

Overview of Sustainability Initiatives at LAU

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- Sustainability in LAU Strategic Plan
- Sustainability in Education and Research
 - ✦ Sustainability-Related Courses
 - ✦ Sustainability-Related Student Activities
 - ✦ Collaborative Sustainability Efforts: Joint Programs
- Sustainability at LAU Facilities and Operations
 - ✦ In Capital Projects
 - ✦ In Renovation Projects
 - ✦ In Campus Life

- Sustainability is emphasized in Pillar 5 of the six-pillar LAU Strategic Plan 2011-2016.
 - ✦ Goal 5.2: Commit to introduce Green curricula in relevant majors and adopt a University culture that contributes to environmental sustainability.
 - Action 5.2.1: Commit to the creation of new majors and minors related to environmental sustainability.
 - Action 5.2.2: Implement Guidelines, Procedures, Programs, and communications that will raise the internal and external profile of LAU as a Green University.
 - Action 5.2.3: Implement sustainability and environmentally responsible measures across LAU campuses.

- Sustainability-Related Courses
 - Civil Engineering
 - ✦ CIE424 Water Distribution and Treatment
 - ✦ CIE426 Wastewater Collection and Treatment
 - ✦ CIE520 Solid Waste Management
 - ✦ CIE522 Environmental Impact Assessment
 - ✦ CIE525 Environmental Policy and Management
 - ✦ CIE526 Environmental Remediation
 - ✦ CIE585 Risk and Natural Hazard Management
 - ✦ CIE723 Water Resources Planning and Management
 - ✦ CIE724 Air Quality Management
 - ✦ CIE725 Geo-environmental Engineering

- Sustainability-Related Courses
 - Mechanical Engineering
 - ✦ ELE 526 Renewable Energy
 - ✦ MEE505 Solar Systems
 - ✦ MEE590 Energy Audit
 - ✦ MEE599D Introduction to Sustainable Energy
 - ✦ MEE599G Applied Solar Energy
 - ✦ MEE599H Passive Building Design
 - Two post-baccalaureate technical certificates are being planned:
 - ✦ Technical certificate in solar and wind energy systems
 - ✦ Technical certificate in building management systems

- UNICEF Projects (Global Design for UNICEF Challenge)
 - Sustainable temporary housing for refugees
 - Solar cooker for refugees
- G-Tour: A green touristic vehicle designed and built by students.
- Shell Eco-Marathon: student teams from around the world design, build and test ultra energy-efficient vehicles.
- Several Final-Year Engineering Projects such as:
 - Smart Greenhouse
 - Sustainable Architecture
 - Solar Thermal Power Plant
 - Sustainable Building Design

- LAU is partnering with other regional and European universities in the following EU Tempus projects:
 - PRO-GREEN-Joint/Dual Professional Graduate Diploma and Professional Degree in Green Technologies with a focus on (i) renewable energies, (ii) green buildings and (iii) water resources.
 - CLIMASP: Development of an interdisciplinary program on Climate Change and Sustainability Policy. The main objective of this project is to integrate and implement the CLIMASP program as an integral part to existing undergraduate academic degrees in disciplines such as education sciences, applied sciences, technical sciences, economics/business sciences, and social sciences.

- The new Library Building in Byblos will be built to meet LEED-Gold specifications with green targets such as:
 - Optimize energy performance
 - Reduce water use
 - Optimize the site sustainability
 - Enhance the indoor environmental quality
 - Select materials in an environmentally responsible and resource efficient way



- Light sensors in areas exposed to direct sunlight to control dedicated lighting circuit for that area which can be turned off when natural lighting is adequate



- Variable frequency drives (VFDs) for motors exceeding 5 horsepower



- Solar water heating whenever hot water demand is high (Dorms, Gym, kitchen, labs, etc...) or whenever the payback period is less than 7 years



- Occupancy sensors in classrooms, meeting rooms, bedrooms, lounges, and faculty offices to control lighting and offset room temperature



- Light sensor to control outdoor lighting



- Air curtains on building entrances



- Dimmers where applicable with light sensors to control lighting level to required levels



- Waste water treatment plants and usage of treated waste water for irrigation purposes



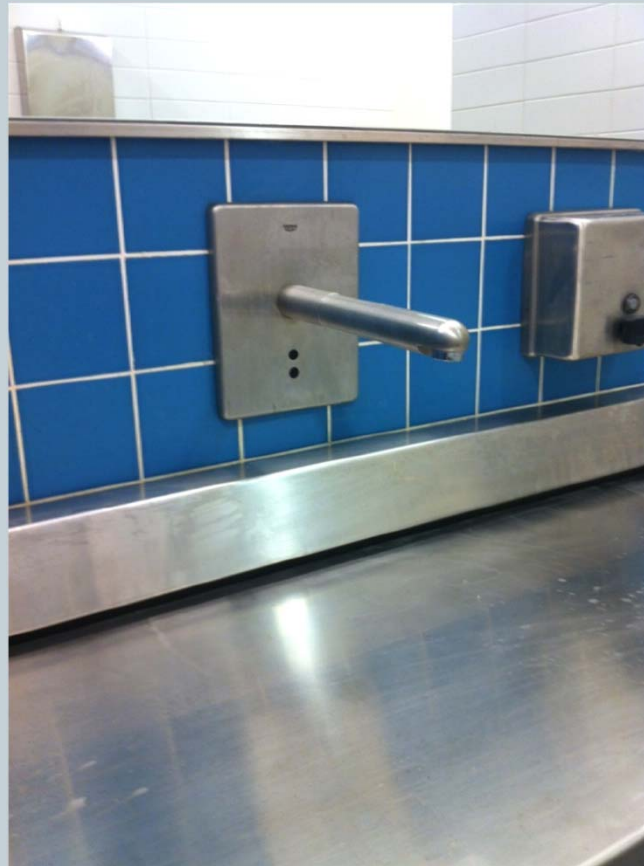
- Efficient irrigation system with electrical solenoid valves controlled by main irrigation controller



- Install CO sensors in parking areas to control VFD of exhaust fans or to switch them to low speed
- Install CO2 sensors in high occupancy areas for demand control ventilation




- Install Sensor-controlled low-flow faucets




- Install Sensor-controlled flush fixtures



- Continuous control of system through BMS



AHU-DX-01

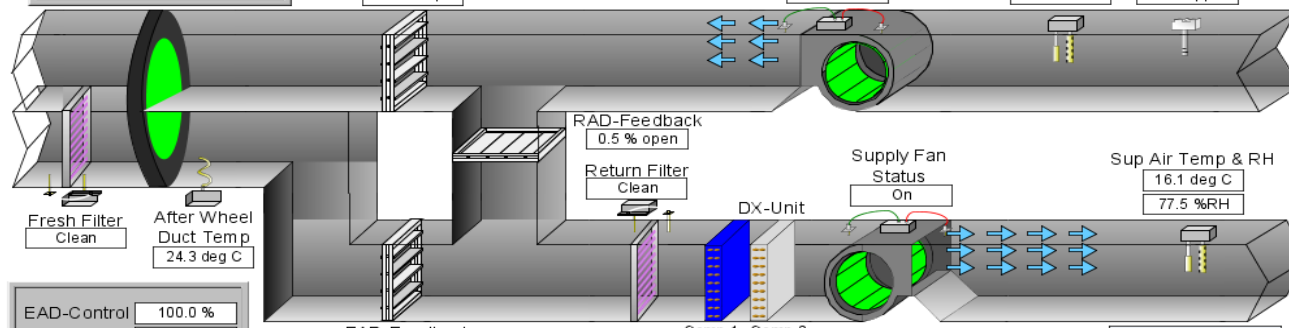


Start/Stop	Heat Wheel
Enable/Disable	True
Selector Switch	Auto
Status	On
Failed	Normal

EAD-Control	100.0 %
RAD-Control	0.0 %
FAD-Control	100.0 %

Minimum FAD/EAD	30.0 %
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Outside Air Temp
32.0 deg C



AHU Location

Return Fan Status	On
Ret Air Temp & RH	21.6 deg C 0.1 %RH
CO2	499.8 ppm

Supply Fan Status	On
Sup Air Temp & RH	16.1 deg C 77.5 %RH

Serving Main Cafeteria	
03.03	

Unit Start/Stop	DX-Unit	On
Heat Start/Stop	Heat	Off
HVAC Mode	Summer	
CO2 Setpoint	500.0 ppm	
Temp. Setpoint	22.5 deg C	
Reset Comp	Off	

Start/Stop	Comp-1	On	Comp-2	Off
Status	On	Off	Off	Off
Emergency Stop	False	False	False	False
Runtime	316.4 hours	316.1 hours		
Ready	True	True		
Failed	Normal	Normal		

Selector Switch	Return Fan	Auto	Supply Fan	Auto
Start/Stop	On	On		
Normal/Fault	Normal	Normal		
Failed	Normal	Normal		
Supply Fan Delay to Start	60.0 seconds			
Reset Fans	Off			

Home
LRC
AHU Riser

- Material/Waste related measures:



RECYCLING



Sincere thanks to Diamond Developers, all BCBCB Consortium partners, and the meeting organizers.

Best wishes for a successful BCBCB Consortium Meeting!