Blade design according to Schmitz

Planform

$$t(r) = \frac{16 \cdot \pi \cdot r}{N \cdot c_l} \cdot \sin^2\left(\frac{1}{3} \cdot \alpha_1\right)$$

Twist

$$\alpha(r) = \frac{2}{3} \cdot \alpha_1$$

$$\alpha_{twist}(r) = \alpha(r) - \alpha_A$$

where

$$\alpha_1 = \arctan\left(\frac{R}{\lambda_A \cdot r}\right)$$

where

α : inflow angle

α_A : angle of attack

α_{twist} : blade twist

λ_A : design tip speed ratio

N : number of blades

R : rotor radius

c_l : lift coefficient

r : radial distance of the element station along the blade

t : center chord length