Editor's Note

The research and technological activities SARTI has carried out during the last term of 2003 and spring term of 2004 are presented in this second issue of Intrumentation Viwepoint.

Sometimes writing the second issue of a magazine proves to be much more difficult than the first, The discovery of a new experience no longer exists and the objective of writing and printing the magazine has been achieved. Our team, however, dows have more things to explain and we are committed to ourselves and our readers. In this issuer, the magazine has ISSN, and some of the activities have been developed in collaboration with other research groups or university groups. We have encouraged and invited people to participate in the hope taht this venture we are initiating will offer and encourage new collaboration links.

In this issue we do not pretend to offer an exhaustive presentation of our activities but to outline our work environment. Some of the related activities are a short description of papers accepted and presented in different reputed congresses sush as Instrumentation and Measurement and Industrial Electronics IEEE Societies.

We hope to present your collaborations in the next issue. Our goal is to make Instrumentation Viewpoint not only a means to share experiences with instrumentation colleagues but also a window for our activities.

Best regards from your partner
Antoni Mànuel, PhD
Director of TDC SARTI

The RESEARCH GENERAL MANAGEMENT of the Ministry of Science and Technology awarded a series of grants within the framework of the National Research an Development plan 2000-2003 to the Technological Development of Remote Acquisition Systems and Data Processing Center (SARTI).

Design of Low-cost Smart Accelerometers

The tangible aim of this Project is the design of a smart low-cost accelerometer, by, making use of a piezoelectric element as basic sensing material, and adding a mixed mode conditioning circuit. There is a combined set of objectives which must be met if this synthetic goal is to be archived:

1. Development of techniques for the calibration, compensation and frequency range extension of basic sensing elements made of piezoelectric ceramics.

2. Development and implementation of novel signal processing techniques as they apply to the above mentioned sensors for the estimation (parametric, non-parametric, blind,..) of mechanical systems, and excitation signals (impact). Both multiple and single sensor applications will be considered.

3. Adaptation or development of novel techniques of calibration, to make the above mentioned methods possible.

4. Implementation of the preceding techniques on a physical device consisting of a basic sensing element (piezoelectric) and a mixed mode conditioning circuit in CMOS technology.

5. Validate the so designed sensors in a wide range of applications.

Remote Control System of Distributed, Embarked Instrumentation

This project wishes to cover a less developed aspect in the accquisition storage, distribution and consultation as centralized instrumentation control of oceanographic data. The project entails, the development of an instrumentation system which is controllable and programmable from the windows environment and which also enables different existing physical parameters in different laboratories of the oceanographic vessel Hesperides to be monitored and controlled (These parameters include water flow in continuous circuits, lab and specially refrigerator temperature and humidity, power supply quality of the instruments, power cuts and anomalies in the operation of the equipment, etc.).

Every measurement point in every lab in BIO Hesperides has to be connected to a central computer in charge of monitoring the state of the distributed instruments.

To achieve this objective, the amount of cable to be used and the hardware required has to be minimized.