

Technology Overview

BUILDING INTEGRATED RENEWABLE ENERGY SYSTEMS

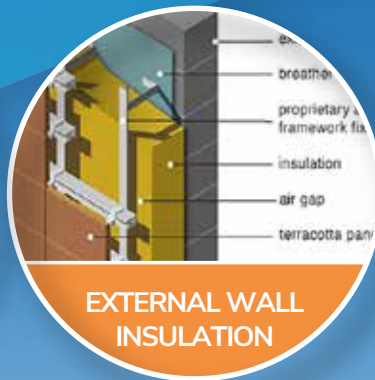
Building Integrated Renewable Energy Systems reduce the building's dependency on grid-based electricity, effectively reducing its energy costs



ROOFTOP PV DOUBLING AS SOLAR SHADING



ROOFTOP PV



EXTERNAL WALL INSULATION



ENERGY RECOVERY VENTILATION SYSTEM

DESCRIPTION

Renewable Energy Building Retrofits

Most buildings in KSA have not been designed and built to be energy-efficient or to integrate renewable energy systems. A suite of energy efficiency measures applied to retrofitting an existing building, combined with high-efficiency cooling technologies and PV panels for renewable electricity, can significantly reduce a building's energy costs.

A significant reduction in electricity costs can be achieved, which will deliver an attractive payback period for the building owner and occupants.

THE BENEFITS



Reduced grid electricity demand and associated building energy costs



Positive impact on health and well-being of different stakeholders

WHAT IS DRIVING ADOPTION?



Rising trend of prosumerism



Declining costs for solar panels and battery energy storage systems



Rising electricity tariffs and the growing need to reduce energy-related expenditures through energy management and renewable energy integration

PATENT AND INNOVATION TRENDS – KEY AREAS OF RESEARCH

- Manufacturing of products or systems for producing solar energy
- Material technologies for PV cells
- Roof systems for PV cells
- Increased efficiency of solar cells
- Perovskite Solar Cells
- Flexible thin film solar modules

PROMINENT COUNTRIES/ TECHNOLOGY PROVIDERS



KEY APPLICATION AREAS



Multi storey residential, government and office buildings



Public buildings including hospitals and universities



Independent residential compounds, villas and palaces

OPPORTUNITIES FOR KSA LOCALIZATION

Manufacturing of the following technology components:



Solar Panel Assembly



Batteries, Inverters and Charge Controllers



Aluminium and Steel Support Structures



Cables, Wires and other low and medium Voltage Equipment

CHALLENGES TO SCALING IN KSA

1

Subsidized electricity tariffs and fuel costs affect financial viability of renewable energy integration in the building environment

2

Absence of regulatory framework to incentivize development of distributed energy resources like rooftop solar PV for self consumption and grid feedback

3

Absence of net metering practices and feed in tariff mechanisms necessary to encourage renewable energy uptake

4

High capital investment associated with solar integration in buildings

5

Absence of financial incentives and subsidies to improve payback periods and ROI