Let $\mathfrak{g}$ be a complex semisimple Lie algebra. Yangians are quantum groups attached to the current Lie algebra $\mathfrak{g} \otimes_{\mathbb{C}} \mathbb{C}[t]$. Twisted Yangians are coideal subalgebras of Yangians associated to a twisted current Lie algebra, the twist coming from an involution on $\mathfrak{g}$. When $\mathfrak{g} = \mathfrak{sl}_n$, their representation theory has been studied a lot in the past twenty years. I will introduce new twisted Yangians when $\mathfrak{g}$ is an orthogonal or symplectic Lie algebra, I will present some of their properties and explain how they can be equivalently defined using the reflection equation. (Received December 08, 2014)