Ford Business Solutions
Global Technology & Business Center, Chennai

25th National Award for Excellence in
Energy Management – Sep '24

Presented By:

Sivakumar V, General Manager, Facilities Management

C Damodaran, Manager, Facilities Management

About Us

Ford Business Solutions is a global hub of technology and business services within the Ford family, providing a diverse portfolio of innovative solutions that create a significant and lasting impact on various aspects of Ford's businesses worldwide.

Our expertise in Software Engineering, Analytics, Data Sciences, AI/ML, Product Engineering and FinTech drives our technological evolution and helps propel Ford forward on its transformation journey. By adding technology to our skillful command over other services such as Accounting / Financial Analysis, Digital Marketing, Enterprise Connectivity, Manufacturing Engineering, Logistics and Supply Chain Management, we also play an important role in Ford's operational and digital excellence.

With over 25 years of operations and a rapidly expanding cadre of over 12,000 employees in India, we remain committed to driving forward change and fostering transformation across Ford Motor Company.

Ford - Global Sustainability Targets

Ford - Global Sustainability Initiatives & Results

Carbon Neutral by 2050:

- Ford's largest emissions source is vehicle use from a well-to-wheel perspective, our investment in electric vehicles is a core element of our climate change strategy.
  - Achieved 19% reduction in total Scope 3 GHG emissions since 2019.

Carbon Free Electricity by 2035:

- 70.5% of carbon free electricity used by manufacturing operations.
  - 100% carbon free electricity sourcing (PPA) in Europe, Mexico & Ohio
  - 80% renewable electricity in Argentina.
- Onsite solar in our plants in Thailand & South Africa producing ~20% of renewable electricity.

Waste:

- Reach true zero waste to landfill across our operations
  - 86 nos of zero waste to landfill (ZWTL) sites.
- Eliminate single-use plastics from our operations by 2030.

Water:

- Use freshwater only for human consumption.
- 19.4% reduction in absolute freshwater use since 2019.

GTBC Facility Overview

Location:	Chennai
Area:	28 Acres
Built-up Area:	2.7 M sq ft
Green Belt Area:	~10 acres

The campus houses

- 2 Office buildings of 12 floors each and 2 basements with 1800+ car parking bays.
- An amenities building with cafeteria, shops, wellness center, fitness center, day care center for kids, auditorium & multi sport facilities.
- State-of-the-art Talent Center with multiple training rooms, auditorium, collaborative spaces.
- Technology Center.
- Outdoor gardens.
- Multipurpose sports field.

Cafeteria

Auditorium

Fitness Center

Day Care Center

Gardens

Multi-purpose Sports Field

GTBC Design Features

- Building orientation to optimise use of shadow path to reduce heat load & use day light.
- High-performance double walled, low e glazing & high SRI roof coating.
- A hybrid air cooled & water-cooled chiller for energy efficient operation.
- VFD for AHUs & VAV air distribution in office buildings.
- LED lighting including control system like daylight sensors, occupancy sensors, timers etc.
- A wastewater treatment plant with MBR technology for efficient water recycling.
- Rainwater harvesting system including tanks & eco pond totaling to a capacity of 5000KL.

GTBC – Campus Layout

High Performance Glazing System - Façade

Hybrid Chiller Plants

LED Lighting System

Sewage Treatment Plant

Rainwater Harvesting & Reuse System

Utility Overview

110 kV GIS & Transformer

Diesel Generator

Water Cooled Chiller

Air Cooled Chiller

Water Treatment Plant

Rainwater Harvesting System

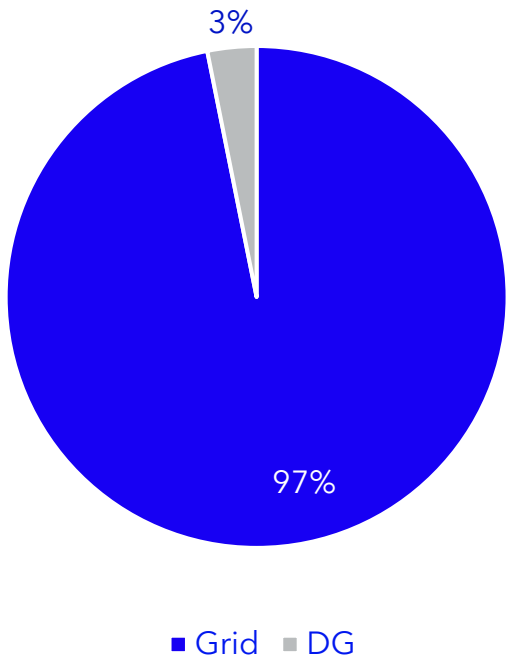
Sewage Treatment Plant

Mechanical Evaporator

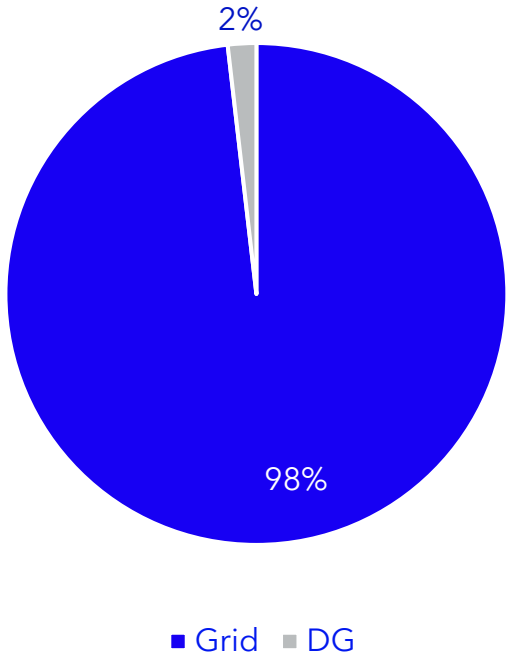
Description	Capacity
Electrical Capacity	110 kV GIS, 10200 kVA
Transformer	32 MVA (2 X 16)
Diesel Generator	11kV, 14 MVA (7 X 2)
HSD Yard	90 KL (2 X 45)
UPS Capacity	4000 kVA
Water Cooled Chiller	2823 TR (3 X 941)
Air Cooled Chiller	1296 TR (4 X 324)
Cooling Tower	1800 TR (2 X 900)
Water Treatment Plant	450 KLD
Drinking Water Plant	73 KLD
Rainwater Sump	5000 KL
Sewage Treatment Plant	572 KLD
Mechanical Evaporator	24 KLD
Organic Waste Composter	750 kgs / day

Energy Consumption: FY 2022 & FY 2023

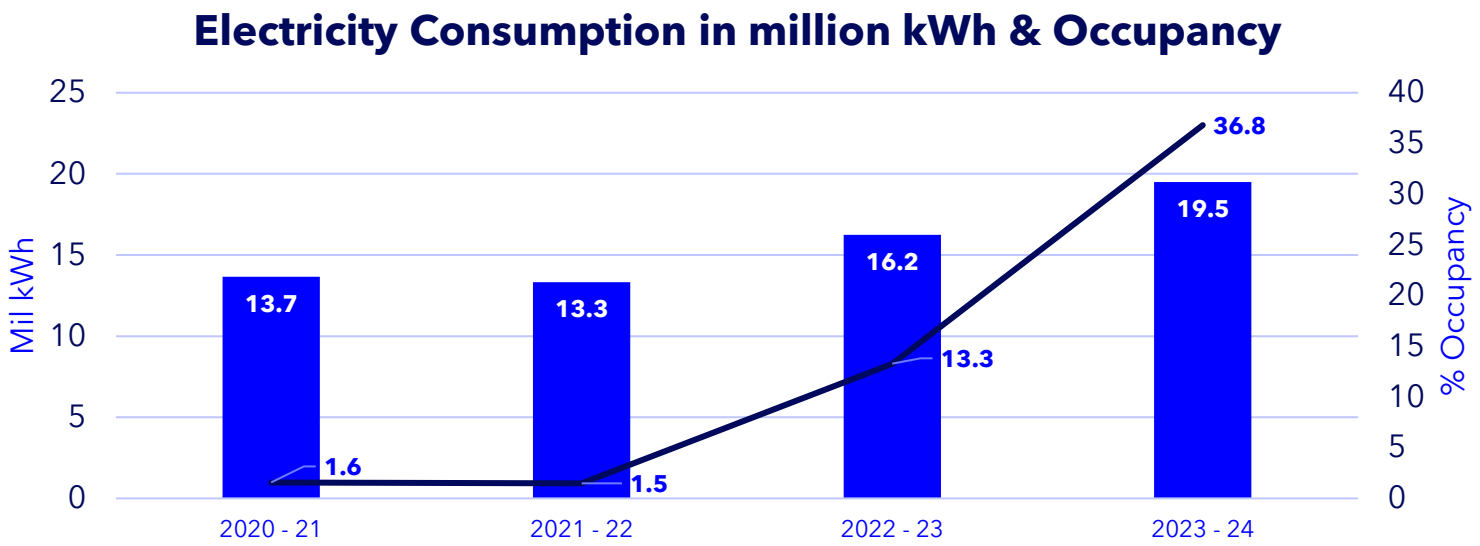
Electricity Consumption in kWh – FY 2022

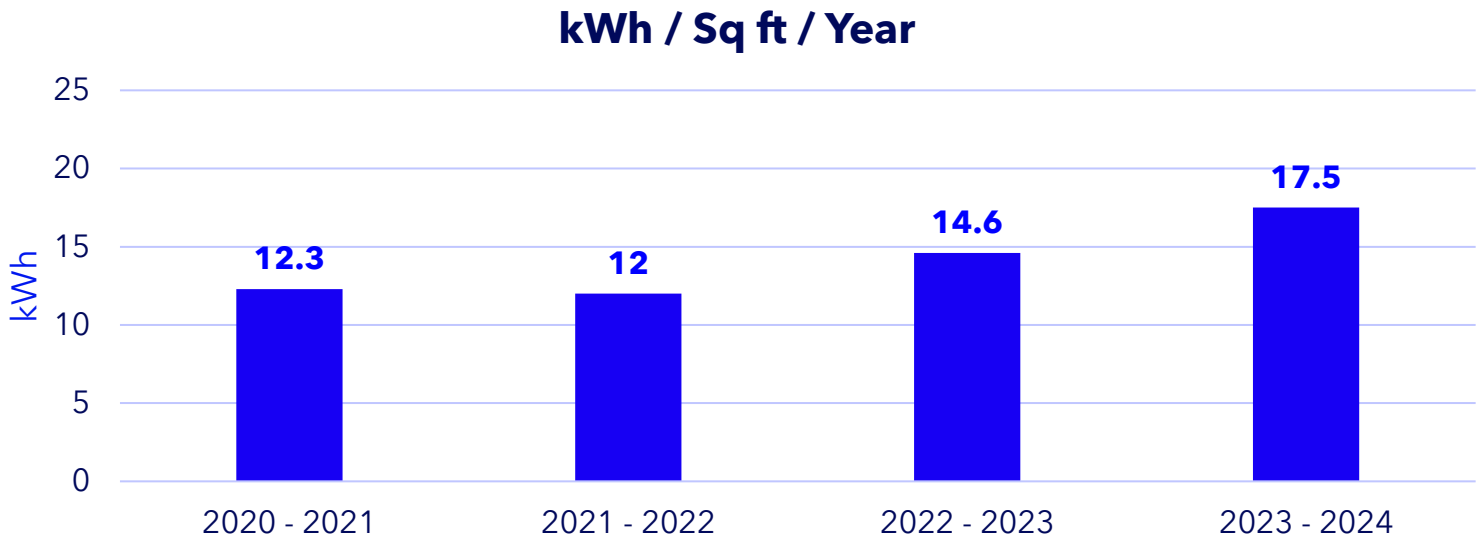


Electricity Consumption in kWh – FY 2023



Energy Consumption: FY 2020 – FY 2023





Key Factors:

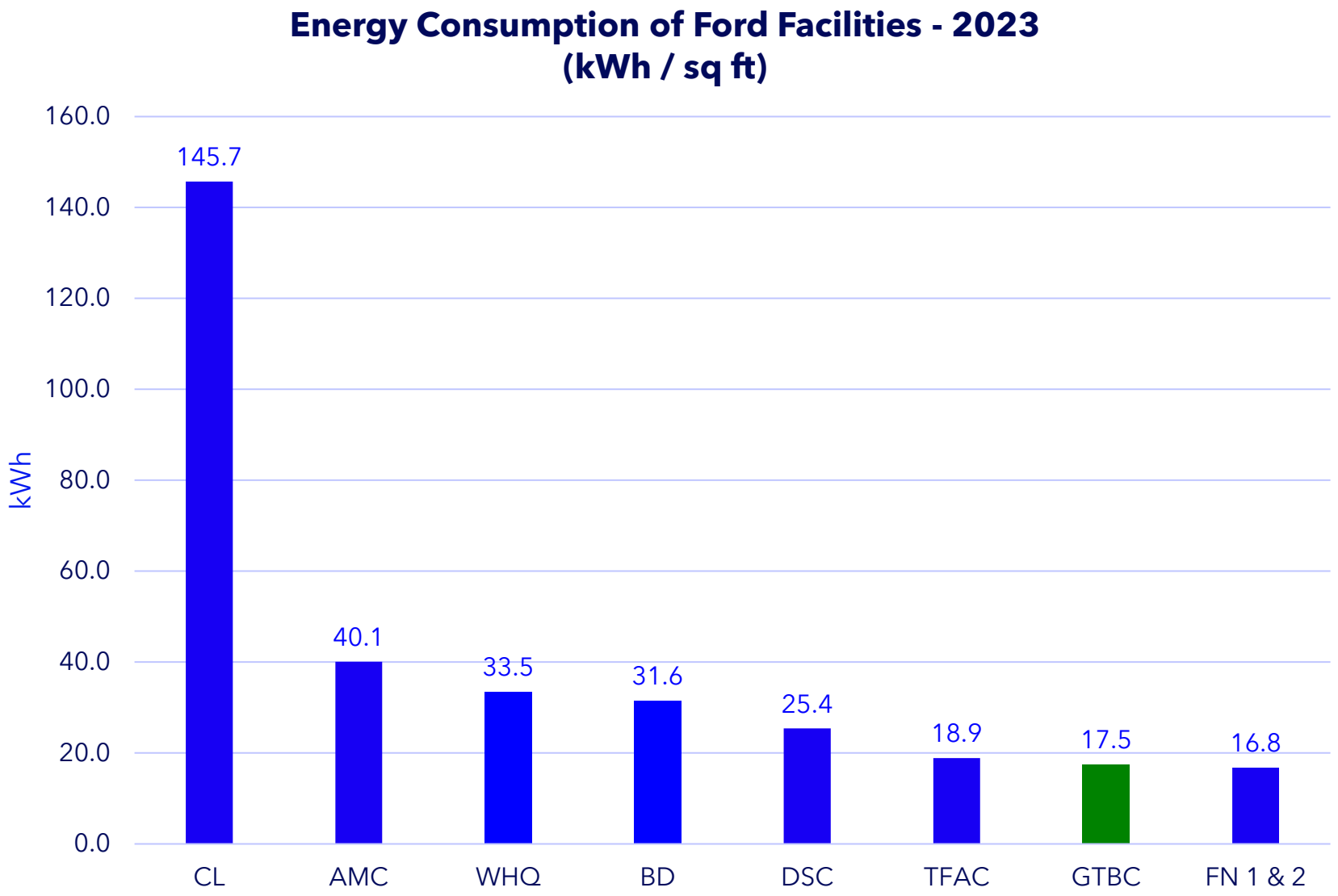
- Building occupancy increased from 13% to 37% during last year.
- Facility operation time increased from 16 hrs to 24 hrs.
- Operating all amenities to enhance foot fall & employee experience

Additional Information:

Our area covers only the employee workspace and excludes all other buildings & basements. We have considered only 1.1 Mils Sq ft

Total built up area:	2,725,395 sq ft
Employee work area:	1,111,959 sq ft

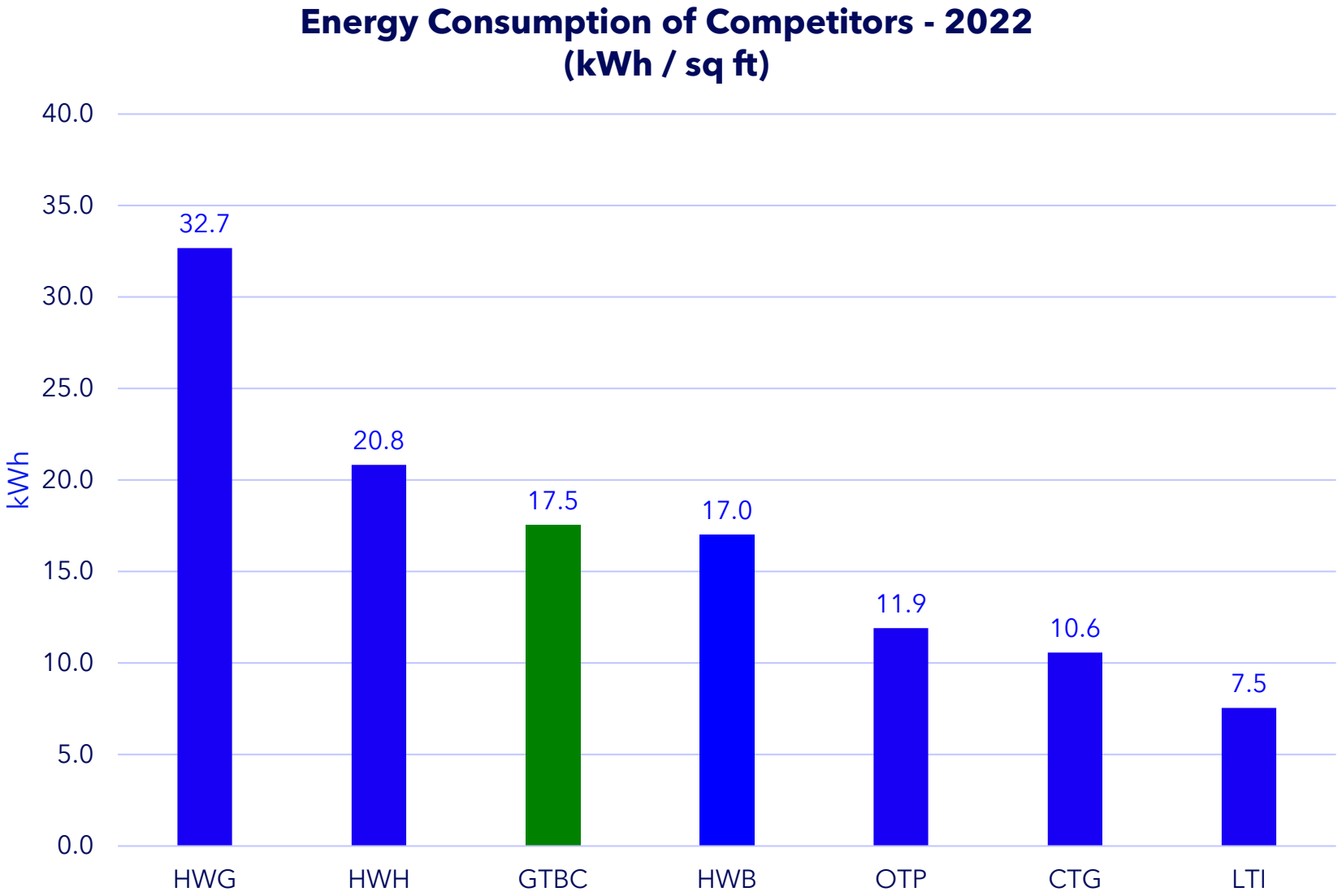
Internal Benchmarking – Ford Buildings



Legend:

CL – Central Laboratory
AMC - Advanced Manufacturing Center
WHQ – World Head Quarters
BD – 2050 Building - Book Depository
DSC - Diagnostics Service Center
TFAC – The Factory At Corktown
GTBC – Global Technology & Business Center
FN 1 & 2 – Fairlane North 1 & 2

External Benchmarking



Key Information:

Our area covers only the employee work area and excludes all other buildings & basements

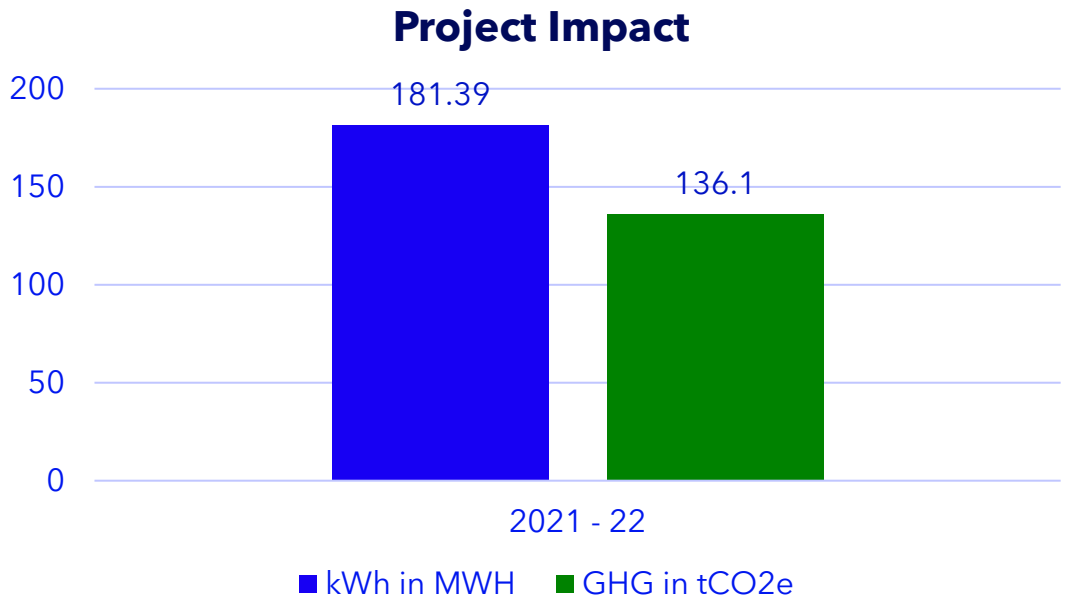
Total built up area:	2,725,395 sq ft
Employee work area:	1,111,959 sq ft

Legend:

HWG – Honeywell, Gurgaon
HWH – Honeywell, Hyderabad
GTBC – Global Technology & Business Center
HWH – Honeywell, Bangalore
OTP – Olympia Tech Park, Chennai
CTG – Candor Tech Space, Gurgaon
LTI – LTI Mindtree, Bengaluru

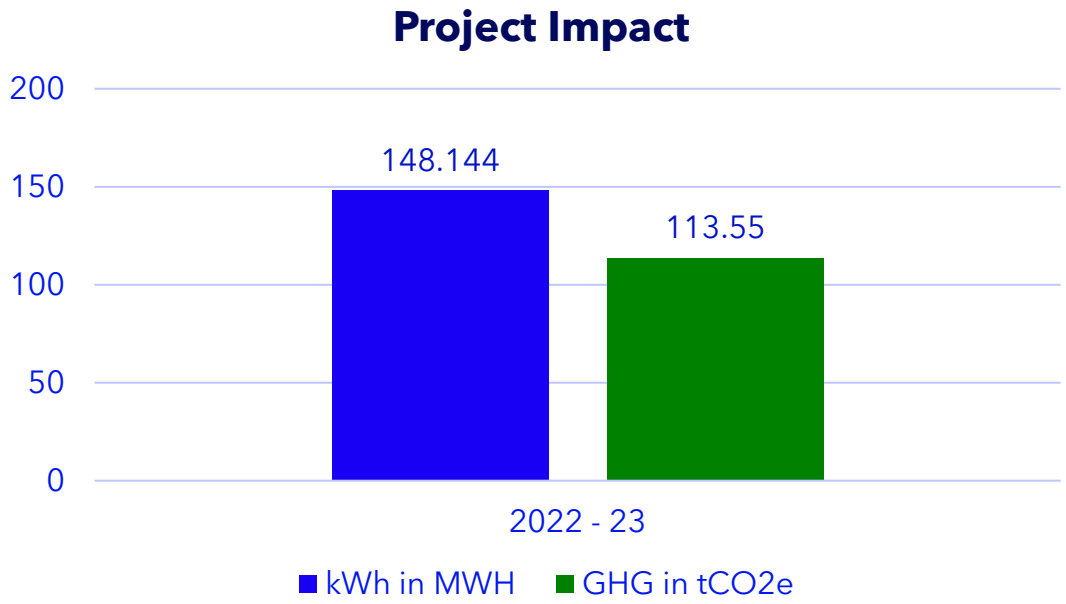
Energy Efficiency Improvement Projects: FY2021

Sl No	Year	Description of the project	Savings in kWh	GHG reduction
1	2021	Occupancy sensor operation optimisation for Lighting	3840	2.9
2	2021	Standby 16 MVA Transformer operation optimized	47450	35.6
3	2021	VFD for cooling tower fan	18000	13.5
4	2021	VFD for chilled water secondary pumps	49500	37.2
5	2021	Demand control ventilation to maintain indoor air quality	62500	46.9



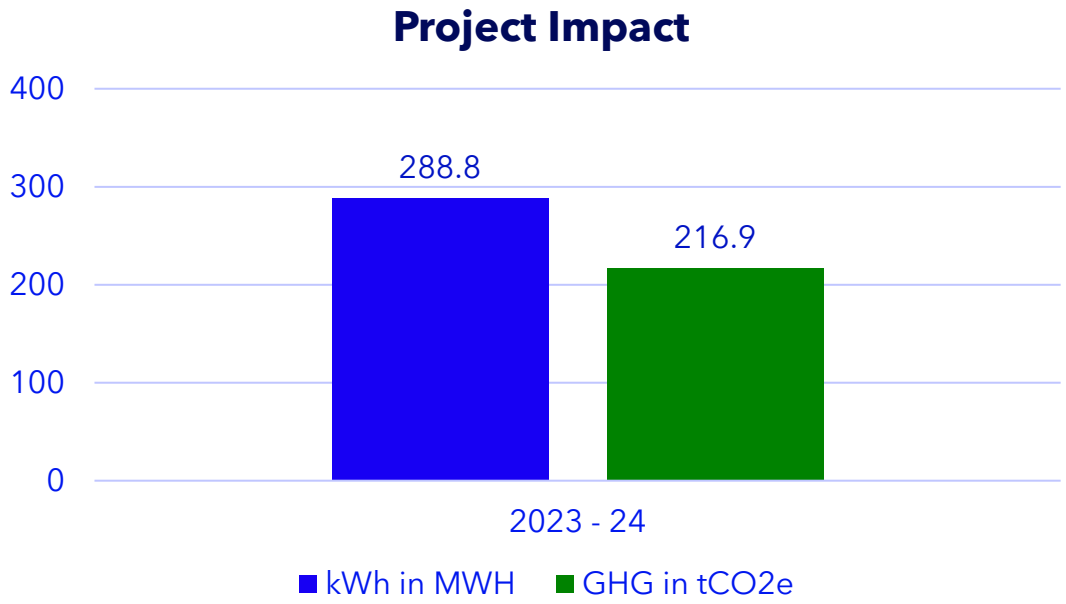
Energy Efficiency Improvement Projects: FY2022

Sl No	Year	Description of the project	Savings in kWh	GHG reduction
1	2022	Blinds operation optimisation for HVAC load reduction	104880	78.8
2	2022	Standby time optimisation in all escalators	6210	4.7
3	2022	Lighting operation time optimisation in service rooms	34164	25.7
4	2022	Daylight sensor lighting	1460	1.1
5	2022	Vertical Turbine Jockey pump replacement with submersible pump	4320	3.2



Energy Efficiency Improvement Projects: FY2023

Sl No	Year	Description of the project	Savings in kWh	GHG Emission
1	2023	Chiller Plant Manager for hybrid chiller	187500	140.8
2	2023	IT network switch room temperature optimization (21 to 23 Deg C)	36500	27.4
3	2023	AHU operation time optimisation	64800	48.7

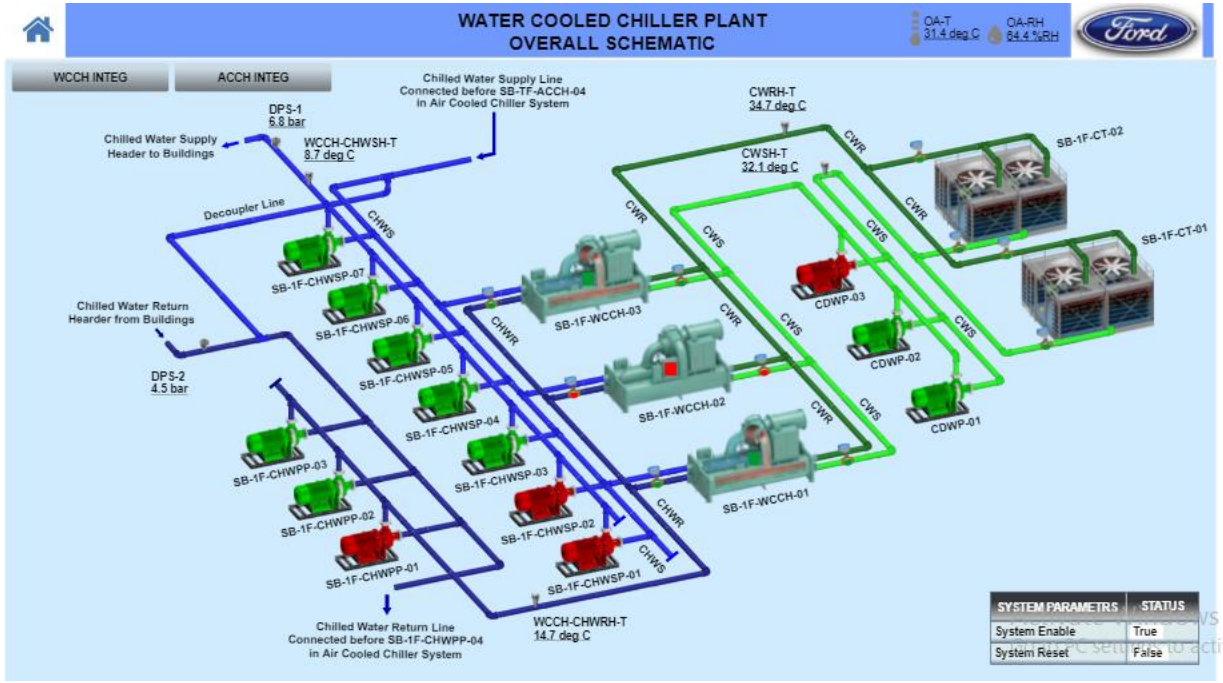


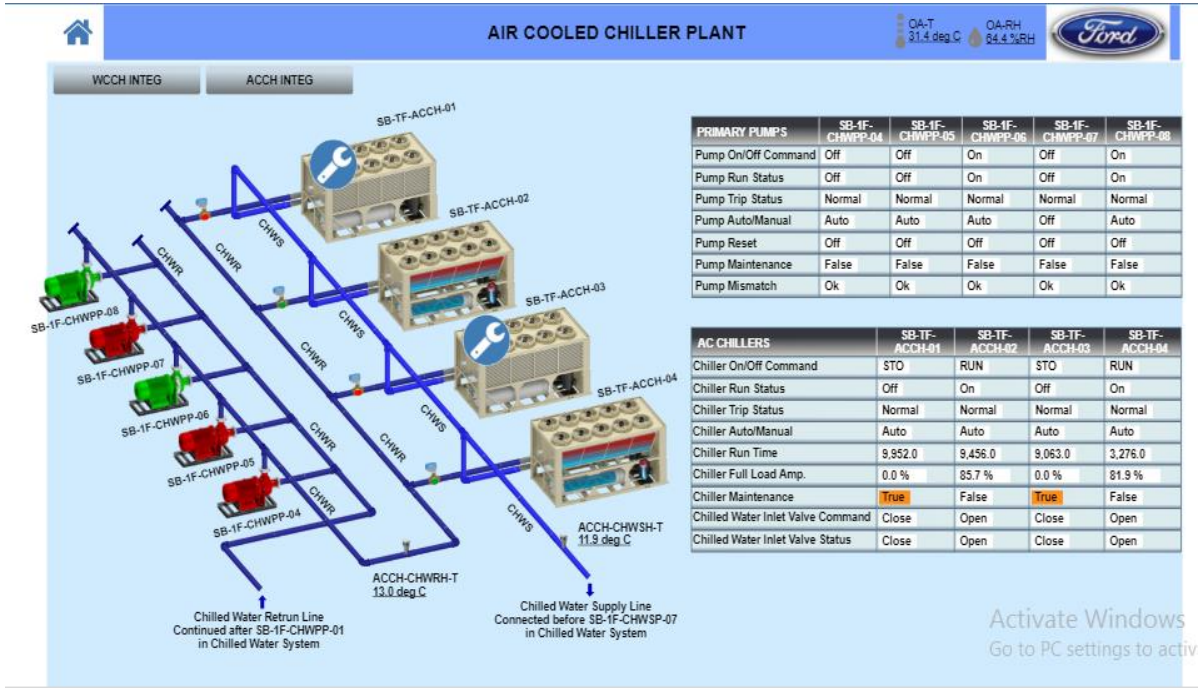
Proposed Energy Efficiency Improvement Projects

Sl No	Year	Description of the project
1	2025	Additional cooling tower for effective utilization of water-cooled chiller
2	2025	EC Fan pilot / trial

Innovative Project: Chiller Plant Manager

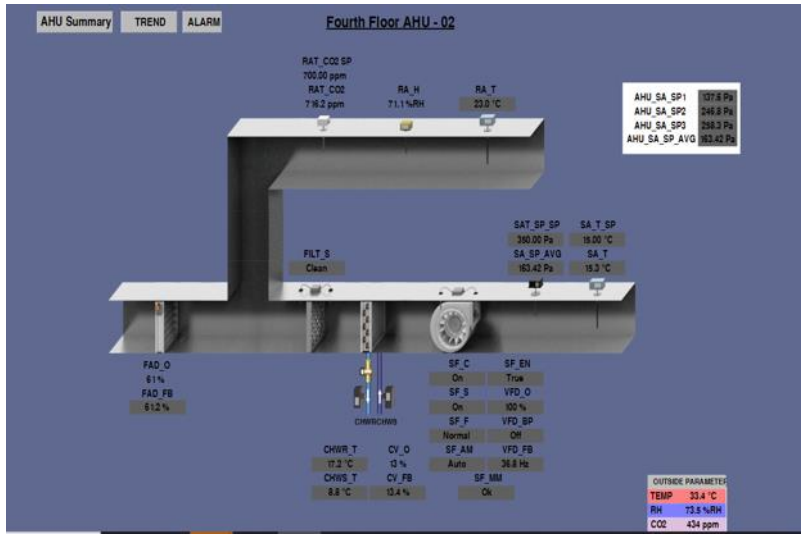
- We have 3 water cooled & 4 air cooled chillers of total capacity of 4119 TR in our facility.
- All the cooling water, chilled water primary, chilled water secondary pumps has VFD.
- We have implemented a combined control system to control all chillers & pumps.
- The system automates the ON / OFF, loading of chillers & speed of all pumps based on the actual load.
- This project has resulted in a savings of 187,500 kWh / annum & GHG emission reduction by 136 Tons.

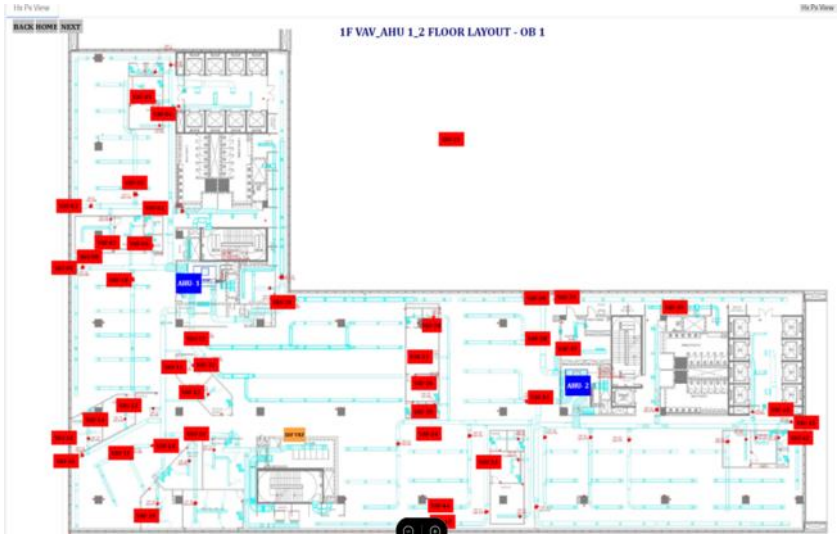


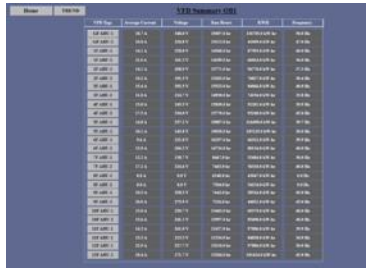


Innovative Project: Building Management System

- We have implemented a state-of-the-art building management system (BMS)
- Full monitoring & control of
  - Air Handling Units (AHU)
  - Variable Frequency Drives (VFD)
  - Variable Air Volume (VAV) for all office areas
  - Variable Refrigerant Flow (VRF) air conditioners
  - Ventilation Systems
- Monitoring for panel status, energy meters, BTU meter, UPS, lifts, water tanks, chillers & pumps







Innovative Project: Multistage Jockey Pump

- In-line with design requirement a vertical turbine pump with a capacity of 15kW was installed as a Jockey pump in our fire protection system.
- This pump maintains the system pressure of Hydrant, Sprinkler, Water curtain system.
- For our weekly testing & underground pipeline leakages, a considerable quantity of water needs to be replenished back by operating the Jockey pumps, this frequent operation results in failures and the pump replacement takes about 6 months
- Considering the above, an alternate solution was identified as using a 11kW submersible pump as a replacement.
- This project resulted in energy savings of 4320 kW / year and improved our repair time.

Vertical Turbine Pump

Submersible Pump

Onsite Renewable Energy – Under Implementation

450 kWp Rooftop Solar System:

- Solar panel installation completed.
- Approvals in progress.
- Expected to be commissioned by end of Sep ‘24

Solar Panel @ Rooftop

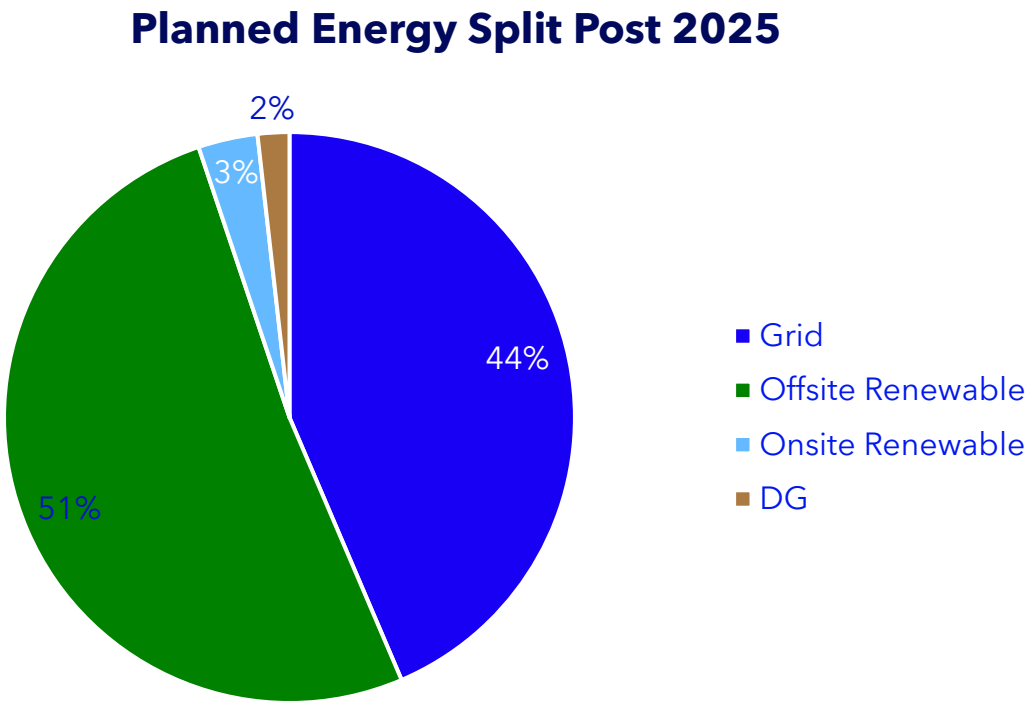
Solar Panel @ Rooftop

Inverters

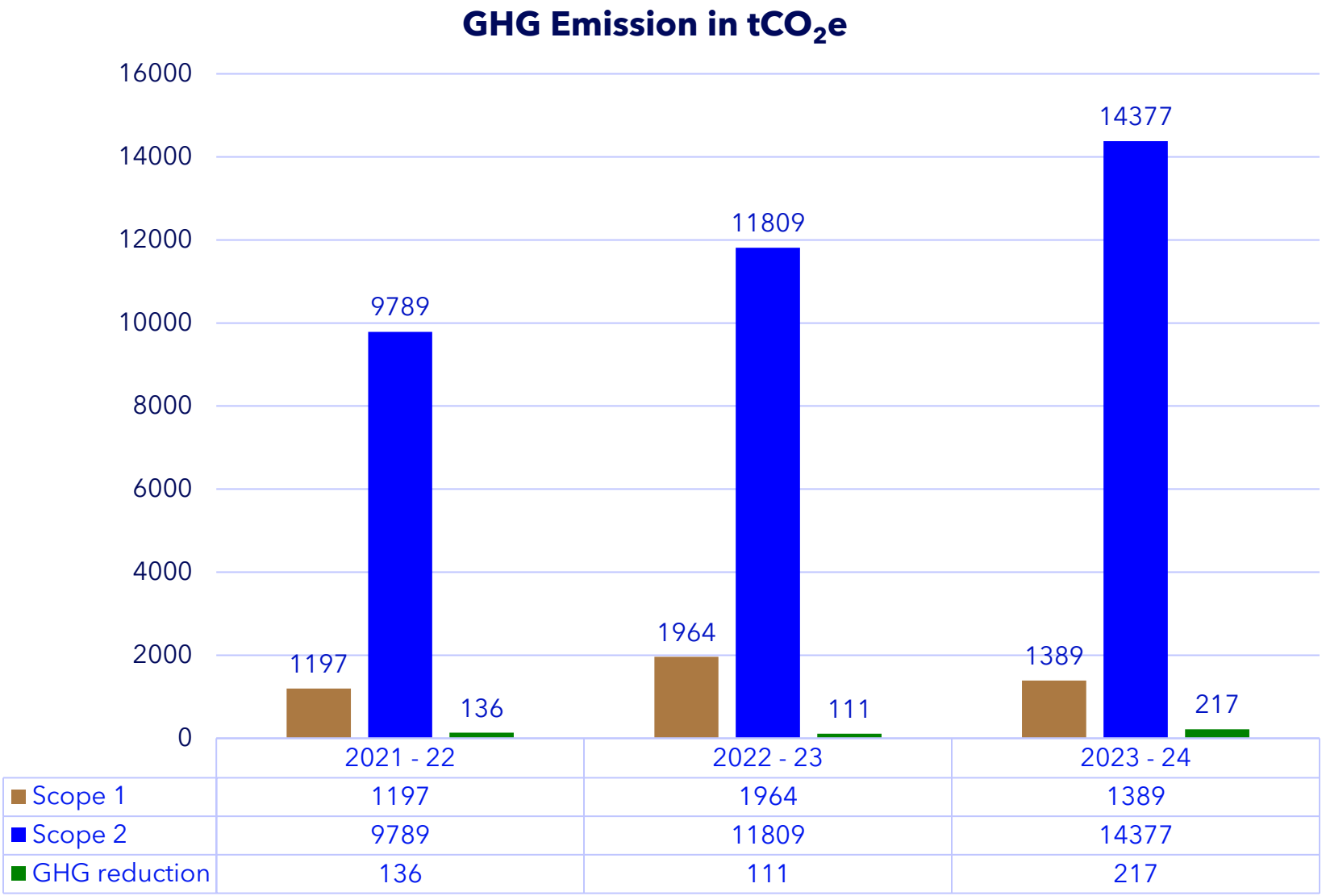
Offsite Renewable Energy – Under Implementation

Energy Purchase through Power Purchase Agreement (PPA)

- Planned to purchase 50% of the total consumption in year 1 and increase up to 80% later.
- Supplier identification completed.
- PPA review and management approvals progress.
- Renewable energy purchase planned from 2025 onwards.



GHG Emission



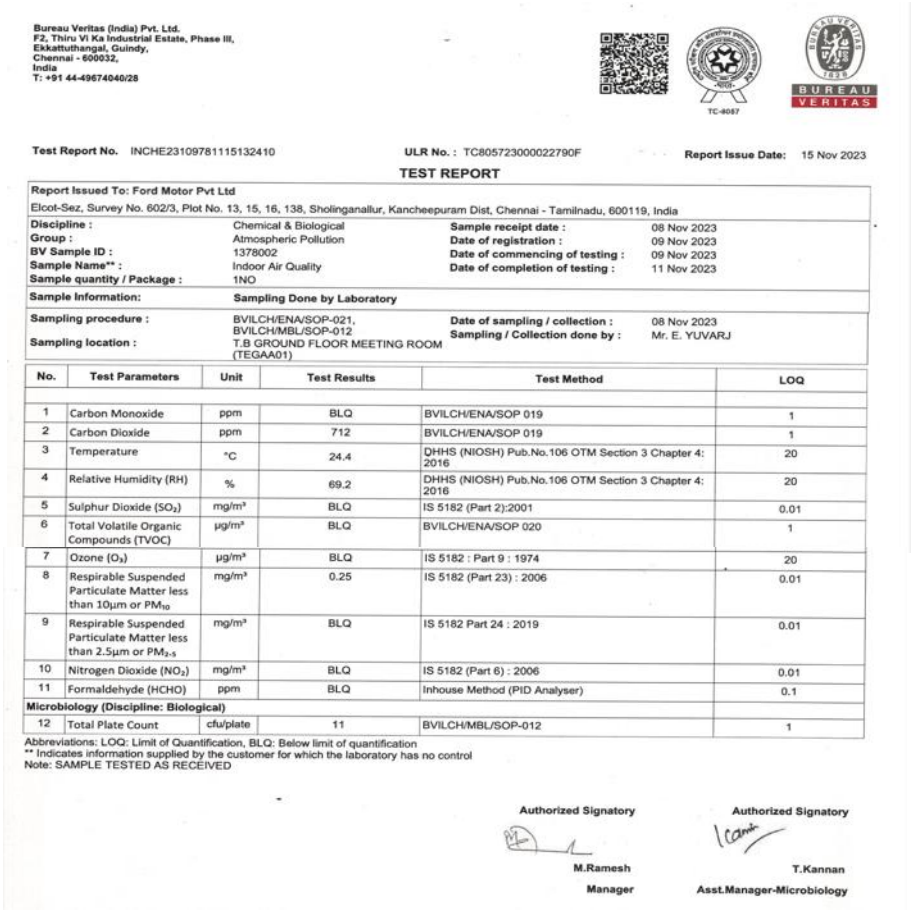
	2021 - 22	2022 - 23	2023 - 24
Scope 1	1197	1964	1389
Scope 2	9789	11809	14377
GHG reduction	136	111	217

Indoor Air Quality

- CO_2 sensor is installed in all AHUs to automate the fresh air damper operations
- Quarterly monitoring of indoor air quality through a NABL accredited laboratory
- Parameters monitored

Test parameters	Unit	Test Result				LOQ
		OB2 10F	OB2 6F	AB 3F	AB 2F	
Sulphur Dioxide (SO_2)	mg/m³	BLQ	BLQ	BLQ	BLQ	0.01
Carbon Dioxide	PPM	616	519	639	714	1
Carbon Monoxide	PPM	BLQ	BLQ	BLQ	BLQ	1
Temperature	C	24	24.2	24.8	24.3	20
Relative Humidity (RH)	%	65	66	65	66	20
Respirable suspended particulate Matter less than 10μm or PM_{10}	mg/m³	0.012	0.018	0.013	0.013	0.01
Respirable suspended particulate Matter less than 2.5μm or $PM_{2.5}$	mg/m³	BLQ	0.01	BLQ	BLQ	0.01
Nitrogen Dioxide (NO_2)	mg/m³	BLQ	BLQ	BLQ	BLQ	0.01
Ozone (O_2)	mg/m³	BLQ	BLQ	BLQ	BLQ	20
Total Volatile Organic Compounds (TVOC)	mg/m³	BLQ	BLQ	BLQ	BLQ	1
Formaldehyde (HCHO)	PPM	BLQ	BLQ	BLQ	BLQ	0.1
Total plate count	cfu/plate	29	69	79	87	1

BLQ - Below Limit of Quantification
LOQ - Limit Of Quantification



Bureau Veritas (India) Pvt. Ltd.
F2, Thiru Vi Ka Industrial Estate, Phase III,
Ekkattuthangal, Guindy,
Chennai - 600032,
India
T: +91 44-49674040/28

Test Report No. INCHE2310978111513241O ULR No. : TC805723000022790F Report Issue Date: 15 Nov 2023

TEST REPORT

Report Issued To: Ford Motor Pvt Ltd
Elcot-Sez, Survey No. 602/3, Plot No. 13, 15, 16, 138, Sholinganallur, Kancheepuram Dist, Chennai - Tamilnadu, 600119, India

Discipline :	Chemical & Biological	Sample receipt date :	08 Nov 2023
Group :	Atmospheric Pollution	Date of registration :	09 Nov 2023
BV Sample ID :	1378002	Date of commencing of testing :	09 Nov 2023
Sample Name** :	Indoor Air Quality	Date of completion of testing :	11 Nov 2023
Sample quantity / Package :	1NO		
Sample Information:	Sampling Done by Laboratory		
Sampling procedure :	BVILCH/ENA/SOP-021, BVILCH/MBL/SOP-012	Date of sampling / collection :	08 Nov 2023
Sampling location :	T.B GROUND FLOOR MEETING ROOM (TEGAA01)	Sampling / Collection done by :	Mr. E. YUVARJ

No.	Test Parameters	Unit	Test Results	Test Method	LOQ
1	Carbon Monoxide	ppm	BLQ	BVILCH/ENA/SOP 019	1
2	Carbon Dioxide	ppm	712	BVILCH/ENA/SOP 019	1
3	Temperature	°C	24.4	DHHS (NIOSH) Pub.No.106 OTM Section 3 Chapter 4: 2016	20
4	Relative Humidity (RH)	%	69.2	DHHS (NIOSH) Pub.No.106 OTM Section 3 Chapter 4: 2016	20
5	Sulphur Dioxide (SO_2)	mg/m³	BLQ	IS 5182 (Part 2):2001	0.01
6	Total Volatile Organic Compounds (TVOC)	µg/m³	BLQ	BVILCH/ENA/SOP 020	1
7	Ozone (O_3)	µg/m³	BLQ	IS 5182 : Part 9 : 1974	20
8	Respirable Suspended Particulate Matter less than 10µm or PM_{10}	mg/m³	0.25	IS 5182 (Part 23) : 2006	0.01
9	Respirable Suspended Particulate Matter less than 2.5µm or $PM_{2.5}$	mg/m³	BLQ	IS 5182 Part 24 : 2019	0.01
10	Nitrogen Dioxide (NO_2)	mg/m³	BLQ	IS 5182 (Part 6) : 2006	0.01
11	Formaldehyde (HCHO)	ppm	BLQ	Inhouse Method (PID Analyser)	0.1
Microbiology (Discipline: Biological)					
12	Total Plate Count	cfu/plate	11	BVILCH/MBL/SOP-012	1

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification
** Indicates information supplied by the customer for which the laboratory has no control
Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory
M.Ramesh
Manager

Authorized Signatory
T.Kannan
Asst.Manager-Microbiology

Awards – IGBC Platinum Certification

IGBC

CII
Confederation of Indian Industry

Indian Green Building Council (IGBC)

hereby certifies that

Ford Global Technology & Business Centre

ELCOT – SEZ, Sholinganallur, Chennai

(IGBC Registration No. NBO 161090)

has successfully achieved the Green Building Standards required for the following level of certification under the

IGBC Green New Buildings Rating System

(Owner-Occupied Building)

Platinum

04 May 2020

This Certificate is valid for 3 years from the date of certification

C N Raghavendran	V Suresh	S Raghupathy	K S Venkatagiri
Chair, IGBC Green New Buildings	Chairman, IGBC	Deputy Director General, CII	Executive Director, CII-Godrej GBC

IGBC

CII

Indian Green Building Council (IGBC)

hereby certifies that

Ford Global Technology & Business Center

ELCOT SEZ, Sholinganallur, Chennai

(IGBC Registration No: [illegible])

has successfully achieved the Green Building Standards required for the following level of certification under the

IGBC Green Existing Buildings Rating System

Platinum

October 2023

(Valid for a period of 3 years)

Other Sustainability Actions

- Maintaining a green cover of 33% area, equivalent to ~ 10 acres with 1800+ trees.
- 600+ indoor plants are strategically placed within the office buildings to improve air quality.
- Daily recycling of ~570 KL of water for irrigation, cooling tower makeup water & toilet flushing.
- Condensate water collected & used for cooling tower make-up.
- Blending of RO reject water and utilizing in landscaping by maintaining standards.
- Converting ~ 500 kg of food waste a day to manure for on-site use through organic waste composter.
- In-house production of drinking water meeting all Indian standards and supplying to all buildings via piped network and avoided usage of bottled water thereby eliminating transportation & usage of plastic bottles.
- Implementation of equipment aided smart cleaning with environment friendly chemicals.
- All taps in the facility were converted to push type aerator tap to reduce water consumption.
- Reducing water consumption in urinals by using both sensors & Eco mats.
- Entire site is a paperless office by reducing the number of printers & utilizing various technologies like digital displays, QR codes, barcodes etc.
- Avoided paper cups by encouraging employees to bring their own mugs & bottles.


Ford