Confederation of Indian Industry

CANDOR TechSpace

24th National Award for Excellence
in
Energy Management 2023

CANDOR GURGAON ONE REALTY PROJECTS PRIVATE LIMITED

Energy & Sustainability Team

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(Manager, Energy)

Brookfield Properties India

At Brookfield Properties, We’re reimagining real estate through sustainable solutions, and we believe in creating spaces that makes a difference.

Committed to industry-leading sustainable development to deliver long-term value to our business, partners and communities

50+ MSF
Grade A
Business campuses

0.5 million
working professional
impacted

2040
net zero goal advanced
by 10 years

250+
TENANTS

About

Candor Tech Space, Sector 48, Gurugram is a Grade A office SEZ spread across 25.2 acres. It is strategically located at a prime location with easy access to NH8, fast exit routes to Delhi, and the International Airport.

This campus offers **3.7 mil. Sqft.** of office space with a composition of open green spaces, curated breakout zones, pedestrian-friendly walkways and a mix of amenities that include a multi-cuisine food hall, clubhouse, wellness center, and a daycare.

The architecture adheres to international standards of quality with highly efficient floor plates and premium building structures.

Property at a glance

CANDOR TechSpace

Built in 2012	**12 buildings**	**25.2-acre land area**
66 kV power sub-station	**469 kWp rooftop solar panels**	**Barrier-free built environment for universal accessibility**
Excellence centre with BMS	**100% organic waste recycling through composting**	**Green landscaped central lawn with sit-outs**
Water-efficient landscaping augmented by a drip irrigation system	**Sewage treatment plant (STP) with ultra-filtration**	**Automated RFID Parking System**
Zero water discharge campus	**Indoor and outdoor sports zone**	**Fully equipped gymnasium**
Electric vehicle charging stations	**Medical wellness center and ambulance services**	**24-hour security, CCTV surveillance and, power back-up**

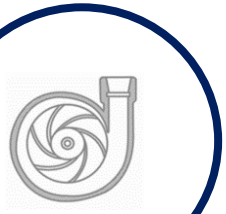
Property at a glance

Energy Conservation/ Efficiency Initiatives Pathway

Through continuous improvements, we ensure that our assets are efficient, resilient and future-fit, and support the needs of our tenants and communities

2018
LED Installation and automation

2019
VFD for HVAC system



2020
Rooftop solar

2021
Centralized BMS

2022
ES filters and EC fans

Energy Initiatives Snapshot

CANDOR TechSpace

Sustained improvements through defined action program to minimize our energy footprint

Energy

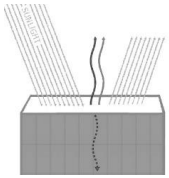
LED Lighting

Centrifugal Chillers Targeted COP 0f 6.3

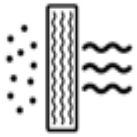
Demand Controlled Ventilation

90% Space Receives day light > 110 lux

VFD's in Chillers and Pumps



High SRI Roof



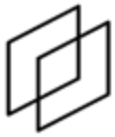
MERV 14+ FILTERS

EV Charging Stations

IAQ Monitoring

Energy Submetering

BMS Integration



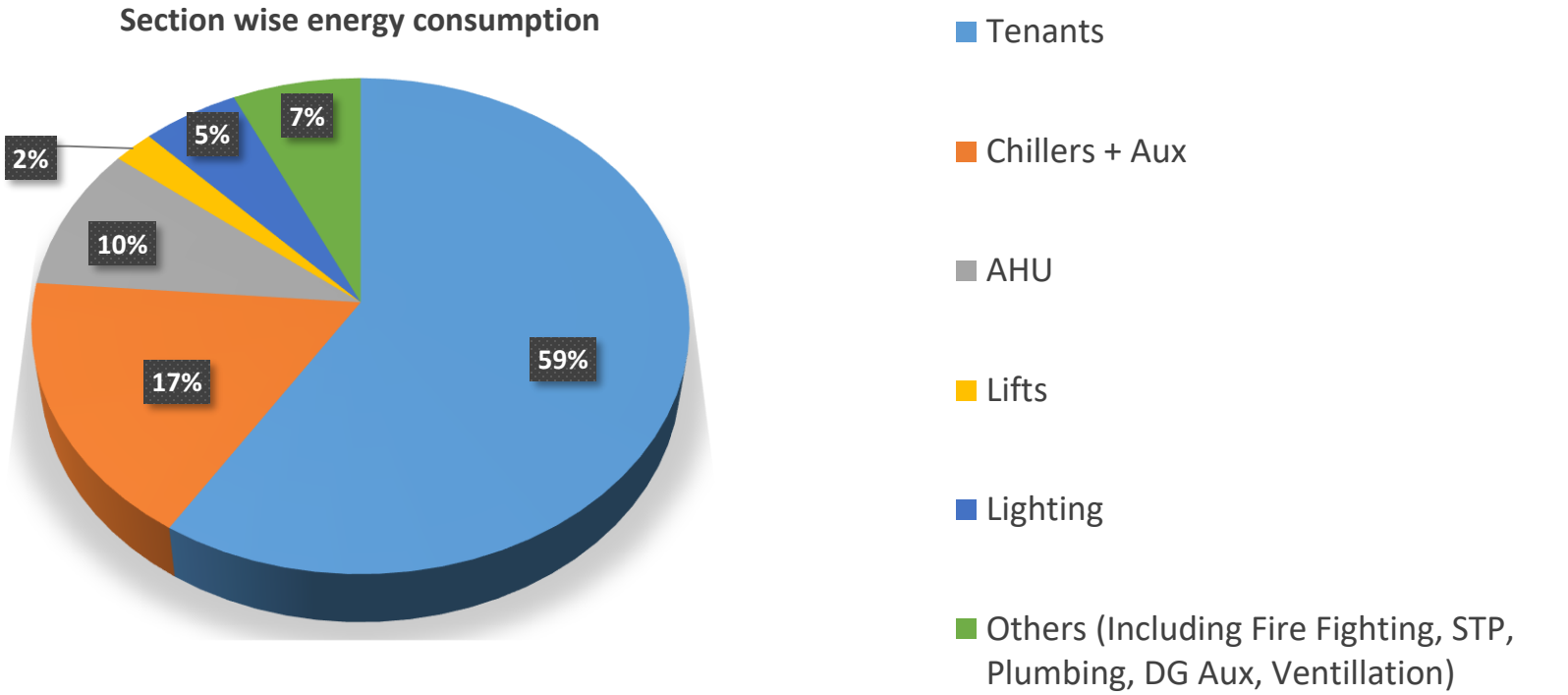
Double Glazing

Rooftop solar

CTI Certified Cooling Tower

CO sensors

Energy Mapping/ Section wise energy consumption



Energy Share of Major Utilities

Section	**Chillers & Aux**	**AHUs**	Basement Lighting	Lifts	Ventilation/ Others
Share (%age)	**60%**	**20%**	7%	7%	6%

Year Wise Energy Consumption Pattern

Parameters	2019-20	2020-21	2021-22	2022-23
Energy (MWh)				
Grid	41,270	30,437	30,321	38,932
DG sets	4,822	277	293	177
Total Energy	**46,092**	**30,714**	**30,615**	**39,110**
Energy Cost (Million INR)				
Grid	355	282	251	284
DG sets	51	3	4	4
Total Energy Cost	**406**	**285**	**255**	**288**

Performance Highlights

	FY 19-20		FY 22-23
Energy Consumption Intensity	181.04 kWh/sqm	↓	138.23 kWh/sqm
Renewable Energy	2,57,106 kWh	↑	6,09,649 kWh
GHG Emission	37,083 mtCO2e	↓	27,779 mtCO2e

~9304 tones of GHG
Emission reduction from 2019 to 2023

=

Equivalent to carbon sequestered by **~620,264 Nos.** Fully grown trees in a year

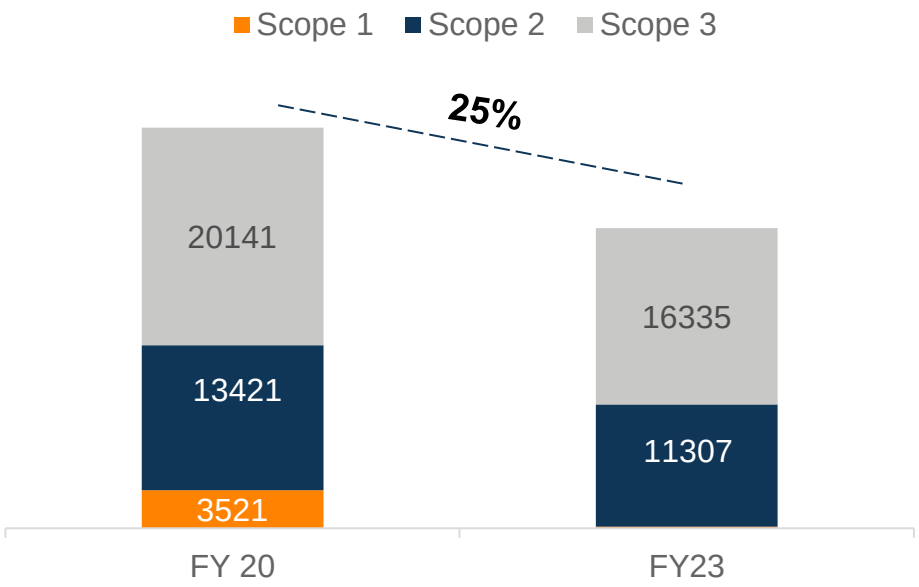
23%
reduction in energy intensity from 2019 to 2023

25%
reduction in GHG emission from 2019 to 2023

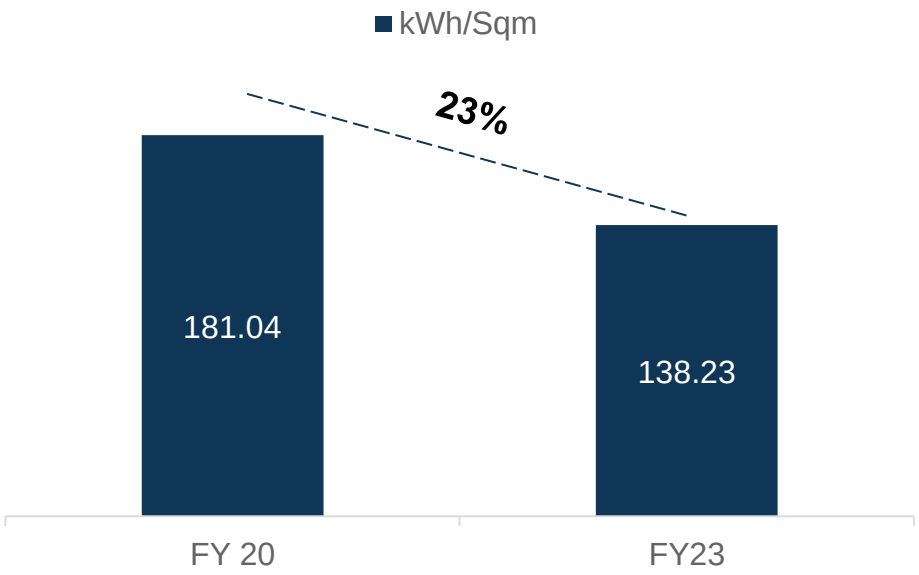
Progress on Net Zero

We are actively tracking our emissions and are closely working with all our stakeholders to achieve a Net Zero carbon future by 2040 (or sooner)

GREENHOUSE GAS EMISSIONS (mtCO2e)



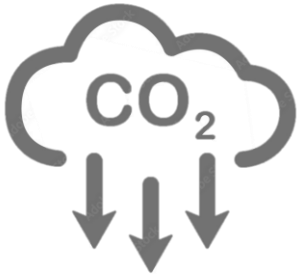
ENERGY CONSUMPTION INTENSITY (KWH/SQM)



Average Annual Hourly EPI (AAhEPI) is **20.5 (Wh/sqm/yr)** for 60% occupancy for 24 hrs./day and 40% occupancy for 12 hrs./day operations.

Impact of ENCON Projects in last years

Year	Major EM Project Implemented	Energy Saving kWh (Lakhs Units)	Cost Savings (Lakhs INR)	Payback (Months)
FY 2019-20	4	224	1983	16
FY 2020-21	4	20	190	20
FY 2021-22	5	23	196	22
FY 2022-23	5	4	35	15

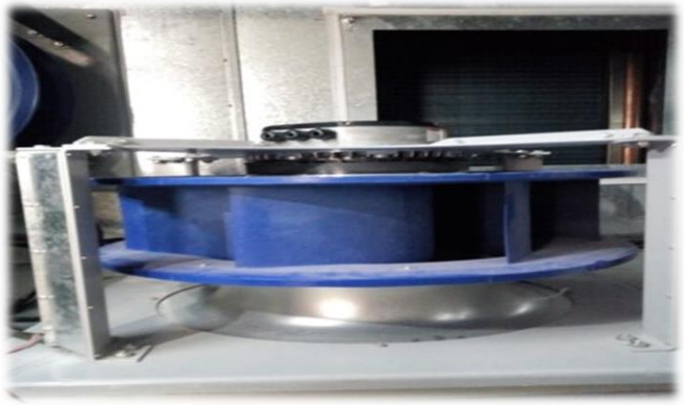


Year	CO2 Reduction, Tonne
FY 2019-20	17,694
FY 2020-21	1,612
FY 2021-22	1,856
FY 2022-23	309

Energy Saving Projects Implemented in last 3 years

EC FANS ES FILTERS

- EC motors installed in AHU's to achieve higher energy savings.
- Improvement in quality of air inside the workplace
- Usage of EC motors & fresh air dampers improves on the quality of air as well specific energy consumption of air handling units(AHU).
- Saving of ~ 24000 kWh units per month by using EC motor



SECONDARY PUMP AUTOMATION WITH DECOUPLER VALVE

- Automation of secondary pump for energy efficiency in HVAC system.
- VFD controlled HVAC pumps with auto changeover as per load demand.
- Avoid running of extra pumps by utilizing in better efficiency manner.

Energy Saving Projects Implemented in last 3 years

CHILLER WITH VFD

- Chilled water system is with VFD regulated with VFD & actuators in AHU's
- Harmonic filters installed for chiller plant to improve power quality
- Operation of chiller plant at less specific energy path
- Centralized HVAC plant improves system efficiency

CENTRALIZED BMS

- All utility equipment's integrated with BMS for better operation controls and monitoring.
- Monitoring energy consumption trend to identify gaps.
- Monitoring and operation control of Chillers, pumps and AHUs.

Energy Saving Projects Implemented in last 3 years

ROOFTOP SOLAR

- We have rooftop solar renewable Energy Plant Capacity of 469 KWp to reduce use of conventional energy.
- Also, reduction in heat load has been achieved through shadow effect of 4~5 Deg C during day time.
- The average guaranteed unit generation per year is 6,09,649 kWh (approx.) & the average CO2 reduction shall be 4,81,622 Kgs. per annum.
- We are generating ~ 65,614 kWh units per month and using in common area.

VFD FOR WATER PUMPS

- VFD installed for auto operation of Flushing and Domestic pumps based on level feedback.
- Uniform flow of water and improvement in water quality.
- Reduction in customer complaints.
- Increased pump life by avoiding frequent breakdowns.

Energy Saving Projects Implemented in last 3 years

LED LIGHTS AUTOMATION

- All existing lights in base building are converted to LED lights
- Installed high efficiency with > 115 lumens/watt.
- Installed 3 metres from ground level for better illumination.
- Installed digital timers and occupancy sensors for automation of lighting operation.

BASEMENT EXHAUST INTERGRATION WITH CO SENSOR

- Installed CO sensors at basement parking's for optimum utilization of axial/ exhaust fans.
- Integration of basement exhaust with CO sensor to avoid extra running hours of fans.
- Dual speed exhaust fans for energy savings.

Case Study-1: Centralized Building Management System

Background: The property is with multiple towers and having different OEM based BMS system.

Challenges: Tower-wise energy footprint, heat load and running hours of equipment comparison was not possible.

Proposed System: BMS system from all towers are brought under a single platform.

Advantages of the new system:

- Precise monitoring of operating parameters on a real time basis.
- Data comparison on hourly, monthly & annual basis
- Fault analysis
- Indoor IAQ parameters monitored & controlled without time delay.

Cost Benefit Analysis (1 Campus):

Total investment	=	Rs. 54.12 Lacs
Annual electrical energy savings	=	2,96,771 kWh
Annual savings	=	Rs. 26.84 Lacs
Payback	=	24 months

Case Study-2: Automation of AHU Fresh Air Damper w.r.t. IAQ Parameters

Background: The fresh air requirement of the occupant is being catered through air handling units (AHU) at individual floors.

Challenges:

- Optimum balancing of fresh air with IAQ Level and Heat load
- Improper supply of fresh air results in sick building syndrome

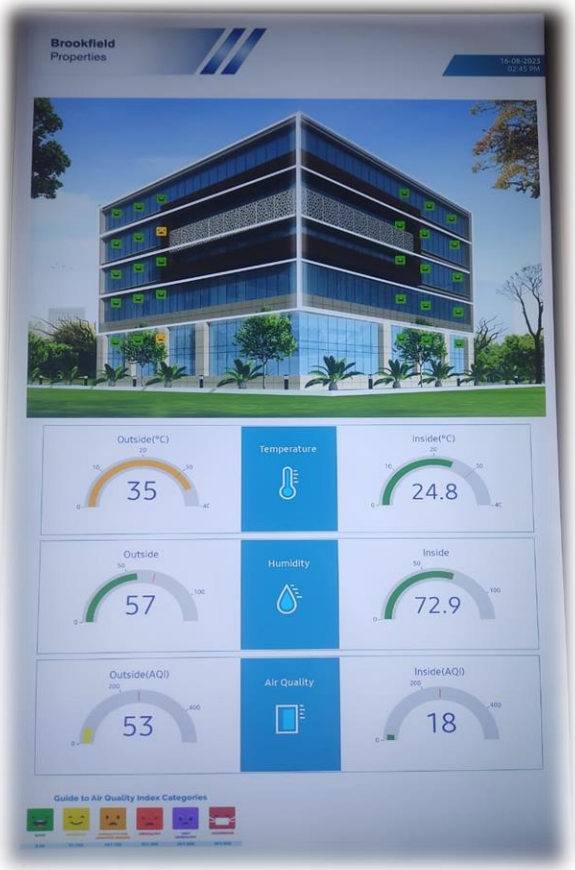
Proposed System: Flow of fresh air based on air quality monitored inside and outside the building

Advantages of the new system:

- Higher energy savings due to optimal opening of fresh air dampers.
- Higher productivity of occupants because of proper maintaining of IAQ level.

Cost Benefit Analysis (1 Tower):

Total investment	Rs.16.75 Lacs
Annual electrical energy savings	1,36,124 kWh
Annual savings	Rs.11.17 Lacs
Payback	18 months



Case Study-3: Chilled Water Ring Main automation/interconnection

Background: Individual towers have got dedicated chilled water plants to cater for the HVAC requirement.

Challenges:

•During seasonal variation and weekends all the plants used to operate in part load conditions.

•Excess running hours resulting in higher wear & tear of the equipment.

Proposed System: Individual plant rooms to be inter-connected so that single plant room can supply chilled water to two or more buildings.

Advantages of the new system:

•Optimal loading of chillers, resulting in higher energy saving

•Run hour, O & M and spares consumption reduced for the receiving plant.

•Enhanced redundancy

Cost Benefit Analysis (1 Ring Main):

Total investment	=	Rs.31.00 Lacs
Annual electrical energy savings	=	2,51,852 kWh
Annual savings	=	Rs.20.67 Lacs
Payback	=	18 months

Waste Management

CANDOR TechSpace

SOP

Proper **Waste Management SOP** in place – being strictly followed foe managing waste

OWC

Inhouse **Organic Waste Converter (OWC)** of 1.0 ton/day to make organic compost

Net Zero

Target – Zero Landfill waste by channelizing all waste for reuse and recycle

Green Chemicals

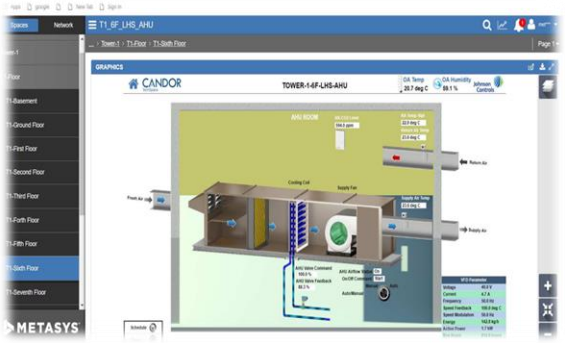
Replaced conventional chemicals by super concentrated **green chemicals**

Hazardous Waste

Commissioned dedicated **Hazardous waste** storage Facility

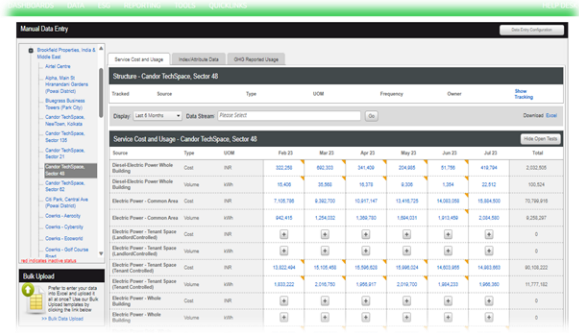
Teamwork, Employee involvement and monitoring

BMS System to monitor energy consumption

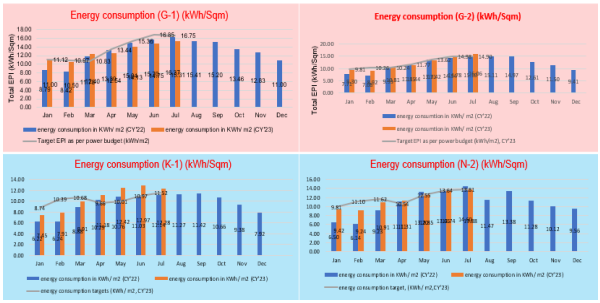


Resource Advisor Portal to update Energy, water, waste and GHG emission data

Monthly Review of Energy Performance



ESG Performance – Energy Consumption Profile (kWh/Sqm)



Training and Awareness Program

Training Gallery

Energy Management Training

Centralized Team of BEE Certified Energy Auditors and Managers for energy management

gef

UNIDO

Under GEF – UNIDO – BEE Project

Capacity building and design & implementation of energy management system as per IS/ISO 50001 in MSME Clusters

Certificate of Training

This is to certify that Mr. Raghav Singhal from CBRE - Brookfield Properties has successfully completed training under the program "Implementer Cum Energy Leader Course on ISO 50001; Energy Management System" held on 23 December 2022.

Vikender Pal Singh
Executive Director
Confederation of Indian Industry

CII
Centre of Excellence
for Competitiveness for SMEs

Milind Deore
Director
Bureau of Energy Efficiency

Date: **16-01-2023**

Certificate No. **PE231222_86**

Our Commitment to Net Zero

Committed to industry-leading sustainable development to deliver long-term value to our business, partners and communities

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Brookfield Properties India advances net-zero target by 10 years to 2040

By Kailash Babar, ET Bureau • Last Updated: Dec 01, 2022, 05:22 PM IST

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2019

Establish baselines

2023

Net Zero plans for all buildings

2025

50% of portfolio on decarbonization pathway

2030

Accelerate decarbonization across assets

2040 NET ZERO (or Sooner)

Across the Brookfield portfolio

Leader in Sustainable Office Development

Committed to deliver on our **Net Zero** target by 2040 or sooner.

Confederation of Indian Industry

KEY ESG CERTIFICATIONS

IGBC
GREEN BUILDING RATING

Confederation of Indian Industry

BEE 5 STAR RATING

ISO 9001, ISO 14001 & ISO 45001 CERTIFICATION

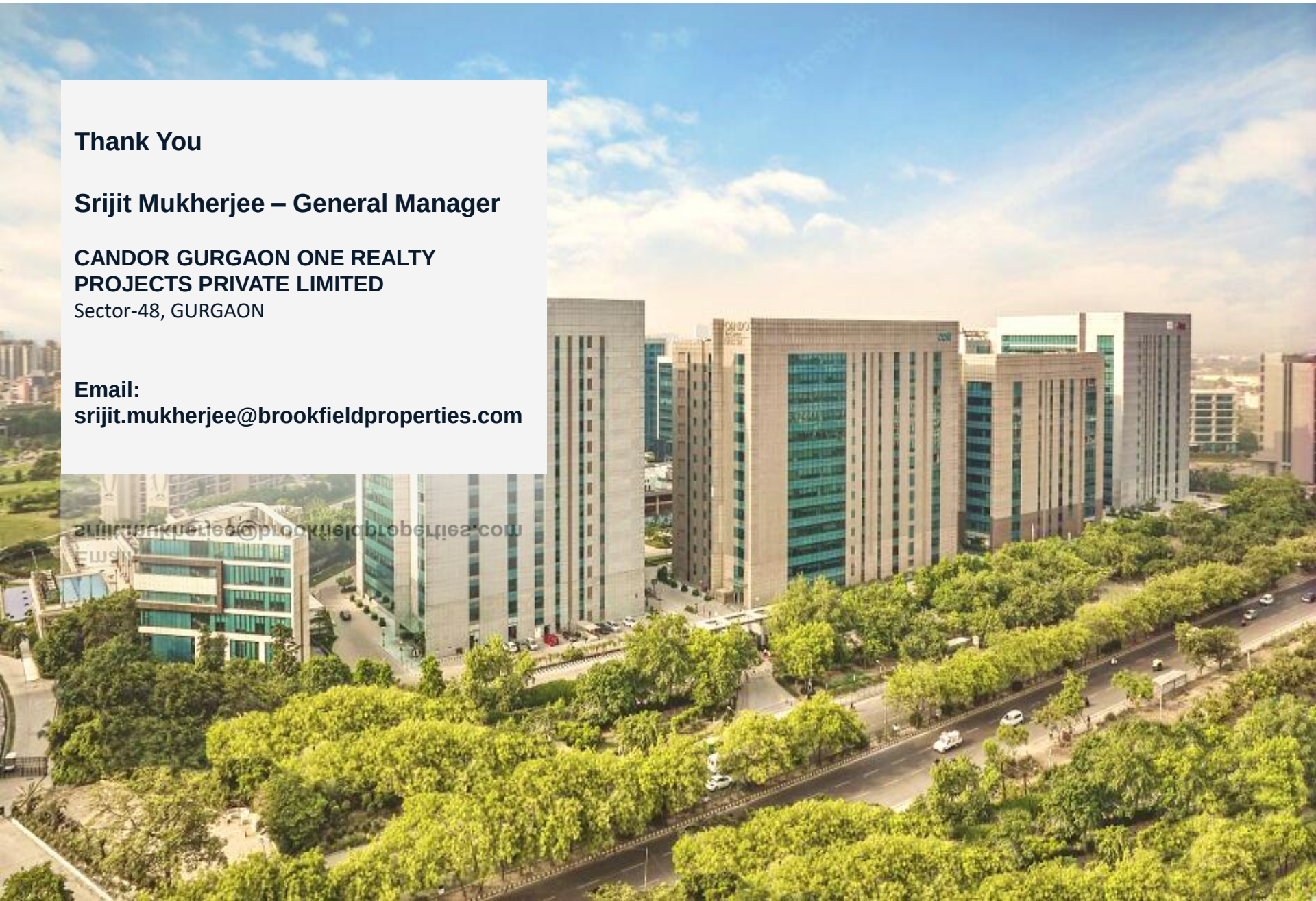
ISO 50001 CERTIFICATION

Learning from CII

- Build up towards the nomination process has helped us to recognize and identify projects which has helped our company's excellence in the reduction of energy consumption and innovation.
- Our mission towards use of clean energy and reduction of carbon footprints is helping us scout for new avenues and techniques to resource conservation.
- We appreciate CII for providing this platform to share our experience, implementations and concepts.
- We believe that our efforts to mitigate climate change and prioritizing a circular economy will ensure our sustained growth in the future.

Way Forward

- Renewable Energy Programme.
- Installation of Fan less Cooling Towers.
- Chemical less water treatment for Cooling Towers/ EBSR system
- Integration of actuators installed in HVAC ring main system with BMS.
- Demand ventilation control based on AQI parameters.
- Photosensors/ Occupancy sensors.



Thank You

Srijit Mukherjee – General Manager

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