

Marine Information over the Network

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1. Introduction

The objective of the present paper is to present the experience about the integration of a group of hardware/software technologies that are applied successfully in networks and systems based on TCP-IP protocol and can be used to implement distributed and data acquisition systems. In this case is presented the installation in the Oceanographic Vessel Hesperides different data acquisition and instrumentation systems to monitor and datalogging using standard communication networks. We present a TCP and UDP Humidity and Temperature server designed by our team in the framework of LabVir project. LabVir project is devoted to implement distributed measurements in marine technologies.

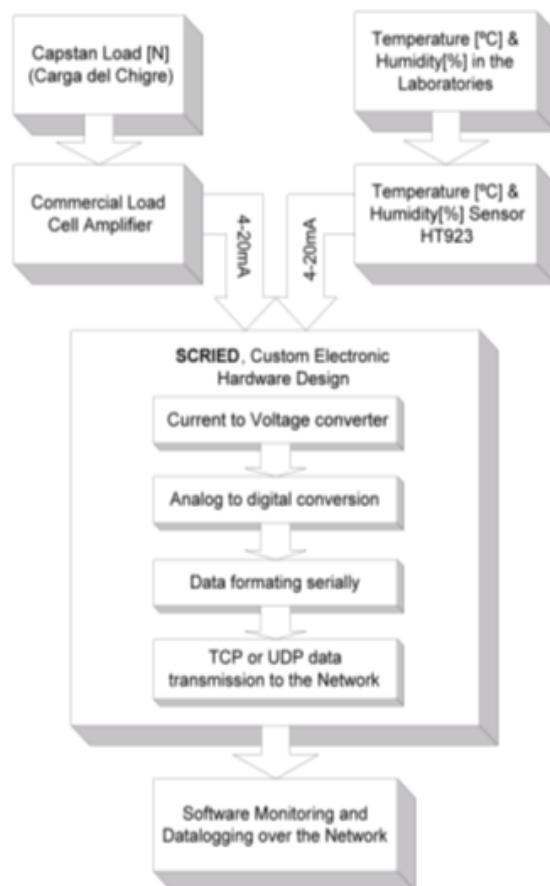


Figure 1: Global Project esqueme

2. Developed work

In order to monitoring the humidity and temperature values in the laboratories of the Spanish Oceanographic vessel Hesperides and to monitor the Capstan Load information from the Load Cell we have designed a device server using TCP and UDP protocols. This custom electronic hardware design called SCRIED is based on a lost cost microcontroller which is a PIC16F870 to perform analog to digital conversion of the signal coming from the temperature and humidity sensor (HT-923) and the load cell amplifier that are signals from 4 to 20mA. When the acquisition is performed, the microcontroller sends the temperature and humidity information through the serial port to a Lantronix firm XPORT embedded system. Data is collected by XPORT from the serial port and transmitted through the Ethernet port whose connection is implemented using LabVIEW and its libraries. Figure 1 shows the system esqueme where take place:

- acquisition from the sensors.
- data transmission using a 4-20mA loop from the sensors to the SCRIED electronic system (figure 2).
- data processed to send information over the network.
- Datalogging and monitoring using LabVIEW applications.



Figure 2: photo about SCRIED design and the temperature and humidity sensor

3. Installation Proces

In august, 2005, we proced to the installation of 5 SCRIED units in the laboratories as follow:

LABORATORIO EQUIPOS ELECTRONICOS de Popa

Temperatura and Humidity

MAC: 00-20-4A-84-35-C6

IP: 192.168.1.91

LABORATORIO CC
Temperatura and Humidity
MAC: 00-20-4A-84-35-EA
IP: 192.168.1.92

LABORATORIO DE GRAVIMETRIA
Temperatura and Humidity.
MAC: 00-20-4A-84-35-C1
IP: 192.168.1.93

LABORATORIO DE SISMICA
Temperatura and Humidity
MAC: 00-20-4A-84-35-E0
IP: 192.168.1.94

LABORATORIO EQUIPOS ELECTRONICOS
de Proa
Capsta Load
MAC: 00-20-4A-84-35-C5
IP: 192.168.1.95

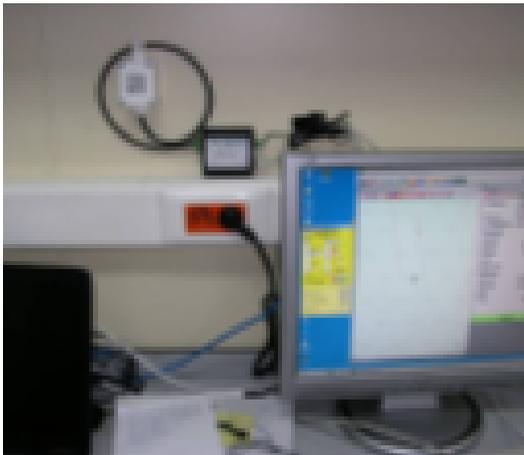


Figure 3: Photos about two installed SCRIEDs in the Hesperides vessel a) Temperature & Humidity monitoring. b) Capstan load from Load Cell amplifier monitoring and datalogging.

The datalogging and monitoring proces is carried out from different software applications programmed in LabVIEW as we can see in figure 3. This application allow the user to select the SCRIED IP address and the protocol used. Then the information is represented by the soft front panels windows in figure 5.

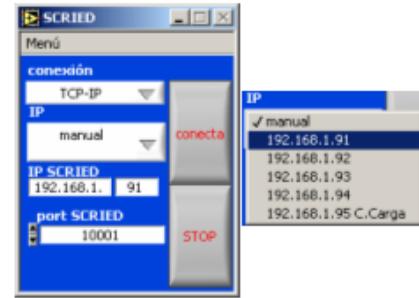


Figure 4: SCRIED IP and protocol selection

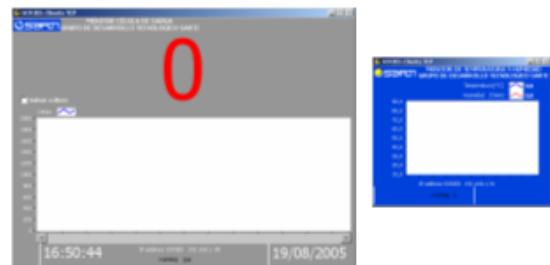


Figure 5: Soft front panels to monitor a) Capstan Load, b) Temperature and Humidity information

4. Conclusions

This paper has presented the installation process of a custom electronic design in order to monitor different parameter over the ethernet network of the oceanographic vessel Hesperides. This experience can be expanded to other marine parameters where a distributed monitoring or datalogging is needed.

5. References

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