



CII NATIONAL AWARD FOR EXCELLENCE IN ENERGY MANAGEMENT 2021



MR.MURALI , MANAGER - ELECTRICAL
MRS.VANDANA, MANAGER - OPERATIONS

GANGA MEDICAL CENTER & HOSPITALS

The hospital is a state of the art **Orthopaedic Trauma & Plastic Surgery** unit catering to a huge population of the western zone of Tamilnadu, adjoining states and also complex trauma are referred from remote frontiers of India and other neighbouring countries like Bangladesh, Nepal, Maldives etc.

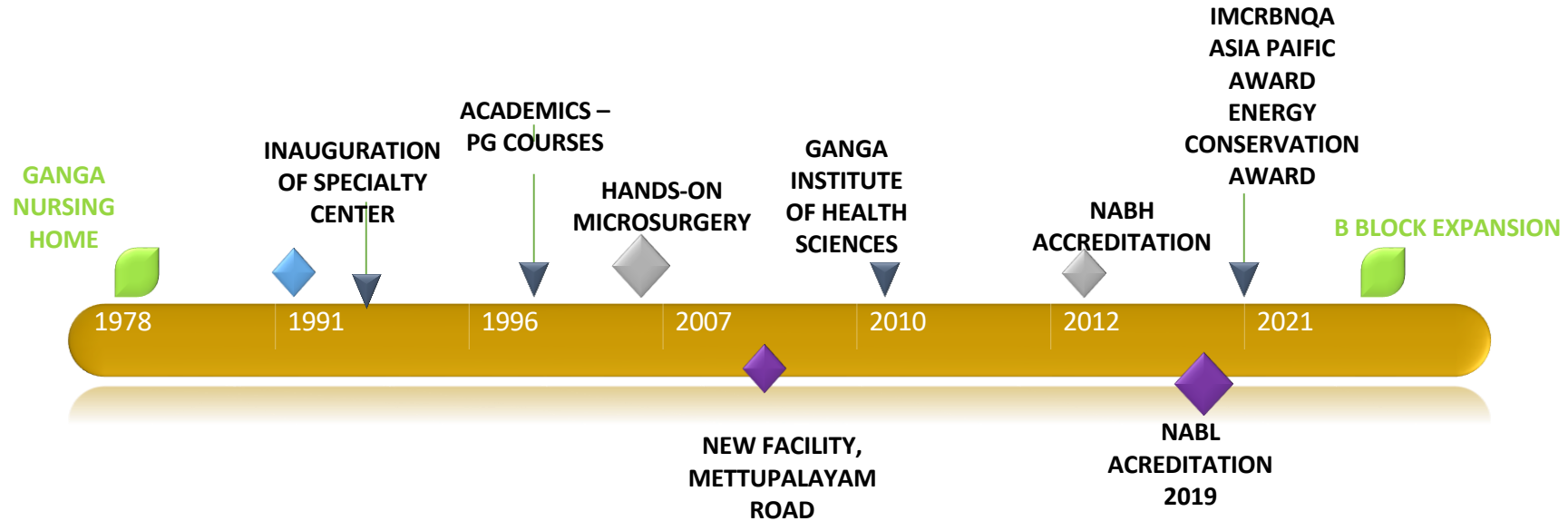
The services provided by GMCH are

- **Department of Plastic, Hand and Micro Surgery**
- **Department of Trauma, Orthopaedics and Spine Surgery**
- **Department of Burns Surgery**
- **Department of Facio Maxillary Surgery**
- **Department of Neuro Surgery**
- **Department of Radiology and Imaging**
- **Department of Physiotherapy**
- **Bone Bank , Ganga Skin Bank**
- **24 Hours Blood Bank, Laboratory, Pharmacy**
- **24 Hours Emergency Services-**
- **24 Hours Ambulance Services**
- **Dietary**

Total Plot Area	
Built up Area	24,128 sq.mt
No. of Beds	500
No. of Operation theatres	36
ICU/HDU	32



GROWTH OF THE HOSPITAL

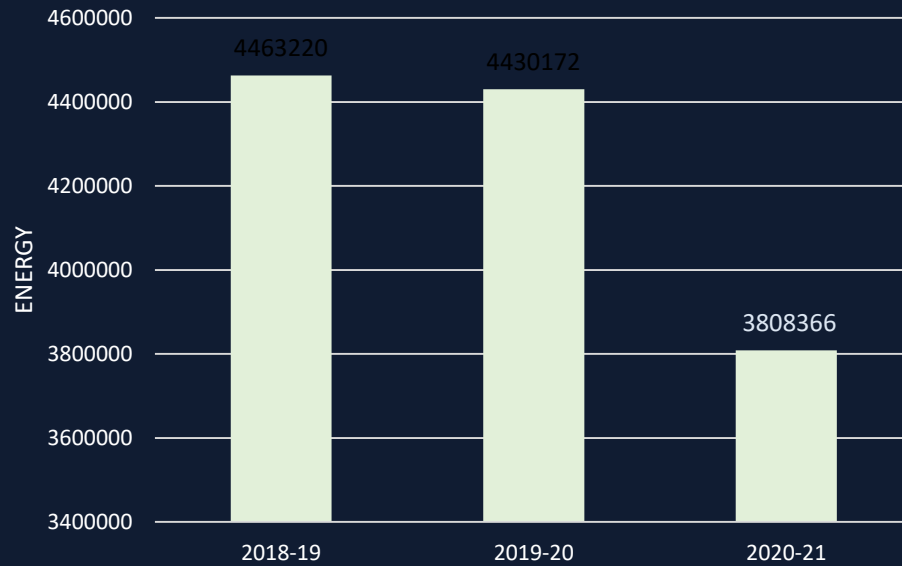


General outline - Electrical

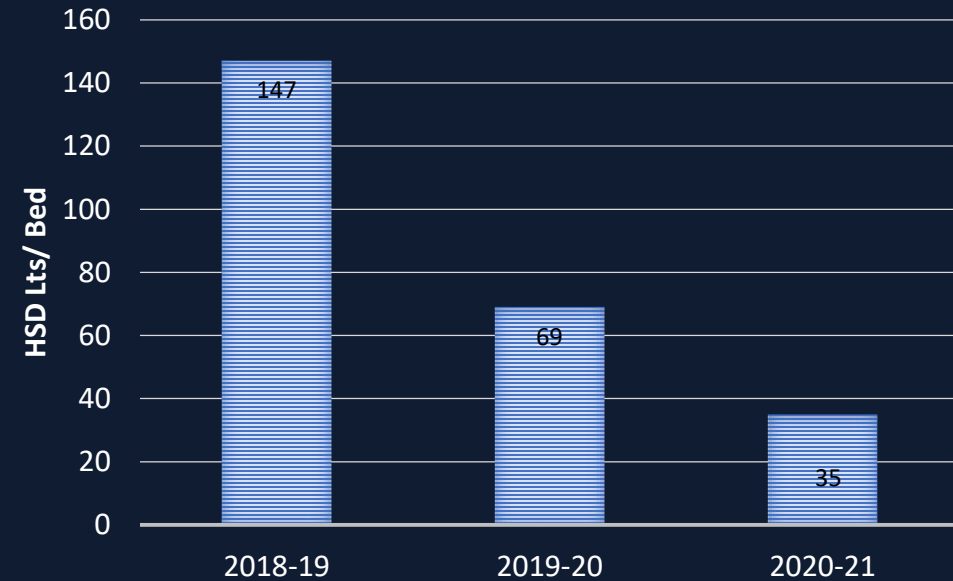
- **Source of Supply** - TANGEDCO , Tamilnadu.
- **Incoming supply voltage** - 11KV
- **Sanctioned Demand** - 875 KVA
- **Transformer capacity** - 1250 KVA & 800 KVA (Standby)
- **Generator capacity** - 750 KVA & 500 KVA x 2 No.s
- **WEG capacity** - 1.25 MW x 2 No.s & 0.75 MW
- **Roof top Solar capacity** - 20 KW x 2 No.s
- **UPS** - 280 KVA for backup during power cut

ENERGY CONSUMPTION OVERVIEW

ENERGY CONSUMPTION (KWh)

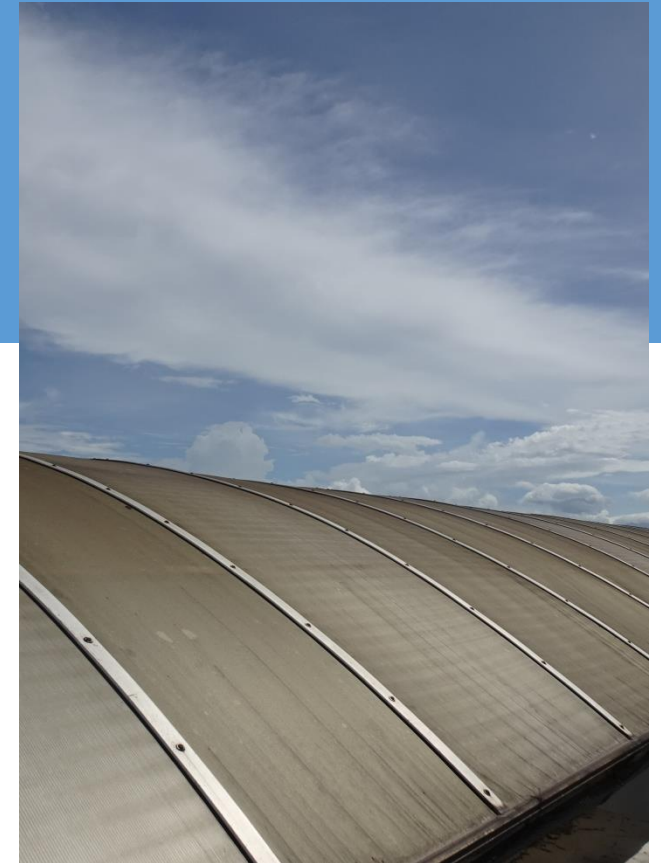
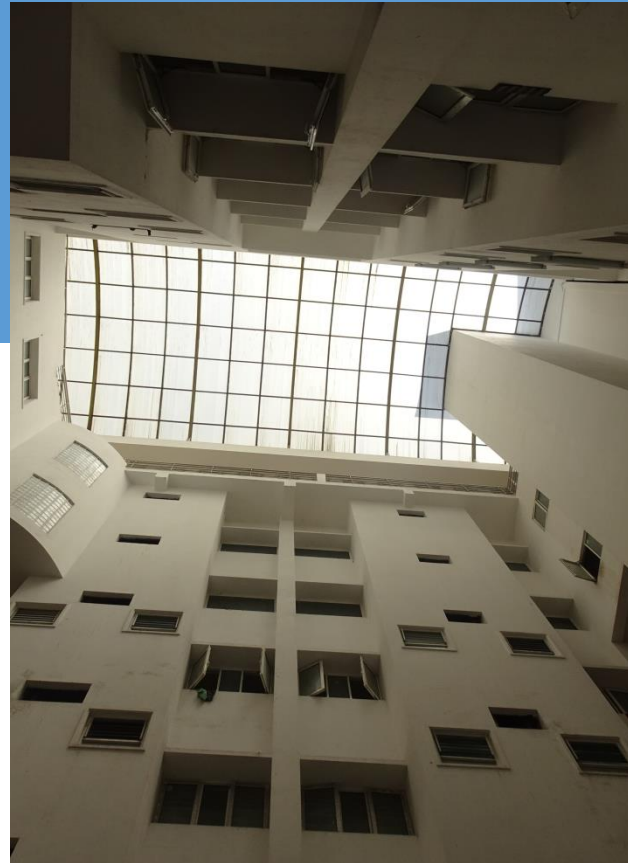
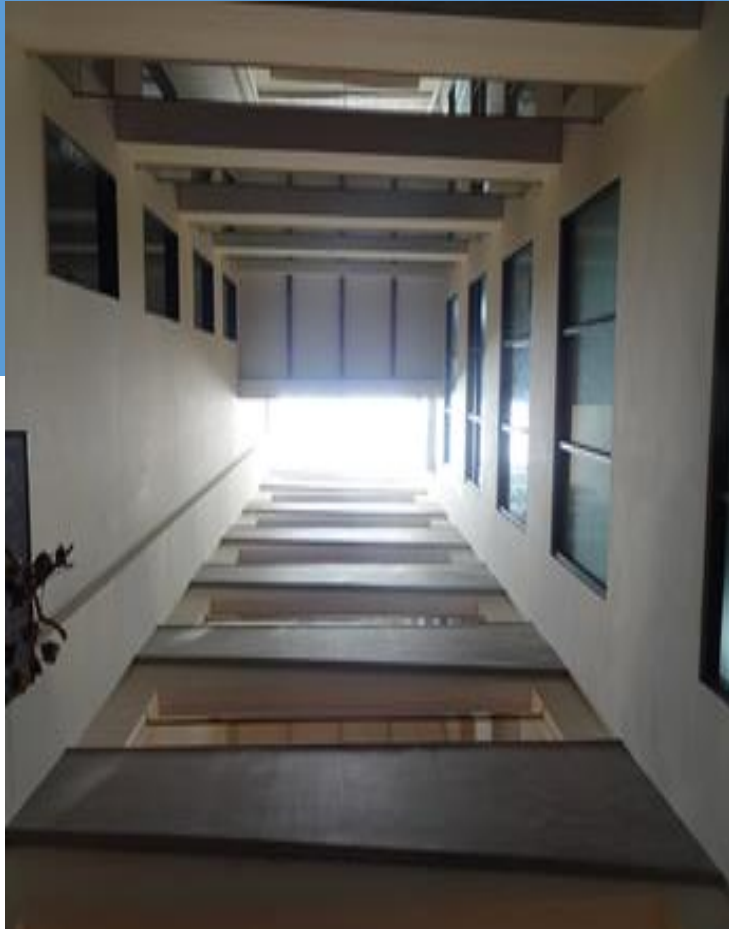


THERMAL ENERGY (HSD)

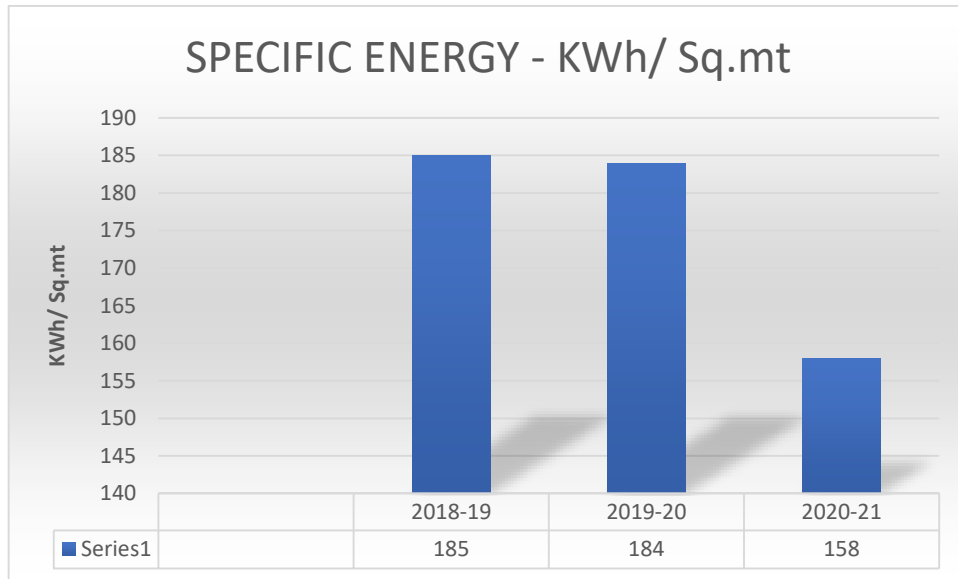


ENERGY CONSUMPTION OVERVIEW

ARCHITECTURAL FEATURES – NATURAL LIGHTING

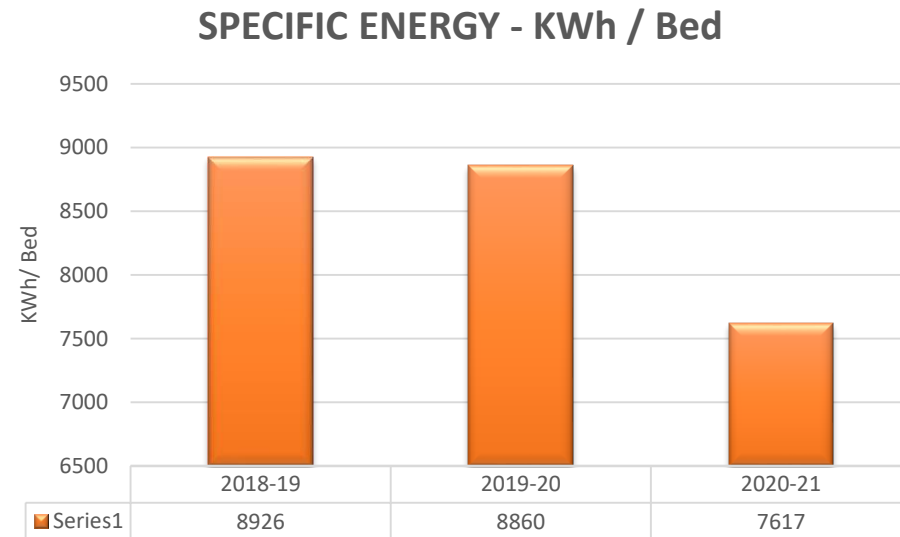


Sp. Energy Consumption in last 3 years (FY 2018-21)

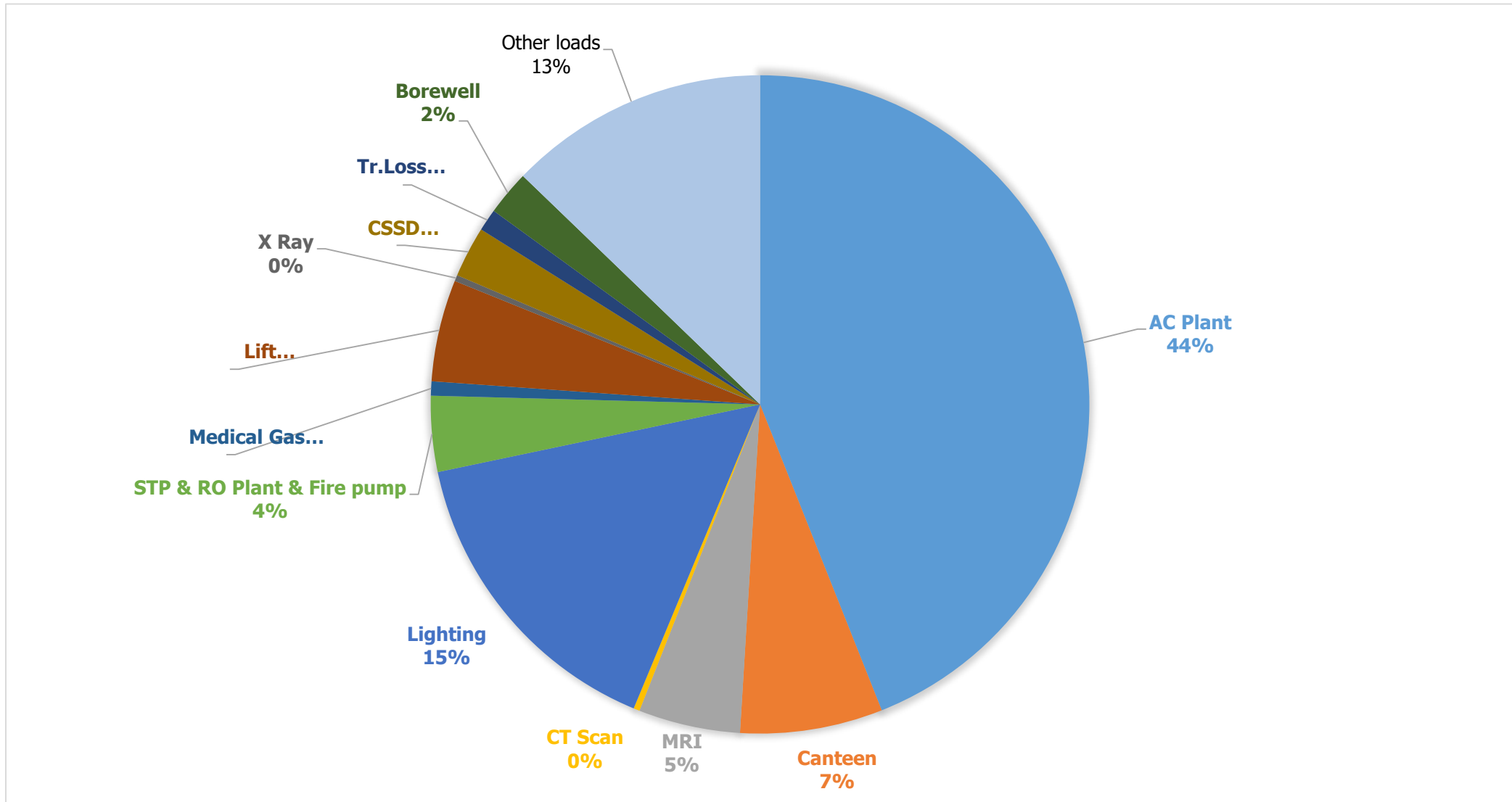


Energy Consumption Overview (SEC / EPI)

Parameter	2018 - 19	2019 - 20	2020 - 21
KWH	4463220	4430172	3808366
Built up Area in Sq.Mtr	24128	24128	24128
No.of Beds	500	500	500
Average Occupancy	80%	80%	80%
SEC in KWH / Sq.Mtr	185	184	158
KWH / Bed	8926	8860	7617



ELECTRICAL LOAD DISTRIBUTION %



MONITORING OF DEPARTMENT WISE POWER CONSUMPTION THROUGH ONLINE EMS

ELNet V5.3 - 30 PRO LV

ELnet V5.3
Energy Management System

Service Configurator Online Datalog Reports e-Mail SMS EBS PPS

ELMEASURE
Possibilities...Infinite

www.elmeasure.com

Go Green

Type here to search

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INFORMATION ON COMPETITORS, NATIONAL & INTERNATIONAL BENCHMARKS

External Bench Mark 2019 - 20

Top 5 Hospitals	KWH / Sq.Mtr / Year	KWH / Bed / Year
Fortis Hospital	111	12436
GANGA HOSPITAL	184	8860
Godrej Memorial hospital	196	
Apollo victor Hospital, Goa	210	
National Bench mark	200	

GOALS	2021- 25
SHORT TERM	3% Reduction on existing usage
LONG TERM	5% reduction on usage

INTERNATIONAL BENCHMARK 205 KWH / Sq.Mtr / Year

GANGA HOSPITAL 158 KWH / Sq.Mtr / Year for 20-21

Energy Savings / Cost Reduction Proposals for the year 2021 - 23

Department	Energy Conservation Proposals	Quantity	Expected Units Savings per Month	Expected Amount Savings per month	Approx. Amount Spent in Rs.	ROI in Months
A/C Plant	Replacement of Conventional AHU's with VFD operated AHU's (or) AHU motor & blower over hauling	9	2100	119640	450000	4
Plumbing	Electrical operated heat pump in the place of hot water boiler & individual water heaters in AAA rooms (18 rooms). (1200 ltrs HSD consumed per month)	1	1620	121608	2400000	20
Electrical	Centralized UPS for OT's and other loads, since the existing UPS consumes more power for charging and discharging and also needs for battery replacement.	4	6120	115470	2500000	22
Electrical	Replacement of 28W BLDC (Brush Less Direct Current) fan in the place of normal 55W fan.	100	1944	16330	270000	17
Electrical	Solar panels in car parking (Near ATM 30 KW panel & opp to Canteen 20 KW panel)	2	5100	42840	2200000	51
Electrical	Solar for lightings in B Block 2nd floor terrace (25 KW panel)	1	2550	21420	1100000	51
Electrical	Additional Maximun Demand 200 KVA to be obtained form TNEB, to avoid penalty (from 500 KVA to 700 KVA)	-	-	70000		
Electrical	Online Energy Monitoring system to be connected in all panel feeders.	60				
	Total	-	19434	507308	8920000	-

ENCON PROJECTS IMPLEMENTED 2018-19 to 2020-21

Year	No.of Energy savings Projects	Investments (INR million)	KWH Savings (million KWH)	Thermal Savings (million Kcal / MTOE)	Savings (INR million)	Impact on SEC - KWH / Sq.Mtr
2018 - 19	5	0.77	0.24	0	0.89	10
2019 - 20	3	0.34	0.14	0	0.03	6
2020 - 21	13	0.4	0.32	0	0.4	13



ENCON PROJECTS 2020 - 21



Replacement of CFL to LED Lightings



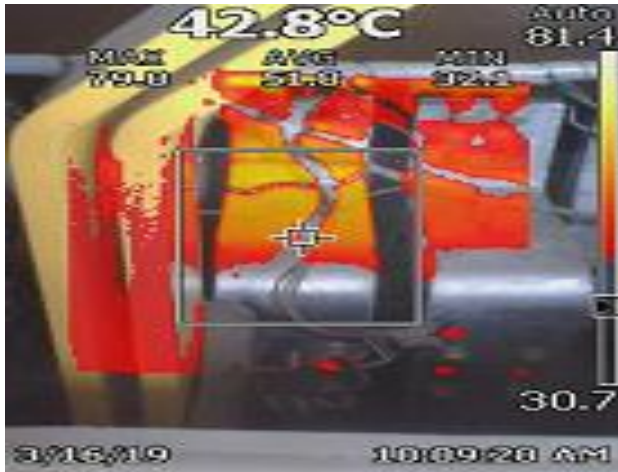
Replacement of Energy Efficient pump – chiller plant



Fixing of VFD on chiller plant

INNOVATIVE PROJECTS

By using Thermal Imager - Transformer to MV bus duct flexible joints and bus bar vibration noticed due to loose connections and temperature goes to 80 deg in 'Y'phase. After attending the loose connections , vibration reduced and temp 54 deg maintained in all 3 phases.



By using Thermal Imager – TANGEDCO HT Yard arcing noticed due to loose connections between HT jumper and HT Bushings and temperature goes to 63 deg in 'Y'phase. After attending the loose connections by EB persons temperature reduced to 34 deg maintained in all 3 phases.



INNOVATIVE PROJECTS – DISASTER MANAGEMENT

OXYGEN CRISIS MANAGEMENT

- PSA Type Oxygen Generator Plant
- 460 LPD X 2 Nos

- CONSUMPTION – 300LPD to 1.4KL/ DAY



INNOVATIVE PROJECTS

ELECTRIC AMBULANCE BUGGY

*Contribution towards healthy
and stable environment*

- Low emissions
- Environment friendly
- Reduced Noise pollution
- Low maintenance
- Higher savings



RENEWABLE ENERGY SOURCES – Wind Energy Generator

Year	Technology (electrical)	Type of Energy	Onsite / Off site	Installed Capacity (MW)	Generation (million KWh)	% of overall electrical energy
2018 - 19	WEG	Wind	Off site	2.5	2.95	66
2019 - 20	WEG	Wind	Off site	2.5	2.96	62
2020 - 21	WEG	Wind	Off site	3.25	2.99	79

SAVINGS IN POWER COST DUE TO WEG (%)	2018-19 45%	2019-20 44%	2020-21 51%

RENEWABLE ENERGY SOURCES - WEG



MAKE	CAPACITY	TOWER TYPE	LOCATION	YEAR OF COMMISSIONING
SUZLON	1.25MW	TUBULAR	TIRUNELVELI	2010
SUZLON	1.25MW	TUBULAR	PALLADAM	2012
PIONEER WINCON	0.75MW	LATTICE	TIRUNELVELI	2020

Investment during 20 – 21 - INR.530 Lacs

RENEWABLE ENERGY SOURCES - SOLAR

Year	Technology (electrical)	Type of Energy	Onsite / Off site	Installed Capacity (MW)	Generation (million KWh)	% of overall electrical energy
2018 - 19	Roof top	Solar	On site	0.1	0.05	1
2019 - 20	Roof top	Solar	On site	0.1	0.06	1
2020 - 21	Roof top	Solar	On site	0.1	0.05	1



WASTE MANAGEMENT



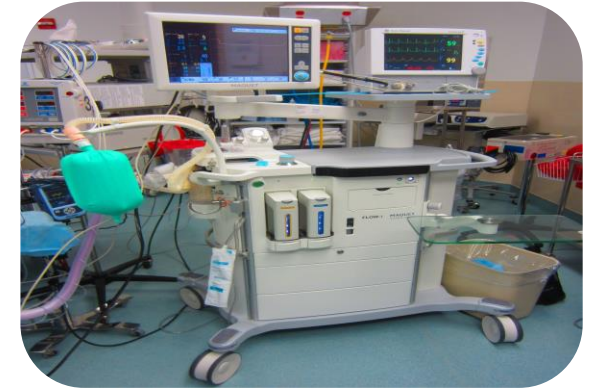
Food Waste Management
2.5 ton per month manure for
vegetable farm



Sewage treatment plant
Sewage is pretreated before its let to
environment
Treated water used for gardening



Bio- Medical Waste Management
Stringent protocols on segregation,
Handling and final disposal of BMW.



Anesthesia Gas Scavenging system
Nerve blocks technique is used to
reduce release of Green house
gases

CO₂ EMISSION REDUCTION

Parameter	2018 - 19			2019 - 20			2020 - 21		
	Units Savings	Amount Savings in Rs.	CO2 Reduction (Mt)	Units Savings	Amount Savings in Rs.	CO2 Reduction (Mt)	Units Savings	Amount Savings in Rs.	CO2 Reduction (Mt)
Installing of LED	70056	697057	60	35136	330630	30	46958	443284	40
Solar Generation Roof top	49777	495281	42	67423	634450	57	56764	535852	48
Wind Energy Generator	2954124	16945864	2511	2967841	18017774	2523	2990759	17417662	2542
Total	3073957	18138202	2613	3070400	18982854	2610	3094481	18396798	2630

TEAM WORK& MONITORING

A screenshot of a web-based dashboard titled "Daily Energy Report". The dashboard displays a table with multiple columns representing different energy-consuming areas and their respective power consumption data. The table includes columns for "Area", "Consumption", "Peak", "Average", and "Minimum" for various departments like "ICU", "OT", "Ward", etc. The data is presented in a grid format with numerical values.

AWARENESS PROGRAMME FOR ENERGY CONSERVATION FOR ALL CATEGORIES OF STAFF – INCLUDED IN THE HOSPITAL INDUCTION -ORIENTATION

ONLINE EMS MONITORING – DAILY DEPARTMENT WISE POWER CONSUMPTION DISCUSSED IN DAILY DEBRIEFINGS

EMPLOYEE ENGAGEMENT PROGRAMMES – POSTER/ SLOGAN COMPETITIONS

GREEN OPERATION THEATRE

**Initiative of Green OT Implementation through Bureau Veritas
for Energy Efficiency and Environmental Stability**

KEY LEARNINGS

TECA – TAMILNADU ELECTRICITY CONSUMERS ASSOCIATION “BEST ENERGY CONSERVATION AWARD 2018-19”

- Knowledge about Best Industry practices
- Current level of performance



MAJOR AWARDS AND ACCOLADES



TECA

Tamilnadu Electricity Consumer Association awarded GMCH for its BEST ENERGY CONSERVATION ACTIVITIES 2018-19

Orthopaedics

Rank	Hospitals	City
1	All India Institutes of Medical Sciences	Delhi
2	Ganga Medical Centre & Hospitals	Coimbatore
3	Christian Medical College	Vellore
4	Postgraduate Institute of Medical Education and Research	Chandigarh
5	Apollo Hospitals	Chennai

THE WEEK

Nominated as Best Orthopedic hospital for 5 times in a row.



GLOBAL PERFORMANCE EXCELLENCE AWARD

Asia Pacific Quality organization has awarded GPEA Best in Class award for Performance excellence



ASSOCIATION OF HEALTHCARE PROVIDERS OF INDIA

- Quality beyond accreditation 2020
- Patient friendly hospital 2019
- Best teaching hospital 2018



IMCRBNQA

GMCH received the prestigious IMC Ramkrishna Bajaj National Quality Award in the year 2020.

THANK

YOU

GANGA

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