

# CONSTRUCTION OF A COMPLETE AUTOMATIC REMOTE CONTROL SYSTEM FOR AN ASTRONOMICAL OBSERVATORY WITH AUTO SUSTAINABLE AND AUTO SELECTIVE ELECTRICAL PLANT

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## Abstract

*We attempt to construct an automatic remote control astronomical observatory working with auto sustainable electrical energy plant which its selection system is monitored with an intelligent control system connected directly to a meteorological station with two fundamental objectives: based on the type of weather select the electrical power source to use, such as solar, wind and biogas, and to determine optimum operating conditions of the telescope.*

*This is a three year project were almost all the infrastructure is made with recycle materials. We have already started this project with the construction of the optical testing laboratory with an holographic table and the construction of a very stable base for a 9.25" mirror telescope (C9.25 Celestron), and we have made the mechanical vibration analysis. We have found that the base for the telescope we made is more efficient than the holographic table. We also present the progress for solar power generation system.*

### Remote User

The user receives the information from the remote weather station, which shows the weather conditions and the type of energy with which to work in the system and the type of astronomical observation that can be made under these conditions. Based on the above, the user can activate the dome-telescope system to initiate and receive the images observation

### Wireless Network

The system is based on a network of wireless nodes, allowing intercommunication between its different components. Being a network communication protocol TCP / IP, we have the possibility of remote access from any electronic telecommunication device whether mobile or stationary.

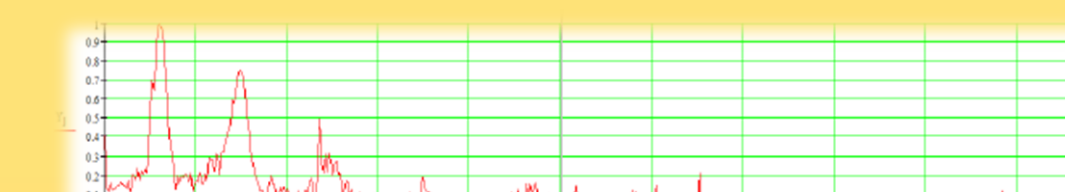
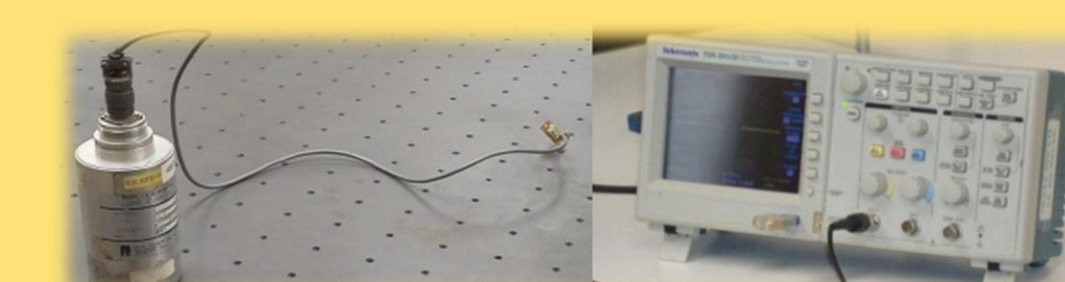


### Control computer

This rule the communication system, storage and control of network devices.

### Dome-Telescope System

The control is based on a system developed and tested in different scientific telescopes of the National Astronomical Observatory of San Pedro Martir.



### Weather Station

This system has two main functions, see the weather conditions to decide the type of astronomical observation to be conducted, so as to select the power source.

### Power sources

The system will incorporate three types of self-sustaining power generation, solar, wind and biogas. These types of energy fed a bank of rechargeable batteries which supply to the entire electrical network through an inverter.

We have built an automated tracking circuit of the sun to optimize solar system. The circuit is simple since it requires not consume too much energy, and is based on a couple of amps and an array of photoelectric sensors.

