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Some Additional CFD Flow Field and Pressure Solution Results for Dimpled Golf Ball with Backspin Rate of 2,000 rpm

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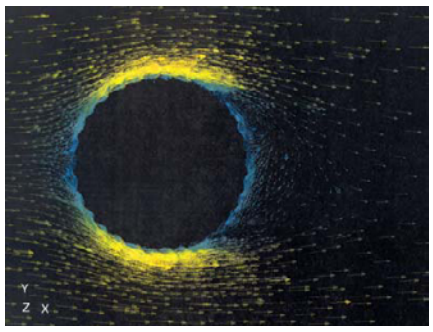
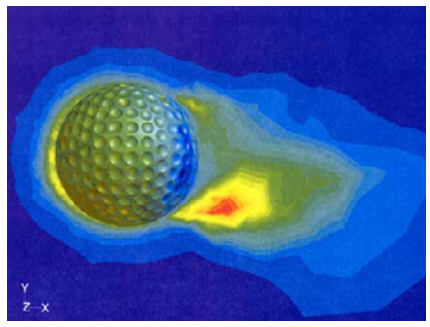
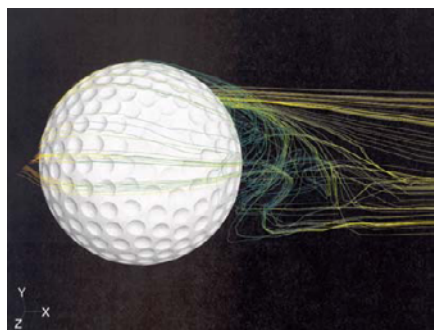


Velocity Vectors



Turbulence Intensity

Total Pressure - Ball Surface



Total Pressure – Path Lines

These figures show some additional golf ball aerodynamic solution results represented by velocity vectors, turbulence intensity, ball surface total pressure distribution, and total pressure path lines, as obtained by using the same CFD method previously reported [1)]. The ball diameter is 43.612 mm, and it has 344 dimples of equal size. The dimple diameter and depth are 3.785 mm and 0.262 mm, respectively. The flow field Reynolds number is 8.5×10^4, and the clockwise direction ball backspin rate about the Z-axis is 2,000 rpm. Reduced intensities of velocity vectors, turbulence intensity, and flow field warpage are obvious comparing with the similar case with the backspin rate of 3,000 rpm[1)]. Ball surface total pressure distribution solution results show the combined static and dynamic pressure magnitudes over the dimple pocket and dimple-free surface areas. Path lines colored by total pressure provide the opportunity for better studying the air flow behavior over the dimples, dimple pockets, as well as in the flow wake region behind the ball. Ball drag and lift coefficients can also be computed using this CFD method.

[1)] L. L. Ting, "Effects of Dimple Size and Depth on Golf Ball Aerodynamic Performance", FEDSM2003-45081, Proceedings of FEDSM'03, 4TH ASME_JSME Joint Fluids Engineering Conference, Honolulu, Hawaii, USA, July 6-11, 2003