CII 25th NATIONAL AWARD FOR EXCELLENCE IN ENERGY MANAGEMENT 2024

Honeywell Automation India Limited

53,54, 56, & 57, Hadapsar Industrial Estate,
Hadapsar, Pune 411 013.
Maharashtra.

Date : 10th - 12th September 2024

Honeywell

MR. SUBRATA BALIARSINGH

- DIRECTOR IFM - INDIA

MS. SWATI KELKAR

- OPERATIONS LEADER – HAIL, PUNE

MR. VIJAYAKUMAR SHOLAPUR

- FACILITIES & ENERGY LEAD - INDIA

HONEYWELL INDIA

8
Decade legacy

$1B
Domestic sales and exports

13500
Employees

3000+
Products, solutions, applications engineered in India

4
Technology development centers

- Bengaluru
- Madurai
- Hyderabad
- Gurugram

3
Manufacturing centers

- Gurugram
- Dehradun
- Pune

20
Facilities in major cities

- Pune
- Bengaluru
- Gurugram
- Chennai
- Dehradun
- Mumbai
- Kolkata
- Madurai
- Hyderabad
- Vadodara

NET ZERO COMMITMENT- HONEYWELL SUSTAINABILITY POLICY

Honeywell

Sustainable Opportunity Policy
Honeywell's Commitment to Health, Safety and the Environment

By integrating health, safety and environmental considerations into all aspects of our business, we protect our employees and contractors, our communities and the environment, achieve sustainable growth and accelerated productivity, drive compliance with all applicable regulations and develop technologies that expand the sustainable capacity of our world. Our health, safety and environmental management systems reflect our values and help us meet our business objectives.

- We protect the safety and health of our employees and contractors, and minimize the environmental footprint of our operations through efforts to prevent illness, injury and pollution.
- We actively promote and develop opportunities for expanding sustainable capacity by increasing energy and water efficiency, improving security and safety, and reducing emissions of harmful pollutants.
- We are committed to compliance with all of our health, safety, environmental and legal requirements everywhere we operate.
- Our commitment to health, safety and the environment is an integral aspect of our design of products, processes and services, and of the lifecycle management of our products.
- Our management systems apply a global standard that provides protection of both human health and the environment during normal and emergency situations.
- We identify, control and endeavor to reduce hazards and associated risk (to employees and contractors), emissions, waste and inefficient use of resources, including energy and water.
- We are open with stakeholders and work within our communities to advance laws, regulation and practices that safeguard the public.
- We abide by the company's own strict standards in cases where local laws are less stringent.
- Our senior leadership and individual employees are engaged in aspects of health, safety and the environment and are accountable for their role in meeting our commitments.
- We measure and periodically review our progress and strive for continuous improvement.

These are our commitments to health, safety, and the environment, and to creating Sustainable Opportunity everywhere we operate.

Vimal Kapur
CEO

Revised: 16 June 2023
Version: 8
Document Number: 3-1101-X10

CORPORATE ENERGY & SUSTAINABILITY TEAM

Executive Sponsorship
Torsten Pilz – Senior VP Chief ISC Officer
Anne Madden – Senior VP & General Counsel

Senior Leadership Support
Gavin Towler – Corporate VP Chief Scientist, Sustainability Technologies & Chief Sustainability Officer
Su Ping Lu – VP & GC, Corporate Secretary Environment Social Governance

Program Management
Shannon Todd, ISC; Lindsey Rossi, ISC

Core Members

Corporate

ESG
Cathy Gallagher
Nandini Gangopadhyay

GRE
Eddie Massie

ISC
Shannon Todd
Lindsey Rossi
Barry Martin
Nathan Outlan
Jara Penn Bahar

Procurement
Jay Shawver
Jesse Reeves

SBG Energy Leads

AT
Evan Kopshy
Carolyn Abel
Monte Lyons

BA
Adriana Miranda
Sam McEwen

ESS
Scott Duncan

IA
Cory Thompson
Lauri Mesaeh

CBRE Facility Partner

Americas
Dan Lindsey
Tony Siddle
Susan Fusaro

EMEA
Steph Temme
Mohammed Ahmed
Patrycja Nowacka

APAC
Kevin Guo

India
Vijay Sholapur
Elayaperumal G

Business Support

Corp Finance
Tracey Nolberto

Legal
Chuck Anthony

Remediation
Benny Dehghi
Jessica Telano

AT
Greg Bopp
Sebastien Chague (Fin)

BA
Jon Speary (GRE)
Jencil Philip (Fin)

ESS
Brandon Morris (AM)
Nicola Emery (Fin)

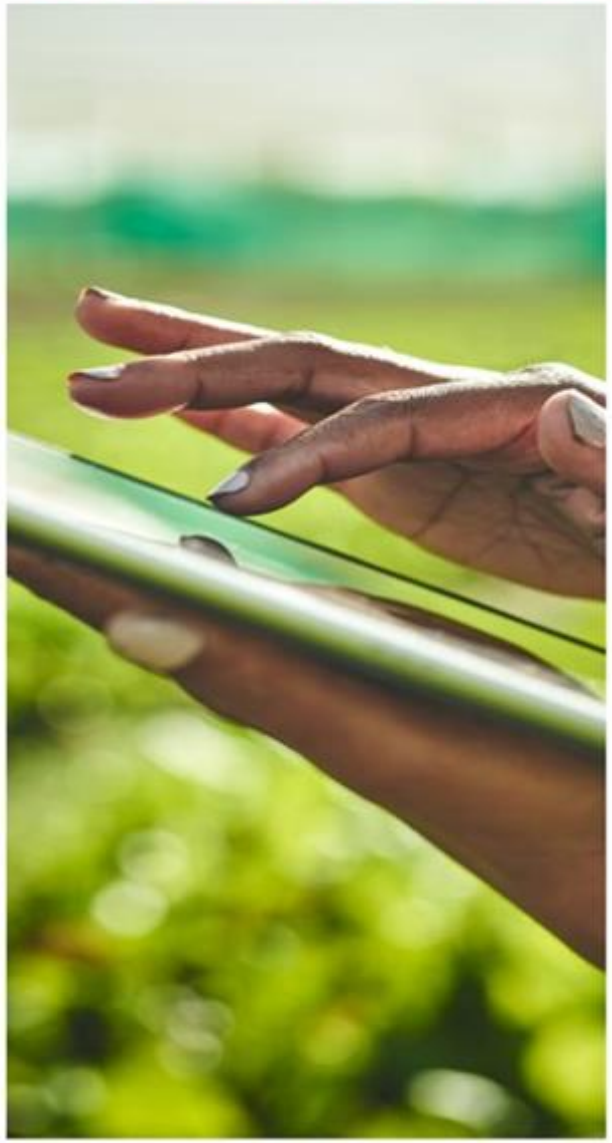
IA
Vasundara Srenivas
(Fin)

SCIENCE BASED TARGETS
IRIVING AMBITIOUS CORPORATE CLIMATE ACTIOI

- **Reduce Scope 01 and Scope 02 GHG emissions 50 % by 2037 from 2019 base year.**
- **Reduce Scope 03 emissions 23 % within the same timeframe.**

- **Investment in Energy savings projects**
- **Improve** Energy Efficiency by 10 %
- **Conversion to renewable energy sources**

THE ENVIRONMENT



Our commitment to being environmentally responsible is reflected in the extensive work we do to reduce greenhouse gas (GHG) emissions, increase energy efficiency, conserve water, minimize waste, and drive efficiency throughout our operations. Honeywell also champions responsible remediation projects and efforts to make our products safer and more sustainable.

OUR ENVIRONMENTAL GOALS

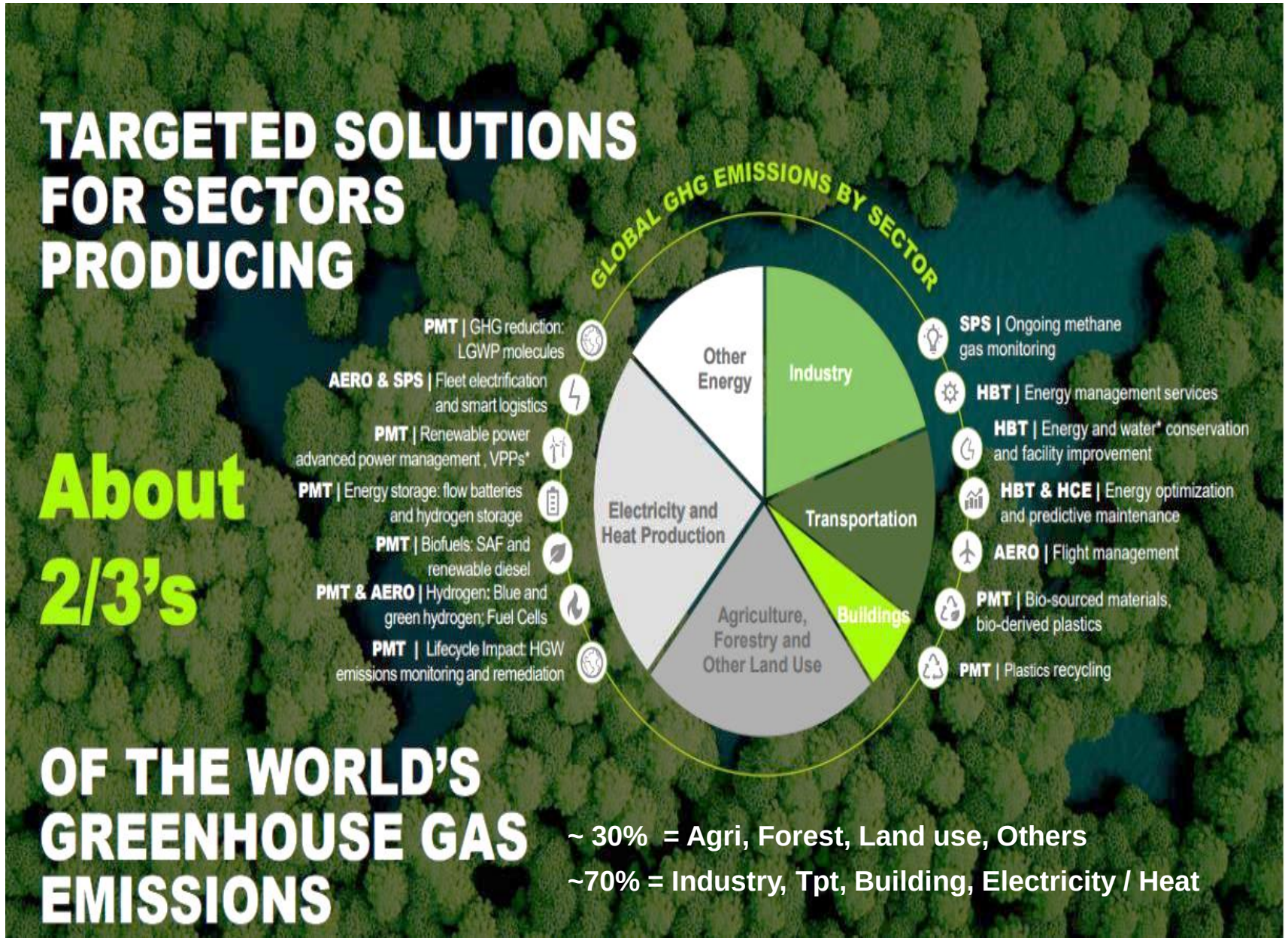
We are proud of the environmental improvements we have achieved to date and continue in our commitment to make our businesses more sustainable.

- **Pledge to be carbon neutral in our facilities and operations[1] by 2035**
- **Commitment to set a science-based target aligned with the Science Based Targets initiative (SBTi)**
- **Five-year "10-10-10" target to, by 2024:**
  - Reduce global Scope 1 and Scope 2 GHG emissions intensity by an additional 10% from 2018 levels
  - Deploy at least 10 renewable energy opportunities
  - Achieve certification to ISO's 50001 Energy Management Standard at 10 facilities

GOAL	TIMEFRAME	STATUS
30% GHG reduction[1]	2007 – 2011 (2004 baseline)	**Exceeded**
20% Energy efficiency improvement	2007 – 2011 (2004 baseline)	**Exceeded**
15% GHG intensity reduction[1]	2012 – 2016 (2011 baseline)	**Achieved 3 years early**
10% GHG intensity reduction[1]	2014 – 2018 (2013 baseline)	**Exceeded**
10% GHG intensity reduction[1]	2019 – 2023 (2018 baseline)	**On track**
10 Renewable energy opportunities		**On track**
10 Certified ISO 50001 sites		**Exceeding**

[1]Scope 1 and Scope 2

HONEYWELL COMMITTED TO BE CARBON NEUTRAL BY 2035



02 facilities certified by LEED platinum

01 facility certified

02 facilities certified

Scope 1 Abatement plan
• Existing DG' conversion to dual-fuel system. • Leveraging Battery Energy Storage System • Leveraging Induction based cooking system • Vehicle fleet engagement model

Scope 2 Abatement
• Offsite and onsite –Green power through PPA • In-house solar power plant.

SITE INFRA – HAIL - HADAPSAR, PUNE

Facility details

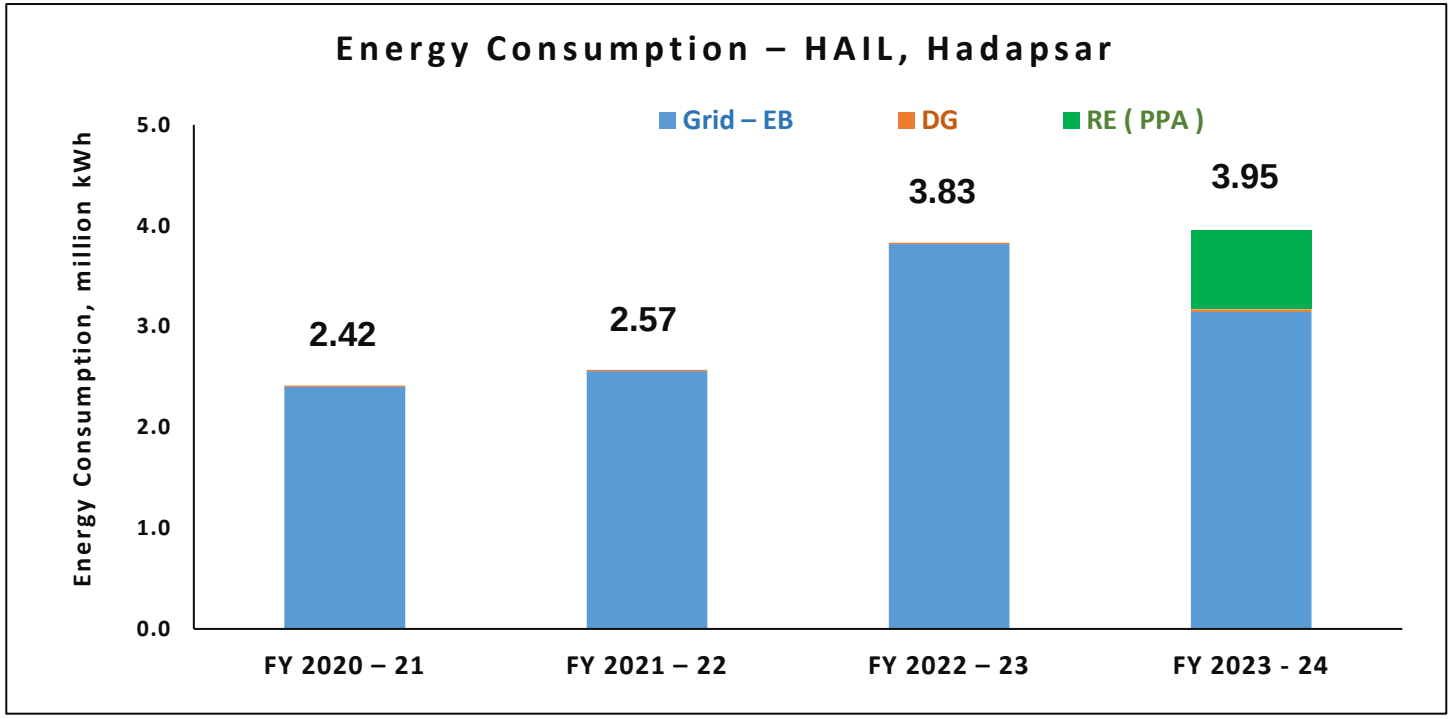
- Owner : Honeywell
- Year of operation : 1984
- Built up area : 263,232 sq.ft
- Towers : Tower - 3 Nos.
- Seating Capacity : 2,658
- Tower 1 Emerald : GF to 2 floors
- Tower 2 Topaz : GF to 2 floors
- Tower 3 Sapphire : GF to 2 floors
- Incoming Power Supply : 22 kV
- Sanctioned Demand : 2,538 kVA
- Transformer Capacity : 3,500 kVA (cumulative 4 nos.)
- Diesel Generator Capacity : 3,085 kVA (cumulative 6 nos.)
- UPS Capacity : 690 kVA (cumulative 8 nos.)
- Chiller Capacity : 485 TR (cumulative 2 nos.)

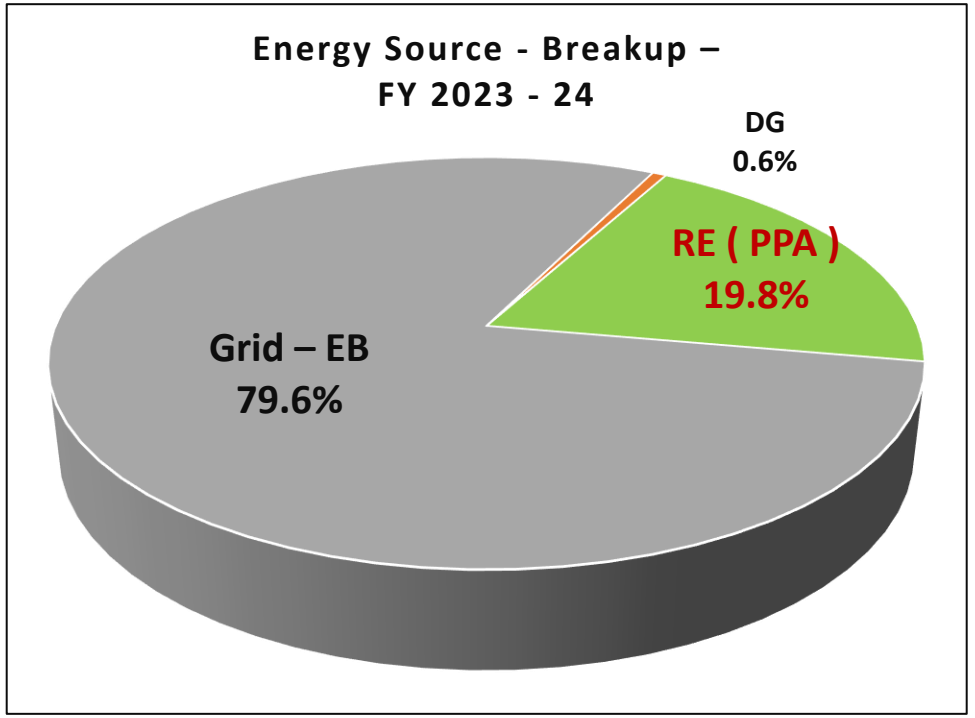
Annual energy use is about 3.95 million kWh with the spend of INR 74.65 millions, including diesel cost during FY 2023 - 24

ENERGY CONSUMPTION OVERVIEW IN 2020 - 2024

Year	Source of Energy			Total Energy Consumption	Energy Cost	Unit rate
	Grid – EB	DG	RE *(PPA)*	million kWh	Million INR	Rs. / kWh
FY 2020 – 21	2,403,116	11,532	0	2.42	35.34	14.64
FY 2021 – 22	2,558,416	12,558	0	2.57	46.56	18.11
FY 2022 – 23	3,816,284	15,242	0	3.83	74.55	19.46
FY 2023 - 24	3,145,912	24,061	781,002	3.95	74.65	18.89

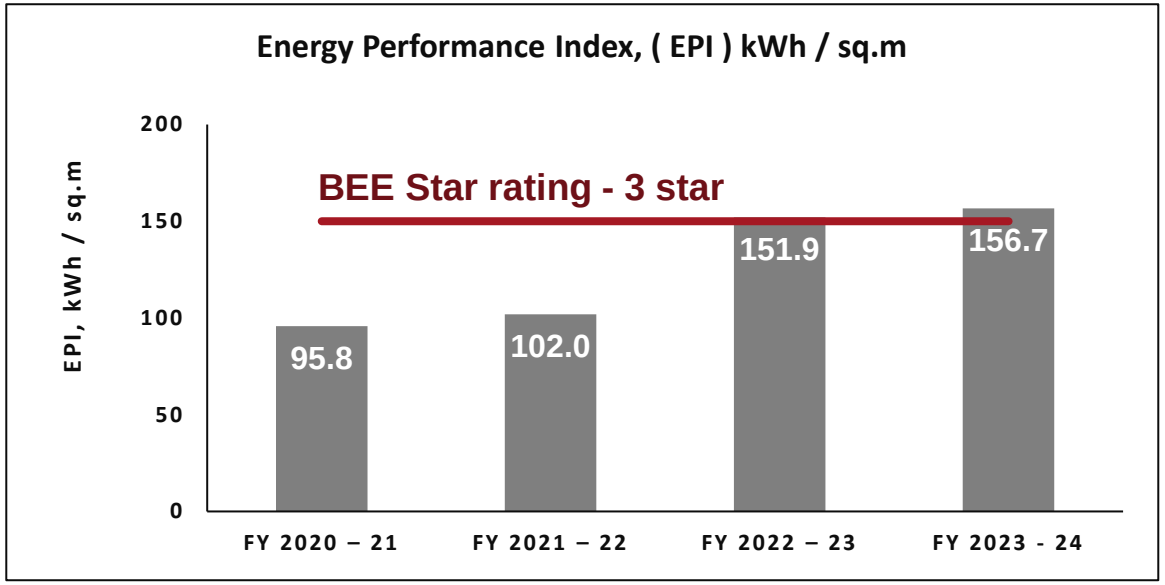
** PPA started from Jan 2024*





Specific Energy Consumption 2020 - 2024

Energy Performance Index – Whole building			
Year	Energy Consumption	Area	Energy performance index
	kWh	Sq.m	kWh / sq.m / yr
FY 2020 – 21	2,414,648	25,216	95.8
FY 2021 – 22	2,570,974	25,216	102.0
FY 2022 – 23	3,831,526	25,216	151.9
FY 2023 – 24	3,950,975	25,216	156.7



EPI (kWh / m^2 / y)	Star Label
200 – 175	1 star
175 – 150	2 star
150 – 125	3 star
125 – 100	4 star
Below 100	5 star

Remarks

- FY 2022 – 23 – recovered from Covid ’19. Implemented return to work at 3:2 model from May 2022 onwards.
- FY 2023 – 24 – Implemented Return to work at 3:2 model to 4:1 model from July 2023 onwards.

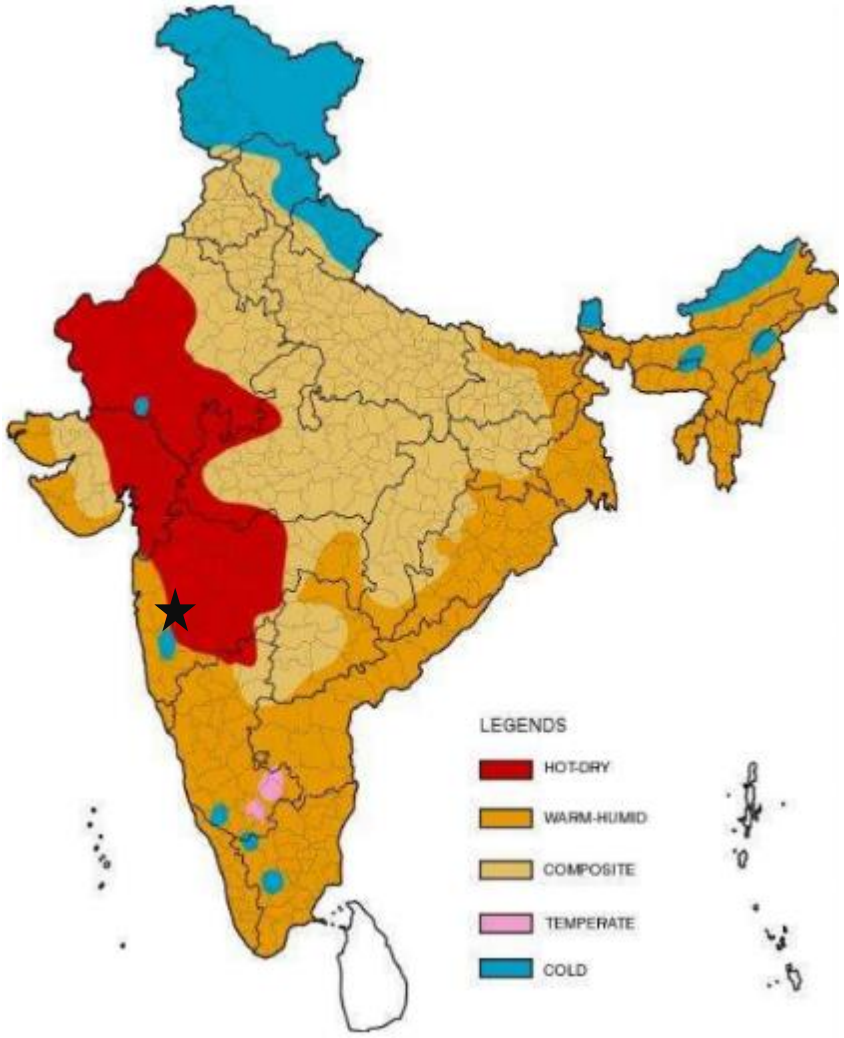
COMPARISON SEC - INTERNAL & NATIONAL BENCHMARKING

Internal Benchmarking	Location	Zone	SEC (kWh / m^2 / y)
Honeywell	Hyderabad	Warm & Humid	169.5

Benchmarking	Reference	SEC (kWh / m^2 / y)		Star Label
		Standard	Actual	
National level	Bureau of Energy Efficiency (BEE)	200 & below	**156.7**	**2 Star**

Climate Zone	AC	
	< 50.0 %	> 50.0 %
EPI (kWh / m^2 / year)		
Warm & Humid	101	**182**
Moderate	94	179
Composite	86	179
Hot & Dry	90	173

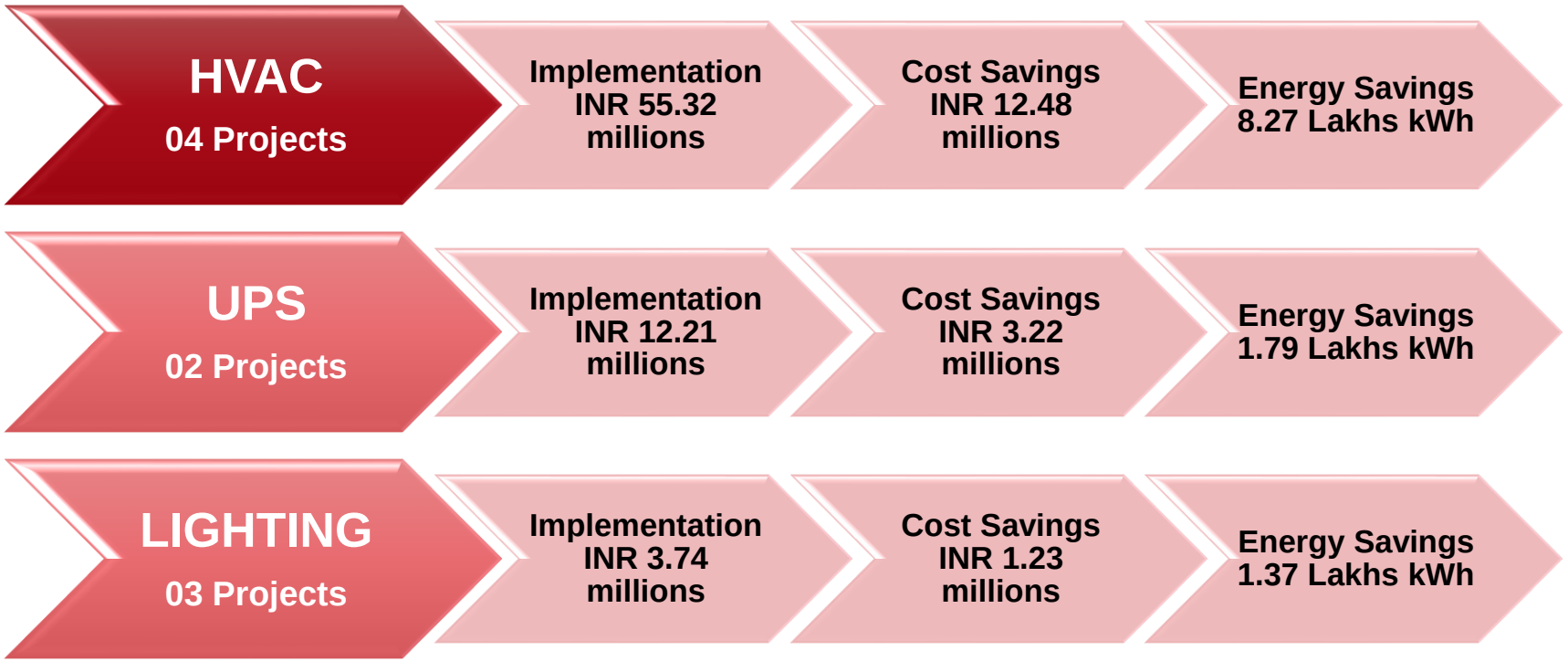
EPI (kWh / m^2 / y)	Star Label
200 – 175	1 star
175 – 150	2 star
150 – 125	3 star
125 – 100	4 star
Below 100	5 star



★ *Pune*

Energy Saving projects implemented in 2020 - 2024

Year	No. of Energy saving projects	Investment	Cost Savings	Energy Savings	Impact to SEC
		Million INR	Million INR	Lakhs kWh	%
FY 2020 – 21	04	11.51	3.39	3.58	12.9
FY 2021 – 22	01	1.04	0.44	0.51	2.0
FY 2022 – 23	03	54.66	11.47	6.44	14.4
FY 2023 - 24	01	4.08	1.64	0.90	2.2



ENCON PROJECT PLANNED IN FY 2024 - 25

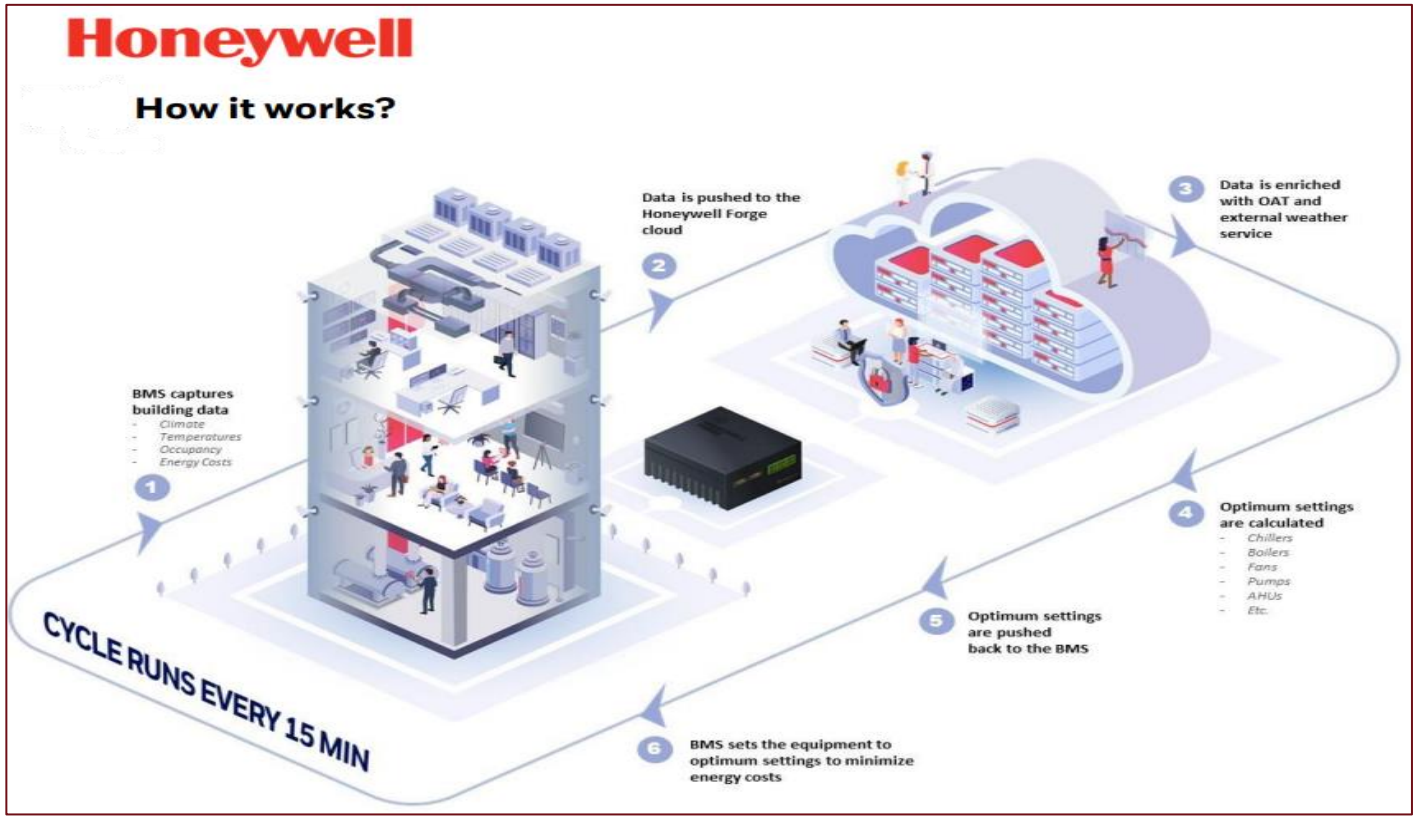
Title of the Project	Electrical Savings, kWh pa	Cost Savings, Million INR pa	Investment, Million INR	Status
Intelligent Building Optimization - Honeywell Buildings Sustainability Manager	155,555	2.8	9.3	In progress

- IS A CLOUD-BASED SOLUTION THAT LEVERAGES MACHINE LEARNING TO OPTIMIZE THE HVAC SYSTEM IN A BUILDING.

  LEARNING FROM DATA HOW SET-POINT CHANGES AFFECT COMFORT AND COST.

  IT MINIMIZES ENERGY COSTS WHILE MAINTAINING COMFORT IN A BUILDING.

- Models & predicts heating & cooling demand
- Learns and adapts based on real-time data
- Identifies inefficiencies in the HVAC System
- Minimizes costs and protects comfort levels



IBO -WHAT IS DONE DIFFERENTLY?

State-of-the-art	DM – DIGITISED MAINTENANCE	EO – ENERGY OPTIMIZER
• HVAC control system configured conservatively to ensure comfort for all operating conditions • Set-points either constant or changing based on rules if outside too hot then decrease chilled water temperature • HVAC system runs sub-optimally • Part of cooling energy is wasted	• Predicts asset healthy status. • Generates auto remediation request • Guides trouble shoot steps. • Stores historical data • Forecast life cycles replacements.	• Models and predicts demand for cooling • Uses on-line weather forecast. • Set-point adjusted every 15 minutes • Delivers the right amount of cooling energy to maintain comfort

ENCON PROJECT PICTURES

Replacement of Conventional UPS with Energy Efficient Modular UPS	
Old UPS	***New UPS***
	

Innovative projects – Implementation of Free Cooling system

Concept note

- Free cooling is one of the way of using colder ambient to perform cooling rather than the refrigeration cycle of the chiller.
- Allowing filtered outside air into the space when outdoor temperatures drops thus alleviating the need for the refrigeration cycle to be running.
- Based on enthalpy (Temperature of ambient air), fresh air fan VFD modulates the air intake to AHU

Benefits of Free Cooling system

- Chiller load is significantly reduced results in energy saving.
- Fresh air from ambient betterments indoor conditions by reducing the CO_2 level in workplace
- Fresh air intake can be managed by scheduling the fresh air intake from Time of the day when ambient has lower enthalpy .
- In winter 100% fresh air can be taken through AHU during normal loads this will avoid operation of chiller plant.

** Project implemented in 2020*

Taking advantage of free cooling during low ambient temperature

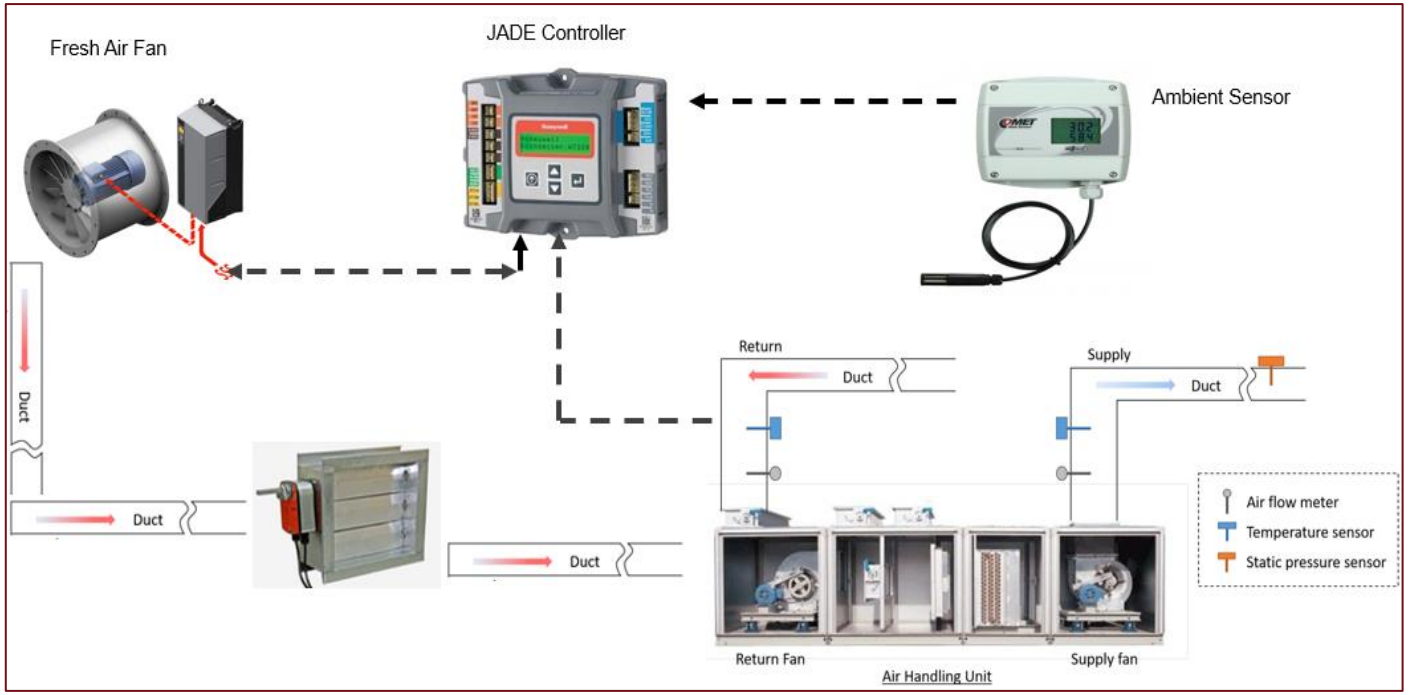
Innovative projects – Implementation of Free Cooling system

Equipment's installed

- Inline fans & Blowers
- Additional duct
- Ambient sensors
- Enthalpy sensors
- Controller
- VFD

Sensors & Controller

- Honeywell make



Project Expense

- Investment
  INR 25.0 Lakhs
- Cost Savings
  INR 8.90 Lakhs pa
- Energy Savings
  89,085 kWh pa

** Project implemented in 2020*

Fresh Air Ducts

Fresh Air Fan

Enthalpy Sensor

VFD Panel

UTILIZATION OF RENEWABLE ENERGY SOURCE

Year	Renewable Energy Source	Renewable Energy Consumption	Total Energy Consumption	Renewable Energy %	Carbon emission offset
		kWh	kWh		Tons of CO_2
FY 2022 – 23	PPA – Solar	781,002 (Jan 24 to Mar 24)	3,938,084	20 %	638
* PPA started from Jan 2024					
Jan 24	PPA – Solar	235,413.0	295,937	79.5 %	192
Feb 24	PPA – Solar	255,803.0	322,948	79.2 %	209
Mar 24	PPA – Solar	289,786.0	364,132	79.6 %	237

GHG EMISSION TREND

	Scope 01	Emission factor CO_2e / unit = 2.69	Scope 02			Total Emission, CO_2 in tons
CO_2e year	Fuel consumed in liters	GHG emission in TCO_2e	Energy consumption in kWh	Emission factor CO_2e / unit	GHG emission in TCO_2e	
FY 2020 – 21	7,205	19.4	2,403,116	0.79	1,898	1,918
FY 2021 – 22	10,750	28.9	2,558,416	0.81	2,072	2,101
FY 2022 – 23	8,836	23.8	3,816,284	0.817	3,118	3,142
FY 2023 – 24	11,170	30.0	3,145,912	0.817	2,570	2,600

INDOOR AIR QUALITY

CHENNAI
Testing redefined
TESTING LABORATORY PRIVATE LIMITED

www.ctllabs.in

CIN: U93000TN2000PTC043869

TEST REPORT

Test Report No & Date	**CTL/CH/N-23291/2024-25 & 07.06.2024**
Sample Number	**N-23291/24-25**
Name of the Customer	**M/s. Honeywell Automation India Ltd.,**
Address	IE67 - Hadapsar - Campus, 56 & 57, Hadapsar Industrial Estate, Hadapsar, Pune, Maharashtra - 411 013.
Sample Drawn by	Laboratory
Sample Name	Indoor Air
Sample Description	**Indoor Air Quality**
Sampling Location	**EMERALD GF SOURCING AREA WS 058**
Sample Drawn on	29.05.2024
Sample Received on	31.05.2024
Sampling Plan & Procedure	CTL/QSP/F-89 & CTL/SOP/AIR/024
Sample Quantity	1 No
Equipment used for Sampling	Particulate Monitor Rtek Due Date 27.02.2025
Analysis Started on	31.05.2024
Analysis Completed on	07.06.2024

Test Results:

The above sample tested as received, and results are as follows:

SL.NO	PARAMETERS	METHOD	UNITS	RESULTS	LIMITS*
1	SUSPENDED PARTICULATE MATTER	NIOSH 0500	mg/m^3	0.025	15
2	SULPHUR DIOXIDE (SO_2)	IS 5182 Part 2 - 2001	mg/m^3	BDL(DL:0.003)	13
3	OXIDES OF NITROGEN (NO_2)	IS 5182 Part 6 - 2006	mg/m^3	0.007	9
4	OXYGEN (O_2)	NIOSH 6601	%	20.9	>19.5

*Occupational Safety and Health Standards
BDL - Below Detection Limit(D.L - Detection Limit)
Remarks: The Indoor air quality level complies as per Prescribed limits in the above location
Statement of conformity is applied considering Decision rule as per CTL/QSP/16

END OF REPORT

Verified by

For Chennai Testing Laboratory Pvt Ltd

Authorised Signatory
G. MANIKANDAN
Head - Environment Division
(CHEMICAL)

Page 1 of 1

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TEST REPORT

Test Report No & Date	**CTL/CH/N-23292/2024-25 & 07.06.2024**
Sample Number	**N-23292/24-25**
Name of the Customer	**M/s. Honeywell Automation India Ltd.,**
Address	IE67 - Hadapsar - Campus, 56 & 57, Hadapsar Industrial Estate, Hadapsar, Pune, Maharashtra - 411 013.
Sample Drawn by	Laboratory
Sample Name	Indoor Air
Sample Description	**Indoor Air Quality**
Sampling Location	**EMERALD GF CANTEEN AREA**
Sample Drawn on	29.05.2024
Sample Received on	31.05.2024
Sampling Plan & Procedure	CTL/QSP/F-89 & CTL/SOP/AIR/024
Sample Quantity	1 No
Equipment used for Sampling	Particulate Monitor Rtek Due Date 27.02.2025
Analysis Started on	31.05.2024
Analysis Completed on	07.06.2024

Test Results:

The above sample tested as received, and results are as follows:

SL.NO	PARAMETERS	METHOD	UNITS	RESULTS	LIMITS*
1	SUSPENDED PARTICULATE MATTER	NIOSH 0500	mg/m^3	0.034	15
2	SULPHUR DIOXIDE (SO_2)	IS 5182 Part 2 - 2001	mg/m^3	0.004	13
3	OXIDES OF NITROGEN (NO_2)	IS 5182 Part 6 - 2006	mg/m^3	0.01	9
4	OXYGEN (O_2)	NIOSH 6601	%	20.9	>19.5

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BDL - Below Detection Limit(D.L - Detection Limit)
Remarks: The Indoor air quality level complies as per Prescribed limits in the above location
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(CHEMICAL)

Page 1 of 1

TEAMWORK, EMPLOYEE INVOLVEMENT & MONITORING

Energy Team

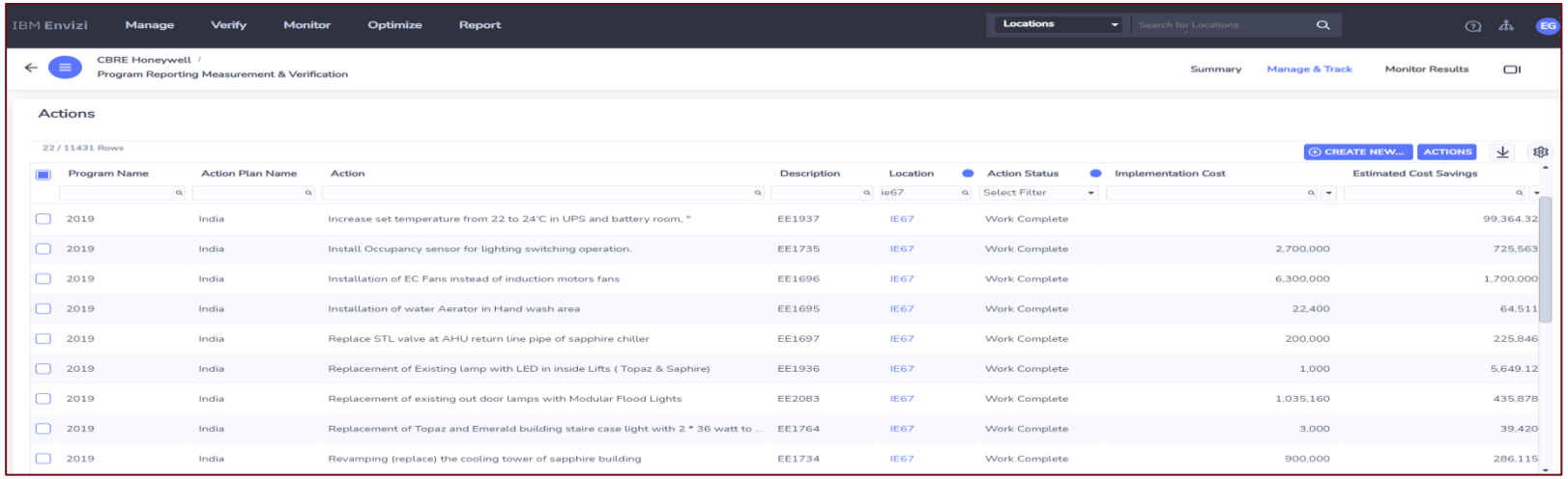
- Certified Energy Managers – 2 Nos.
- Weekly and monthly Energy review
- Energy Dashboard
- Dedicated Energy CAPEX budget
- Periodical Energy Training

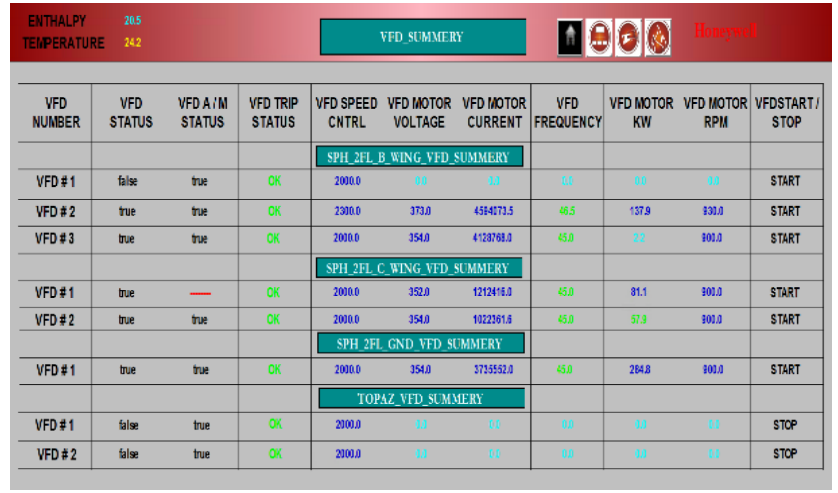
Kaizens

- DG A Check optimization from daily to weekly
- Operating multiple chillers at part load
- Chiller scheduling based on seasons
- Fresh air utilization based on ambient
- Timer optimization in Lighting sensor

BMS Team

- monitor
- scheduling of utilities (Chillers, AHUs)
- monitoring of equipment's - HVAC
- Energy consumption data analysis for critical equipment's
- Indoor air quality monitoring





THANK YOU

Honeywell

LIST OF ENERGY PROJECTS

No.	List of Energy Projects	Completion Date	Implementation Cost, INR	Cost Savings, INR	Energy Savings, kWh
01	Replacement of staire case light - 2 x 36 watt with 2 x 18 watt LED - 22 nos. ; 50 watt with 6 watt LED - 22 nos.	2020 Q3	5,000.00	68,580.00	7,620.0
02	Installation of EC Fans inplace of conventional induction motors fans	2020 Q3	6,300,000.00	1,700,000.00	182,795.0
03	Installation of Occupancy sensor for lighting switching operation	2020 Q4	2,700,000.00	725,563.00	78,015.0
04	Implementation of Free Cooling system	2020 Q4	2,500,000.00	890,887.00	89,088.0
	Sub total		**11,505,000.00**	**3,385,030.00**	**357,520.0**
01	Replacement of existing out door lamps with Modular Flood Lights	2021 Q4	1,035,160.00	435,878.00	51,280.0
	Sub total		**1,035,160.00**	**435,878.00**	**51,280.0**
01	Upgradation of UPS system with energy Efficient Modular UPS system.	2022 Q3	8,134,000.00	1,580,795.00	89,000.0
02	Replacement of existing Chiller plant with Energy Efficient Chillers, premium efficiency pumps (Condenser & Primary) and Cooling towers	2022 Q4	19,554,320.00	4,284,527.00	240,035.0
03	Replacement of 18 yrs old R 22 refrigerants - Split, Cassette unit, Package AC & window AC Units with ozone friendly refrigerants	2022 Q4	26,967,482.00	5,602,968.00	315,460.0
	Sub total		**54,655,802.00**	**11,468,290.00**	**644,495.0**
01	Replacement of existing Sapphire building 120 kVA x 4 UPS into modular UPS	2023 Q2	4,080,000.00	1,635,930.00	89,590.0
	Sub total		**4,080,000.00**	**1,635,930.00**	**89,590.0**
	Total		**71,275,962.00**	**16,925,128.00**	**1,142,885.0**