

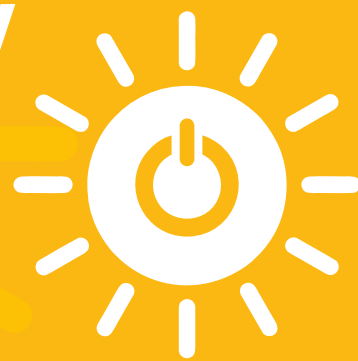


AMITY
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— HARYANA —

NAAC 'A'
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AFFORDABLE AND CLEAN ENERGY





Amity University Haryana Minutes of Meeting on Policy Review

Amity University Haryana has a huge commitment towards environment and sustainability. A lot of teaching learning research and other activities revolve around this highly significant issue to make the planet a better place. A meeting was organized on 04.02.2021 with experts to review some major policies related to these aspects. The meeting was presided over by the honorable Pro Vice Chancellor Dr. Padmakali Banerjee with following members:

1. Member Secretary Dr. Ravi Manuja
2. Member Dr. Vikas Madhukar
3. Member Dr. Kushagra Rajendra
4. Member Dr. Pallavi Sharma
5. Member Dr. Seema R Pathak
6. Member Dr. Anil Kumar

Agenda 1: To review the policy to maximise water reuse across the university

Agenda 2: To review the Environmental and Sustainability Policy

Agenda 3: To review the policy for ensuring all renovations / new builds follow the energy efficiency standards

Agenda 4: To review the policy on divesting investments from carbon-intensive energy industries especially coal and oil

Resolution: The committee recommended that at this point of time, no changes to the policy are necessary. Hence AUH may maintain the same policies for the time being.

The meeting was adjourned after Vote of thanks to the Chair.

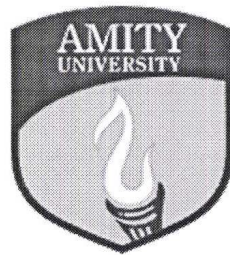

Registrar
Amity University Haryana
Manesar Gurgaon-122413

Registrar
Amity University Haryana



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AMITY UNIVERSITY HARYANA

Energy Efficient Renovation and Building

Commissioning Plan for Buildings

2016



Commissioning Plan for Buildings

1. BUILDING DESCRIPTION

The Academic block at Amity University Haryana has 6 stories above ground with a gross floor area of 484,364 Sft. Energy sources for building includes both electricity from grid and rooftop solar PV & fossil fuel (diesel). This is an air- conditioned building and is installed with water cooled centrifugal chillers (600 TR x 2 Nos. and 800 TR x 1 Nos.). Lighting fixtures installed in the building is a blend of T8 and LED lights. Electricity supply is through Feeder Panels which have the capability of metering energy consumption. Energy source for building from fossil fuel involves Diesel generator sets (3 Nos.) that are installed for powerback up and used only in case of no electricity supply.

2. GOAL

The goal of the commissioning effort involves:

- Conducting investigation and analysis of building's major energy consuming systems
- Breakdown of different energy use profile in the building
- Operating problems that affect occupant's comfort and energy use
- Finding potential operational changes to solve operating problems of energy use systems
- Identifying a variety of recognizable efficiency opportunities.

3. SCOPE & SCHEDULE

Amity University Haryana is committed to perform commissioning for this facility with an objective of systematically identifying energy saving opportunities.

Amity Power Management shall act as the commissioning agent (CxA) and will provide suitable documents for the required credit. The CxA will report directly to the AUH Management.

Commissioning activities will consist of:



- Documenting the breakdown of energy use in the building
- Developing procedures for and overseeing functional testing and systems diagnostics of the building systems
- Identifying any operating problems
- Identifying any and all potential capital improvements related to energy use and occupant comfort
- Providing a cost-benefit analysis for cost-effective capital improvements.

The CxA shall coordinate with the facilities manager and building operations staff, on scheduling, and shall integrate activities into the overall project schedule.

3.1. Systems commissioned:

1. Heating system and distribution
2. Cooling system equipment and distribution
3. Air-handling and fan-coil units and air distribution system
4. Ventilation and exhaust systems
5. HVAC controls
6. Lighting controls
7. Electrical sub-metering systems

3.2. Commissioning Services

The following services define the scope of work :

1. Fully develop a retro-commissioning plan detailing the roles, responsibilities, and actions required to commission the facility, along with a timetable for completion. Develop the plan at the outset of the project, and define all actions to be taken by the CxA. Identify a team member to be present for each activity. Include a checklist of all equipment to be tested.
2. Review all building documents, including mechanical drawings, equipment specifications, operations and maintenance manuals, utility bills, and operating documents.
3. Conduct a site assessment to understand how the building systems currently



- operate.
4. Conduct interviews with the building operations staff.
 5. Undertake a detailed energy-use breakdown
 6. Develop specific equipment and system, functional performance test procedures and diagnostic monitoring based on energy management control system trend logging, stand-alone portable data logging, and manual function testing for applicable project systems:
 7. Submit a Master List of Findings to the Management, identifying all the operating problems that affect occupants' comfort and energy use and detailing all problems identified during the investigation and analysis phase. Include a cost-benefit analysis for each operational problem and proposed change.

Above commissioning activities shall be carried out at an interval of every six months.

4. WALK-THROUGH SURVEY

Amity management is very sensitive about energy consumption at their buildings and campuses. Thereby, a walk through energy audit was carried out in line with ASHRAE Level 1 which involved:

- brief interviews with site operating personnel,
- a review of the facility's utility bills and other operating data, and
- An abbreviated walk-through of the building.

Amity Power Management team is designated for monitoring energy consumption at Amity University Haryana (AUH). The energy consumption data maintained and provided by them were helpful in identifying problems of energy use systems and recognizing various energy saving opportunities.

Below are the Audit observations and findings:

4.1. Brief Interviews with Site Operating Personnel

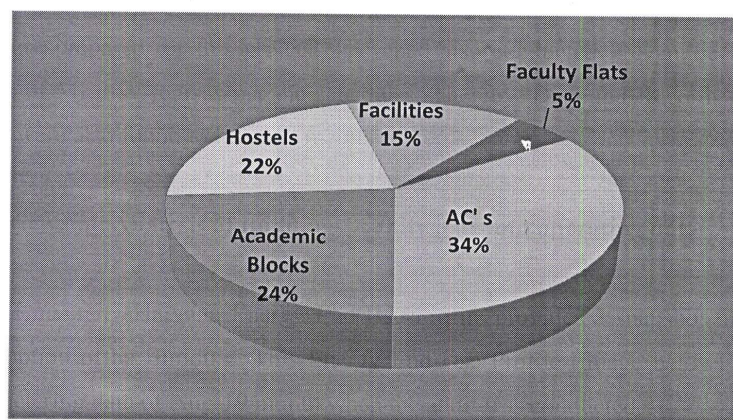
Brief interviews were conducted with Electrical, HVAC and plumbing operating personnel at Amity University Haryana. The interviews involved discussions regarding

O&M plans and procedures being used by them.

All the operating staff members were found to be quite aware of preventive maintenance procedures prepared for this project. They had also conducted Preventive Maintenance Checks of MEP systems as per the schedules. Thereby, Data and Records of these PM checks were also found to be well-maintained.

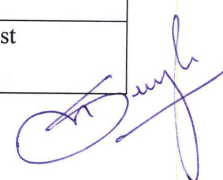
1.. 4.2 Review and Analysis of Buildings' Utility data and operating data

Amity University Haryana Energy End-Use Profile provides a snapshot of the energy consumption of the Building. This Energy End-Use Profile (image below) was created from metering data of Aug'19 month when the audit was conducted.



4.3 Recommended Low-cost/no-cost Energy Efficiency Upgrades

#	Description	Implementation Cost
1	Maintain HVAC set points at 26 °C will reduce load on chiller system	No cost
2	Reduce condenser water temperature to 30°C will improve operating efficiency of chiller	No cost

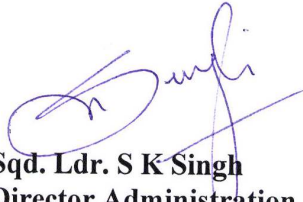




3	Prevent oil leakage and Balancing oil quantity in the transformer	Low cost (< INR 75000)
4	Install energy meters for monitoring lighting energy consumption	Medium cost (INR 75000 - 200,000)
5	Replace weak capacitors for improving power factor	Medium cost (INR 75000 - 200,000)
6	Replace inefficient lights with LED	High cost (> INR 200,000)

Above energy saving measures were recommended in Aug'19, out of which following were implemented in Sep'19:

#	Description
1	Maintain HVAC set points at 26 °C will reduce load on chiller system
2	Reduce condenser water temperature to 30°C will improve operating efficiency of chiller
3	Prevent oil leakage and Balancing oil quantity in the transformer
4	Replace weak capacitors for improving power factor
5	Replace inefficient lights with LED


Sqd. Ldr. S K Singh
Director Administration
Amity University Haryana

Sqn Ldr SK Singh
Director Admin
AUH Manesar