



## Task

Automation of the IGP's National Permanent GPS Reference Stations

## Customer

IGP – Instituto Geográfico Português, Portugal

### Date

June 2004

### Project Facts

#### Instruments

- RS500 & Spider Software

#### Field:

- Managing each IGP GPS Permanent Reference Station

#### Office:

- Spider software takes care of all tasks



**The relationship between Leica Geosystems in Portugal and IGP has been based for many years on trust, quality and a high level of service and support. Consequently, IGP has decided to use Leica SPIDER software to manage the Portuguese National GPS Permanent Station Network (ReNEP), which currently has 8 GPS stations.**

**With an average distance of about 150 km between stations on the mainland, IGP has also installed additional stations in the Mid Atlantic - one on the Azores Islands and another one on Madeira. Four of these stations are integrated in the Euref EPN station: CASC, GAIA, LAGO and PDEL (Azores). PDEL (Azores) is also an IGS station.**

The change to Leica SPIDER has allowed IGP to finally automate procedures for the reception and distribution of the GPS permanent network data, eliminating the need for a person to do that job. The first results are already successful and the RINEX files (24 hours and 1 hour) are now automatically sent to the Euref EPN. In the near future, IGP will also participate in the Project "Real-Time GNSS" over the Internet.

### History and aims of the ReNEP

In 1997 when IGP installed the first GPS Reference Station in Cascais, a Leica GPS receiver SR9500 was chosen and it became the first Euref Leica station.

The basic configuration of the ReNEP/GPS consists of high quality RS500 receivers CORS with 12 Channels, Antenna Choke Ring with Dorne Margolin elements, a Meteorological sensor - Met3 from Paroscientific and an UPS with autonomy for a few hours.

"At the end of 2003, IGP made an important step by changing the control software of the Portuguese Leica Reference Stations, CASC, GAIA, LAGO and PDEL to Leica SPIDER, which immediately allowed IGP to remove the computers that

were normally installed in each station, and replace them with a simple modem," Helena Ribeiro, IGP RENE/GPS Manager said. "SPIDER now remotely controls each GPS receiver from our network directly through a phone line."

The SPIDER server component is installed in the IGP headquarters, in Lisbon, and from there it manages the ReNEP/GPS. IGP identified the major advantages of SPIDER to be:

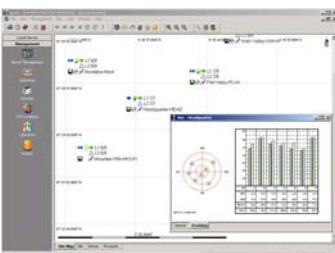
- Easy to configure, and to start running - after initial set up and tuning, no operator is needed
- The modem connections to all stations are established automatically
- The software controls the connections and the system operability
- If any problems are detected, messages are automatically sent out to the system manager
- Allows automatic GPS data distribution to several ftp servers at the same time

"In our case, daily data is automatically sent to IGP, IGS and BKG servers, and the hourly files are sent to IGP, BKG and Sopac servers," Helena Ribeiro said. "Right now, we are undertaking all the necessary steps so that Funchal, in Madeira Island, can also become an Euref station." The next planned stages for RENE/GPS include the installation of four new stations, three on the mainland, and one in Azores (already purchased from Leica Geosystems, Portugal). Mobile communications will then need to be tested and it is expected that RTK corrections will be available on the Internet, and through GSM to all interested users.

"With the implementation of these three projects, we are entering in new era of the Portuguese ReNEP/GPS," Helena Ribeiro said

### Benefits

- Automatic data distribution to different ftp servers
- Possibility to make different files, different rates.
- Total control of the Network 24h/day 7 days per week control



**"With SPIDER the hourly and daily RINEX data distribution to Euref EPN finally became automatic."**

**Helena Ribeiro  
RENEP/GPS Manager, IGP**

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## Application Report: Continuously Operating GPS Reference Stations