Theme-01

Sustainable City

UNIT 01 [Beginner]

↳ **Chapter 01 : Mechanics.**

LESSON 01

Case Scenario.

Project Overview

Adam and Iail's city is facing increasing energy demands and environmental concerns.

Adam and Lila decide to investigate alternative energy sources that could benefit your community and make their city more sustainable.

Learning Objectives

By the end of the theme students will be able to:

- Recognize energy transformation processes in wind turbines.
- Identify different types of sensors and their practical applications.
- Comprehend the working of RFID technology, including data reading from RFID tags and transmission to a receiver.
- Understand the environmental impact of various energy sources, highlighting the advantages of renewable energy,particularly wind power.
  Understand the concept of automation and its advantages.
- Understand energy transformation processes in wind turbines.
- Strengthen hands-on skills in building and testing electrical circuits.
- Learn how to control home devices using a mobile application.
- Program an Arduino to process RFID data and control a garage door mechanism.
- Analyze the efficiency of energy conversion in wind turbines, considering factors such as blade design and wind speed.
- Explore the environmental impact of various energy sources, highlighting the advantages of renewable energy,particularly wind power.
- Incorporate water conservation and waste management systems that complement energy systems in city designs.
- Design urban green spaces and forests to enhance air quality and provide recreational areas.
- Develop a city model that integrates renewable energy sources for efficient energy use.
- Design and build a basic circuit that integrates an RFID reader and operates a servo motor development.

Project Task:

Follow Engineering Design Process to help Adam and Laila design and build a sustainable city.