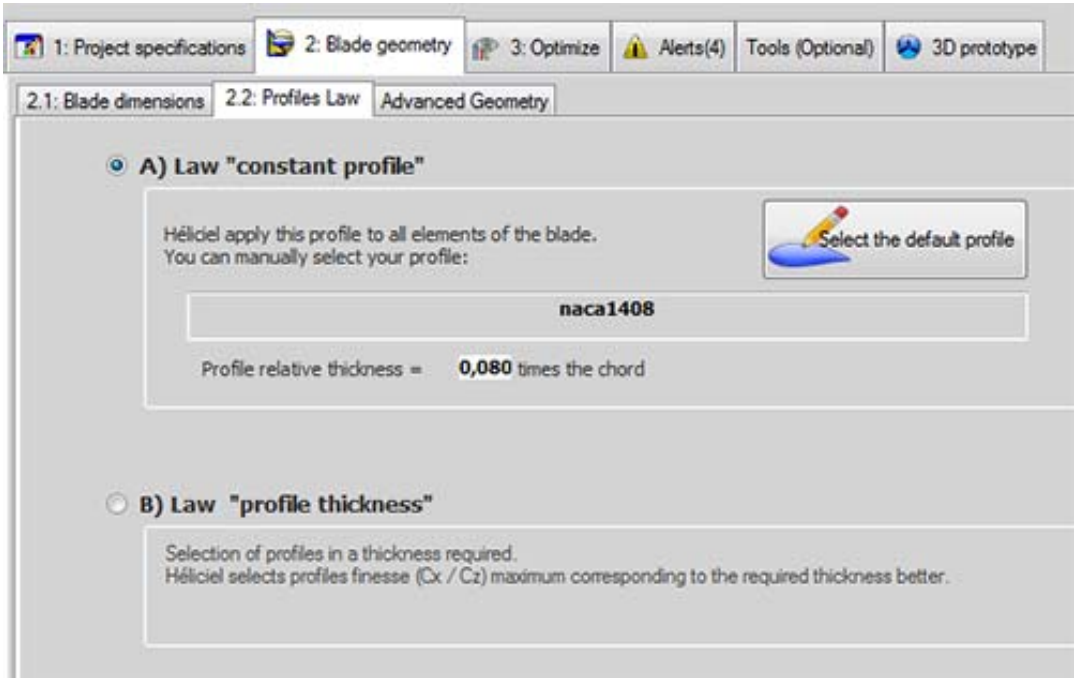
Thickness distribution of the blade or wing

The thickness distribution of blade propellers or wind turbine or water turbines can be defined in two ways::

- **Thickness imposed by the constant profile (recommended for new users):**

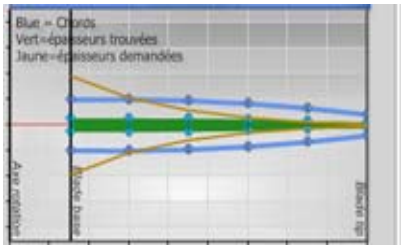
  If the profile law constant is chosen, the thickness of the blade is determined by the distribution of chords and the relative thickness of the profile because the shape is constant.



The relative thickness of the profile is the ratio : profile thickness / chord profile. Thus, when the chord increases the thickness increases proportionally. The adjustment of the thickness slider is therefore disabled when the law profile is constant:

- **Thickness set manually with the cursor thickness distribution (advanced users)**

  If you selected the law thickness profile, you can use the slider thicknesses of blade, If you selected the law thickness profile, you can use the slider thicknesses of blade (= chords profiles) .This has the effect of modifying and impose different forms of profiles along the blade. The profile shape at a given point of the blade radius is defined by the chord width. Héliciel searches its database, the profiles corresponding to better the conditions of width and thickness required by the user.The database is not infinite, the forms found by heliciel will therefore, can be of different thickness than required.



This is why the scheme of blade (above) gives::

- orange: the required thickness with sliders
- green: the thickness found in the database

the thickness of the blade or the wing, plays an important role on the lift/drag ratio of the blade or the wing. The performance of the propeller or the wing are directly attached to the lift / drag ratio of its profiles. thick profiles, generate a stronger drag than thin profiles. So we are looking for the finest possible, profiles, to increase performance..But beware, the thickness distribution along the blade or the wing is a key determinant of the strength of the blade or the wing. The choice of profiles is therefore subject to the criteria that we set out on the page for profiles.

see also Law profiles , and "**Re built propeller** "