DOCTORATS INDUSTRIALS

EL PLA DE DOCTORATS INDUSTRIALS

PROJECTE DE DOCTORAT INDUSTRIAL
EXPEDIENT 2015 DI 069

DADES DE L'EMPRESA I DE L'ENTORN ACADÈMIC

Títol del projecte

DEVELOPMENT OF FLUID DYNAMIC ISSUES IN A GENERAL PURPOSE PARALLEL COMPUTATIONAL CODE. APPLICATION TO VARIABLE GEOMETRIES INVOLVING FROST GROWTH.

Empresa

TERMO FLUIDS S.L.

Responsable de l'empresa

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Treballador/a de l'empresa i doctorand/a

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BREU DESCRIPCIÓ DEL PROJECTE DE RECERCA

First year:

* Study of the general structure and main functions/objects of the TermoFluids general purpose code. TermoFluids is a parallel unstructured CFD&HT code for the simulation of multiphysics and multiscale technological problems. The code has been developed by TermoFLuids S.L. with the collaboration of the CTTC (UPC).
* Application to the aerodynamic flow complex geometries (flow in ducts, compact plate-and-tubes surfaces, etc.). Application to the aerodynamic flow in fans and heat exchangers.
* Collaboration of optimum blade design and engine cooling solutions in order to suppress stall and surge problems at low flow conditions in ram-air fan applications. This work is directly related to European projects with the participation of TermoFluids S.L.

Second-year:

* Modelling and numerical resolution of the frost growth in cooling surfaces. Multidimensional analysis. Comparative studies of diferent existing mathematical models and development of new ones.
* Modelling of the humid air flow, considering fluid dynamic and mass and energy transfers in cooling surfaces or arbitrary shape.

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Third year:

* Solid- fluid interaction considering frost growth and humid air flow. Variable geometry case with mass and energy diffusion. Application to different technological fields.