Aerodynamic of airfoil performance is closely related to the continuity of its surface curvature, and airfoil profiles with a better aerodynamic performance plays an important role in the design of wind turbine. The surface curvature distribution along the chord direction and pressure distribution on both suction side and pressure side of four wind turbine airfoils were analyzed. The results show that dramatic changes in the curvature cause big changes and discontinuous pressure distribution. Redesign of FX66-S196-V1 airfoil using airfoil profiles theory successfully eliminated the discontinuity of curvature distribution. And the performances of new airfoil are compared with the original one to validate, and results show an improvement, validated the advantage of the improved design method.