

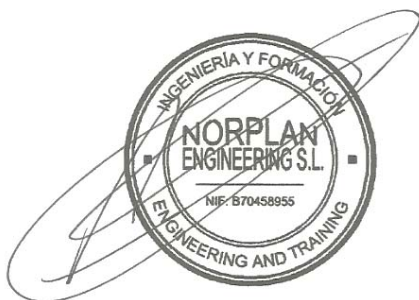
# DIPLOMA

*NORPLAN ENGINEERING SL certifica que Andrés Menes Cuervo*

*Con N.I.F 71.896.411-K, ha realizado con aprovechamiento el Curso de*

*C++ aplicado a OpenFOAM*

*Impartido entre los días 27/01/2021 y 20/02/2021, con una duración de 20 horas.*



*NORPLAN*

*En Narón, a 20 de febrero de 2021.*

*Isabel Lamas (Tutora)*

*Carlos Rodríguez (Director)*

# *Programa del Curso:*

## **Chapter 1: Introduction to C++. Application to OpenFOAM**

- 1.1 Introduction
- 1.2 C++
- 1.3 Basic structure of a C++ program
- 1.4 Preprocessor directives
- 1.5 Variables
- 1.6 Operators
- 1.7 Inputs and outputs
- 1.8 Control structures

## **Chapter 2: C++. Application to OpenFOAM**

- 2.1 Introduction
- 2.2 Typedefs
- 2.3 Functions
- 2.4 Pointers
- 2.5 Data structures
- 2.6 Classes
- 2.7 Constructors
- 2.8 Destructors
- 2.9 Friends
- 2.10 Inheritance
- 2.11 Virtual member functions
- 2.12 Abstract classes
- 2.13 Templates
- 2.14 Namespaces
- 2.15 Solving partial differential equations in OpenFOAM
- 2.16 Programation in OpenFOAM

## **Chapter 3: Development of own code in OpenFOAM**

- 3.1 Development of a new solver
- 3.2 Compilation of applications and libraries
- 3.3 Development of a new boundary condition
- 3.4 Development of a new turbulence model
- 3.5 Development of a new transport model
- 3.6 Development of a new thermophysical model
- 3.7 Development of a new postprocessing utility

## **EXERCISES**

- 1 C++ program 1
- 2 C++ program 2
- 3 C++ program 3
- 4 C++ program 4
- 5 C++ program 5