**CIMNE**

# Master of Science in Computational Mechanics/ Master on Numerical Methods in Engineering

## ACCEPTANCE OF INTERNSHIP WORK PLAN

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| Name of the student | **Albert Capalvo Viladot** |
| Company/Institution | **Quantech ATZ, S.A.** |
| Name of the supervisor | **Dr. Fernando Rastellini Canela** |
| Department | **Stampack development** |
| Start and end dates | **24/10/2016 to 10/02/2017** |
| Total number of hours | **450** (6 hs/día) |

Topic: **Modelling of Microstructural Phase Change and Prediction of Mechanical Properties of Steels during Quenching Stage in Hot Forming Processes**

Main tasks:

Task 1: Bibliographical research of State-of-the-Art for the Modelling of Microstructural Phase Change and Prediction of Mechanical Properties of Steels

Task 2: Development and implementation of a simplified model for Microstructure Prediction in Steels during Quenching (using Matlab or equivalent).

Task 3: Development and implementation of a simplified model for the Prediction of Mechanical Properties (Hardness, Ultimate Strength, Young modulus, etc.) of Steels in terms of the predicted Microstructure after Quenching (using Matlab or equivalent).

Task 4: Validation of developed models using diferent Temperature-time historical curves (for a single material point).

Task 5: Implementation/integration of the developed models in Stampack (Fortran)

Task 6: Post-processing of calculated variables and properties in Stampack.

Task 7: Validation with industrial examples of Hot Forming in Stampack.

Task 8: Internship report and documentation of work done.

Additional remarks:

The main focus will be completion of tasks 1 to 4. The task 5 to 7 may be performed with the additional aid of Stampack team. To easy the completion of task 8, a dairy will be completed to constinously track the work performed each day.

**Any change in the information contained in the internship agreement must be authorized by the local master coordinator.**

Date: 24/10/2016

Student's signature                          Master Coordinator's signature