RE100 Infrastructure Construction
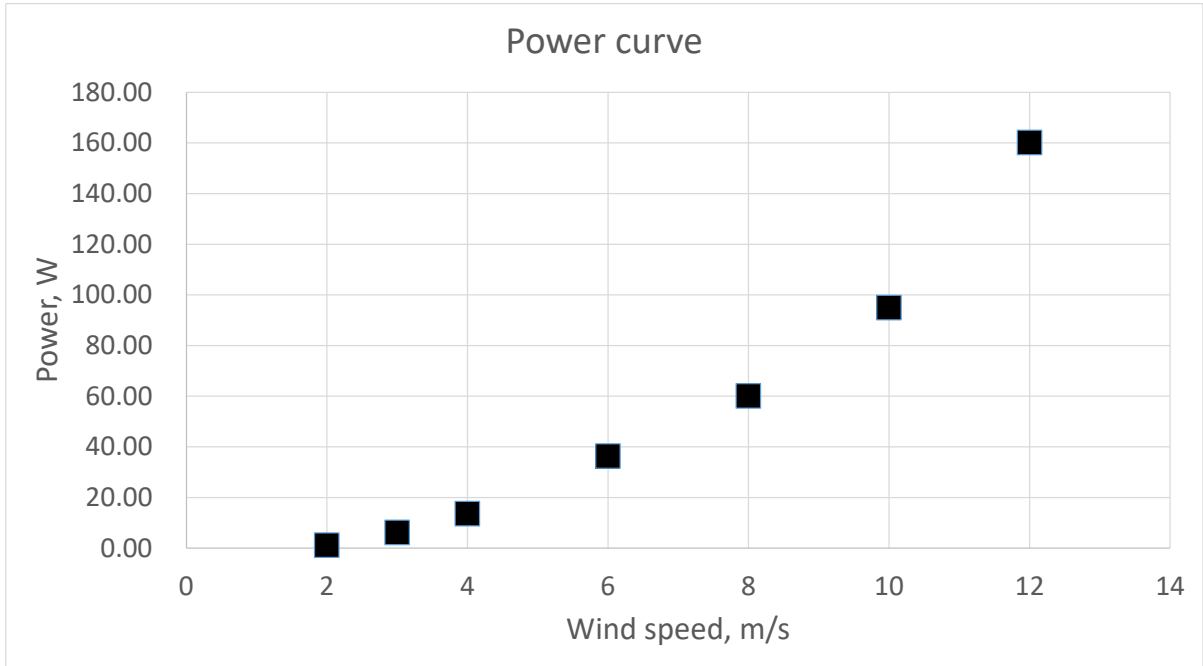
RM's Wind Turbine

Introduction

All synchronous generators produce usable electricity through an inverter or converter. When producing usable electricity, a rotating resistance torque is generated by the load. Therefore, the technology is to design a wind turbine so that it can generate practical electricity even at wind speeds below 5 m/s.

The R-Materials wind turbine is one of the few micro wind turbines in the world that can generate electricity even at low wind speeds of 1.5 m/s.

The performance indicators presented by R-Materials refer to performance when actual generation is achieved in a loaded condition.

1. RM X-1 Model

Classification	Performance Indicator
Rated power, W	160
Maximum power, W	200
Nominal Voltage, V	28.1
Maximum Voltage, V	36
Maximum current, A	15
Cut-in/out wind speed,m/s	1.5 / 15
Rated wind speed, m/s	12
Survival wind speed, m/s	50
Weight, kg	80
Diameter, m	1.0
Height, m	1.1
Type (grid off=f, on=n)	f/n
ESS(Battery)	Option

Power curve

Power, W vs Wind speed, m/s

Wind speed, m/s	2	3	4	6	8	10	12
Power, W	1.20	6.20	13.60	36.40	60.10	95.00	160.20

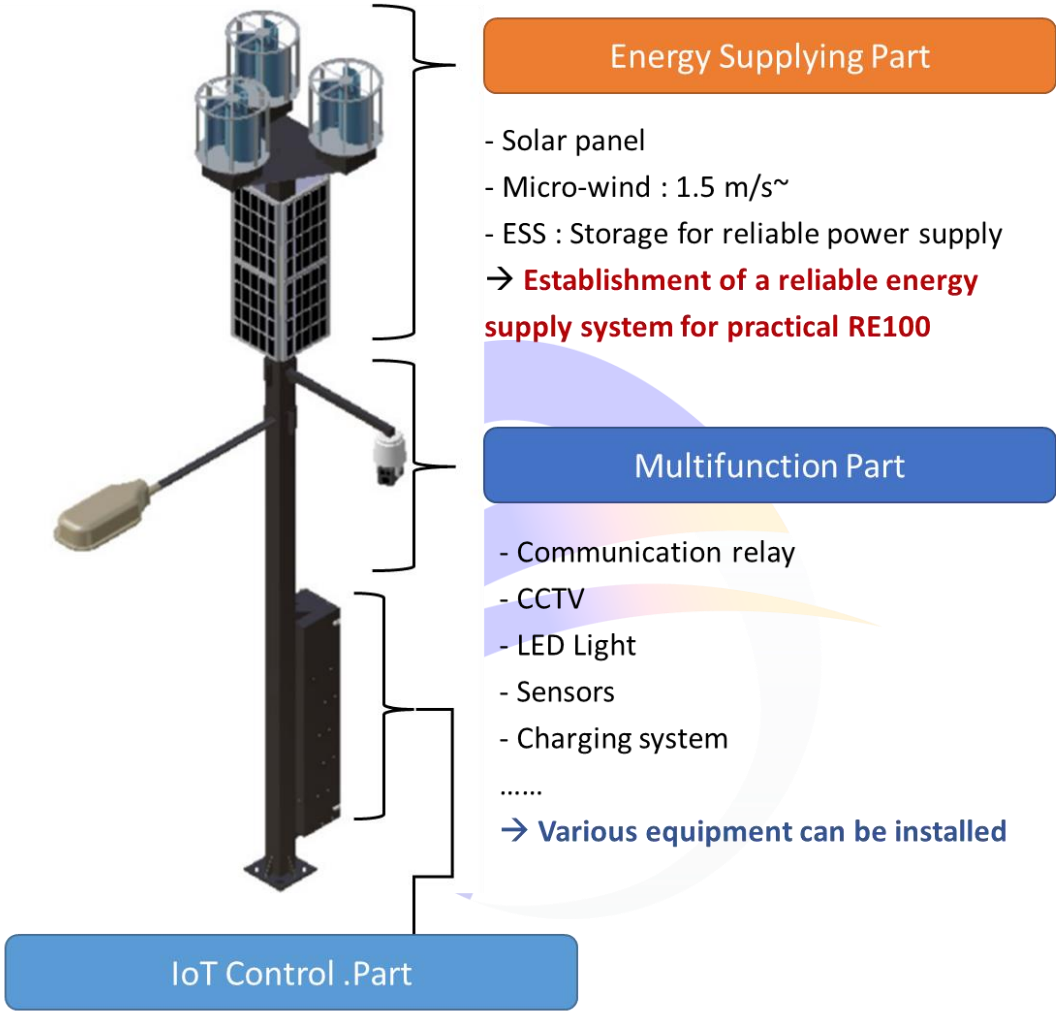**Example of Application (1) Hybrid Generation system (Solar + Wind)**
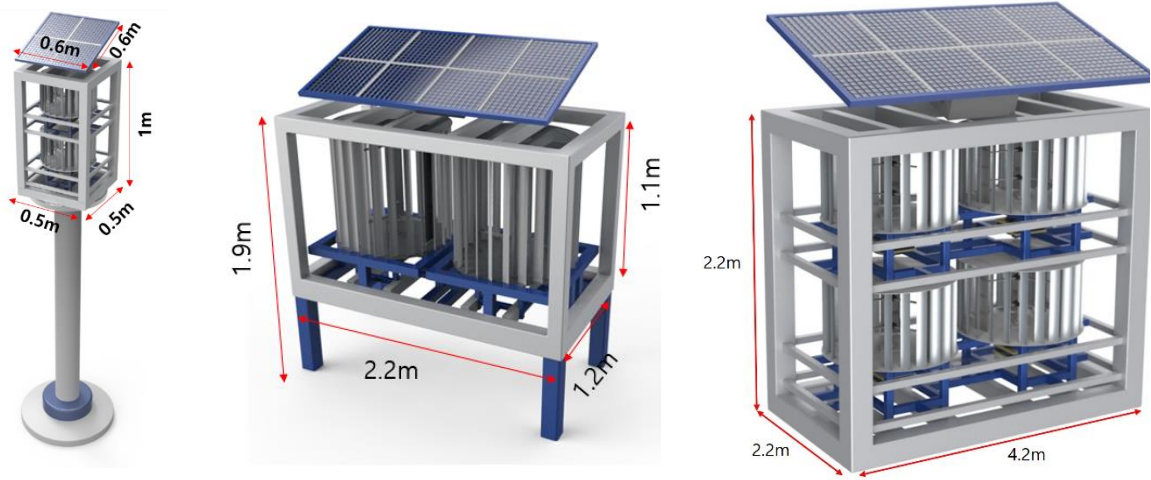
- The system can be used in a variety of ways.
- The generation capacity can be expanded by installing multiple wind turbines simultaneously.

ORMATERIALS
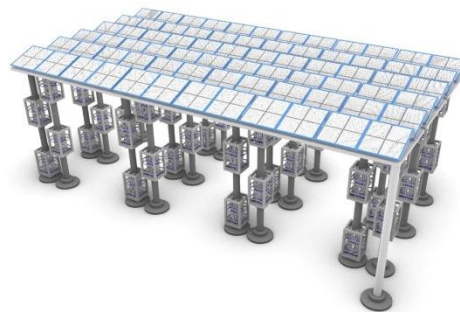
Example of Application (2) Off-grid Multifunction Pole

RE100 Multifunction Pole (Off-grid)

Energy Supplying Part

- Solar panel
- Micro-wind : 1.5 m/s~
- ESS : Storage for reliable power supply
→ **Establishment of a reliable energy supply system for practical RE100**

Multifunction Part

- Communication relay
- CCTV
- LED Light
- Sensors
- Charging system
……
→ **Various equipment can be installed**

IoT Control .Part

- IoT technology can be used to combine monitoring systems and communications to create a smart control system.

관제프로그램

영상관제시스템 샘플

It can be used for urban regeneration, smart farm and village power supply services as follows.

- LED street light control function (power consumption, dimming control)

- Remote control function of landscape lighting

- Safety function (crime prevention, vehicle tracking, theft, wildfire…)

- Environmental data collection and statistics function with environmental sensors, big data accumulation function

- Motion detection and speed measurement function using lidar sensor

- Emergency charging (electric bicycle, smartphone, drone…)

- Credit card payment function after charging

- Object recognition function using CCTV (vehicle, license plate number, animal, person, face recognition)

- Using CCTV images as an AI engine, safety, crime prevention, enforcement, and smart traffic are realized.

- CCTV self-diagnosis and recovery function

- Electronic Signboard Function

- Metaverse function through VR camera image

- Direct control function via speaker and microphone

- Generator power output usage and storage control function

- Battery level check and report function

- Generator temperature, vibration sensor detection, and power consumption control function

- Equipped with a drone station and video drone, fire monitoring, extinguishing, criminal vehicle tracking, and metaverse functions