



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

SDG 7 | **Report on Clean and Affordable Energy**

SDG 7

REPORT 2021



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I. Targets



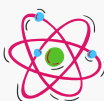
Responsible Consumption of Energy

Centurion University constantly strives toward responsible consumption of energy. It has an in-house and indigenously built, 32-kilowatt solar micro grid which is sufficing the need of the market complex inside the University premises. The University has set targets to reach 60-kilowatt production by 2023.



E-Mobility Solutions

The University promotes e-mobility solutions to curb Carbon emissions. It currently produces 20 e-vehicles and aims to achieve the target of manufacturing 100 E-vehicles by 2023. Besides the University has set a target to establish a charging station within its premises.



Patent

Centurion University currently has 76 applied patents and 452 research papers off which 46 research papers are in the core area of Solar Energy. It aims to add 5 more patents and 10 research papers by the end of 2023 in the area of Green Energy.



Training

Centurion University has trained 450 youths from the local community, both boys and girls, and aims to train an additional 300 students, 100 of whom will be girls. The University targets to train 1105 more students by end of 2023.



Entrepreneurship

Centurion University has trained 480 students under Surya Mitra Entrepreneurship Endeavour. It has incubated an e-mobility solution company 'Skyrider'. The startup is run by an alumnae entrepreneur. The University targets to incubate another e-mobility solution company by 2023.

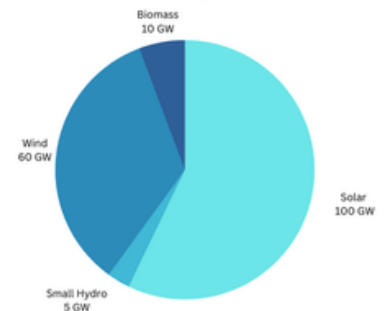


II. The Context of Centurion University

Centurion University of Technology and Management is aligned with the Ministry of New and Renewable Energy, Government of India's endeavours towards a sustainable future with clean and affordable energy. India has set an ambitious target to achieve a capacity of 175 GW worth of renewable energy by the end of 2022, which further plans to expand to 500 GW by 2030. This is the world's largest expansion plan in renewable energy.

India was the second largest market in Asia for new solar PV capacity and third globally (13GW of additions in 2021). It also ranked fourth for total installations (60.4 GW), overtaking Germany (59.2 GW) for the first time.

Renewable energy targets of India to be achieved by 2022



India's New Solar Power Tree Takes Up Only 4 Square Feet And Produces Enough Energy To Light Five Houses

Centurion University has set up state of the art infrastructure in Renewable Energy in partnership and collaborations with core industries. It aims to transform the University into a carbon neutral place with offsetting carbon credits. The renewable energy facility constantly engages itself into academic delivery through constant engagement. As a part of curriculum, beginning from the students of Vocational Education to Doctorates, everyone has benefitted through this domain, skill or value-added courses. The students further had spread awareness in the community on the advantages of renewable energy over conventional sources. In collaboration with different NGOs, capacity building of the community is also carried out. The centre itself focusses on re-skilling and up-skilling youths in the immediate vicinity community for taking up a career in Renewable Energy harnessing both solar and wind power. Hence, it opens plethora of avenues towards self-sustainability and path of entrepreneurship.



Jagannath Padhi
Director,
Centurion University

1. Infrastructure

1.1. Renewable Energy Action Learning Laboratory

Centurion University has collaborated and partnered with Schneider Electric and established a state of the art 'Renewable Energy Facility which is detailed below,

Unique Features

The action learning laboratory generates its own power endeavouring towards SDG 7 and it is completely run by solar photovoltaic power.

Training Manuals

The following manuals are provided by Schneider Electric,

1. Complete electrical wiring
2. Installation of electrical system
3. Working principle of renewable energy benches

Aim of the action learning laboratory

To enable students to gain basic, comprehensive and in-depth understanding of renewable energy concerning solar photovoltaics.

Objectives

To provide hands on knowledge, experiential learning and practice linked pedagogy on the following:

1. Off-grid electrical bench
2. Micro-grid electrical bench
3. Hybrid electrical bench
4. Water pumping systems
5. Solar panels and allied accessories
6. LED systems



Outcomes

1. In depth critical understanding of off-grid, micro grid and hybrid electrical benches.
2. Understanding the science of semiconductors and photovoltaics
3. Basics of flexible solar cells.
4. Ability to calculate efficiency of solar cell and panels
5. Hands-on ability to install solar panels and connect it to requisite
6. Use of precision metrological instruments
7. Basic understanding of HMI and SCADA and integration with solar arrays

List of equipment

1. Schneider electric bench: off-grid
2. Schneider electric bench micro-grid
3. Schneider electric bench hybrid
4. Schneider electric bench water pumping system
5. Soldering bench
6. Solar panels (5W to 500W),
7. Inverter (750 V A to 1500 V A)
8. Controller (3A to 60 A)
9. Battery (4 Ah to 150 Ah)
10. DC fans (12 V 18 W)
11. LED systems

Caters to

BTech, MTech, Skills for Success (SFS), Domain Courses (All UG course including BSc and MSc), Diploma, and World Skills participants.

The students will be able to carry out preventive, scheduled and breakdown maintenance of any solar photovoltaic systems. The students of SFS/Domain/World Skills are trained on their required test projects and in a real time simulated environment.

Market Linkages

The objective of the action learning laboratory is to endow students with the required skills, domains, and competencies pertaining to renewable energy systems. Students will be able to choose path of entrepreneurship, enhance employability and excel in their job profile.

Relevant Sustainable Development Goals



2. Capacity Building Training on Renewable Energy

2.1. International Exposure



Government of India is committed towards clean energy implementation across the country. Pertaining to this commitment the Hon'ble Prime Minister of India had set up The International Solar Alliance (ISA). This is an alliance of 121 signatory countries most being sunshine countries, which lie either completely or partly between the Tropic of Cancer and the Tropic of Capricorn. The primary objective of the alliance is to work towards efficient consumption of solar energy to reduce dependence on fossil fuels. The alliance is a treaty-based inter-governmental organization. Countries that do not fall within the tropics can join the alliance and enjoy all benefits as other members, with the exception of voting rights.

This has led to an intervention from the Ministry of Skill Development and Entrepreneurship (MSDE) for capacity development of Indian techies working in the area of renewable energy. MSDE has an objective to train Indian manpower on advanced renewable energy technology and deploy their skills towards the development of policy pertaining to SDG 7 and others.

The University being committed to National Government policy development has nominated its faculty who are working on renewable energy contributing towards SDG 7 after receiving requests from the Ministry of Skill Development and Entrepreneurship and Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation GmbH or GIZ).

The training had focused on Building System Automation using Green Energy.



2.2. Community Outreach Activity

Community Outreach's mission is to enrich learning at Centurion University. It constantly engages to build up capacity of the local community through training on recent trends, development of new products and engaging school students from local communities.

Besides this Centurion University in collaboration with National Skill Development Corporation has been imparting training to students from different states of India under Suryamitra Skill Development Programme. The students get certified on the following courses: Solar PV Installer Suryamitra, Solar PV Installer Electrical, Solar PV Installer Civil.



SURYAMITRA



2.3. Other Training Activities

There were several training programs being conducted for youths of the local community, training of trainers, underprivileged girls and others.

There are about 300 youths from the local community who were trained in life-skills building using solar PV. About 250 trainers were trained on automation using HMI SCADA and IoT and about 150 underprivileged girls were trained on solar PV pertaining to Entrepreneurship.



Training the youth from the Local Community



Training-of trainers



Training of students on home automation



Training of undergraduates



3. Towards a Sustainable Energy Efficient Campus...

3.1. Responsible Consumption

Centurion University strives to build up an energy efficient campus through usage of less energy to perform the same task and produce the same result. It is accentuated through regular energy audit which enables understanding of the niche areas and identifies scope for improvement. Thereby, Centurion University relies on usage of star rated energy appliances across its campuses. The University has taken several steps towards decarbonization through energy efficient self-sustaining activities. One of such effort is a DC Solar Micro Grid of Roof Top Solar Installations. DC micro grid with centralized generation and distributed storage enables electrification of off-grid that have difficulty in accessing the electrical distribution network to meet their energy needs.

The Roof Top Solar PV unit is equipped with PV cells which partially meets the electricity need of the campus. It supplies electricity to the market complex of the University



Solar Street Light

The University campus is all equipped with solar lighting systems.



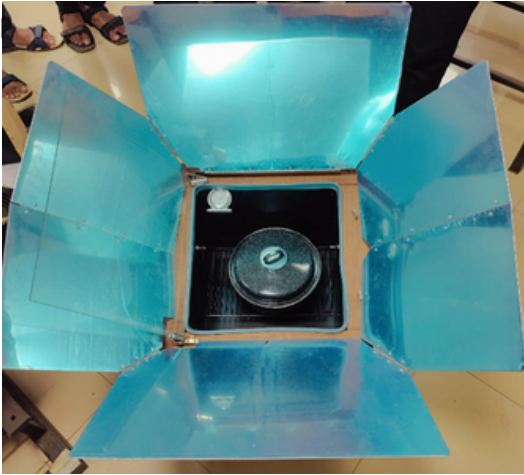
3.2. E-Mobility Initiatives

The University Green Initiatives has multifaceted approaches, among which one such approach is e-mobility. It indigenously manufactures e-vehicles using transfer technology transfers. Skyriders e-mobility solutions is a start-up incubated by the University which manufactures e-vehicles. The start-up is founded by one of the university's alumnus.



4. Research

4.1. Student's Projects



Solar Box Type Cooking Device for Sustainable Development of Rural Area



Hybrid Type Solar Dryer with phase change material for drying food products



A hybrid type of Solar dryer



Solar Parabolic Trough Collector



Solar Operated Pesticide Sprayer

