

ICFAI Foundation for Higher Education, Hyderabad

ENERGY AUDIT REPORT

Ela Green Buildings & Infrastructure Consultants Pvt. Ltd.

ela

Design Certification Training

S. Vijayalakshmi

REGISTRAR

ICFAI FOUNDATION FOR HIGHER EDUCATION

(Deeemed-to-be-University establishes under section 3 of UGC Act 1956.)

ICFAI FOUNDATION FOR HIGHER EDUCATION HYDERABAD

For Ela Green Buildings & Infrastructure Consultants Private Limited,

Sriram Krishnamurthy, Certified Energy Auditor (EA-30994)

51,Officers Lane, Cantonment, Pallavaram, Chennai - 600043

Ela Green Buildings & Infrastructure Consultants Pvt. Ltd.
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CERTIFICATE

This is to certify that **The ICFAI Foundation for Higher Education, Hyderabad** has conducted Energy Audit for their campus and has submitted necessary data & credentials for scrutiny for the period, June 1, 2020-May 31, 2021. The activities and measures carried out the by the University have been verified and was found to be **satisfactory.** The efforts taken by the faculty & students towards energy conservation are highly appreciated and commendable.

For Ela Green Buildings & Infrastructure Consultants Private Limited,

Sriram Krishnamurthy

Certified Energy Auditor

EA-30994

15-06-2021

51, Officer's Lane, Pallavaram, Cantonment, Chennai – 600043, Website: www.elagreenconsultants.com

Title	ICFAI Foundation for Higher Education, Hyderabad
Consultant	Ela Green Buildings & Infrastructure Consultants Pvt. Ltd.
Year	15 June 2021
No. of Pages	57

Audit Team

1	Mr. Pruthviraj Balekai	*Sustainability Consultant, Ela Green Buildings & Infrastructure Consultants Private Limited*
2	Mr. Sriram Krishnamurthy	*Certified Energy Auditor, Ela Green Buildings & Infrastructure Consultants Private Limited*
3	Mr. Aditya Damle	*Sustainability Consultant, Ela Green Buildings & Infrastructure Consultants Private Limited*
4	Mr. N V Sarma	*General Manager (Projects), ICFAI Foundation for Higher Education, Hyderabad*
5	Mr. Mahendra	*University Engineer , ICFAI Foundation for Higher Education, Hyderabad*

About Us

We are a one-stop solution for all your sustainability, green design, and energy-efficiency needs. With more than ten years of experience in sustainability & energy industry, we offer holistic turnkey solutions for making your project truly sustainable.

Team

An enviable mix of multi-disciplinary team consisting of veterans, experienced professionals, to the young crops with a diverse technical background including; architects, sustainability engineers from civil, electrical, mechanical domains.

Key Strengths

- Technical know-how – Most of our employees have master's degree in sustainability & related fields. We also possess various coveted "Accredited Professionals" tag from leading bodies including LEED, GRIHA, IGBC, EDGE & WELL
- Ethics & professionalism – Our company value-system and experience in scaling numerous learning curves ensures timely delivery of projects
- Network & Relationship – Our reputation amongst the certification bodies and our contacts with vendors, manufacturers of green products & services

Services

- Green Building Certification – LEED, GRIHA, IGBC, WELL, EDGE etc. across all types of buildings ranging from commercial, residential, factories, metro stations, IT data-centres etc.
- Simulation services: Energy modelling, Daylight analysis, CFD analysis etc.
- Energy audits, HVAC commissioning, TAB, ECBC compliance
- Impact assessment, sustainability reports, feasibility studies, capacity-building and training

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Foreword

A nation's growth starts from its educational institutions, where the ecology is thought as a prime factor of development associated with environment. A clean and healthy environment aids effective learning and provides a conducive learning environment. Present day educational institutions are becoming more sensitive to environmental factors and more concepts, measures and technology are being introduced to make them sustainable.

To preserve the ecology inside the campus, various viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the energy savings, recycle of waste, water reduction, water harvesting etc. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

An energy audit is an inspection survey and an analysis of energy flows for energy conservation in a building. It may include a process or system to reduce the amount of energy input into the system without negatively affecting the output.

It provides staff and students better understanding on ways to save energy on campus. Energy auditing promotes financial savings through reduction of resource use. It gives an opportunity for the development of ownership, personal and social responsibility for the students and teachers.



For Ela Green Buildings & Infrastructure Consultants Private Limited,

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Executive Summary

The main findings of the audit show that, in general, all the departments and students at ICFAI Foundation for Higher Education [1] are aware about the need for environmental protection at a general level. It was also observed that a number of best practices such as central rainwater harvesting pond, roof top solar system etc. are being followed in the campus.

Also, on a detailed review, it was observed that the University is implementing some of the best practices in terms of facility improvements, ease of learning, energy savings measures, and water conservation activities. Many eco-friendly measures followed in the institution and in certain processes, it could benefit from further review in order to improve their efficiency, fairness and consistency.

About IFHE Campus

ICFAI was established in 1984 as a not-for-profit society with the broad objective of empowering citizens through world class quality education. ICFAI launched a high end, innovative professional program in financial analysis in 1985. The Program was first-of-its-kind in India, aimed at equipping students and working professionals with cutting-edge knowledge in contemporary areas of finance.

ICFAI has established 11 Universities across India. The ICFAI Universities are located at Jaipur, Hyderabad [ICFAI Foundation for Higher Education (IFHE), which is a Deemed University], Dehradun, Tripura, Dehradun, Jharkhand, Raipur, Himachal Pradesh (Baddi), Sikkim, Mizoram, Meghalaya and Nagaland.

ICFAI Foundation for Higher Education is a deemed-to-be-University established under section 3 of UGC Act, 1956. IFHE's comprehensive student-centric learning approach provides relevant knowledge, imparts practical skills and inculcates a positive attitude among the students.

Today, IFHE is one of the largest multi-disciplinary universities in the country. The Faculty of Management, Faculty of Science and Technology and Faculty of Law are the three main building blocks of the university. The University is a member of the Association of Indian Universities (AIU) and Association of Commonwealth Universities (ACU).

The University has been inculcating the most pragmatic and idealistic education to more than 8,000 students in the current year. The courses provide are in the wide spectrum of Science & Technology, Management & Law taught in English medium. The campus is Ranked 2nd among private universities in Telangana - Education World - University Rankings, 2019 with 30 programs over 5 disciplines.

Vision & Mission

Vision of ICFAI Foundation for Higher Education, Hyderabad is to emerge as an Institution of Excellence known for research, teaching, and practice.

The Mission of the University is 'Learning for Leadership'. It aims at developing a cadre of professionals possessing specialized skills having a sense of social and moral responsibility and the ability to address problems from a broader perspective.

[1] *Will henceforth be referred to as IFHE Campus in this report*

Introduction

The intention of conducting an Energy Audit is to upgrade the environment condition in and around the campus.Various audits tasks like waste management, energy, water and others are carried out to bench mark the performance and improve the respective sustainability parameters.

ICFAI Foundation for Higher Education, Hyderabad management had decided to conduct an energy audit of the Hyderabad campus and its constituent buildings to assess the current level of sustainability and also improve the standards going forward. In this regard, M/s Ela Green Buildings & Infrastructure Consultants Pvt. Ltd. were brought on board to conduct a Walkthrough Energy Audit. Sustainability has been ascertained by and large at an infrastructure level, since operational aspects would fall beyond the scope of the study.

Table 1 Basic Information

Site Name	**ICFAI Foundation for Higher Education (IFHE), Hyderabad**
Address	IFHE Campus, Donthanapally, Shankarapalli Road, Hyderabad – 501203.
Name & Contact Info	Mr. N V Sarma - General Manager nvsarma@icfaiuniversity.com Mr. Mahendra: University Engineer Email: mahender@ifheindia.org Mr. P Sai Krishna: Maintenance Engineer Email: saikrishna.p@ifheindia.org Mr. Gopichand Y: Junior Engineer Email: gopichand.y@ifheindia.org Mr. Krishna A: Junior Engineer Email: krishna.a@ifheinfia.org
Year Built	Year of establishment: 1995
Population Breakdown	Students: 8,000 per year Faculty: 300 Maintenance Personnel: 100
Hours of operation	Institutional Buildings: 9 AM to 6 PM
Month per year of operation	10 months
Built-up area	18,00,000 sq. ft (approx.) encompassing residential, academic, administrative, dormitory buildings
Site Area	91 acres (approx.)

Scope & Methodology

The specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards.

During the planning of the audit, an analysis was conducted in order to identify, evaluate and prioritize the practices, facility operation; academic best practices that are with compliance. The methodology used included physical inspection of the campus, review of the relevant documentation, and interviews.

Scope of Energy Audit in this report involves the following elements:

- Energy Audit
- Renewable Energy accounting

Recommendations were provided to the project team[2] (listed at the end of each audit section) based on a detailed analysis of conditions, observing and gathering information during the audit.

Run- Time Schedule

Regular functional hours of university are from 9 am to 6 pm, Monday – Saturday in 2 sessions. Morning session starts at 9 am and ends at 1 pm and the afternoon session starts from 1 pm and ends at 6 pm. There are various configurations in place for cooling the different building within the campus. The academic block is cooled by 370 TR * 4 nos. setup. One is always on standby, and the remaining three are operated based on the weather and demand. In summer, all three chillers are run. 272 FCUs are present overall. Ductable AC is used in the Law School, whereas FST block entirely used split ACs. There are no treated fresh air units. Fresh air is supplied only in few spaces by means of manually operated louvers.

Energy Analysis

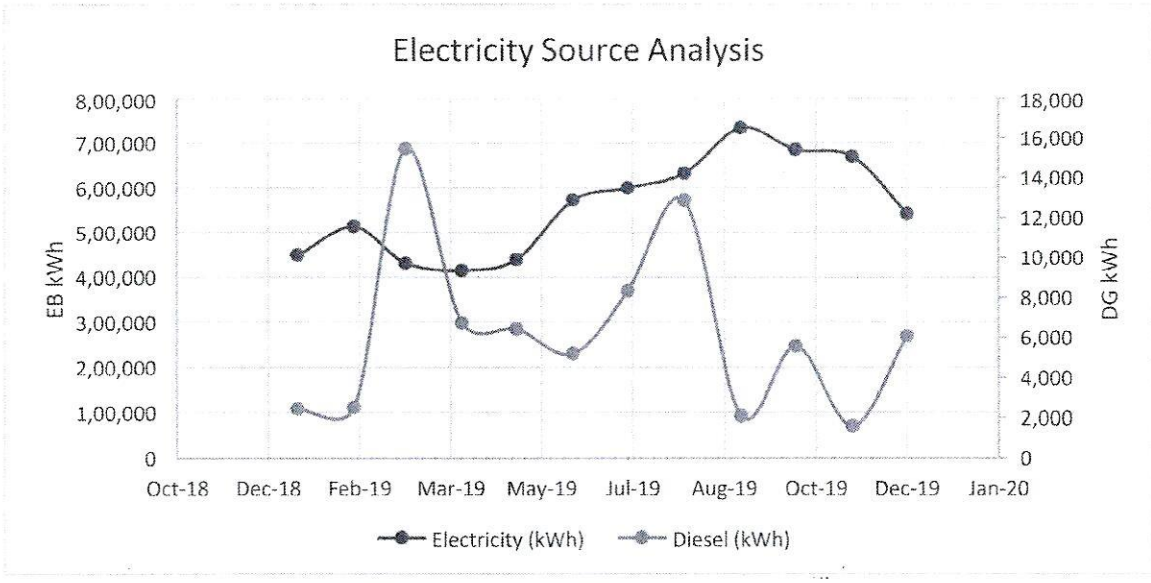
Energy Consumption Analysis

Energy consumption of each regularly occupied space was studied using the building meter logs, electricity bills, diesel meter logs, solar generation logs and system records. The main sources of energy supply to the facility is as follows:

- **Electricity**: State Utility, Diesel generators & On-site renewable energy system.
- **Heating**: On-site bio-gas satisfying 100% of cooking needs

Monthly electricity consumption from various sources and thermal consumption for cooking purposes is shown in Annexure 1.

[2] *Project team refers to personnel at IFHE Campus*



It can be observed that, on an average, 90 % of the building electricity is through the Grid with 10 % with Diesel Generators. Electricity is supplied to the campus by the state owned utility gird responsible for electricity distribution in Telangana. There are no private distribution firms. In case of load shedding, DG generators[3] are used on site as a backup power option.

Table 2 shows EPI comparison of Ela Green School with Bureau of Energy Efficiency (BEE) standards. The Government of India has set up Bureau of Energy Efficiency (BEE) to assist in developing policies and strategies for reducing energy intensity of the Indian economy within the overall framework of the Energy Conservation Act, 2001. The project falls under Composite climate zone. EPI benchmark for office buildings as per BEE is 117 kWh/m^2/y^4r.

Table 2 EPI comparison with BEE standard buildings

Building	EPI for Jan'19 – Dec'19 (kWh/m^2/yr)	BEE Standard EPI (kWh/m^2/yr)	Increase in performance
IFHE Campus	67	117	42.8 %

The indoor lighting fixtures, in very few areas have been retrofitted to low power LEDs. In most the buildings, classrooms, and hostel blocks, fluorescent tube lights are in use: Air leakage was one of the major issues observed relating to HVAC usage. There are large gaping holes between the bottom of the door and floor, leading to massive leakage rates. In some of the naturally day lit corridor areas, artificial lights were still found to be in use.

[3] *1 l of HSD is considered equivalent to 3.2 kWh*

[4] *https://www.beeindia.gov.in/sites/default/files/Flyer_22nd%20Jan.pdf*

List of ECMs

1. If considerable usage is predicted in FST block, migration from split AC to ductable VRF maybe considered due to higher efficiency of VRF units. It was also noticed that classrooms tend to have door open with ACs running, which may be strictly avoided.
2. The cooling tower water can be dosed with chemicals to reduce the TDS levels and also algae growth to promote better heat transfer
3. The solar hot water panels must be frequently cleaned to remove bird droppings, dust etc. This will result in better heat absorption. The pipeline leading to the storage tank, and the tank itself must be well insulated.
4. The set-point of the AC should always be maintained at 24 °C plus or minus 1 °C.
5. Since BMS trending does not exist, panel readings of HVAC must be manually noted everyday to perform rudimentary analysis to identify energy conservation measures.
6. Weather stripping and sealing must be carried out immediately to improve the thermal comfort of the indoor space and also reduce the electricity consumption of the HVAC Units
7. In libraries, studios, and labs – task lighting may be employed to reduce the overall lighting power density and also increase the student's productivity
8. Daylighting can be better utilised in a few areas, if glaring problem doesn't persist
9. Lighting is usually the second highest energy consumption component in educational buildings.
10. Switching to LED and task-lighting will bring about potential energy savings.

Energy & Cost Reduction Targets

It is observed that IFHE team can reap the benefits of lower operational costs. The team, in its endeavor to be leader in sustainable institutions, needs to ensure the performance is maintained properly. To be ahead of the curve, it is recommended that the facility team is set an ambitious target of 5 % reduction every year compared to 2019 levels.

Preventive Maintenance Plan

AC Systems

1. Change air filter.
2. Check box actuator and control system operation. Repair or replace parts as required.
3. Check for proper operation of cooling and/or heating coil. Clean and reposition fins as required.
4. Check fan blades and clean as required.
5. Check integrity of all panels on equipment. Replace fasteners as needed to ensure proper integrity and fit of equipment.
6. Visually inspect areas of moisture accumulation for biological growth. Clean and disinfect as required.
7. Check thermostat function.

WEEKLY

1. Check condensate drain path and remove debris as needed to assure it is free flowing.
2. Check fan blades. Clean, repair or replace as needed.

3. Visually inspect areas of moisture accumulation for biological growth. If present, clean or disinfect as needed

MONTHLY

1. Check control system and devices for evidence of improper operation. Repair, adjust or replace components to ensure proper operation.
2. Check motor contactor for pitting or other signs of damage. Repair or replace as needed.
3. Check refrigerant system temperatures. If outside recommended levels, find cause, repair and adjust refrigerant to achieve optimal operating levels.
4. Check integrity of all panels on equipment. Replace fasteners as needed to ensure proper integrity and fit finish of equipment.
5. Check drain pan drain line and coil for biological growth. Clean as needed.
6. Check evaporator coil fins. Restore if possible. Replace coil if necessary, to return to proper functioning.

Pump Maintenance

DAILY

1. Visually inspect pump.

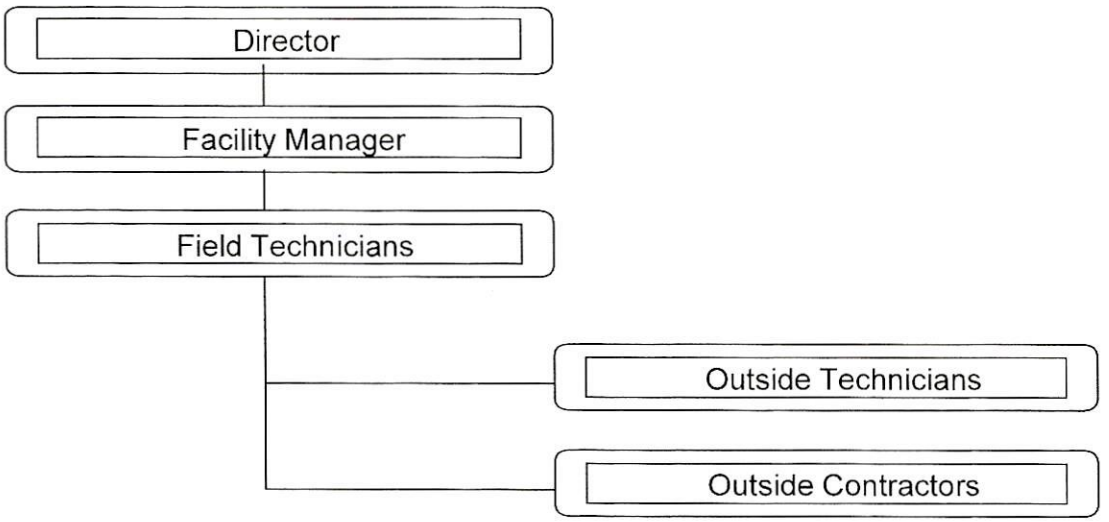
MONTHLY

1. Clean pump strainer.
2. Check pumps control system and devices for evidence of improper operation. Repair, adjust or replace components to ensure proper operation.
3. Check variable frequency dive for proper operation. Correct as needed.
4. Visually inspect pumps and associated electrical components. Repair or replace as needed to ensure proper operation.
5. Annual,
6. Check control box for dirt, debris and o loose terminations. Clean and tighten as needed.
7. Check motor contactor for pitting or other signs of damage. Repair or replace as needed.
8. Check drive alignment, wear, bearing and coupling seating and operation. Repair and replace as needed.
9. Check for proper flow. Clean, adjust and repair as needed.
10. Lubricate field serviceable bearings.

Operation and Maintenance Plan

Maintenance Organization and Staffing Responsibilities

Facility maintenance personnel, including the custodians/field technicians, take direction from the Director, per the following organization chart:



Staffing Responsibilities

Director: Based upon the guidance of the Superintendent, the Director is the direct supervisor of the Facility Manager, providing direction on maintenance issues. 'He/she assists the Facility Manager with needed resources, providing the most appropriate funds for supplies, equipment, and service contracts. He/she also approves the Maintenance Department budget based upon analysis of past expenditures and projected requirements.

Facility Manager: Serves as the direct supervisor of the Outside Technicians, Contractors, and Field Technicians. He/she oversees the scheduling and accomplishment of all maintenance activities, to include the scheduling of work, the assignment of work orders, the provision of needed supplies and equipment, and the approval of contract support. He/she also develops the Maintenance Department budget based upon analysis of past expenditures and projected requirements.

Field Technicians: Works under the facility manager and provides the ground support to the facility manager.

Maintenance Priorities and Procedures

Priorities: IFHE has established the following priorities for Maintenance Department response to requested work:

Emergency: eminent life safety threat or operational disruption that could cause the closure of schools.

Safety/Health/Security/ADA: identified problem that could result in injury if not corrected in a timely manner.

Preventive Maintenance: scheduled inspection or routine maintenance tasks that if not completed, could result in premature failure of a facility system or equipment item.

Unscheduled Repair Actions: action required in repairing a facility system, equipment item, or building component that is not functioning properly, or was damaged.

Support Services: upon request, the maintenance department can assist the facility team with special events and programs. As much advance notice as possible is requested so that this support can be de-conflicted with other work requirements.

Procedures:

IFHE currently processes maintenance work orders manually, with requests from facility and staff called into or personally directed to the Maintenance Department, and, based on priority, the Facility Manager assigns work orders to the appropriate contractor(s). If a contractor identifies a facility problem at the building, they either remedy the problem themselves, or if they need assistance in completing, report the problem to the Facilities Manager.

The Facility Manager also oversees the Operation & Maintenance (OM) program, assigning OM work orders to outside contractors or completes them himself. Completed work is filed, and an analysis of maintenance expenses is completed.

Scheduled Maintenance Tasks and Tracking

The accomplishment of scheduled inspection and Maintenance Tasks, is critical to the successful operation of IFHE. Prescribed inspection and maintenance schedules have been developed and are shown on the following page(s).

IFHE has adopted the Maintenance Tasks as provided in the OESU Preventive Maintenance Program Guidelines. Based upon the equipment at our facility, the tasks are appropriate and will be adhered to in the accomplishment of schedule inspection and maintenance activities.

Established Facility Manager Duties and Responsibilities

DAILY

1. Ensure the sweeping of sidewalks and entryways.
2. Ensure the removal of trash from lawn shrubs, bushes, sidewalks, stairway and parking lots.
3. Review custodial nightly reports and respond appropriately.
4. Review Work Orders.
5. Replace damaged and soiled ceiling tiles.
6. Replace electrical lamps, breakers, fuses and ballasts as needed.
7. Check mechanical & electrical listen for unusual noises; check for excessive heat and equipment vibrations.
8. Ensure doors, windows and roof accesses are secured.

WEEKLY

1. Inspect and re-lamp interior/exterior building lighting.
2. Inspect and re-lamp parking lot and site lighting.

PERIODIC

1. Inspect and repair curbs, walks and paving.
2. Inspect and restore signage.
3. Inspect roof conditions; remove debris.
4. Replace batteries.
5. Restore cracks and blemishes on building exterior.
6. Verify that there is adequate supply of filters, lamps, etc.

7. Inspect and restore pavement markings.
8. Inspect all restroom, shower rooms and water closets.
9. Check all door operations and adjust hardware including overhead doors and operators.
10. Inspect and repair all finished surfaces.
11. Replace burned out and flickering lamps (light bulbs).
12. Check for tripped circuit breakers.
13. Inspect and test fire alarm system.
14. Perform monthly fire extinguisher inspect.
15. Supervise annual fire extinguisher testing.
16. Inspect and test smoke detectors.
17. Supervise annual fire protection test.
18. Supervise annual Fire sprinkler system test.
19. Supervise annual backflow protection valve test.
20. Rotate fire line valves off and on.
21. Rotate all plumbing fixture shut off valves.
22. Rotate all water valves serving floor drains.
23. Rotate all bib valves.
24. Supervise air conditioning preventive maintenance service.
25. Inspect, test and service all exit lights.
26. Inspect, test and service all emergency lights.
27. Inspect and test all lighting fixtures.
28. Inspection and maintenance on air conditioning equipment.
29. Inspect Site:
    a. Fence
    b. Grounds
    c. Pavement
    d. Storm Drainage System
30. Building Exterior
    a. Entrances
    b. Landscaping
    c. Outside Storage Area
    d. Parking Lot
    e. Roof
    f. Sidewalk

Annexure 1 – Energy Consumption Data*

***Pre-Covid data was analysed as that represent the campus' full occupancy**

Table 3 Electricity Consumption Pattern

Month	Electricity (kWh)	Diesel (kWh)
January 2019	450,000	2,450
February 2019	514,100	2,528
March 2019	432,380	15,472
April 2019	415,760	6,744
May 2019	440,180	6,437
June 2019	572,480	5,181
July 2019	599,820	8,324
August 2019	632,500	12,857
September 2019	734,420	2,096
October 2019	685,600	5,573
November 2019	670,260	1,577
December 2019	542,420	6,079

Annexure 2- Pumps & Borewell Inventory

Pumps Details				
S.no	**Location**	**Nos**	**Make**	**Capacity**
1	Swimming Pool	3	kirloskar	10HP Motor
2	Pump House	4	kirloskar	15HP Motor
	Booster Pumps for bore wells	2	kirloskar	5HP Motor
3	Fire System	1	kirloskar	15HP Motor
		1	kirloskar	50HP Motor
		1	kirloskar	105HP Motor
	Booster Pumps	20	kirloskar	7.5HP Motor
4	Sprinklers	2	kirloskar	12.5HP Motor
	Bore well Pumps			
5	Maingate Coconut tree	1	kirloskar	12.5HP Motor
6	Car parking 2nd one	1	kirloskar	3HP Motor
7	Car parking 3rd one	1	kirloskar	10HP Motor
8	Car parking 4th one	1	kirloskar	10HP Motor
9	Car Parking Corner	1	kirloskar	3HP Motor
10	Car parking 7th one	1	kirloskar	3HP Motor
11	Car parking 8th one	1	kirloskar	3HP Motor
12	Near A.C Plant	1	kirloskar	7.5HP Motor
13	Academic E Wing Backside	1	kirloskar	7.5HP Motor
14	Near A-1 Guest House	1	kirloskar	10HP Motor
15	Near A-10 Guest House	1	kirloskar	7.5HP Motor
16	Beside A-8 Guest House	1	kirloskar	7.5HP Motor
17	Backside of A-7 Guest House	1	kirloskar	7.5HP Motor
18	QRS backside	1	kirloskar	6HP Motor
19	Opp. New FOL Mango Tree	1	kirloskar	7.5HP Motor
20	STP Inside Compouns	1	kirloskar	7.5HP Motor
21	STP Gate Entrance	1	kirloskar	7.5HP Motor
22	Basket Ball Ground	1	kirloskar	7.5HP Motor
23	Cricket Ground	1	kirloskar	5HP Motor
24	Mess-2 Backside	1	kirloskar	7.5HP Motor
25	OLD FOL Backside	1	kirloskar	5HP Motor
26	Opp. Indoor Stadium.Cilinc	1	kirloskar	7.5HP Motor
27	Opp. H Block	1	kirloskar	7.5HP Motor
28	G&H Block	1	kirloskar	7.5HP Motor

Annexure 3- Lighting & Ceiling Fans CFR

S.no	Location	2x 36watts 4feet tube light fixtures (Flurosce nt lights)	2x 36wat ts mirro r optic tube light fixtur es	2x18w round fittings (CFL Fixture s)	2 x 11watts Round light Fixture s (CFL Fixture s)	1x 36 Watts box type Tube light fixtures (Flurosce nt lights)	1x 11 light fixture s(CFL)	Doom Light Fixture s-18W (CFL)	Ceili ng fan
1	*A*	33		33	6	305	376	100	316
2	*B*	16	49	64	8	202	250	55	244
3	*C*	13	9	24	4	201	155	63	198
4	*D*	27	10	67	8	309	362	98	310
Total		**89**	**68**	**188**	**26**	**1017**	**1143**	**316**	**1068**

S.No	Location	2x18w round fittings(CFL Fixtures)	1x 36 Watts box type Tube light fixtures(Fluroscent lights)	1x 11 light fixtures(CFL)	Ceiling fan
1	*Q*	9	308	387	269
2	*R*	6	210	331	210
3	*S*	6	317	380	348
Total		**21**	**835**	**1098**	**827**

S.no	Location	2x 36watts 4feet tube light fixtures (Fluroscent lights)	2x18w round fittings (CFL Fixtures)	1x 11 light fixtures(CFL)	Ceiling fan
1	*G*	5	448	366	245

S.no	Location	2x 36watts 4feet tube light fixtures(Fluroscent lights)	2x18w round fittings(CFL Fixtures)	1x 36 Watts box type Tube light fixtures(Fluroscent lights)	1x 11 light fixtures(CFL)	Ceiling fan
1	H	18	203	143	396	158

S. no	Description	2x 36watts 4feet tube light fixtures(Fluroscent lights)	2x 36watts mirror optic tube light fixtures	2x18w round fittings(CFL Fixtures)	2 x 11watts Round light Fixtures(CFL Fixtures)	1x 36 Watts box type Tube light fixtures(Fluroscent lights)	1x 11 light fixtures(CFL)	Doom Light Fixtures-18W (CFL)	2x18watts oval Doom Light Fixtures(CFL)	Ceiling fan
1	E	32	54	60	26	251	313	73		289
2	F	12	39	42	11	203	255	70	130	231
	Total	**44**	**93**	**102**	**37**	**454**	**568**	**143**	**130**	**520**

S.no	Description	2x18w round fittings(CFL Fixtures)	10 watts Night lamp Light Fixtures	1x 36 Watts box type Tube light fixtures(Fluroscent lights)	1x 11 light fixtures(CFL)	Ceiling fan
1	D1	40	13	53	59	44

S.no	Location	2x18w round fittings(	10 watts Night lamp	1x 36 Watts box type Tube light	1x 11 light	Ceiling fan

		CFL Fixtures)	Light Fixtures	fixtures(Fluroscent lights)	fixtures(CFL)	
1	D2	40	34	51	44	43

S.no	Location	2x18w round fittings(CFL Fixtures)	1x36watts patti fittings(Fluroscent lights)	1x 11 light fixtures(CFL)	Ceiling fan
1	S1	63	110	142	108

S.no	Location	2x18w round fittings(CFL Fixtures)	1x36watts patti fittings (Fluroscent lights)	1x 11 light fixtures (CFL)	Ceiling fan
1	S2	64	144	142	107

S.No	Location	2x 11w Square light Fixtures(CFL Fixtures)	10 watts Night lamp Light Fixtures	1x 36 Watts box type Tube light fixtures(Fluroscent lights)	1x 11 light fixtures(CFL)	Ceiling fan
1	B2	40	96	132	57	72

S.No	Location	2x 11w Square light Fixtures(CFL Fixtures)	10 watts Night lamp Light Fixtures	1x 36 Watts box type Tube light fixtures(Fluroscent lights)	1x 11 light fixtures(CFL)	Ceiling fan
1	CMD(B1)	40	96	128	57	72

S.No	Location	2x18w round fittings(CFL Fixtures)	1x 36 Watts box type Tube light fixtures(Fluroscent lights)	1x 11 light fixtures(CFL)	Ceiling fan

1	***Etype***	30	99	100	75

S.No	*Location*	*2x 36watts 4feet tube light fixtures(Fluroscent lights)*	*1x36watts patti fittings(Fluroscent lights)*	*1x 11 light fixtures(CFL)*	*Ceiling fan*
1	***Mess-1***	225	8	30	97

S.No	*Location*	*2x 36watts 4feet tube light fixtures(Fluroscent lights)*	*2x18w round fittings(CFL Fixtures)*	*2x 11w Square light Fixtures(CFL Fixtures)*	*1x36watts patti fittings(Fluroscent lights)*	*Ceiling fan*
1	***Mess-2***	151	97	28	23	80

S.No	*Location*	*2x 36watts mirror optic tube light fixtures*	*2x18w Down light (CFL Fixtures)*	*2x 11w Square light Fixtures(CFL Fixtures)*	*Ceiling fan*
1	***library***	268	36	166	137

S. No	*Location*	*2 x 2 down light Fixtures(CFL Fixtures)*	*2x 36watts 4feet tube light fixtures(Fluroscent lights)*	*2x 36watts mirror optic tube light fixtures*	*2x18w round fittings(CFL Fixtures)*	*2x 11w Square light Fixtures(CFL Fixtures)*	*1x 36 Watts box type Tube light fixtures(Fluroscent lights)*	*1 x 18watts Tube light fixtures (Fluoroscent lights)*	*1x 11 light fixtures(CFL)*	*Ceiling fan*

1	***FST***	730	37	93	82	243	7	6	1	515

S.No	*Location*	*2x 36watts mirror optic tube light fixtures*	*1 x 18watts Tube light fixtures(Fluoroscent lights)*	*1x 36 Watts box type Tube light fixtures(Fluroscent lights)*	*Ceiling fan*
1	***Admin and Clinic***	18	31	11	35

S.No	*Location*	*2x 36watts 4feet tube light fixtures(Fluroscent lights)*	*2 x 11watts Round light Fixtures(CFL Fixtures)*	*1x36watts patti fittings(Fluroscent lights)*	*1x 11 light fixtures(CFL)*	*Doom Light Fixtures-18W (CFL)*	*Ceiling fan*
1	***Gym***	119	30	6	4	11	54

S.No	Type of lighting	Fitment Details	Rating (Watt)	No.of fittings	Total Wattage (KW)
1	Street lights	HPSV	150	140	21
2	Ground lights	HPSV	400	30	12
3	Tennis court lights	HPSV	250	24	6
4	Basketball court lights	HPSV	250	24	6
5	Swimming pool lights	HPSV	250	16	4
6	ABCD hostel lights	HPSV	250	8	2
				Total load	**51 KW**

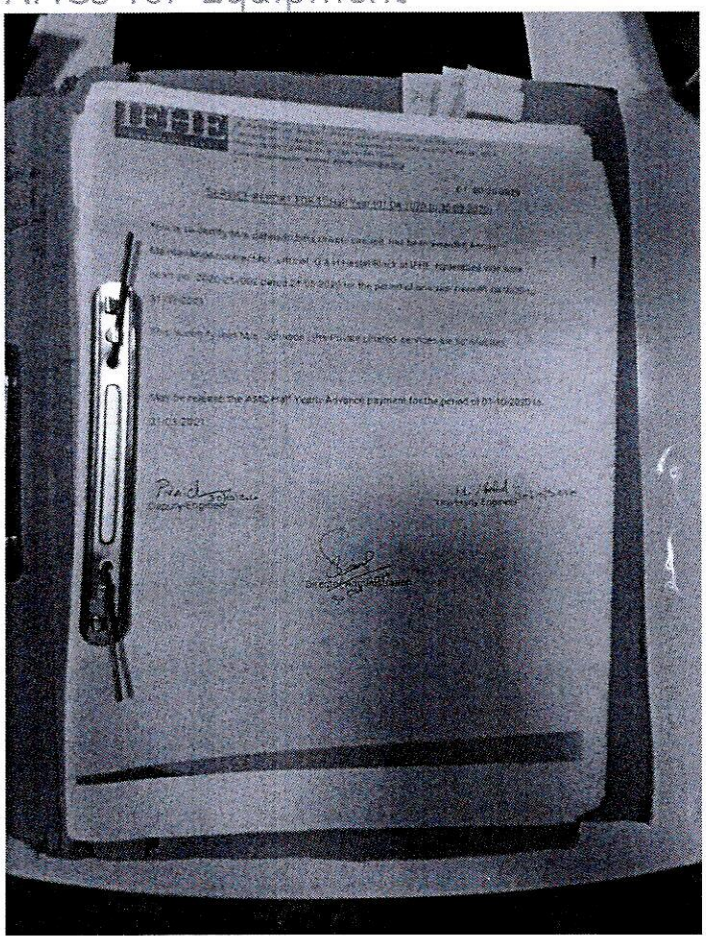
S.No	Details of Equipment	Location	No. of fittings
1	Street light Feeder pillar -1	ABCD hostel	75
2	Street light Feeder pillar -2	Hous	65
3	Post lamp feeder pillar-3	NEW FOL	20

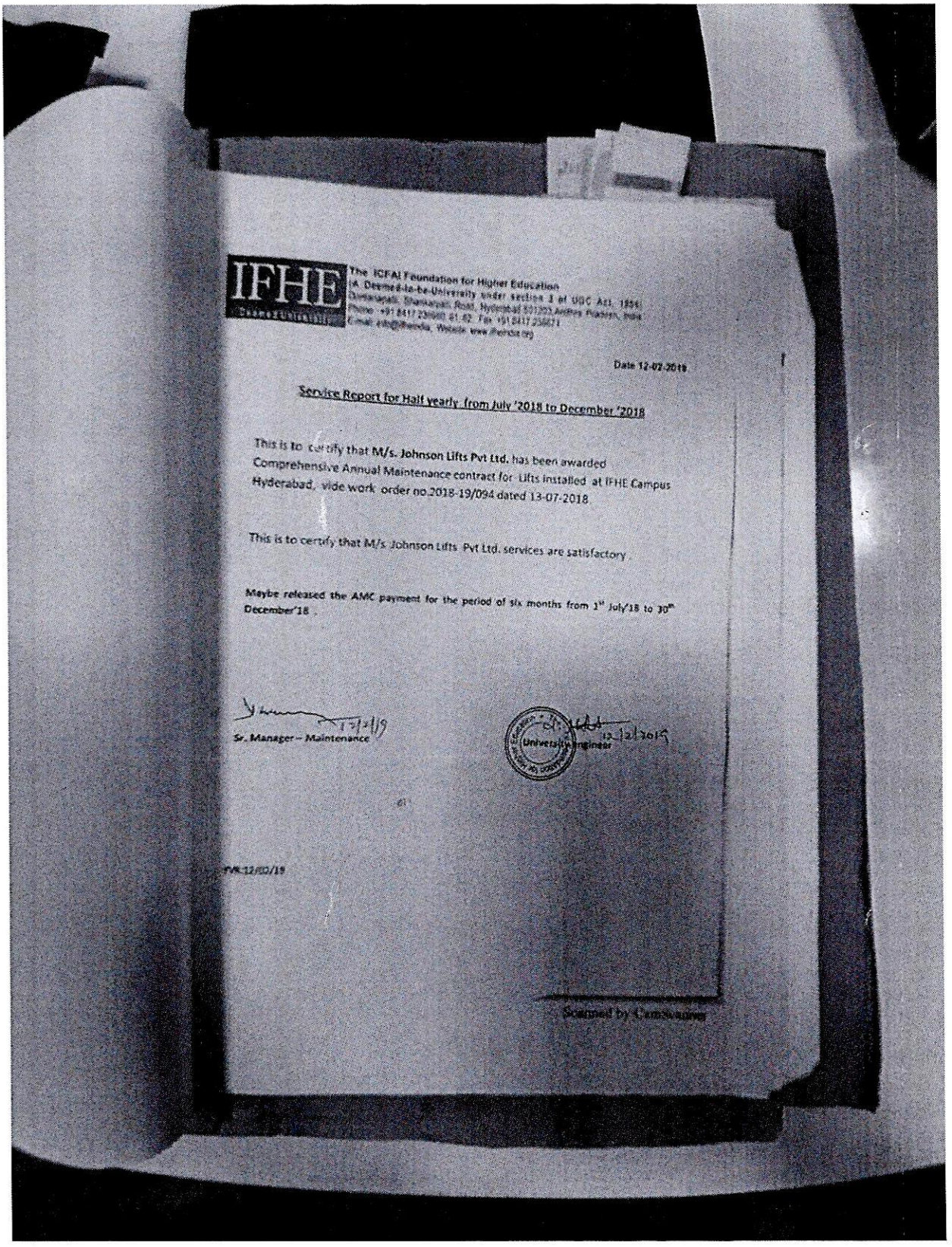
Annexure 4- Solar Hot Water CFR

S.No	Location	Storage Tank Capcity (Ltrs)	System Capacity (Ltrs)	Backup Heaters Capacity (KW)
1	Q-Block tank-1	3000	2400	9
2	Q-Block tank-2	3000	2400	9
3	R-Block tank-3	3000	2000	9
4	R-Block tank-4	3000	2400	9
5	S-Block tank-5	3000	2000	9
6	S-Block tank-6	3000	2400	9
7	Mess-2 tank-7	5000	3800	9
8	H-Block tank-8	3000	2400	9
9	G-Block tank-9	2000	1600	9
10	G-Block tank-10	3000	2400	9
11	A-Block tank-11	3000	2400	9
12	A-Block tank-12	2000	2200	9
13	B-Block tank-13	3000	1600	9
14	B-Block tank-14	2000	1600	9
15	C-Block tank-15	3000	1600	9
16	C-Block tank-16	2000	1600	9
17	D-Block tank-17	3000	2400	9
18	D-Block tank-18	3000	2400	9
19	E-Block tank-19	3000	2000	9
20	E-Block tank-20	2000	1200	9
21	F-Block tank-21	3000	1200	9
22	F-Block tank-22	3000	2000	9
23	Mess-1 tank-23	5000	4000	9
24	D1-Block tank-24	2000	1600	9
25	D2-Block tank-25	2000	1600	9
26	S1-Block tank-26	2000	1500	9
27	S1-Block tank-27	2000	1500	9
28	S2-Block tank-28	2000	1500	9
29	S2-Block tank-29	2000	1500	9
30	G-Block tank-30	3000	3200	9
31	H-Block tank-31	3000	2800	9
	TOTAL CAPACITY	**86000**	**65200**	

Annexure 5- Best Energy Management Practices at Site

AMCs for Equipment





IFHE

The ICFAI Foundation for Higher Education
(A Deemed-to-be-University under section 3 of UGC Act, 1956)
Donthanpally, Shankarpalli Road, Hyderabad 501203, Andhra Pradesh, India
Phone: +91 8417 236600, 61 62 Fax: +91 8417 236671
E-mail: info@ifheindia, Website: www.ifheindia.org

Date 12-02-2019

Service Report for Half yearly from July '2018 to December '2018

This is to certify that **M/s. Johnson Lifts Pvt Ltd.** has been awarded Comprehensive Annual Maintenance contract for Lifts installed at IFHE Campus Hyderabad, vide work order no.2018-19/094 dated 13-07-2018.

This is to certify that M/s Johnson Lifts Pvt Ltd. services are satisfactory.

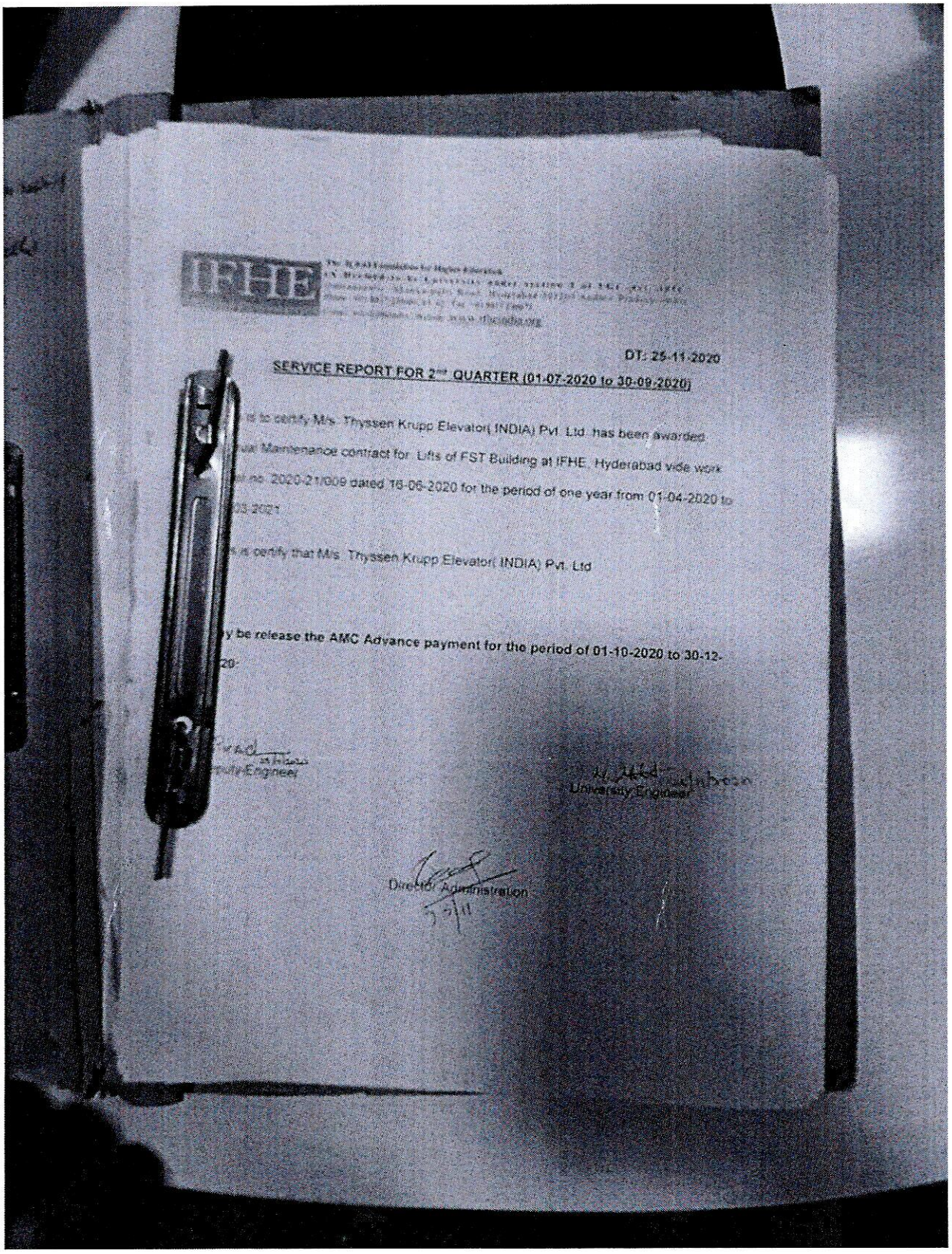
Maybe released the AMC payment for the period of six months from 1st July'18 to 30th December'18.

12/2/19
Sr. Manager – Maintenance

12.2.2019
University Engineer

PVR 12/02/19

Scanned by CamScanner



DT: 25-11-2020

SERVICE REPORT FOR 2nd QUARTER (01-07-2020 to 30-09-2020)

...is to certify M/s. Thyssen Krupp Elevator(INDIA) Pvt. Ltd. has been awarded ...ual Maintenance contract for Lifts of FST Building at IFHE, Hyderabad vide work ...r no. 2020-21/009 dated 16-06-2020 for the period of one year from 01-04-2020 to ...3-2021.

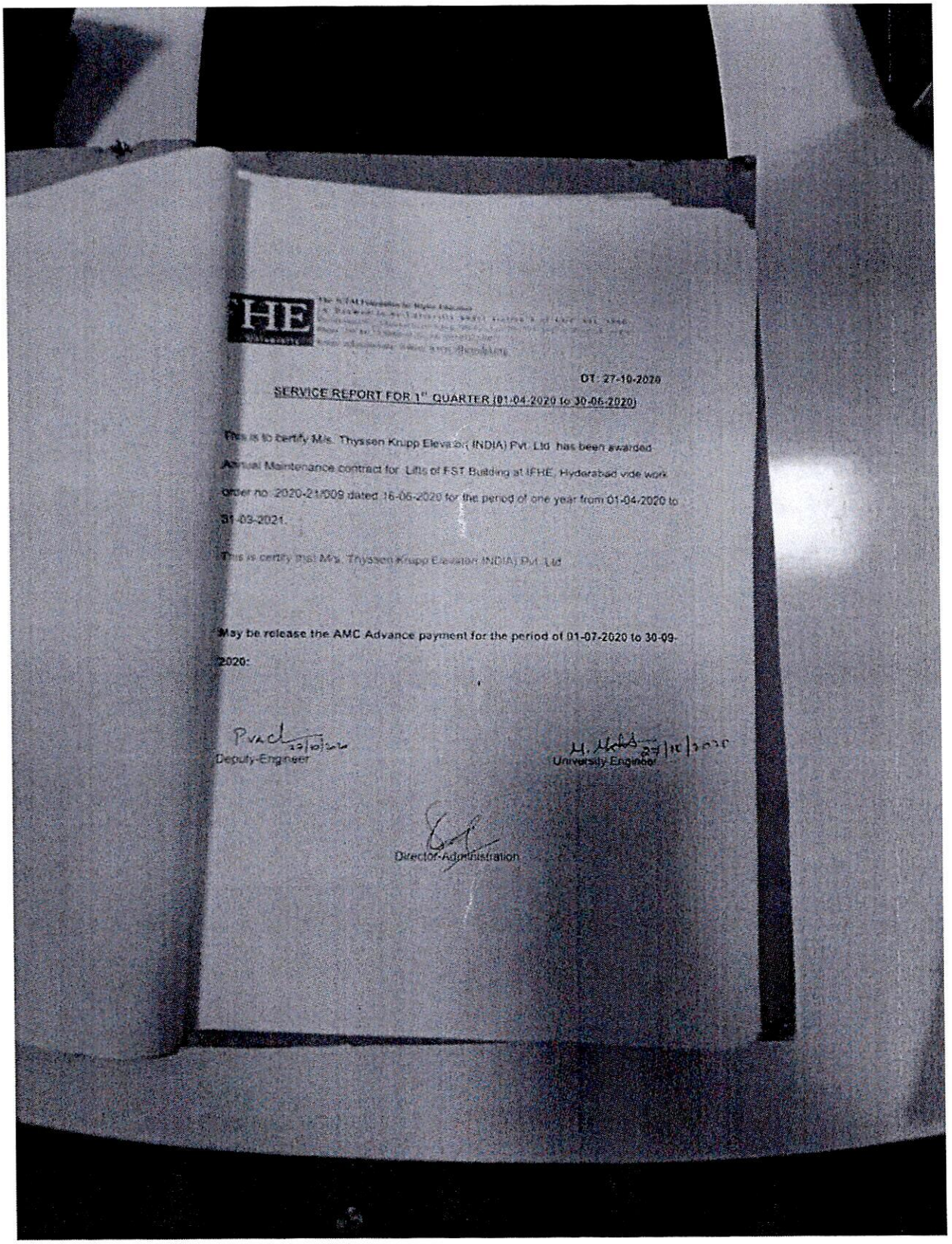
...is certify that M/s. Thyssen Krupp Elevator(INDIA) Pvt. Ltd

...y be release the AMC Advance payment for the period of 01-10-2020 to 30-12-...20.

...Engineer

University Engineer

Director Administration



DT: 27-10-2020

SERVICE REPORT FOR 1" QUARTER (01-04-2020 to 30-06-2020)

This is to certify M/s. Thyssen Krupp Elevator (INDIA) Pvt. Ltd has been awarded Annual Maintenance contract for Lifts of FST Building at IFHE, Hyderabad vide work order no. 2020-21/009 dated 16-06-2020 for the period of one year from 01-04-2020 to 31-03-2021.

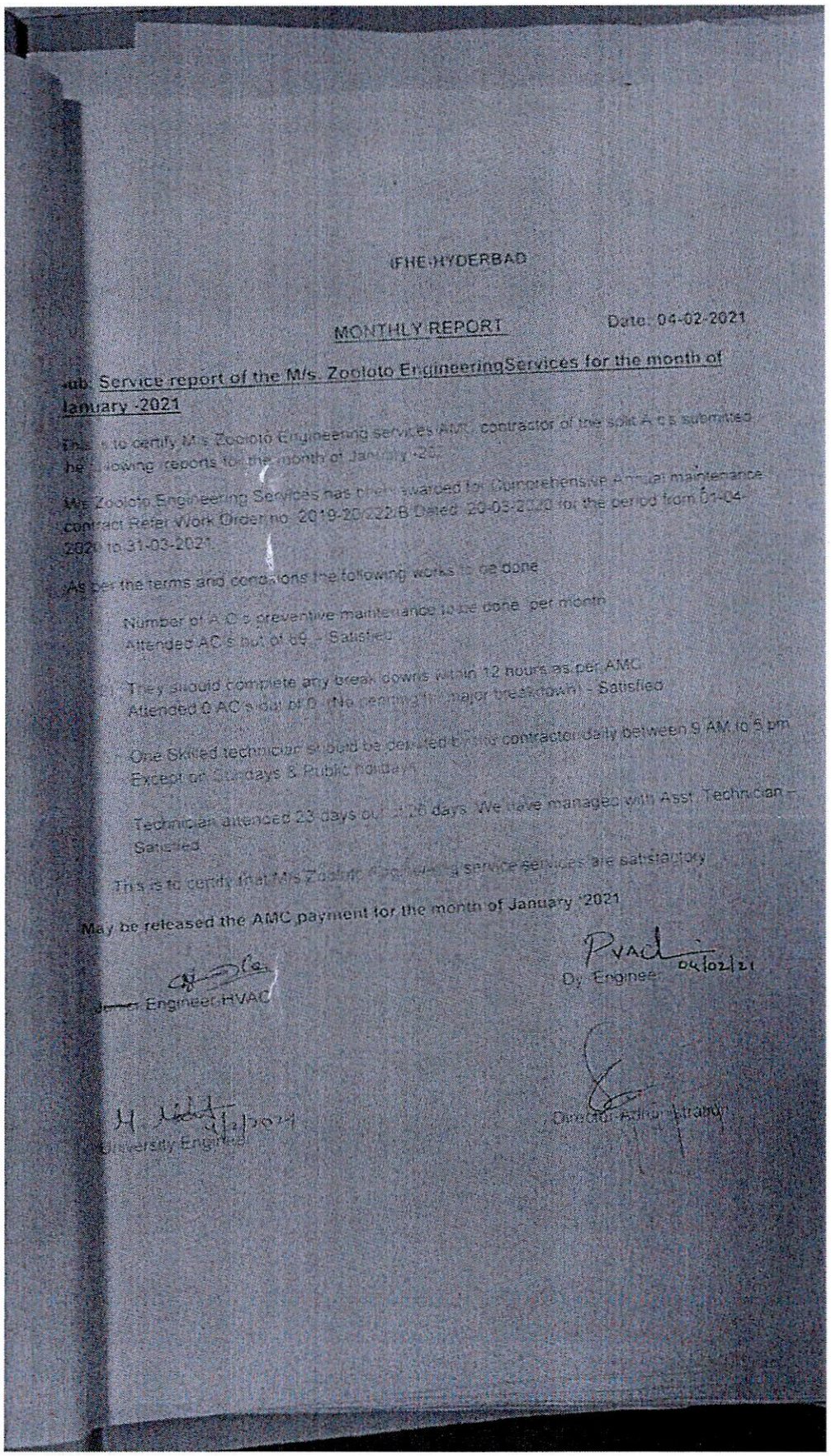
This is certify that M/s. Thyssen Krupp Elevator (INDIA) Pvt. Ltd

May be release the AMC Advance payment for the period of 01-07-2020 to 30-09-2020.

Deputy Engineer

University Engineer

Director-Administration



(FHE-HYDERBAD

MONTHLY REPORT Date: 04-02-2021

Sub: Service report of the M/s. Zooloto EngineeringServices for the month of January -2021

This is to certify M/s Zooloto Engineering services AMC contractor of the split A C s submitted the following reports for the month of January -202

M/s Zooloto Engineering Services has been awarded for Comprehensive Annual maintenance contract Refer Work Order no 2019-20/222/B Dated 20-03-2020 for the period from 01-04-2020 to 31-03-2021

As per the terms and conditions the following works to be done

Number of A C s preventive maintenance to be done per month
Attended AC s out of 69 - Satisfied

They should complete any break downs within 12 hours as per AMC
Attended 0 AC s out of 0 (No pending for major breakdown) - Satisfied

One Skilled technician should be provided by the contractor daily between 9 AM to 5 pm Except on Sundays & Public holidays

Technician attended 23 days out of 26 days (We have managed with Asst Technician – Satisfied

This is to certify that M/s Zooloto Engineering service services are satisfactory

May be released the AMC payment for the month of January -2021

Dy. Engineer 04/02/21

Engineer HVAC

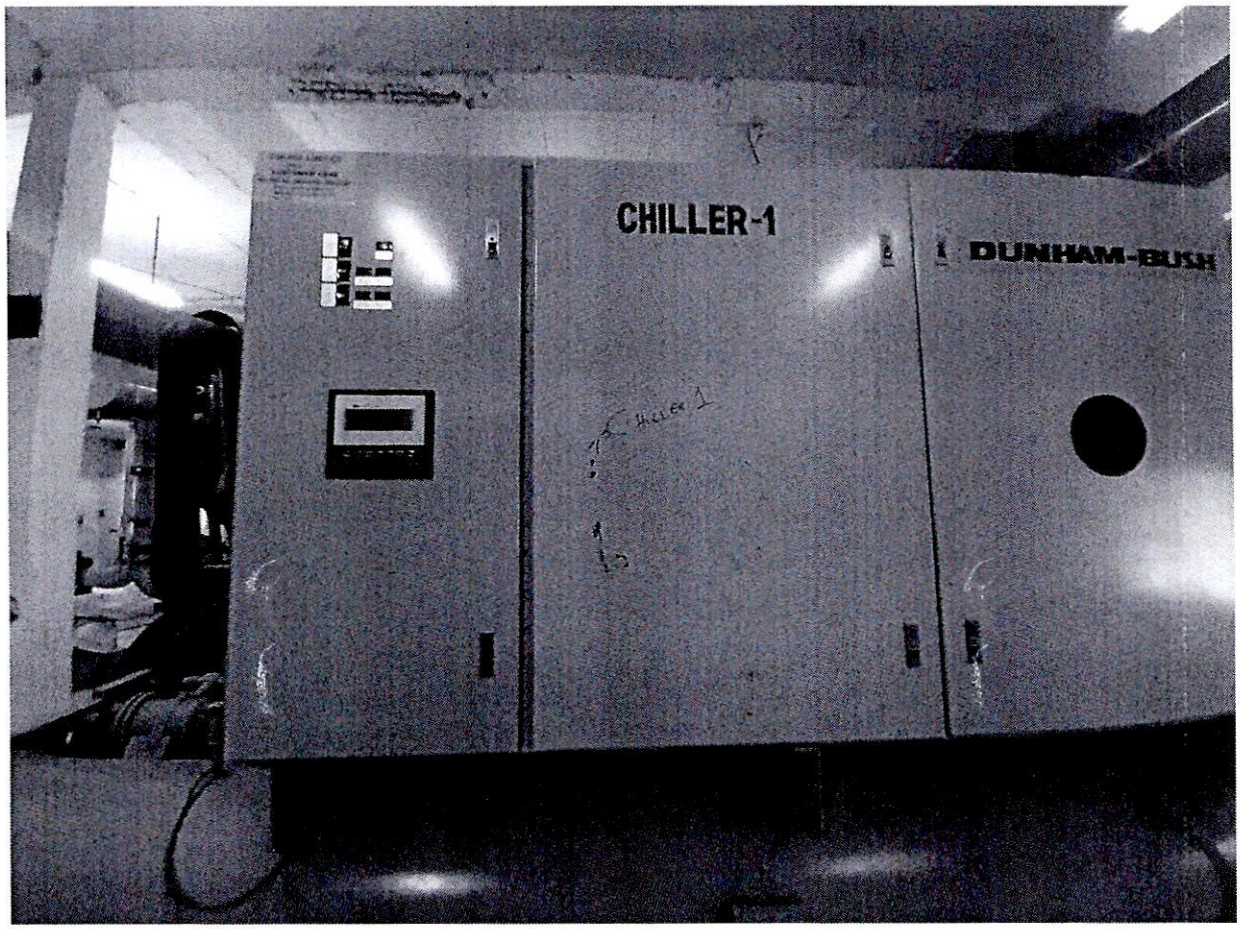
University Engineer 4/2/2021

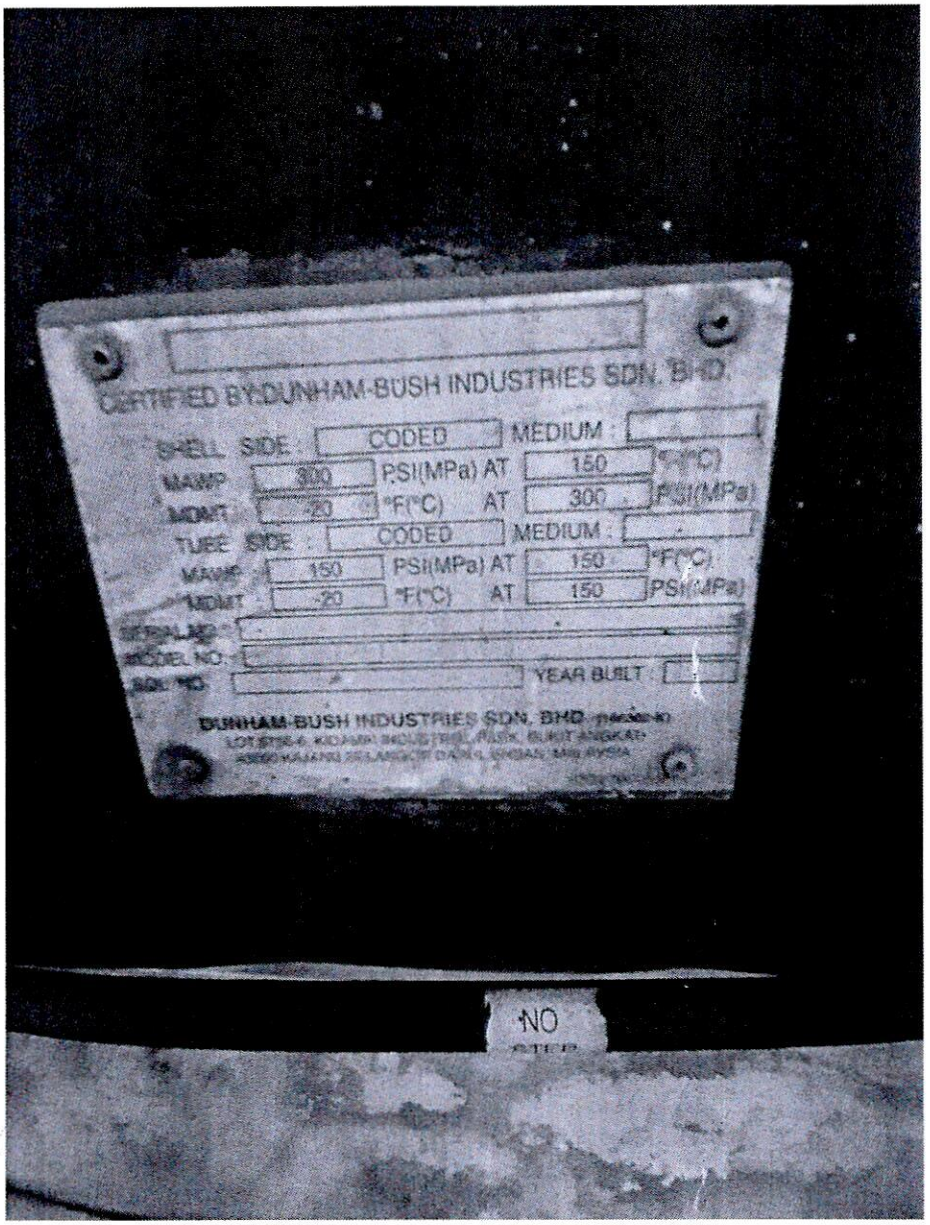
Director-Administration

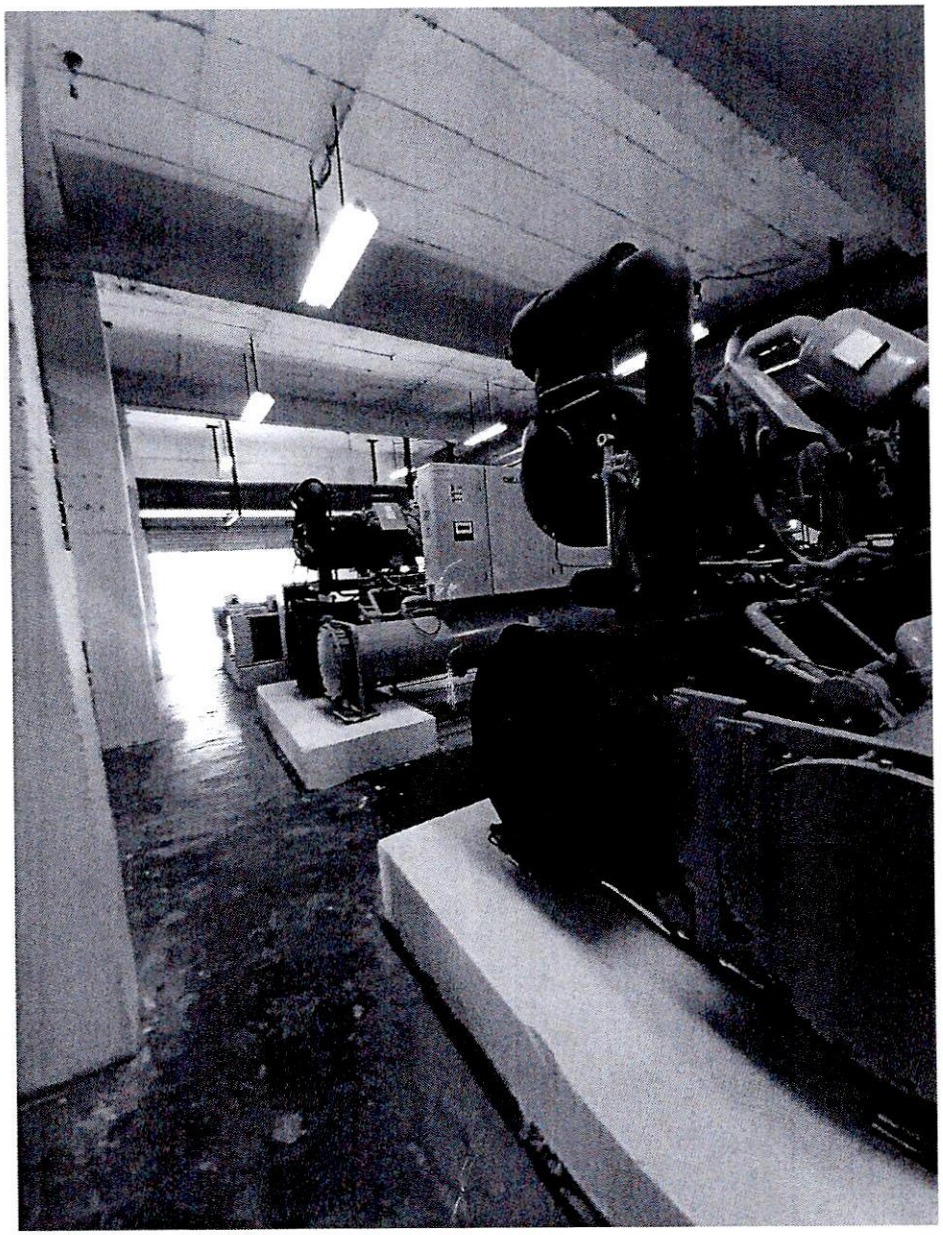
Metering & Equipment

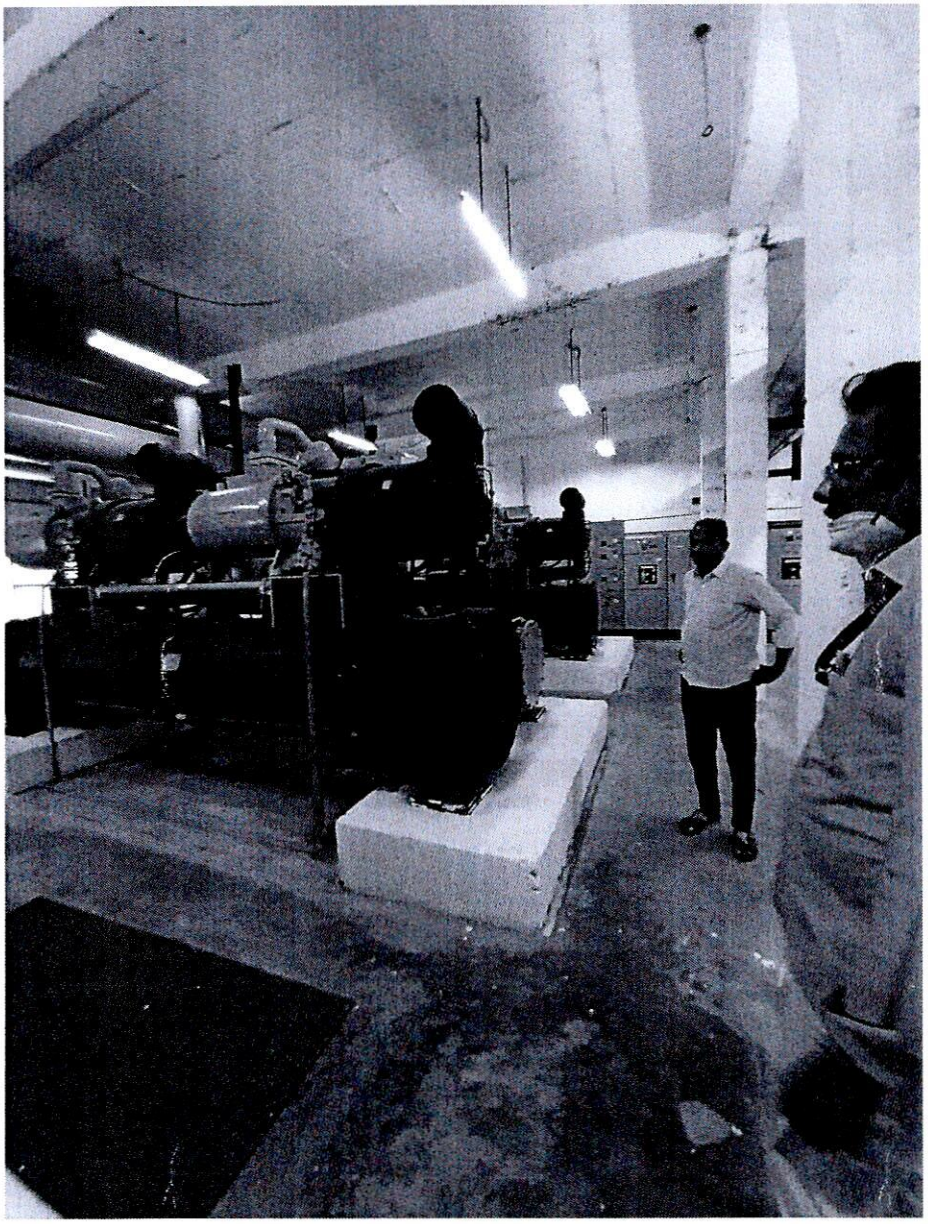


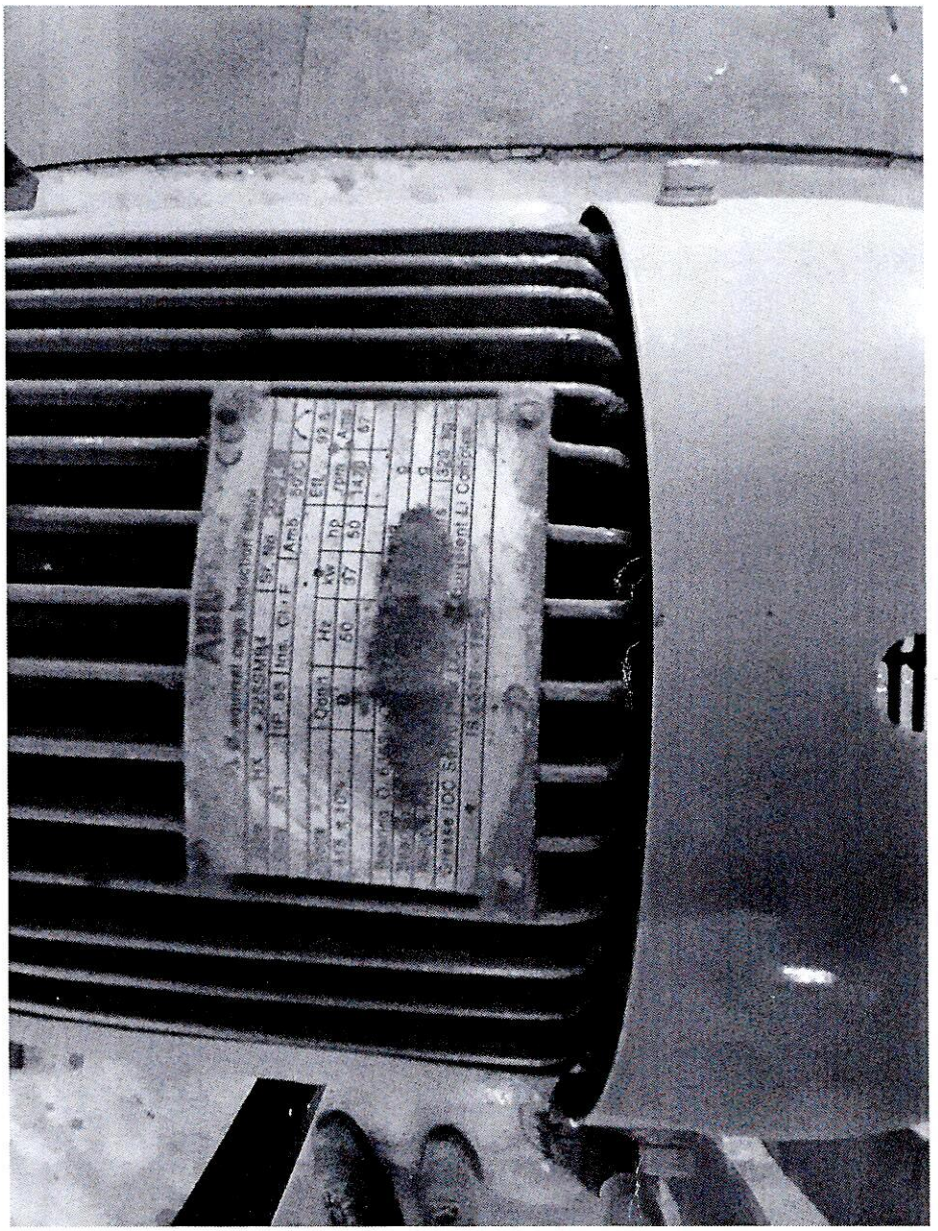

pGD1 user interface
Menu
Set

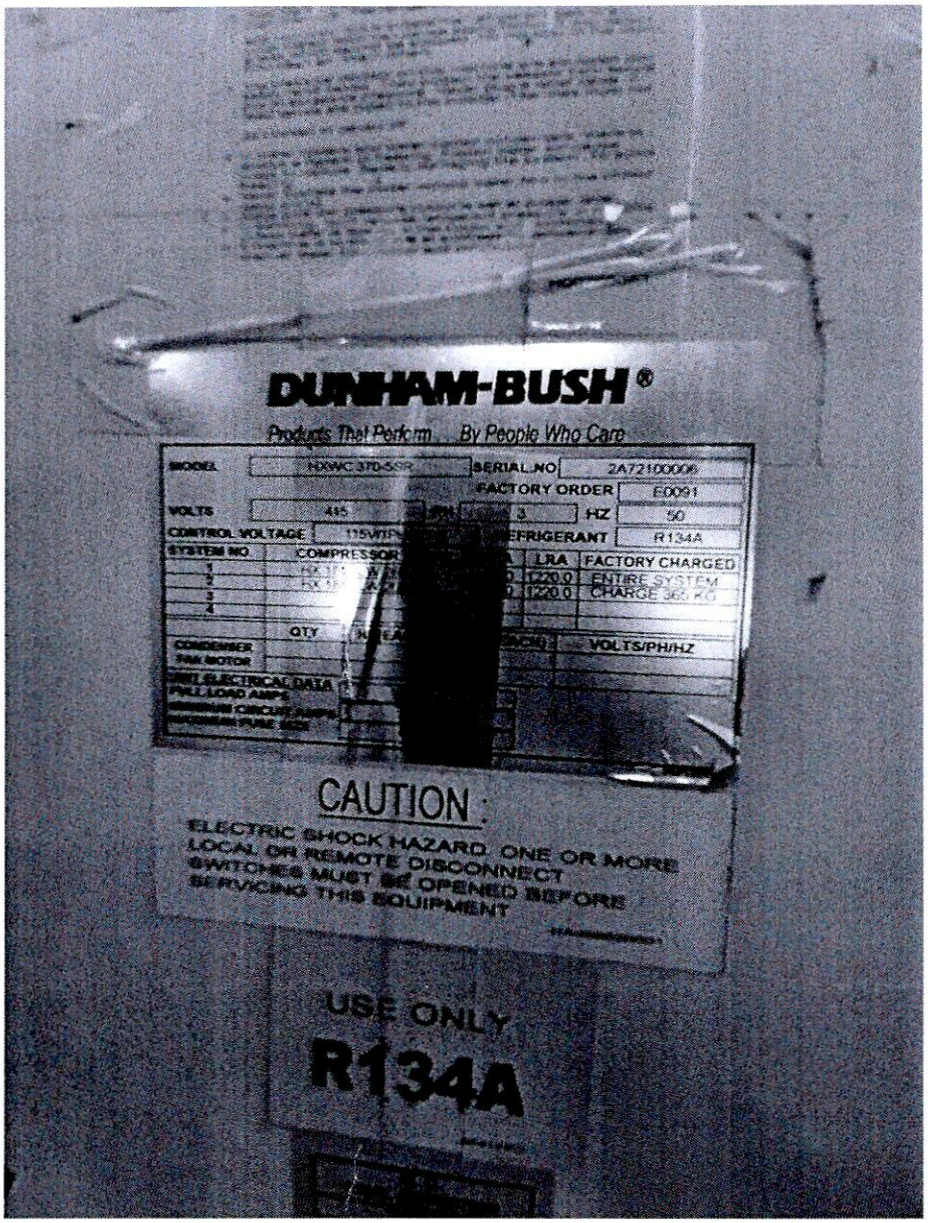

CHILLER-1
DUNHAM-BUSH

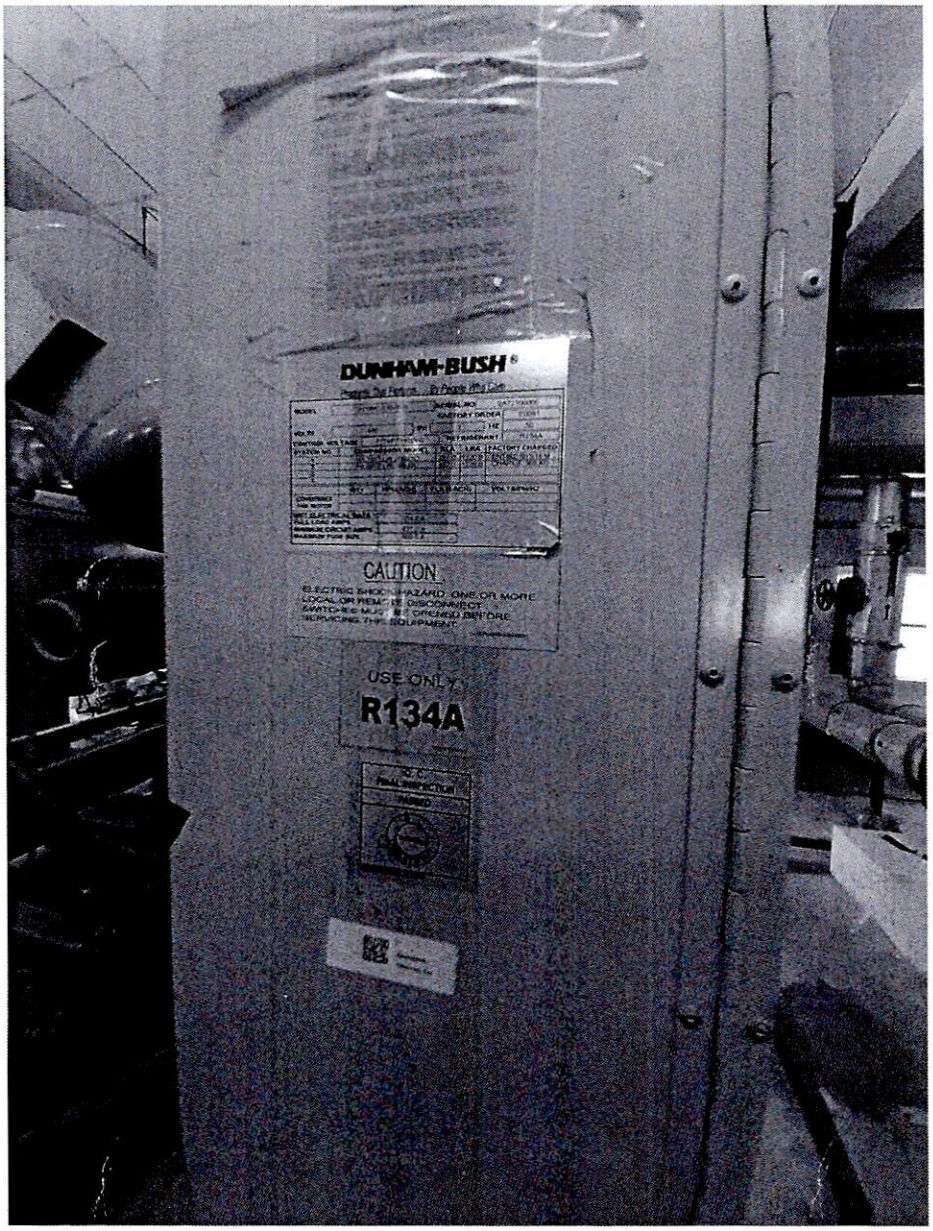

CERTIFIED BY DUNHAM-BUSH INDUSTRIES SDN. BHD.
SHELL SIDE : CODED MEDIUM :
MAWP 300 PSI(MPa) AT 150 °F(°C)
MDMT -20 °F(°C) AT 300 PSI(MPa)
TUBE SIDE : CODED MEDIUM :
MAWP 150 PSI(MPa) AT 150 °F(°C)
MDMT -20 °F(°C) AT 150 PSI(MPa)
MODEL NO.
YEAR BUILT
DUNHAM-BUSH INDUSTRIES SDN. BHD.
NO

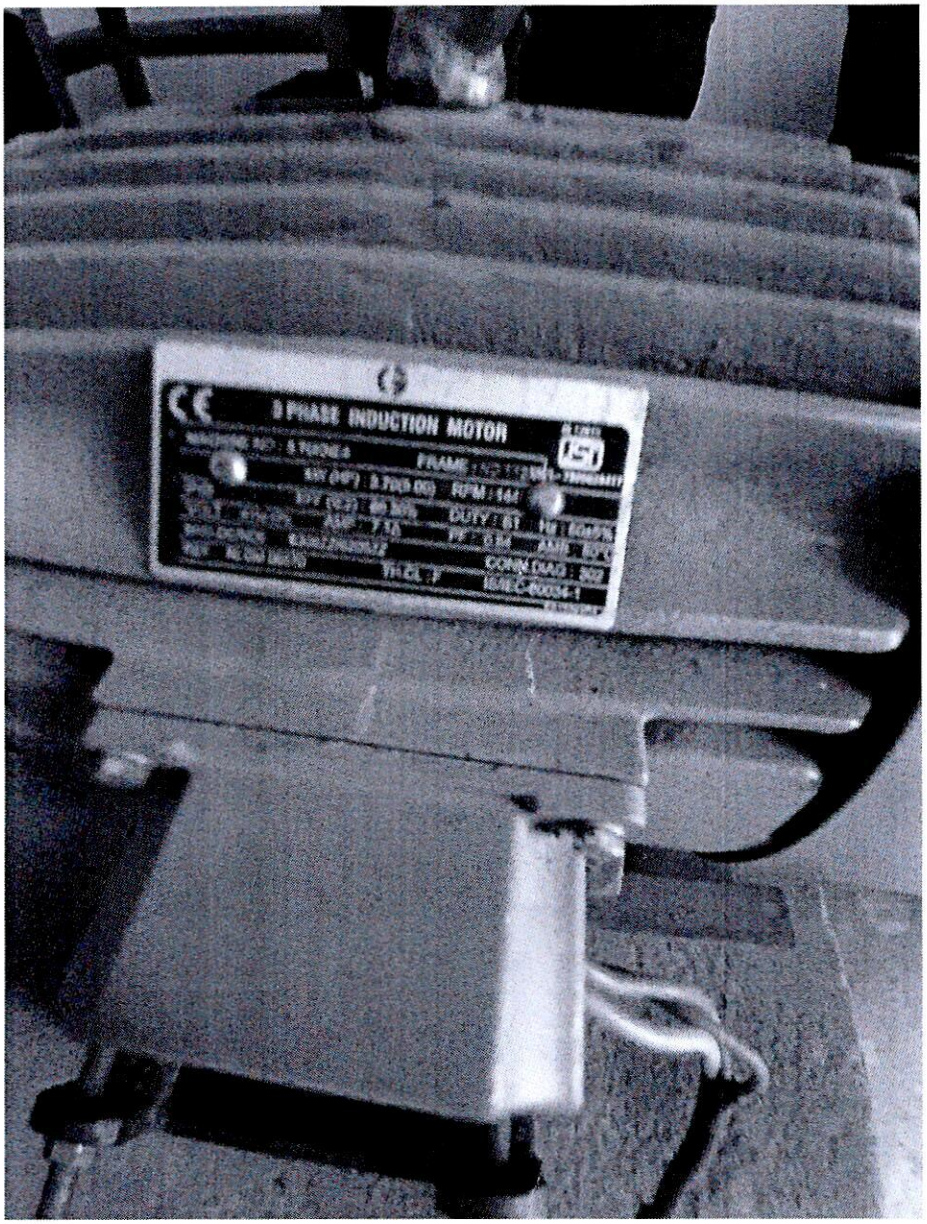






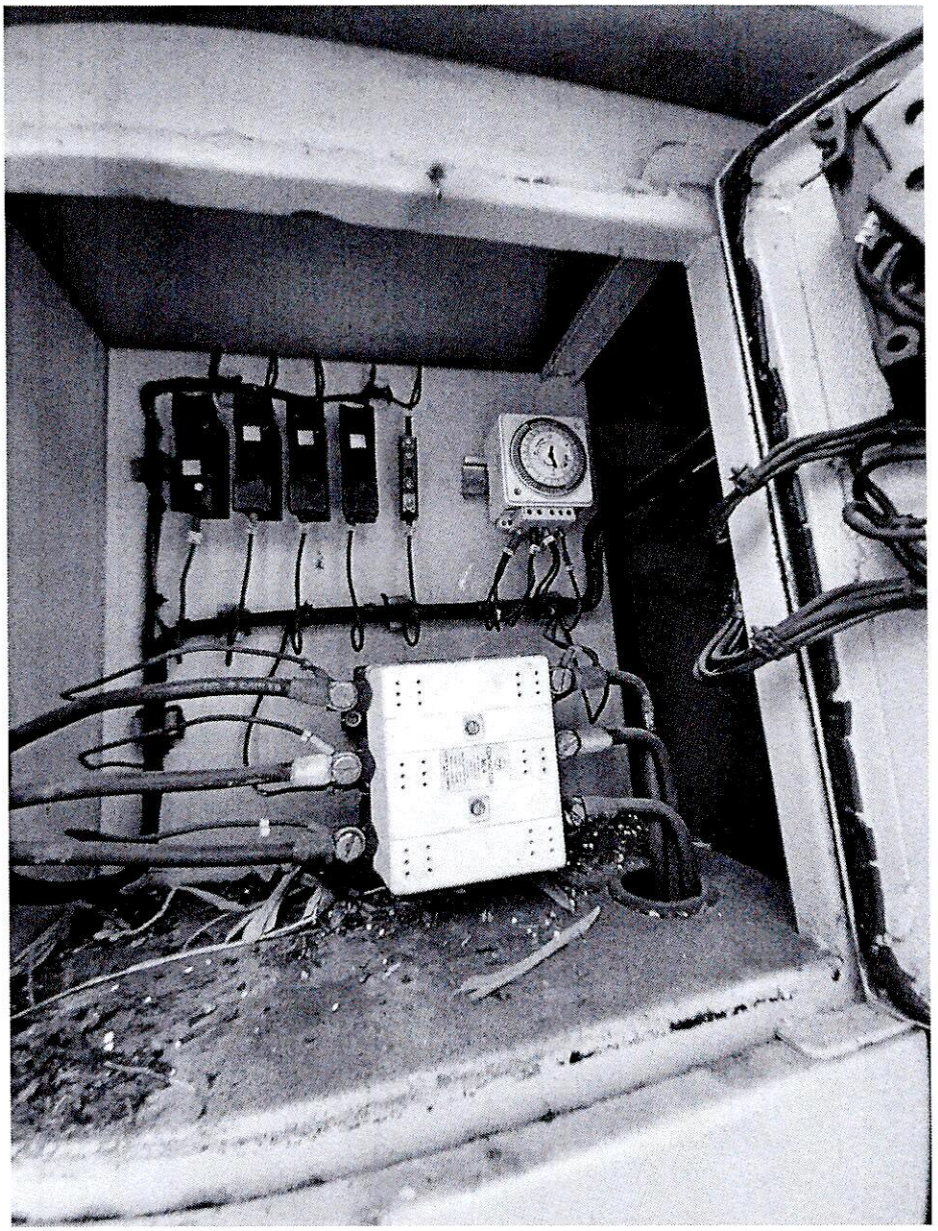

DUNHAM-BUSH®
Products That Perform ... By People Who Care
MODEL
SERIAL NO
2A72100006
FACTORY ORDER
E0091
VOLTS
HZ
50
CONTROL VOLTAGE
REFRIGERANT
R134A
SYSTEM NO
COMPRESSOR
LRA
FACTORY CHARGED
1220.0
ENTIRE SYSTEM
1220.0
CHARGE 365 KG
QTY
VOLTS/PH/HZ
CONDENSER FAN MOTOR
FULL LOAD AMPS
CAUTION :
ELECTRIC SHOCK HAZARD. ONE OR MORE LOCAL OR REMOTE DISCONNECT SWITCHES MUST BE OPENED BEFORE SERVICING THIS EQUIPMENT
USE ONLY
R134A


DUNHAM-BUSH
CAUTION
USE ONLY
R134A

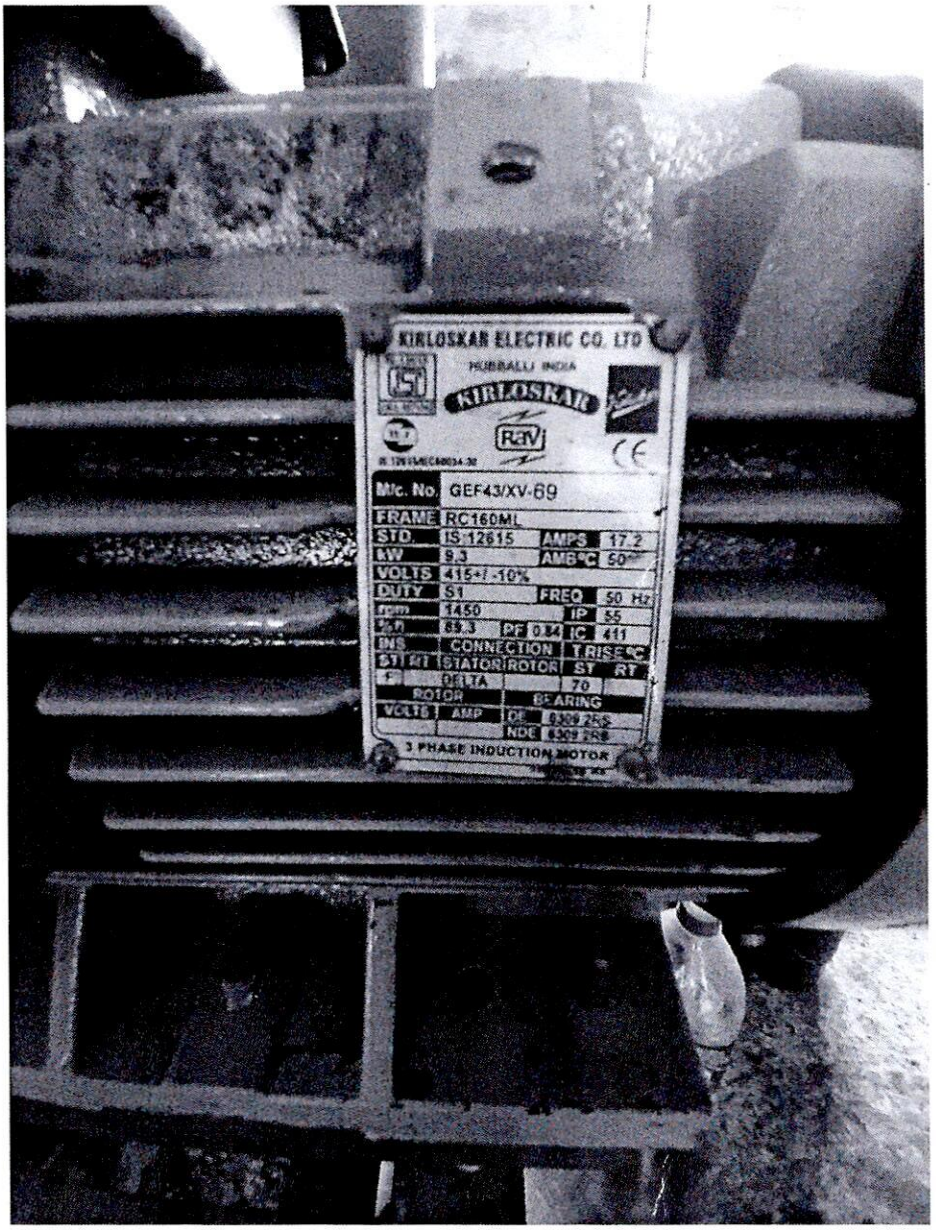

3 PHASE INDUCTION MOTOR

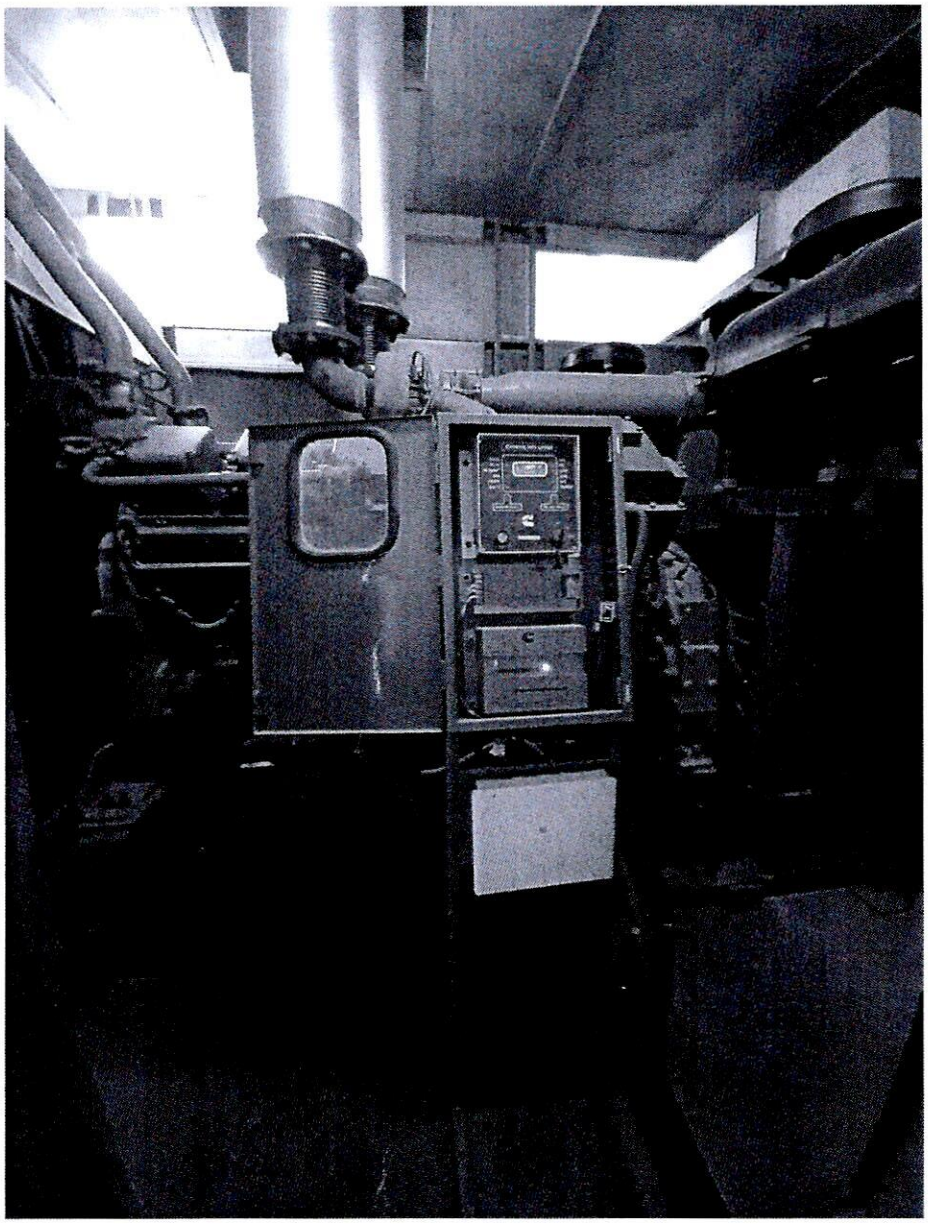

AKASH
AKASH

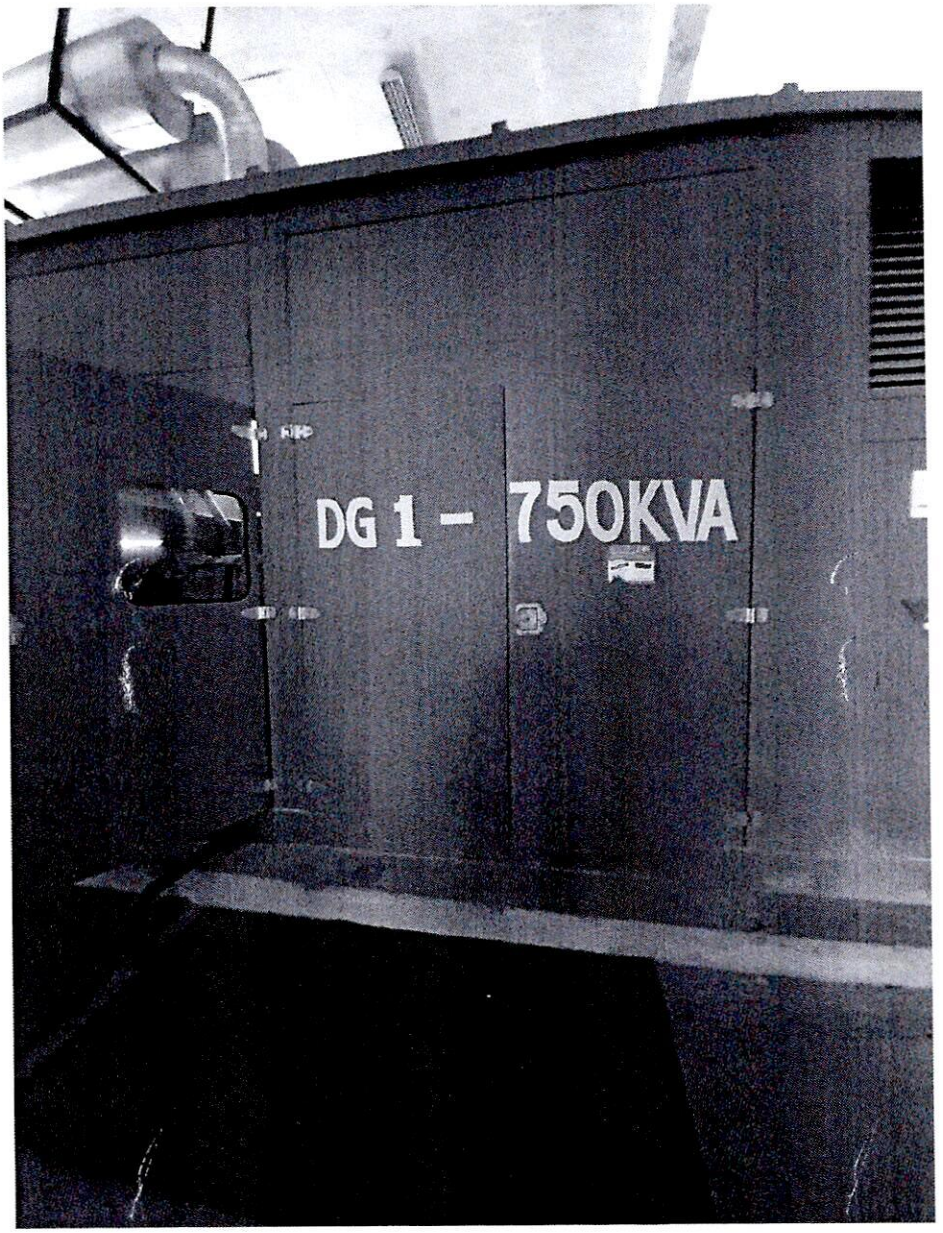




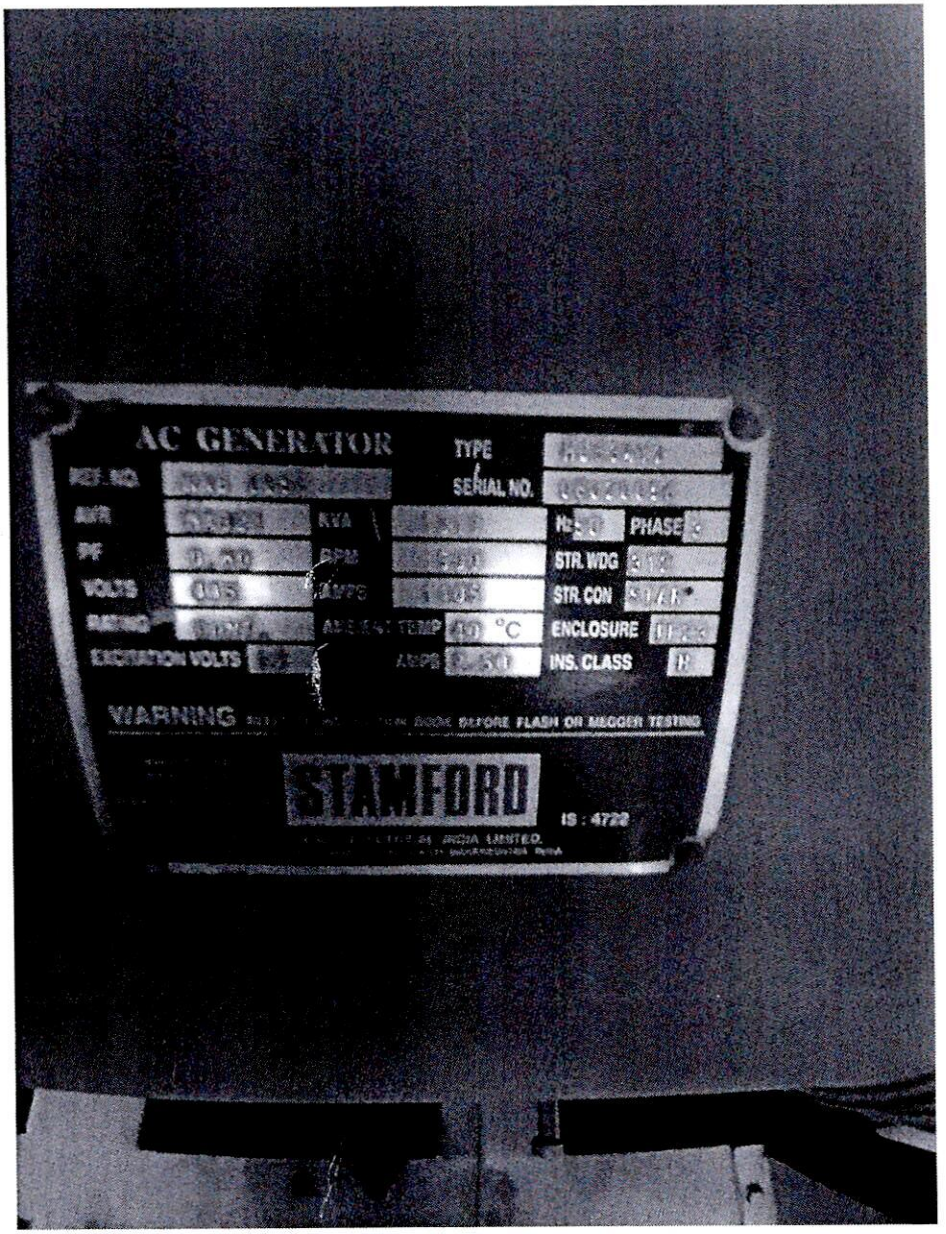



KIRLOSKAR ELECTRIC CO. LTD
HUBBALLI INDIA
KIRLOSKAR
Mtc. No. GEF43/XV-69
FRAME RC160ML
STD. IS 12615
AMPS 17.2
kW 9.3
AMB°C 50
VOLTS 415+/-10%
DUTY S1
FREQ 50 Hz
rpm 1450
IP 55
% η 89.3
PF 0.84
IC 411
DMS
CONNECTION
T RISE °C
ST RT
STATOR/ROTOR
ST RT
DELTA
70
ROTOR
BEARING
VOLTS AMP
DE 6309 2RS
NDE 6309 2RS
3 PHASE INDUCTION MOTOR

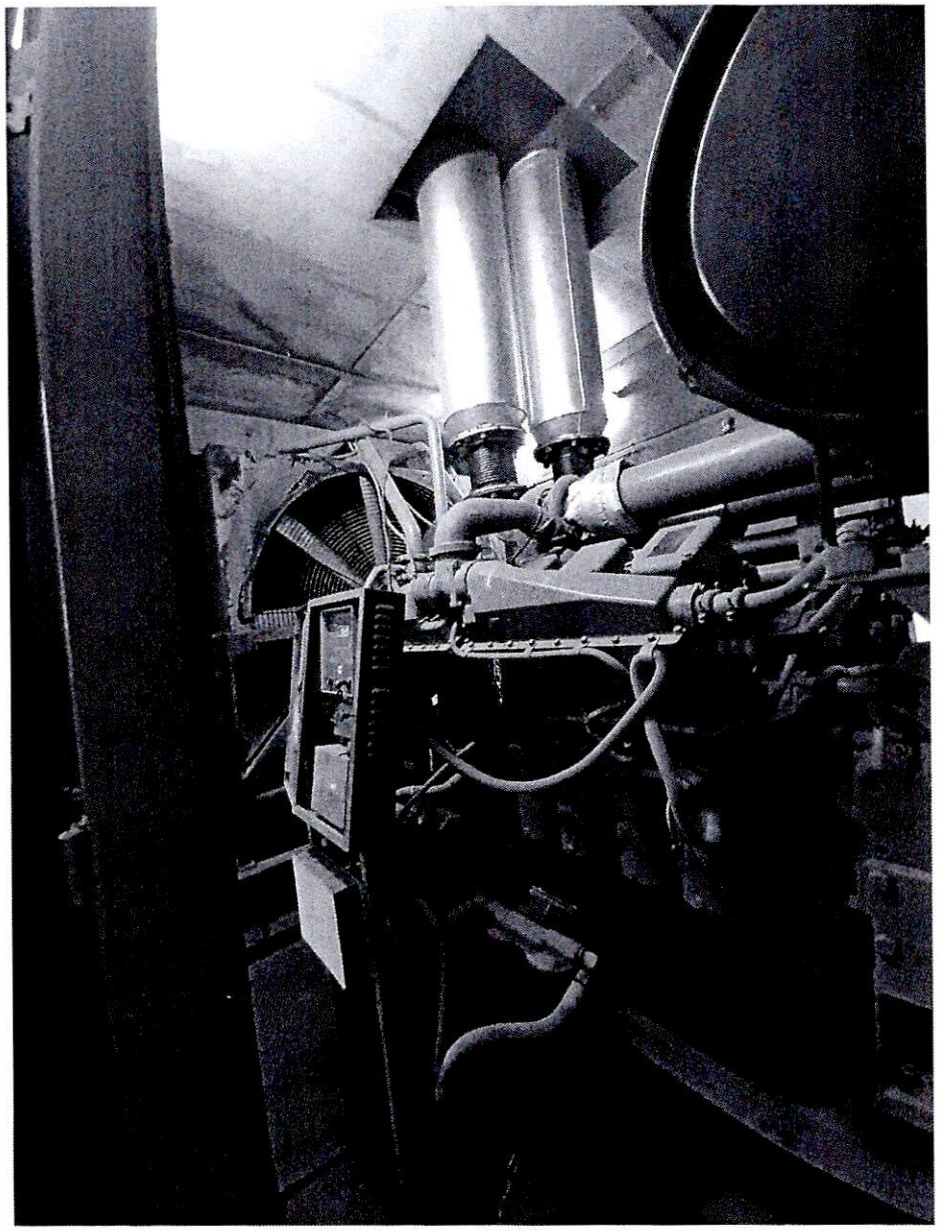


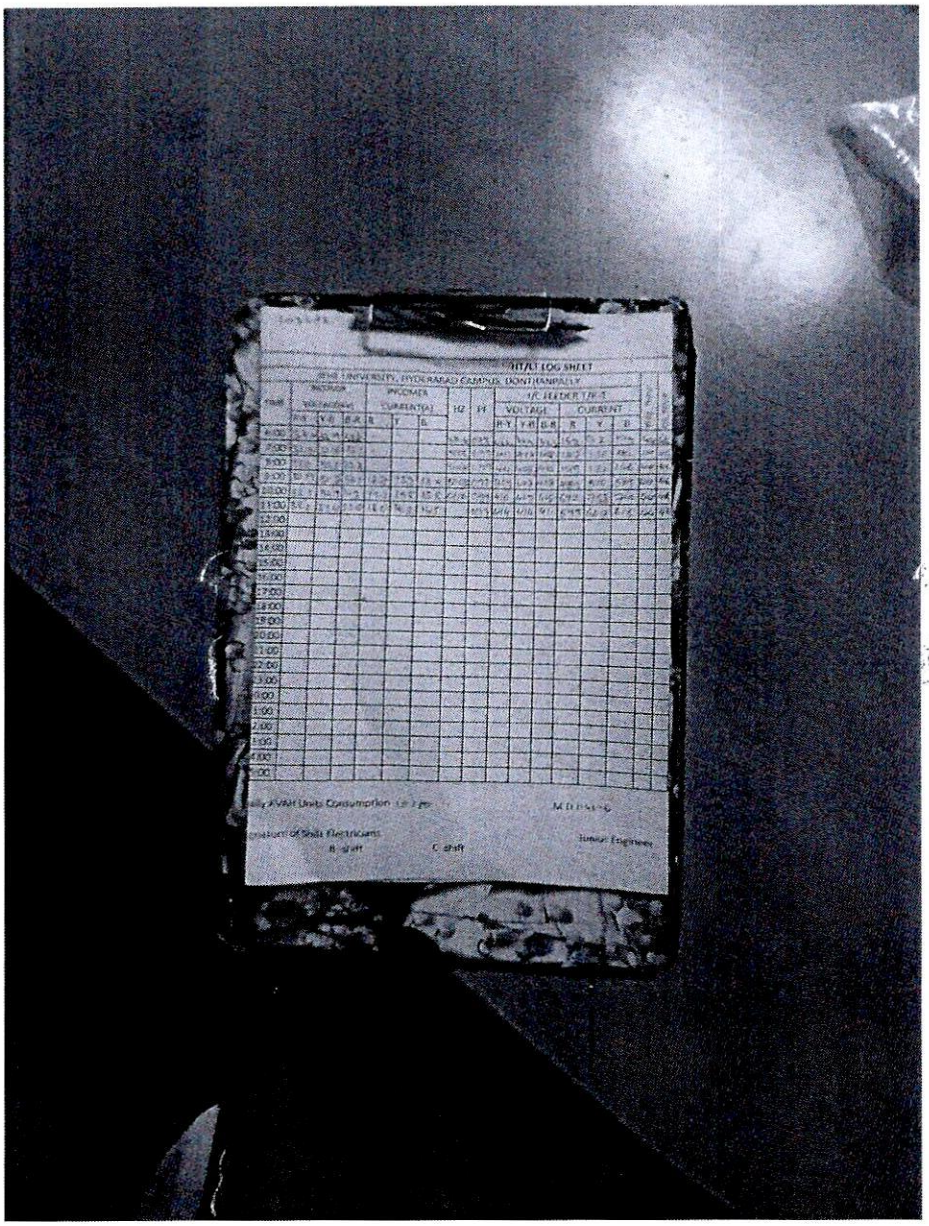

DG 1 - 750KVA




AC GENERATOR
TYPE
SERIAL NO.
KVA
PHASE
STR. WDG
STR. CON
ENCLOSURE
INS. CLASS
VOLTS
AMPS
EXCITATION VOLTS
AMBIENT TEMP 40 °C
WARNING
STAMFORD
IS : 4722

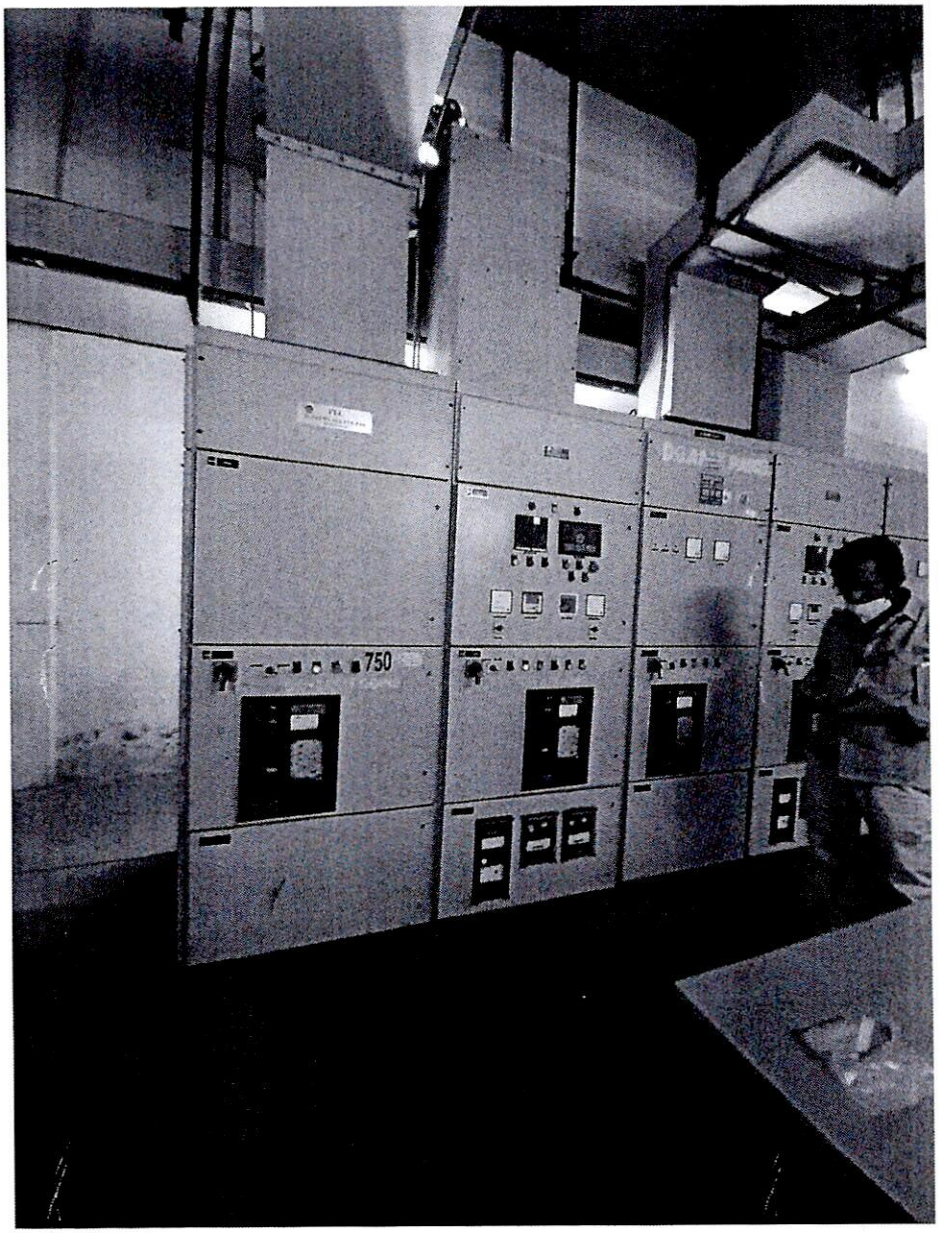


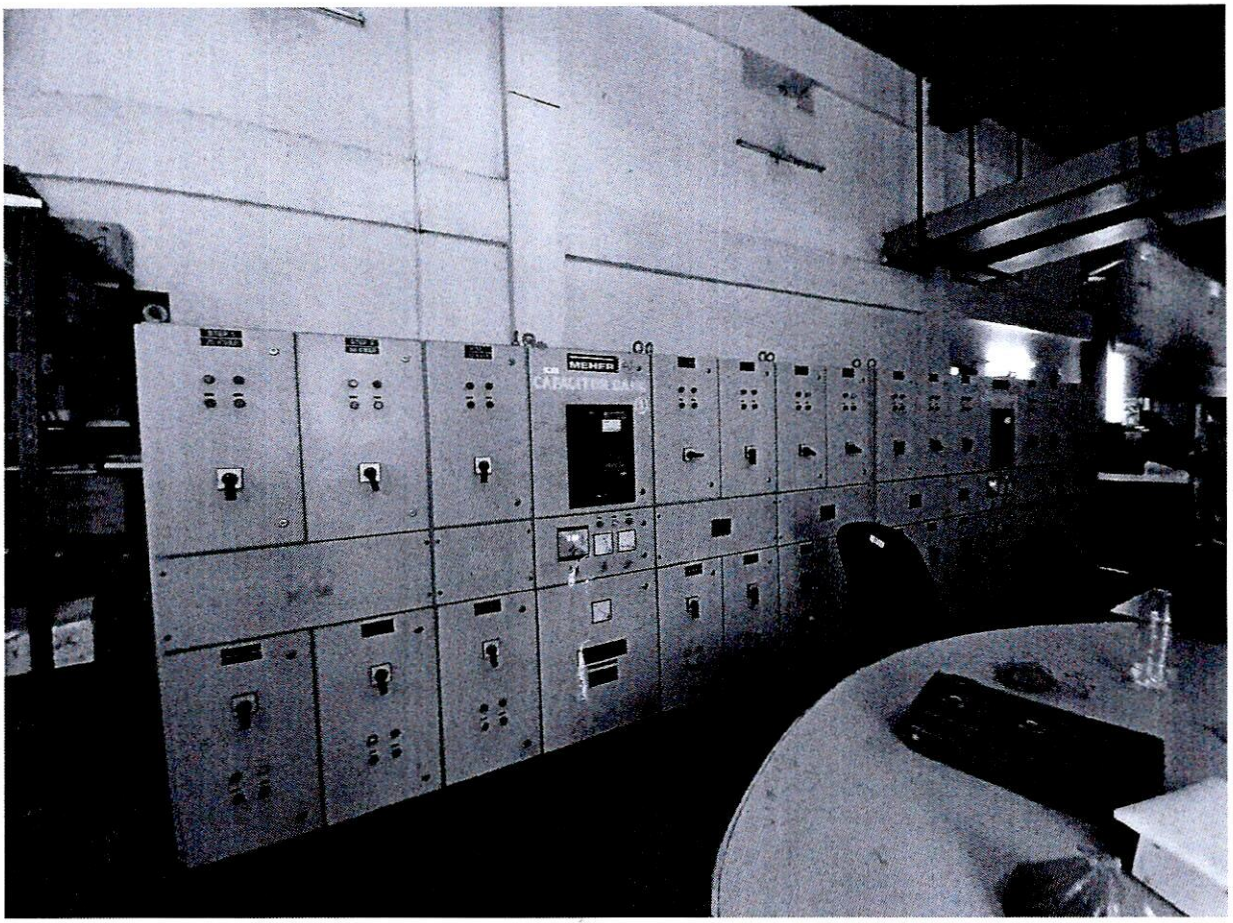



HT/LT LOG SHEET
Time
INCOMER
CURRENT(A)
VOLTAGE
CURRENT
R-Y
Y-B
B-R
R
Y
B


TRANSFORMER-2
3C X 240 SQ mm 33KV HT
XLPE AL ARMOURED CABLE
From VCB-2 TO TR 2
VCB-1
DANGER


33KV HT SWITCHBOARD


750

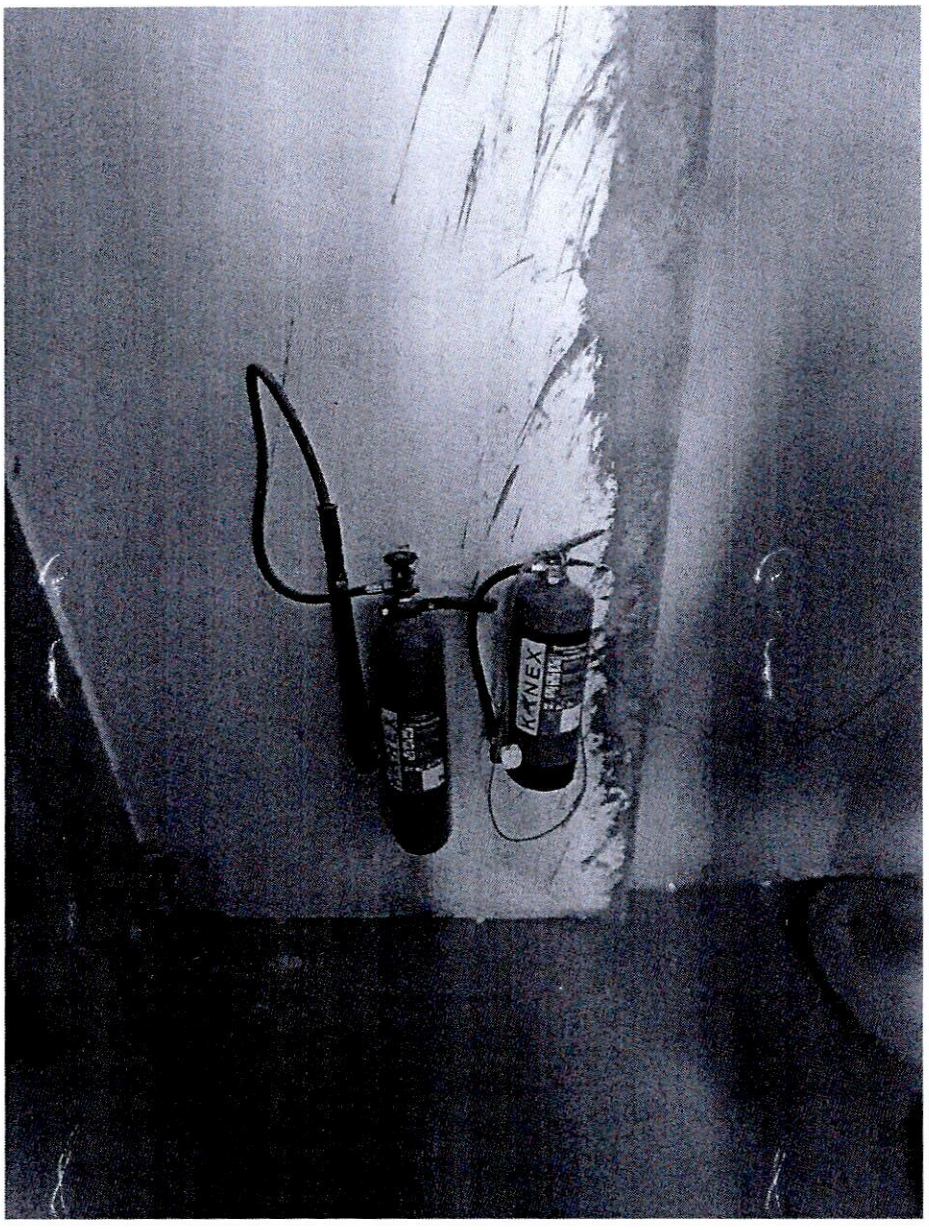

MEHER



S. Vijayalakshmi.

REGISTRAR
ICFAI FOUNDATION FOR HIGHER EDUCATION
(Deemed-to-be-University establishes under section 3 of UGC Act 1956.)

ICFAI FOUNDATION FOR HIGHER EDUCATION ★ HYDERABAD



S. Vijayalakshmi

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