

RESUMO N° 265

## **EMBEDDED APPROACHES: TOWARDS THE VIRTUAL WIND TUNNEL**

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The growing maturity of CFD approaches, together with the availability of fast hardware is pushing the use of computer simulation in wind engineering applications. “Traditional” fixed mesh approaches are slowly gaining acceptance in the field by proving their ability to perform accurate yet inexpensive predictions even for complex configurations.

A limitation to the wider adoption is the difficulty in meshing complex geometries. It has however been observed that, depending on the problem of interest, a highly accurate discretization of the computational geometry might not be needed. This is typically the case of bluff bodies for which the essential features of the flow are determined by the sharp edges in the model. This possibility opened the door to the use of novel, embedded, approaches which guarantee a robust performance even for very complex geometrical configurations as well as using optimized solvers on fixed grids. The goal of this work is to describe the recent advances in the development of an embedded solver for wind engineering problems