MAIDESC M42

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1.

Simulations

Transvalor has to simulate a free rotating wind turbine in realistic wind conditions.

Automatic meshing process

In the previous meeting (M36) TSV presented the automatic meshing process developped during the MAIDESC project.

PREVIOUSLY
Automatic Remeshing process with automatic parameters adjustment.
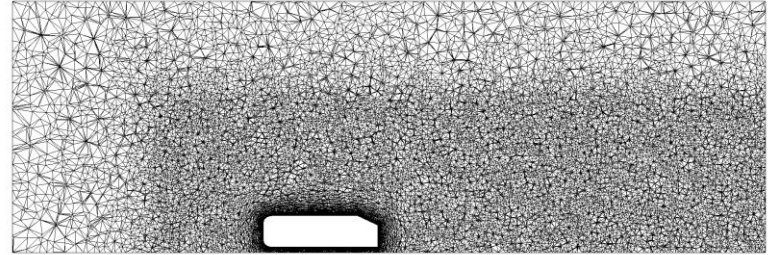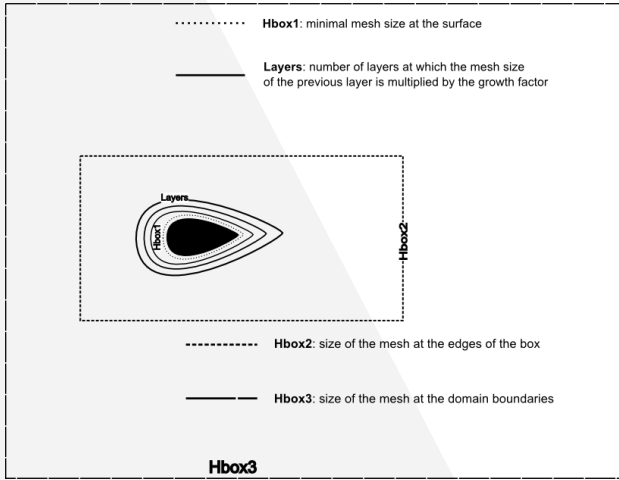Increasing number of elements at each remeshing iteration.
Depending on the geometry complexity and the initial number of elements, a satisfying mesh is generated in several hours.

NOW
A second method has been setup to take into account a geometric boundary layer
Method adapted for aerodynamic simulation

Geometrical Boundary Layer meshing

Hbox1: minimal mesh size at the surface

Layers: number of layers at which the mesh size of the previous layer is multiplied by the growth factor

Hbox2: size of the mesh at the edges of the box

Hbox3: size of the mesh at the domain boundaries

ADVANTAGES

▸ Few parameters to set

▸ Size of the mesh in the box to maintain a resolution in the wake

▸ Accurate aerodynamic coefficients

▸ Work for immersed and body fitted methods

Brain

TIE Fighter

https://youtu.be/ik2GTP34nTc

https://youtu.be/3IBf51_IxWw

More videos available on Aeromines YouTube channel:
https://www.youtube.com/channel/UCPSnEhkEkXKXbGtnz84js9A

Geometrical Boundary Layer meshing

▶ Resolution of the mesh close to the object can be specified to the user

 ▶ This method is economical in terms of mesh elements number

  ▶ Efficient in terms of computation cost: few hours for medium size objects.

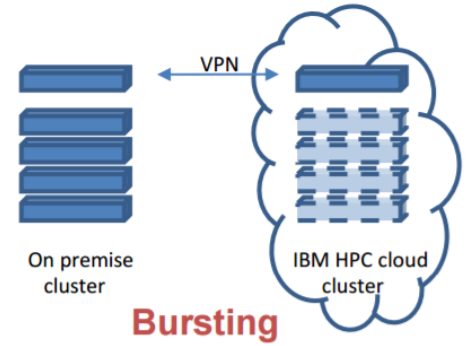   ▶ This meshing process has been set online for users upon request

2.

Aeromines Platform

Aeromines promote, diffuse and add value to research development.

Aeromines – « Cloud Hybride »

VPN

On premise cluster

IBM HPC cloud cluster

Bursting

AVANTAGES

▸ Ressources illimitees

▸ Meilleure gestion des ressources

▸ Orchestration globale

▸ Local?

Aeromines – « User Platform »