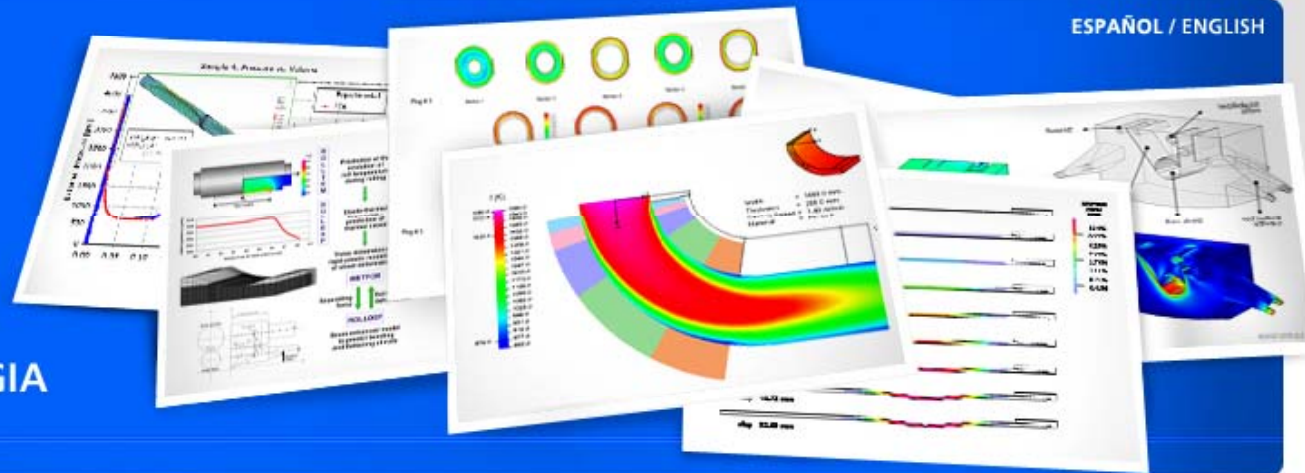# SIM&TEC

Simulación y Tecnología
Simulation and Technology

DE LA CIENCIA
A LA TECNOLOGIA

FINITE ELMENT METHOD IN FLUID DYNAMICS

Marcela B. Goldschmit

Contents

▶ Laminar flow – description - equations

▶ Finite element method – laminar flow - examples

▶ Interphases

▶ Turbulent flow – description – models – FEM - examples

▶ Thermo fluid dynamic model

▶ Particles transport – Eulerean and Lagrangean models

Bibliography

O.C. Zienkiewicz y R.L. Taylor, *The finite element method. Volume 3: Fluid dynamics*, Fifth Edition, Butterworth Heinemann Ed., Oxford, 2000.

P.M. Gresho y R.L. Sani, Incompresible flow and the finite element method. Advection-diffusion and isothermal laminar flow, John Wiley, 1999.

O. Pironneau, *Finite element methods for fluids*, J. Wiley, 1989.

C. Cuvelier, A. Segal y A.A. van Steenhoven, *Finite element methods and Navier-Stokes equations*, D. Reidel Publishing Company,1986.

B. Mohammadi y O. Pironneau, *Analysis of the K-Epsilon Turbulence model*, J. Wiley, 1994.

R. Löhner, *Applied CFD techniques, An introduction based on finite element methods*, J. Wiley, 2001.

A. Chorin y J.E. Marsden, *A mathematical introduction to fluid mechanics*, Springer Verlag, 1980.