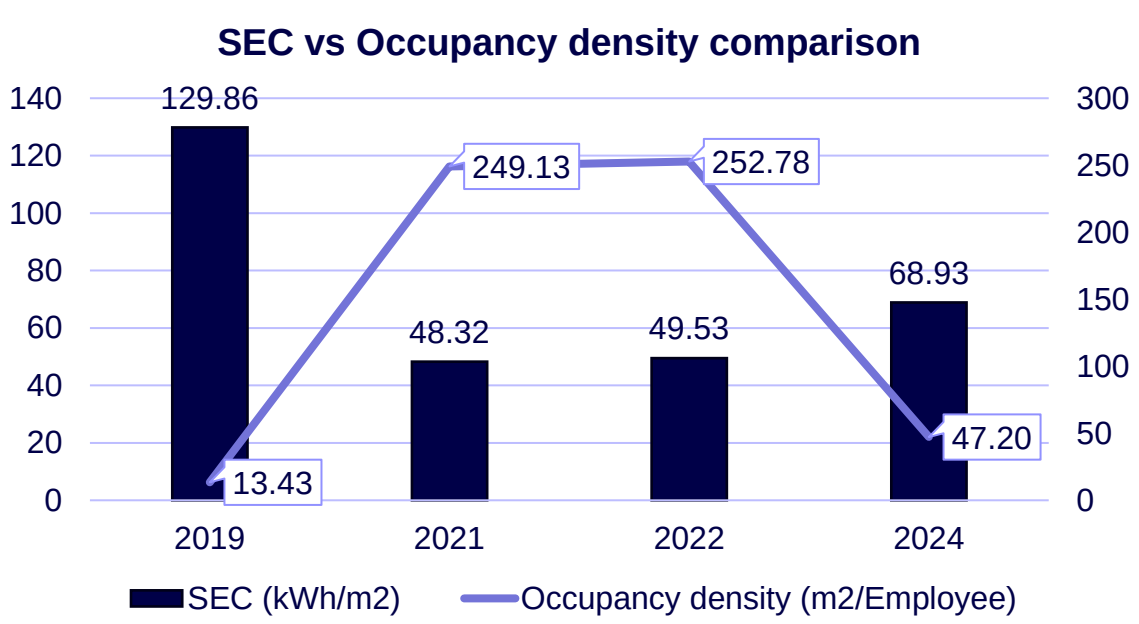


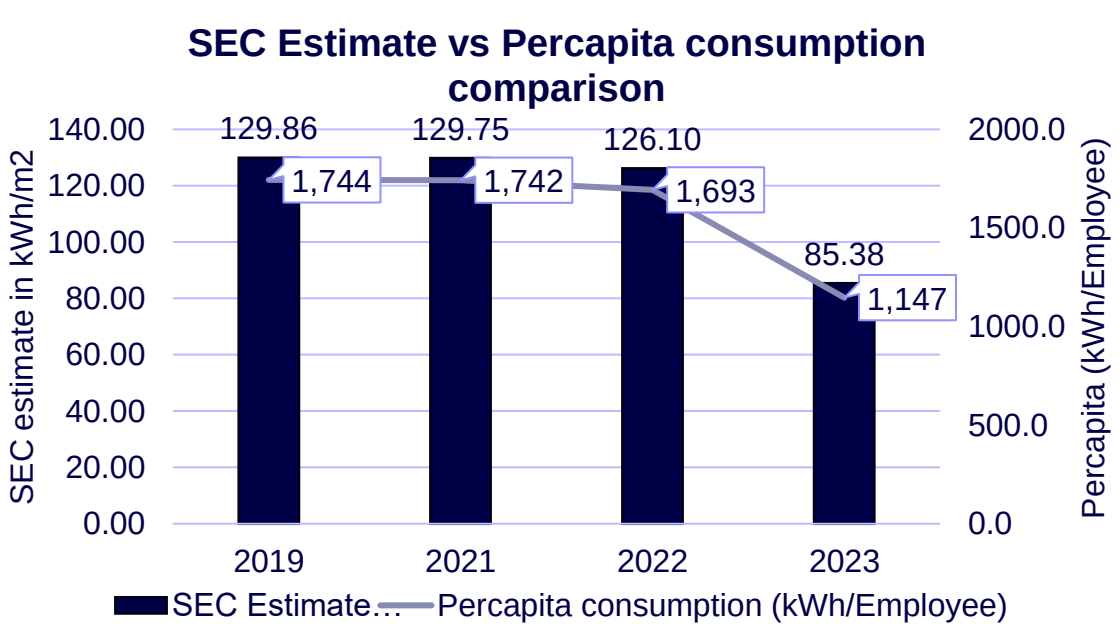


Remark:

- Energy share contribution by wind energy is 78.41%, EB units is 20.51%, DG units is 1.04% and solar units is 0.04%.
- Energy consumption in 2019: 20.15 MU | 2020: 10.42 MU | 2021: 7.50 MU | 2022 : 7.69 MU | 2023: 10.70 MU.
- Energy consumption in 2023 has been increased due to increased headcount at office. Percentage of HC for the seating capacity | Base year **2019 HC:** 90% | **2021 HC:** 4% | **2022 HC:** 7% | **2023 HC:** 35%. | **2024 HC:** 83%.

Specific Energy Consumption (SEC) Overview - 2021 to 2023





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National & Internal Benchmark

National Benchmark - BEE

EPI in kWh/Sq. m./ year			
Star rating	**Warm and humid**	**Composite**	**Hot and dry**
1 star	**200-175**	190-165	180-155
2 star	**175-150**	165-140	155-130
3 star	**150-125**	140-115	130-105
4 star	**125-100**	115-90	105-80
5 star	**Below 100**	Below 90	Below 80

Climatic Zone - ECBC

City	Climatic zone
Chennai	**Warm and humid**
Coimbatore	Warm and humid
Bangalore	Moderate

Inference:

- SEC estimate for our campus is 85.38 kWh/sq.mtr. Which is 15% lesser than the 5 Star rated benchmark of 100 kWh/sq.mtr.

Internal Benchmark - CODE 001

CO - Complaints	D - Downtime	E - Efficiency
Complaints relating to comfort : Zero	Downtime of equipment : **Zero**	Efficiency – **1 unit** per square foot per month

Internal benchmark for Owned campus - 2023

Owned campus	EPI (kWh / Sq. m./ Annum)
CBE - CHIL – SEZ	49.1
CHN - Siruseri	54.4
CHN - MEPZ - SEZ	68.9

Energy saving projects vs SEC impact analysis

2021

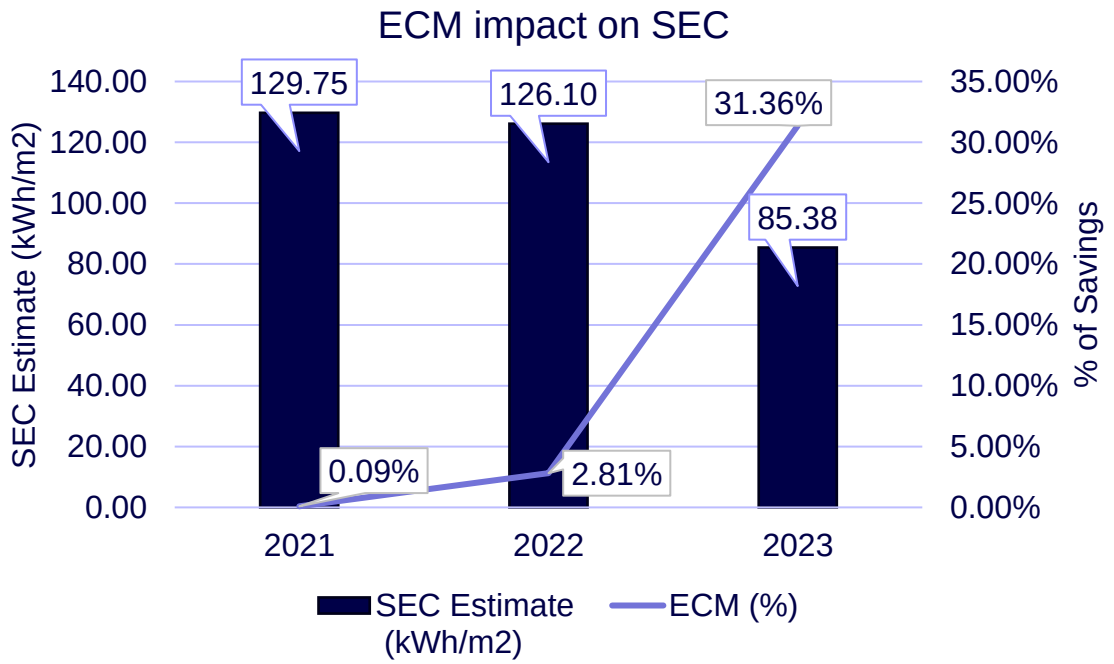
Implemented No. of ECM project : 1
Investment Cost : ₹ 0.7 Million
Energy Savings : 0.02 Million kWh
Cost Savings : ₹ 0.16 Million

2022

Implemented No. of ECM project : 4
Investment Cost : ₹ 7.56 Million
Energy Savings : 0.57 Million kWh
Cost Savings : ₹ 5.37 Million

2023

Implemented No. of ECM project : 4
Investment Cost : ₹ 138.18 Million
Energy Savings : 6.32 Million kWh
Cost Savings : ₹ 60.05 Million



Summary of Savings

Annual Energy Savings
6.90 Million kWh

Cost Savings
INR. 65.58 Million

Investment cost
INR. 146.44 Million

Payback Period
2.2 Years

Major project 1: Replacement of old air-cooled chiller with energy efficient Water-cooled chiller and Air-cooled chiller

Key highlights

Energy savings
61,40,844 kWh/ annum

Investment
INR 12,98,57,630

Cost savings
INR 5,83,38,018

Payback period
2.3 Years

Emission reduction
4,974 MT

Problem statement

- Existing air-cooled chiller ikW was 1.45 kW/ TR and energy consumption was high.

Goal/ success measure

- We have upgraded the centralized conventional Air-Cooled chiller system of 4235 TR capacity to the Hybrid chilled water system of 3600 TR (Water-Cooled Chiller – 2100 TR and Air-Cooled Chiller – 1500 TR).

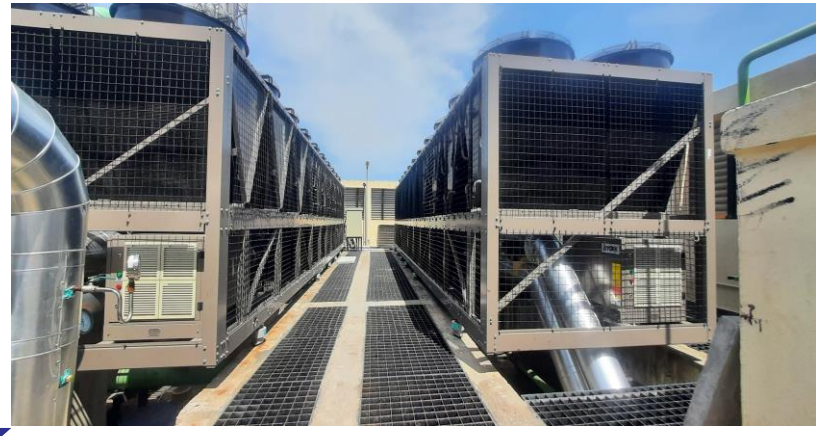
Benefits

- The designed chiller plant efficiency between 0.61 ikW/TR to 0.66 ikW/TR has been achieved based on our monitoring of the project over the last six months.

Other key benefits

- The upgraded system adjusts more efficiently to maintain set temperatures, catering to varying weather conditions and occupancy levels. Consequently, this translates to greater energy conservation, improved comfort for occupants, an enhanced environment for productivity, and a smaller environmental footprint.

Chiller retrofit before and after implementation

Existing System: Air cooled chiller		Implemented System: Hybrid Water cooled & Air- cooled chiller	
	Air cooled chiller: 11 x 385 TR (11 x 539 kW)		Water cooled chiller: 5 x 420 TR (5 x 253.3 kW)
			Air cooled chiller: 4 x 375 TR (4 x 474.9 kW)

CL Reduction: 635 TR (2,288 kW)

Major Project 2 : EC fan retrofit for eight FCUs in SDB- 2 and 3

Key highlights

Energy savings

1,38,408 kWh / annum

Investment

INR 8,51,371

Cost savings

INR 13,14,876

Payback period

8 months

Emission reduction

114 MT

Problem statement

- Existing belt driven fans were inefficient and resulted in losses due to the belt driven operation.

Goal/success measure

- Eight conventional belt driven fans in the air handling unit have been replaced with energy efficient EC fan in SDB- 2 and 3.
- Four existing 3.7 kW fans and four 5.5 kW fans replaced with 3.5 kW in SDB- 2 and 3.

Benefits

- Minimum power consumption, better efficiency and high air performance.
- Easy speed control and integration with BMS.

Other key benefits

- Energy saving achieved and equivalent CO_2 emission is avoided.

Major project 3: Providing hot water through heat pumps for dishwash machine instead of using electric heater in cafeteria

Key highlights

Energy savings

1,38,000 kWh/ annum
78.03 Mn kCal/ annum

Investment

INR 9,43,276

Cost savings

INR 13,11,000

Payback period

9 months

Emission reduction

114 MT

Problem statement

- The existing dishwash machine with electric heater consumes higher energy. The plan is to provide hot water through heat pumps for the dishwash machine instead of using electric heater in the cafeteria.

Goal/ success measure

- To reduce the energy consumption by adopting heat pump system for hot water requirement instead of electric heater.
- Existing 3 x 31 kW heaters were replaced with 2 x 12 kW heat pumps in cafeteria.

Benefits

- Heat Transfer efficiency improvement.
- Environment friendly and cost effective.

Other key benefits

- Energy saving achieved and equivalent CO_2 emission is avoided.

Innovative project : Consolidate of primary and secondary pump with variable primary flow pump with VFD

Key highlights

Energy savings
13,01,089 kWh/ annum

Investment
INR 1,23,81,920

Cost savings
INR 1,23,60,348

Payback period
1 Year

Emission reduction
1,071 MT

Problem statement

- Existing primary and secondary pump setup was very old, and energy consumption were high.

Goal/ success measure

- We have upgraded the pumping system of 645 kW capacity (Primary Pump – 195 kW & Secondary Pump – 450 kW) to the Variable primary pump of 550 kW.

Benefits

- Direct Pump load reduction of 95 kW.
- Pump efficiency improvement with VFD modulation.

Other key benefits

- Energy saving is achieved.
- Equivalent CO_2 emission is avoided.

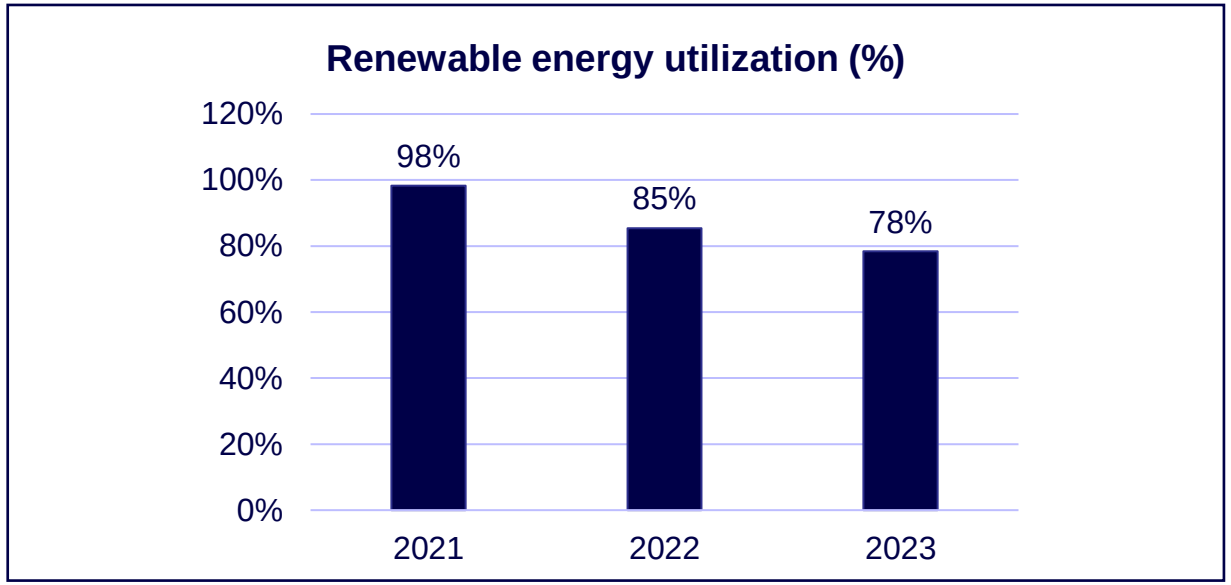
Pump retrofit before and after implementation

Existing System: Primary and secondary pump system		Implemented System: Variable primary flow pump system	
	Primary pump: 13 x 15 kW		Variable primary flow pump: 10 x 55 kW (with VFD)
	Secondary pump: 6 x 40 kW 7 x 30 kW		

CL Reduction: 95 kW

Utilization of renewable energy sources

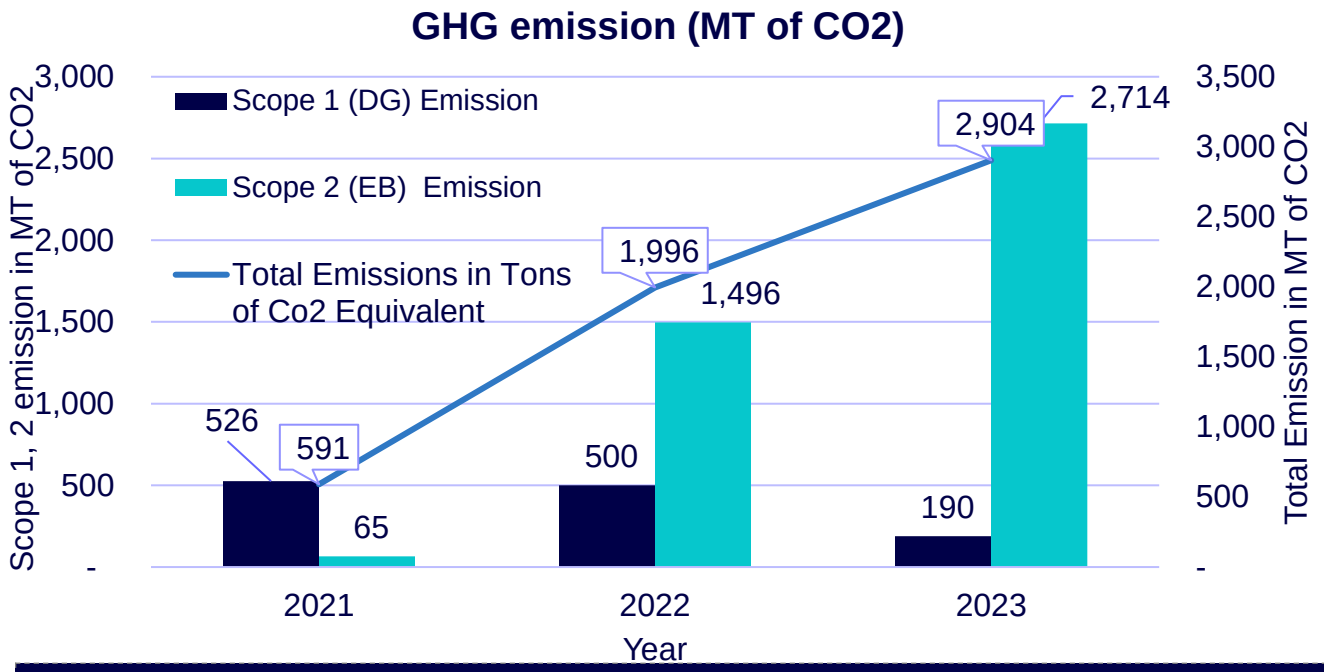
Source	2021	2022	2023
EB (kWh)	42,212	10,29,678	21,94,661
DG (kWh)	82,940	90,257	1,10,846
Solar (kWh)	6,762	5,606	4,235
Wind (kWh)	73,67,630	65,61,514	83,88,571
Total	**74,99,545**	**76,87,055**	**1,06,98,313**



Group Captive – Offsite Power Purchase				
Year	**Source (Solar, wind, etc.,)**	**Total offsite installed capacity (MW)**	**Consumption by the company (million kWh)**	**Share % w.r.t to overall energy consumption**
2021	Wind	256.85	13.74	41%
2022	Wind	256.85	10.96	31%
2023	Wind	256.85	12.49	28%

Wind energy utilization reduced in 2023 compared to 2021 and 2022 due to less wind generation and allocation.

GHG emission inventorization



Remarks:

- Total CO_2 emission has been reduced by 87% compared with the baseline of 2019: 22,610 MT.
- Wind energy utilization reduced in 2023 compared to 2021 and 2022 due to less wind generation and supplies.
- Allocated wind energy in 2021: 41%, 2022: 31% and in 2023: 28%.

Indoor air quality				
Type of system installed	**Monitoring Method**	**Monitoring Period**	**Parameters monitoring**	**Benefits achieved**
Ambient Air Quality monitor system	Online & External vendor	Realtime (IBMS) / Monthly (External)	Temperature, CO_2, CO, O_2, RPM, TVOC and RH	Good indoor air quality maintained to ensure EHS in office premises
Indoor air quality monitoring system	Online & External vendor	Realtime (IBMS) / Monthly (External)	Temperature, CO_2, CO, O_2, RPM, TVOC and RH	Good indoor air quality maintained to ensure EHS in office premises

Water Management

Sources of Water & Usages

Water Withdrawal

- Tanker Water
- Municipal Water
- Rainwater Harvesting
- AHU condensate
- Drinking Water

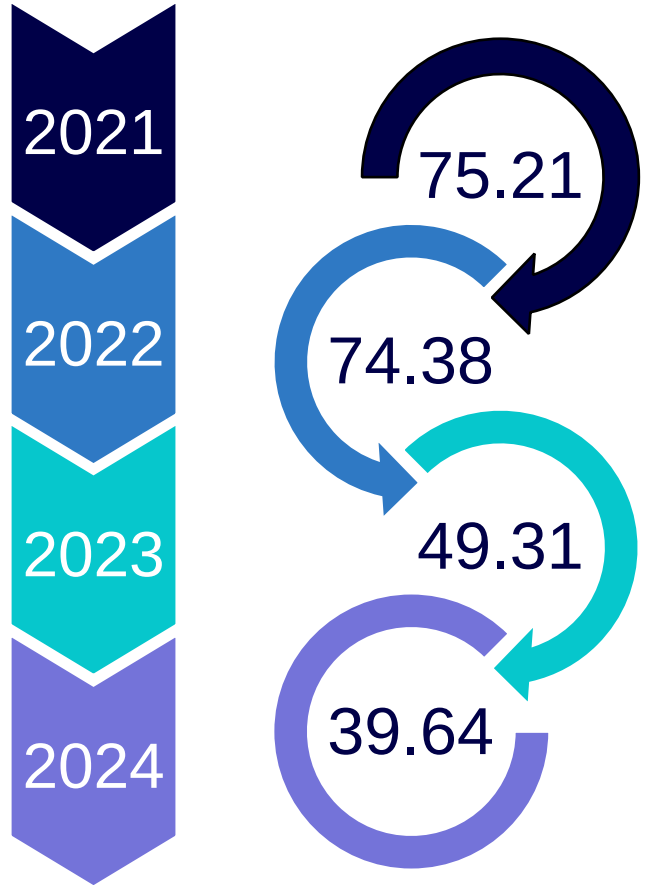
Water Consumption

- Domestic
- Cafeteria
- Cooling Tower
- Landscape
- Flushing

STP Treated Water

- Landscape
- Flushing
- Cooling Tower makeup

Water Percapita (LPD per Employee)



Waste Management

Waste management process (waste stream mapping and disposal / recycling process)

Paper waste recycle, Reduce & Reuse

- Limitation of printer access
- E Fit tool implemented, and manual check list optimized
- Paper cups usages eliminated 100%

Plastic waste Recycle

- Segregated and stored separately
- Disposed only through authorized recyclers
- Single use and throw away plastics are banned inside the campus

Solid (garbage) waste Incineration

- All solid wastes generated are disposed within the SLA through the authorized vendors.

Hazardous / E-waste/ battery waste Recycle

- Battery waste extension of battery warranty (3 to 3.5 years)
- E Waste CFL to LED retrofit to enhance the lifetime & reduce the waste generation.

Organic waste converter

Capacity	: 130 Kg / Hour
Input	: Food / Vegetable waste and saw dust
Output	: Organic manure
Recycle	: Approximately 390 kg per day
Utilization	: Campus landscape and Weekly distribution to employees

Inhouse Team Initiatives

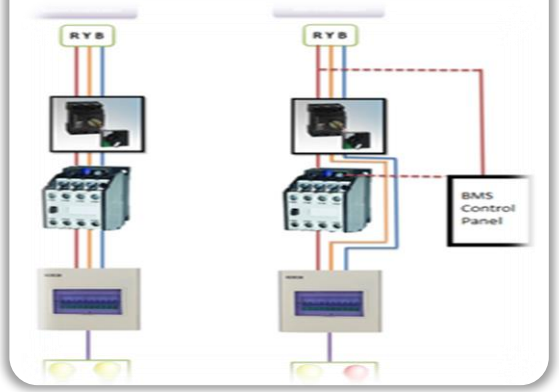
Dining Door floor spring modification (90° to 0°)

Timer Controller for Peripheral Lighting

Heat Pump for Dishwasher machine hot water demand

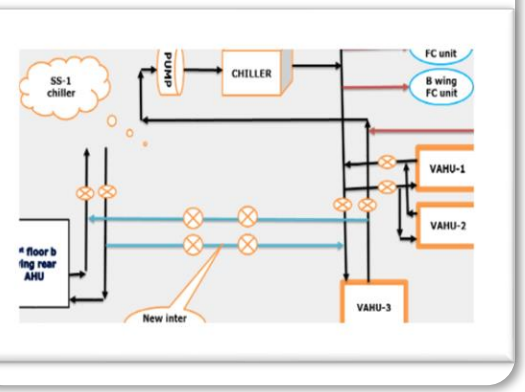
MHL 70W with Solar LED 20W peripheral location

Lighting Operation control Via BMS



Motion Sensor for Restroom Lighting Control

Process & Comfort Chiller HVAC raiser interconnection



World Earth Hour Celebration

Standardization of Best Practices

Air-Conditioning

- Workplace temperature policy standardized 24°C to 26°C
- Maintaining UPS/ Battery room temperature b/n 25°C to 26°C
- Hub room temperature-maintained b/n 24°C to 26°C
- Standard operation temperature for all freezer equipment

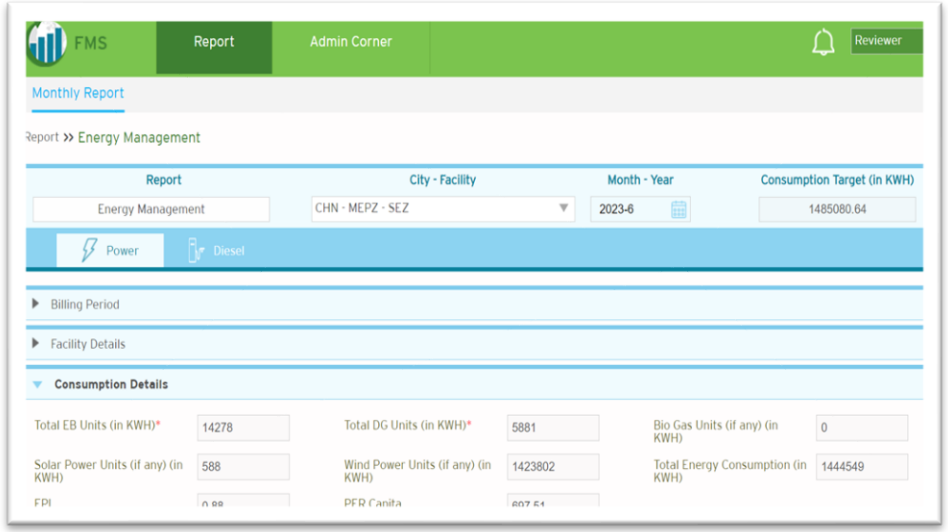
Kitchen / Pantry

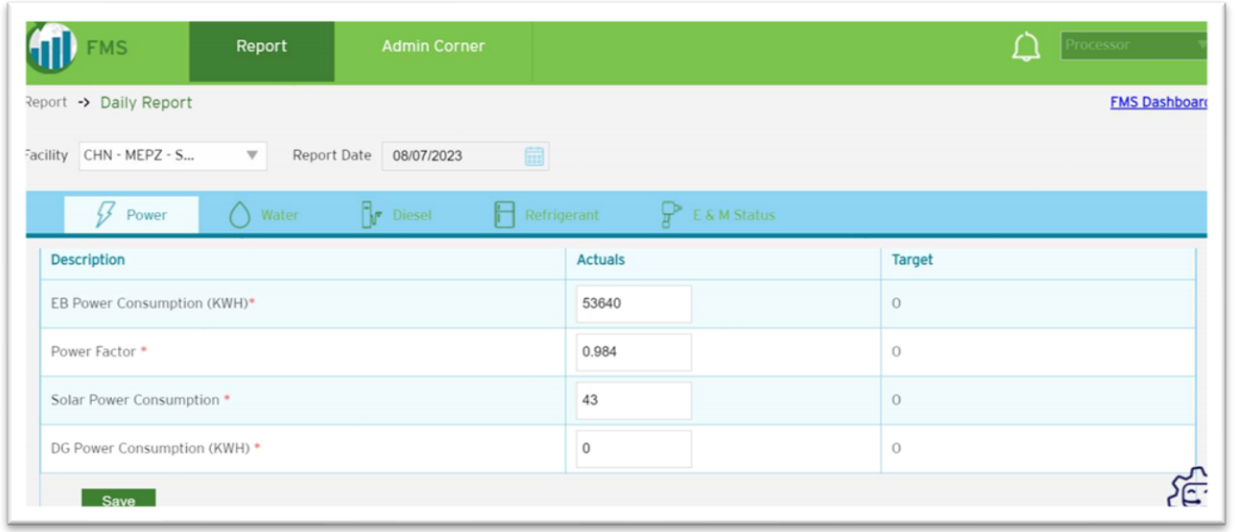
- Elimination of electrical hot plate
- Mandatory use of BEE star rated equipment's
- Scheduled operation of ventilation system
- Weekly deep cleaning for all type of freezer

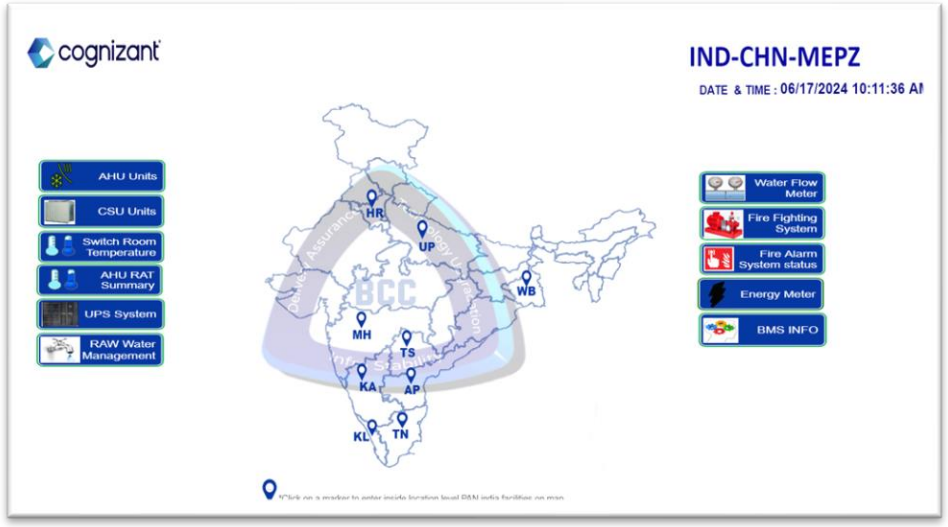
Employee engagement

- QR code-based feedback system
- Common mailer on Go Green initiatives
- Awareness creation to associates on ECM
- Energy conservation day celebration

Measuring and monitoring devices and tools







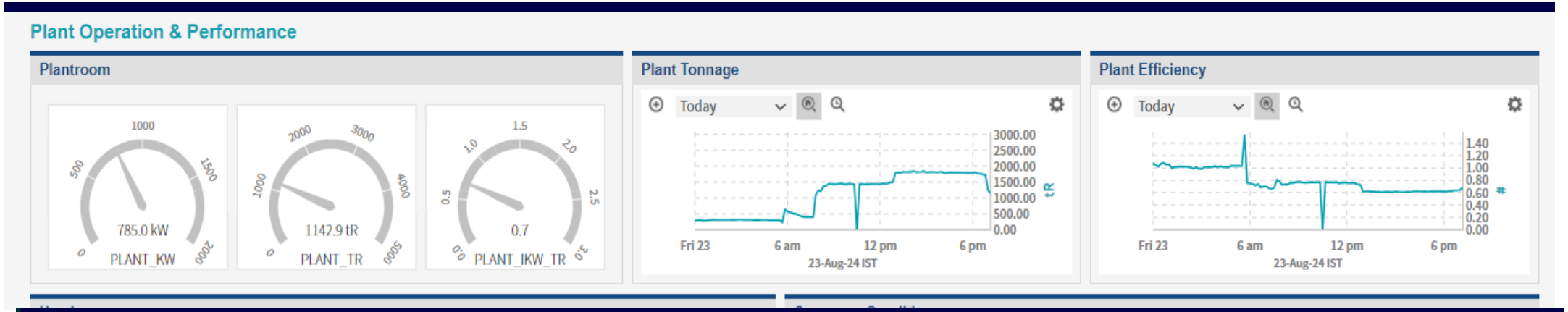
Daily module

- Consumption details and breakup
- Hourly breakup-transformer/ DG/ chiller
- Diesel consumption
- Water report
- Refrigerant status
- Equipment status

Monthly module

- Monthly module
- Facility details
- Consumption details
- Billing details
- Diesel consumption

Measuring and monitoring devices - IBMS



SDB1_AHU_SUMMARY

Location	AHU SCHEDULE	On/Off Cmd	AHU Set Point	Run Sts	Filter Sts	A/M	Trip Sts	RAT	Valve Cmd	Valve FB	VFD Cmd	CO2
SDB1_01F_CR3_AHU01	false	Off	24	Off	Clean	Auto	Normal	25.2 °C	100.0 %	83.2 %	78.9 %	704.5 ppm
SDB1_01F_CR1_AHU01	true	On	24	On	Clean	Auto	Normal	23.1 °C	94.0 %	80.6 %	5.6 %	604.0 ppm
SDB1_01F_CR2_AHU01	true	On	24	On	Clean	Auto	Normal	23.6 °C	68.1 %	68.0 %	43.9 %	661.7 ppm
SDB1_01F_CR4_AHU01	false	Off	24	Off	Clean	Auto	Normal	24.8 °C	100.0 %	0.0 %	80.0 %	612.5 ppm

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Award and certification

LEED India for New Construction - Gold

Confederation of Indian Industry
Since 1895

Indian Green Building Council

Indian Green Building Council (IGBC)

hereby certifies that

Cognizant, MEPZ Campus
Chennai

has successfully achieved the Green Building Standards required for the following level of certification under the Leadership in Energy and Environment Design (LEED) India Green Building Rating System

LEED India for New Construction Gold
September 2010

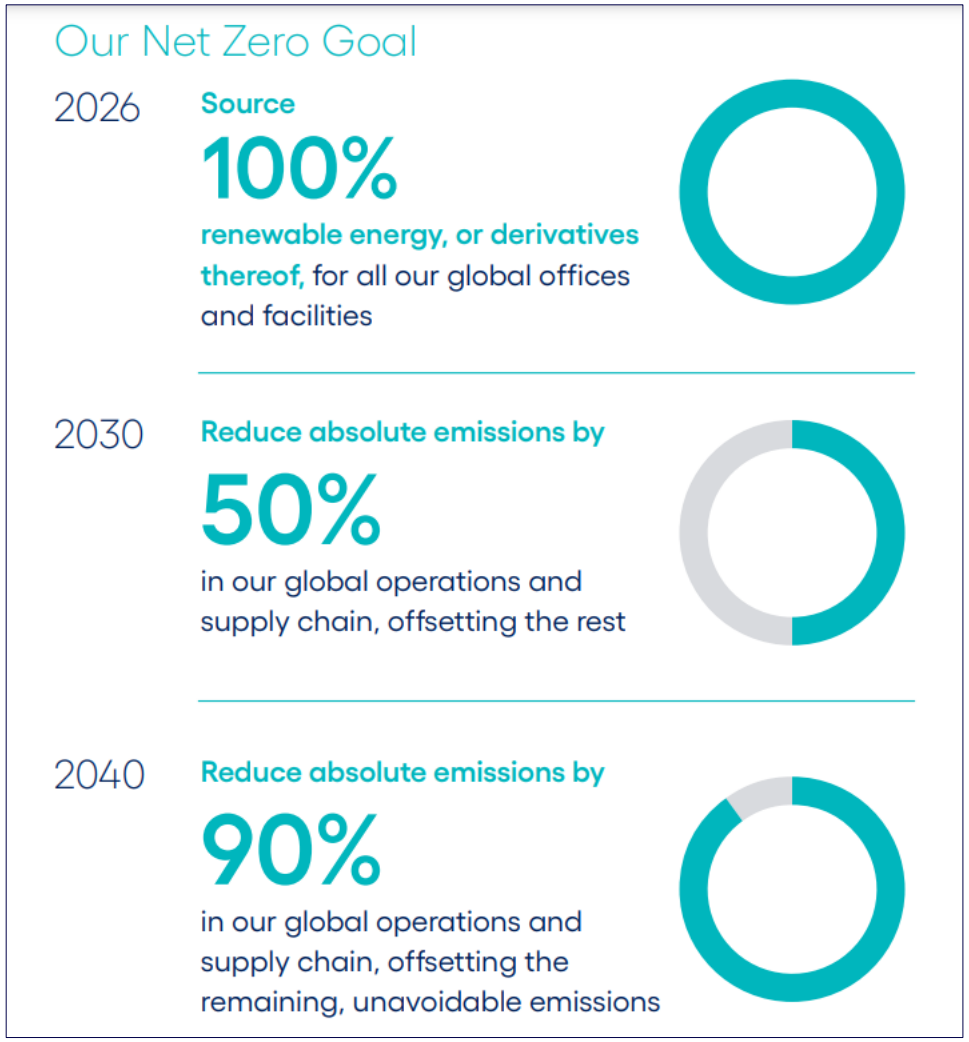
C N Raghavendran
Chairman, LEED India

Dr Prem C Jain
Chairman, IGBC

Jamshyd N Godrej
Chairman, CII-Godrej GBC

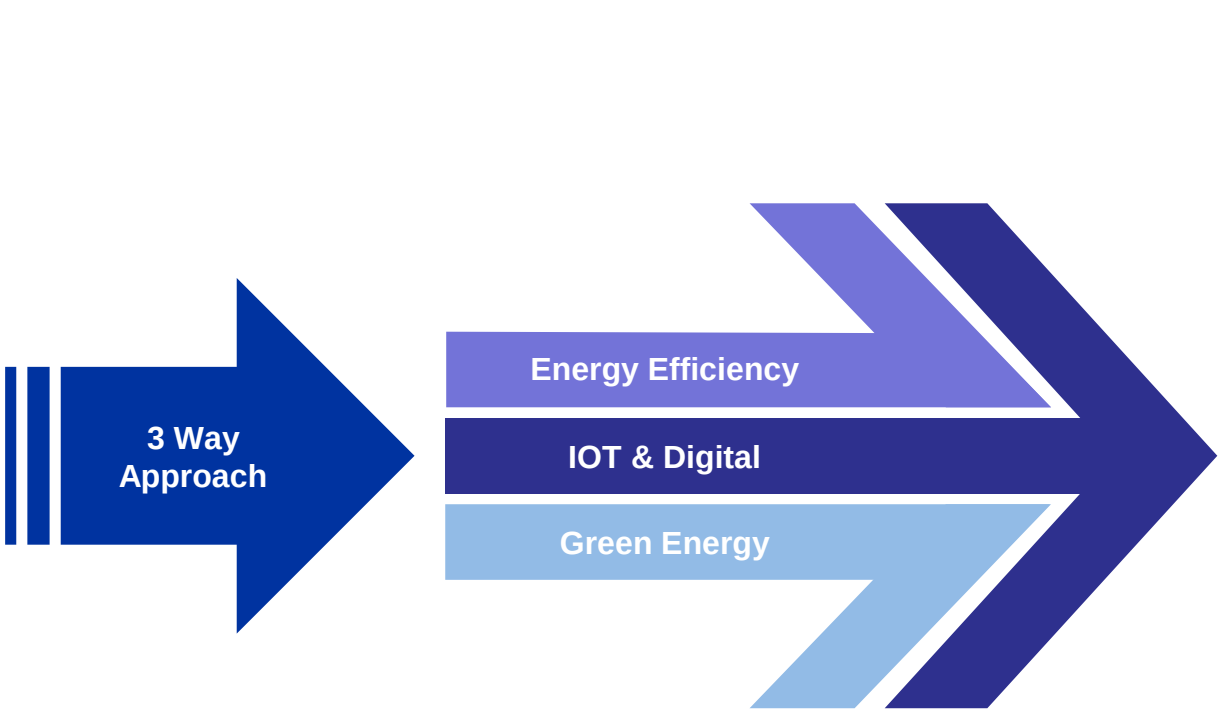
Energy Efficient Unit Award in 2019

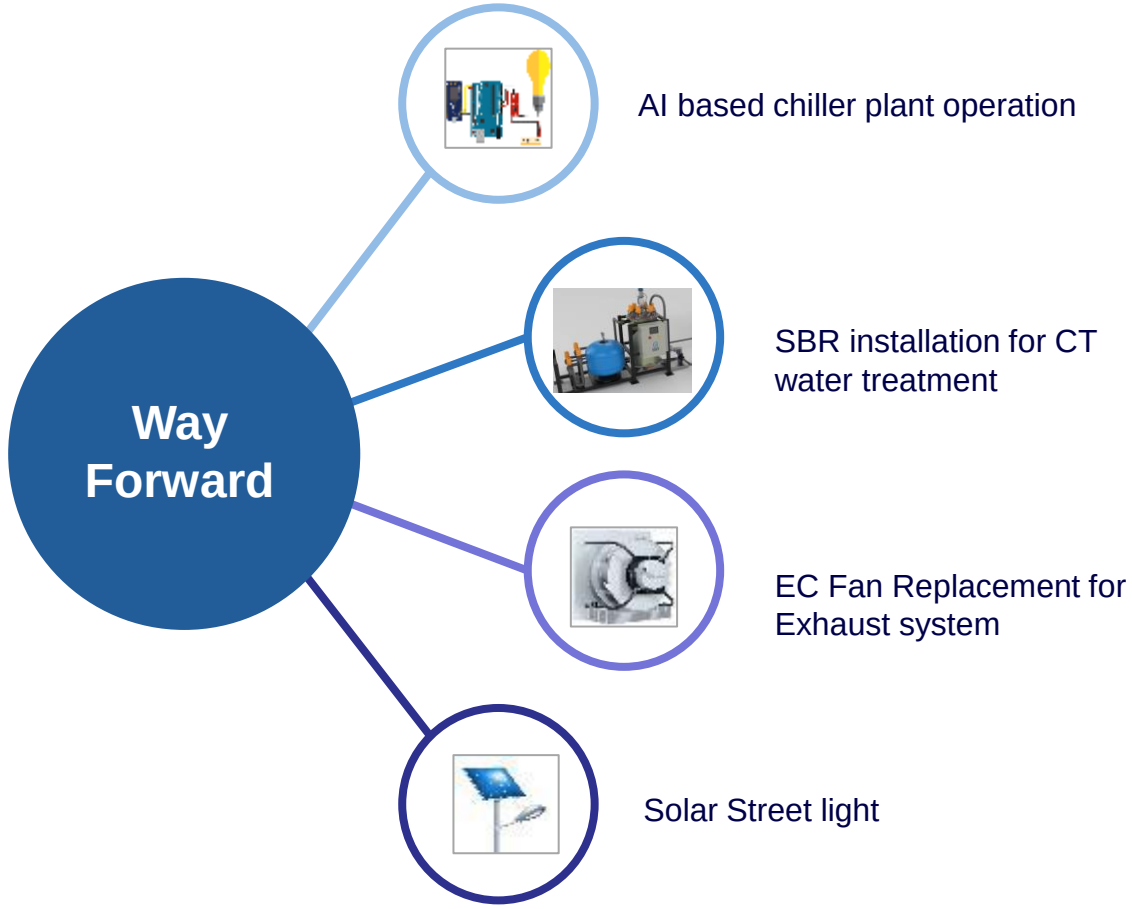
Net Zero Goal and action plan



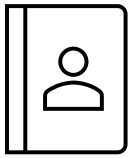
- In 2021, we announced our **Net Zero Goal**, a science-based approach to eliminate or offset our GHG emissions in line with the Paris Agreement.
- Net Zero Goal (compared to our 2019 emissions baseline).
  - 2030 – Reduce absolute emissions by 50% in our global operations and supply chain, offsetting the rest.
  - 2040 – Reduce absolute emissions by 90% in our global operations and supply chain, offsetting the remaining, unavoidable emissions.
- In April 2022, we announced our objective to source 100% of our energy needs for our offices and facilities from renewable sources, solar and wind, by the end of 2026.
- We plan to achieve our Net Zero Goal through six main levers: Renewable energy, green buildings, travel reduction, green IT and data centers, supply chain engagement and carbon offsets.

Way forward for 2024

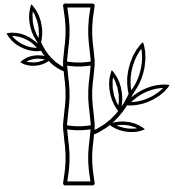




Learnings from CII Energy Awards



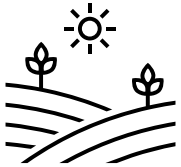
The Energy Awards highlight the latest innovations and technological advancements in the energy sector



The latest technology implemented by other competitors.

Benchmarking our organization performance with other peer companies

The Energy Awards highlight the latest innovations and technological advancements in the energy sector



The event emphasizes the importance of adopting sustainable practices and technologies to combat climate change and protect natural resources

The Energy Awards event fosters collaboration and knowledge sharing among industry professionals

Thank you