November - December 2013

High Power Transmission Line Cable Inspection

Chaplin

HIGH POWERED TRANSMISSION LINE CABLE INSPECTION

QUE NÃO SE MUDA JÁ COMO SOIA

ALBATROZ ENGENHARIA

18th December

Albatroz Engineeering at the IEEE UBI Student Branch

On December 18th, the University of Beira Interior (ubi.pt) branch of the Institute of Electrical and Electronics Engineers (ieee.org) at Covilhã, Portugal, invited Sandra Antunes (a former student at UBI) to give a lecture on the practice of aeronautics at Albatroz Engineering.

Sandra Antunes during the presentation

The first part of the presentation covered procedural aspects of engineering like differences between research, development and innovation, differences between academic and company oriented research and development and the different stages of technology. The skills most needed at each "engineering environment" were emphasised. Project oriented concepts were introduced and opposed to continuous production tasks.

The second part of the presentation covered different topics of the development cycle for project oriented tasks, beginning at the market research and the individual specification for each client. Practical examples of hardware systems for power line inspection illustrated the concepts as the seemingly common needs originated different solutions (ASLMS2007 vs ASLMS2009) and, in a dual manner, the same hardware systems proved useful for different needs (power lines and railways).

Since most products and services created at Albatroz Engineering are tailored for individual users and aircraft, this involves a lot of detailed design engineering covering mechanical structures, ageing and weather protection, wiring, power and data handling, stress analysis, safety assessment, ergonomics, total cost of ownership, installation, removal and maintenance procedures, as well as documentation.

Conference room; both photographs are courtesy of IEEE UBI Student Branch

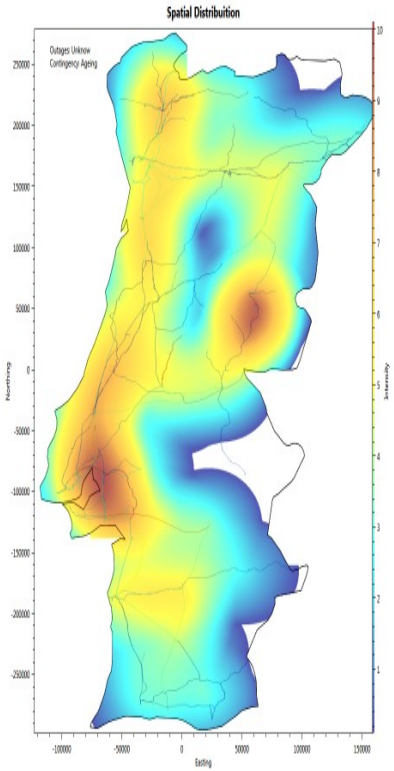
November

The 2013 internship season

During 2013, Albatroz Engineering welcomed 5 interns from different countries and academic fields. In the August - October newsletter we had the opportunity to talk about the activities of Olatz Muruaga Garcia (Spain), Gianluca Masotta (Italy), Clara Paiva and Filipe Silva (Portugal). As we say farewell to Pedro Artiga, we will describe his work during the last four months.

Pedro Artiga

Pedro Artiga was born in S. José dos Campos, São Paulo, Brazil. He is an enthusiastic about the new technologies, especially those related to data processing. Currently, he reconciles a degree in Computer Engineering with his passions, cinema and motoring.
Pedro's work within the Grid Intelligence & Optimisation (GIO) framework focussed on the development of an intelligent interface to extend Geographic Information Systems (GIS) with statistical signal processing tools, in order to create a data visualisation application that allows to quantitatively relate the power lines to the environment where they operate.



The benefits of this application from most visualization tools are that it goes beyond the simple display of stacked layers of information. One can simply display different layers simultaneously choosing the stack order as in GIS tools. However, the tool unleashes its power when it is asked to display qualitatively (it also has a quantitative output) the spatial result of correlation operations between layers of information of different origins (figure on the left for an example). As the GIO databases are inherently time-space referenced, there is also a representation for time-correlations (not shown).

This tool can be used to massively compare different phenomena to unveil unexpected correlations that suggest promising lanes for research of nexus of causality of tripping events observed on the grid.

Pedro did the internship through the International Association for the Exchange of Students for Technical Experience, (iaeste.org).

Spatial correlation of tripping events due to unidentified causes with asset ageing

December

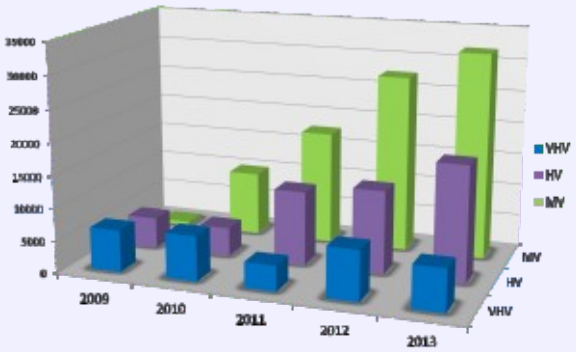
More than 56000km inspected during 2013, 182000km since 2007

Since Albatroz Engineering launched the Power Line Maintenance Inspection (PLMI) on November 2007, over 182000km of over-head lines have been inspected with LiDAR and real-time automatic processing.

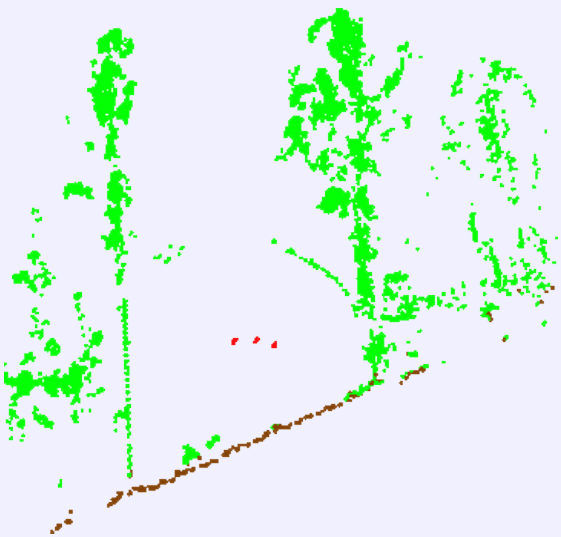
A total of five PLMI systems running in Portugal, Spain and France allowed the company to close the year with an increase of 17% of over-head lines inspected over 2012.

Also, 56% corresponds to medium voltage [MV] lines (up to 50kV), which are the most challenging ones to inspect, both technically (see bottom picture) as well as economically (due to the low average revenue per km), establishing PLMI as a leading solution for line maintenance.

Other key accomplishment was the development of a module for automatic stork nest detection based on video and photographs, making bird life inspection much **easier, informative** and **less time consuming**. Storks' nest inspection is now connected with Grid Intelligence & Optimisation to enhance asset condition insight and support maintenance.



Extension of right-of-way inspected during the last five years (km)



MV line 8m above ground between trees 30m tal on a steep slope mountainl

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Research, Development and Innovation

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