

INTERNATIONAL SUMMER COURSE IN RENEWABLE ENERGIES

18th – 22nd JULY 2022



VET Usurbil & ZubiGune Foundation



USURBILGO
LANBIDE
ESKOLA

CIFP USURBIL LHII



SCHEDULE AT GLANCE

	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 - 9:00	Welcome	Photovoltaics Solar Energy	Photovoltaics Solar Energy	Photovoltaics Solar Energy	Electromobility for sustainability
9:00 - 11:00	Thermal Solar Energy & Geo- thermal Energy				
11:00 - 11:30	Coffee Break				
11:30 - 14:30	Thermal Solar Energy & Geo- thermal Energy	Local Generation Local Microgrid	Energy Storage Battery testing	Energy Consumption Real buildings and instalation	Electromobility for sustainability Diplomas



SOLAR PHOTOVOLTAIC ENERGY

TEACHER: Juan Carlos Ausin, PhD Electrical Engineer

DATES: July 18, 19, 20

TABLE OF CONTENTS

1. Introduction. General photovoltaic concepts
2. How to build your own offgrid system Solar pannels
 - Power electronic selection
 - Battery technology and size System cost
3. Outdoor Practice: Build your own PV ongrid instalation
 - Roles: Installer, Engineering and Customer
 - Project Execution
 - Conclusions



ELECTRICAL BIKES TECHNOLOGIES (E-BIKES)

TEACHER: Juan Carlos Ausin, PhD Electrical Engineer

DATE: July 21

TABLE OF CONTENTS

1. Types of E-bikes
2. Motor technology (Power, Torque, Voltage, etc.)
3. Battery and Vehicle autonomy



THERMAL SOLAR ENERGY & GEOTHERMAL ENERGY

TEACHER: Oier Aranzabal, Mechanical Engineer

DATE: July 22

TABLE OF CONTENTS

1. Introduction. Energy hybridation as a solution for renewable integration

2. Thermal integration: multi-energy production chamber

- Biomass
- Solar thermal
- Geothermal heat pump
- Co-generation
- Condensation boiler

3. Electrical integration: renewable micro-grid

- Photovoltaic generation
- Wind turbine
- Ir-water heat pump

4. Ventilation integration: Negur building

- Canadian well
- Mechanical ventilation

5. Monitoring energy systems in USURBILGO LANBIDE ESKOLA

- Scadas, some examples.



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