

# Activities and Initiatives

## Study Groups on Mathematics for Industry and Institutions

September 17 – 19, 2012

Faculty of Mathematics. University of Santiago de Compostela

**The Study Groups on Mathematics for Industry and Institutions** are the leader workshop in Galician for interaction between mathematicians and industrial representatives. These workshops contribute to enhance the transfer of mathematical knowledge to industry.

This fifth edition of the Study groups on Mathematics for Industry and institutions were organized by researchers of Galician Universities (A Coruña, Santiago de Compostela and Vigo) and involved the collaboration of Technological Institute for Industrial Mathematics (ITMATI) and Spanish Network for Mathematics and Industry (math-in).

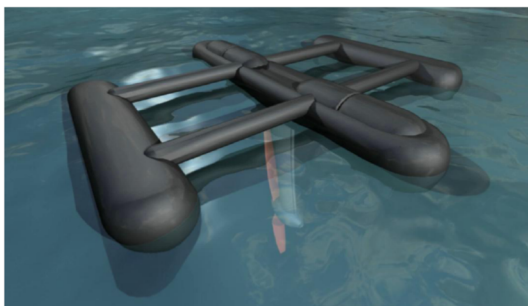
This time, 30 Industrial Mathematics experts have participated in the work teams together with companies involved to achieve the numerical simulation of two devices in the renewable energy sector in order to improve their efficiency: a floating platform to extract power and a solar thermal panel.

### Problems

As key findings for each of the problems presented in this workshop, we can emphasize:

**Magallanes Renovables:** Design optimization of a floating platform to extract power from tidal and marine currents.

 Proyecto Magallanes



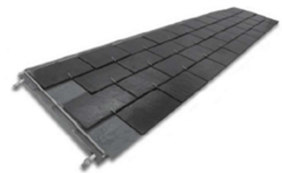
The aim was the numerical simulation of water flow through the rotors using a hydrodynamic model adapted to the marine environment characteristics by using computational fluid dynamics (CFD). It has been presented the influence of the speed of rotation of each rotor, of the distance between them and of the angle of attack on the energy efficiency of the platform. The wake caused by each rotor and their influence on the efficiency of the assembly has also been simulated.

**Cupa Innovación:** Mathematical modeling of the efficiency of solar thermal panel of natural slate, Thermoslate©.

The Thermoslate© allows complete integration of a solar thermal panel in a traditional slate roof. The working group

has made a mathematical model that simulates the thermal behavior of the panel, taking into account European Standard UNE-EN-12975-2 and the special features of the slate. This mathematical model can be used to improve the design and efficiency of the solar thermal panel to take the maximum profit of the features of the slate.

**CUP4**  
Natural Value Company  
**THERMOSLATE**  
by CUP4



With initiatives like this, the mathematical technology is shown as a key tool to provide solutions with high added value in innovative products and services for businesses.

The proceedings with the conclusions will soon be available on the WEB at the following link<sup>1</sup>.

<sup>1</sup><http://www.math-in.net/VStudyGroups>