Coupling of STAR-CCM+ to Other Theoretical or Numerical Solutions

[1]

In some situations, simulations need to cover a large spatial or time domain. Often, only part of the solution domain exhibits three-dimensional flow features which require the solution of the Navier-Stokes equations. For such applications it is desirable to couple the 3D flow simulation by STAR-CCM+ in a smaller spatial and temporal subdomain with either theoretical or simpler numerical solution in the remaining part of the solution domain (e.g. 2D or 3D potential flow solution, wave theory or another faster solution method). This presentation discusses various coupling options and demonstrates on several examples the advantages and disadvantages of the method. For example, one important advantage of volumetric coupling by forcing functions is that the damping of upstream-propagated disturbances is also possible.The direction of future development in STAR-CCM+ to accommodate such coupling will also be discussed.

Author Company:
CD-adapco
Author Name:
Milovan Peri?
Industries:
Marine[2]
Products:
STAR-CCM+®[3]
Conference:
STAR Global Conference 2014[4]

Links:
[1] http://www.cd-adapco.com/sites/default/files/Presentation/SGC2014_CD-adapco_Peric_0.pdf
[2] http://www.cd-adapco.com/industries/marine
[3] http://www.cd-adapco.com/products/star-ccm%C2%AE
[4] http://www.cd-adapco.com/conference/star-global-conference-2014