Taking a typical multihull (in the first case below a motor catamaran), there is some additional geometry definition required to calculate the various heights and widths required by the ISO 12215:7 standard. Much like the sheerline and keeline definition for monohulls (ISO 12215:5), the import of these various curves and surfaces into Hullscant is not essential, but it lets Hullscant calculate wet deck heights and beams at given locations rather that the user having to define these values themselves.

For monohulls, there was a need for a sheerline, keeline and chineline (for fast motor vessels), which are curves tracing along the points defining the station section curves of the hull. Within ISO 12215, for multihulls, in addition to these curves there is a need for –

- Wetdeck profile
- Wetdeck / hull (of float for trimaran) join line
- Float /ama keelline (trimarans only)
- Float / ama sheerline (trimarans only)
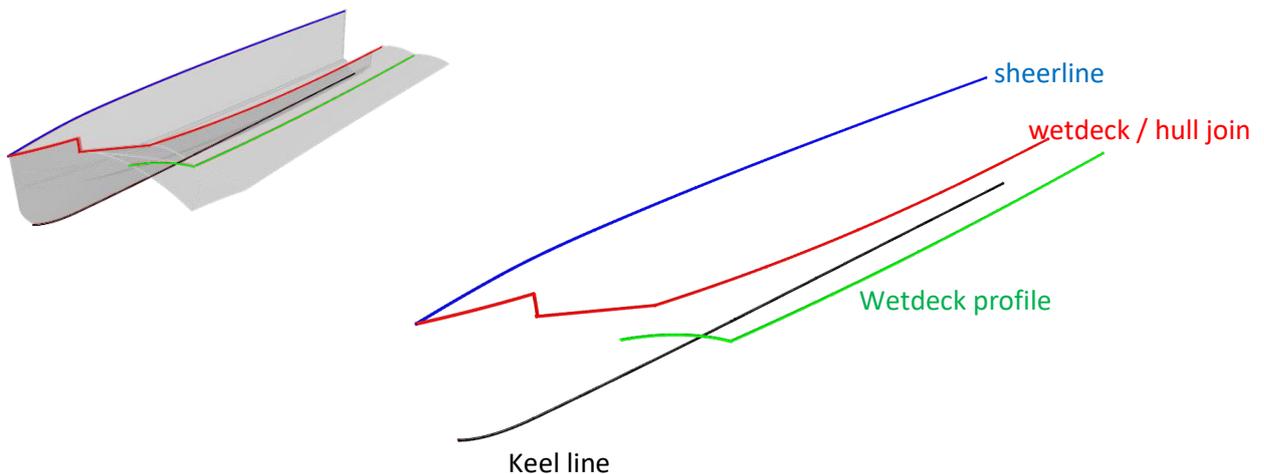
The approach taken within Hullscant has been to allow for 2 more sets of station curves, from which these lines can be taken.

Multihull additional station curves –

- **Wetdeck station curves.** These are at the same longitudinal locations as the hull stations.
- **Float station curves**. These are at different locations from the hull; as with the hull, there are 21 stations, the location of which is defined by the aftmost and forward most point if the imported geometry (much like the main hull station positions are defined from the imported geometry)

From the wetdeck stations the wetdeck profile and the wetdeck/hull join are extracted.

From the float stations the float sheer line and float keel line are extracted.

Wetdeck

Wet deck profile – this curve determines the wet deck height, and its extents, along the length of the main hull. For a catamaran it will be expected to be on the centreline (y=0), but the user can set it elsewhere if wanted.

Wetdeck / hull join – this curve is used to determine the extent of the wetdeck and cross beams (ie determining B_{BH} and B_{WD}). In the case of a trimaran it is the connection of the wetdeck with the float rather than the main hull. If there is fairing or additional structure, meaning that the width of the wet deck (B_{WD}) is different from the distance between hulls (B_{BH}), then the user should over -write the relevant value for the structural element in question.

Both of these curves belong to, or are extracted from, the wetdeck surface definition, like the keel and sheer lines are extracted from the hull stationlines

Trimaran floats

Taking a sailing trimaran hullform for example, which consists of a main hull and a float (or ama) either side (only port float shown below), the user can import the main hullform reference geometry as for a monohull, from which a keel line and sheer line can be taken (or imported as separate curves). The float hullform should be imported as a separate entity, declared as the float (as per dialog below).
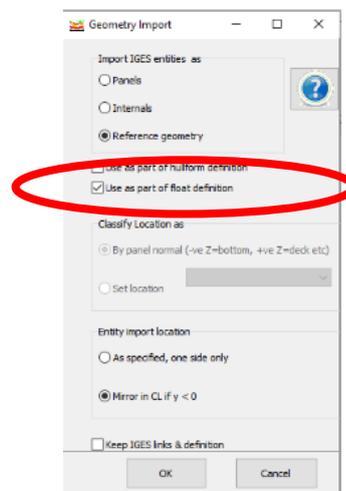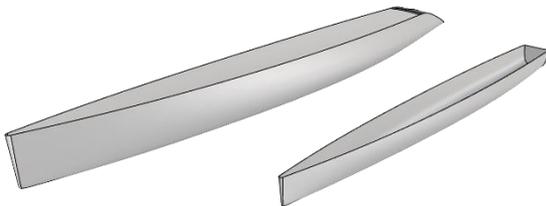
This will create a hullform definition for the float , from which a float keel line and sheer line is created (or they can be imported as IGES curves as with the main hull). The fore and aft limits of the float are independent of the main hull limits , but the global x=0 should still be the aft extent of the waterplane of the main hull; that is, the AP of the ama can be at a negative X value (as can be overhangs of the main hull). Finally the wetdeck surface can be imported, from which the wetdeck profile and join with the float can be extracted (or these curves can be imported as separate IGES curves).

sheerline

Wetdeck profile

float
sheerline

Wetdeck/float
join

keel line

Float keel line
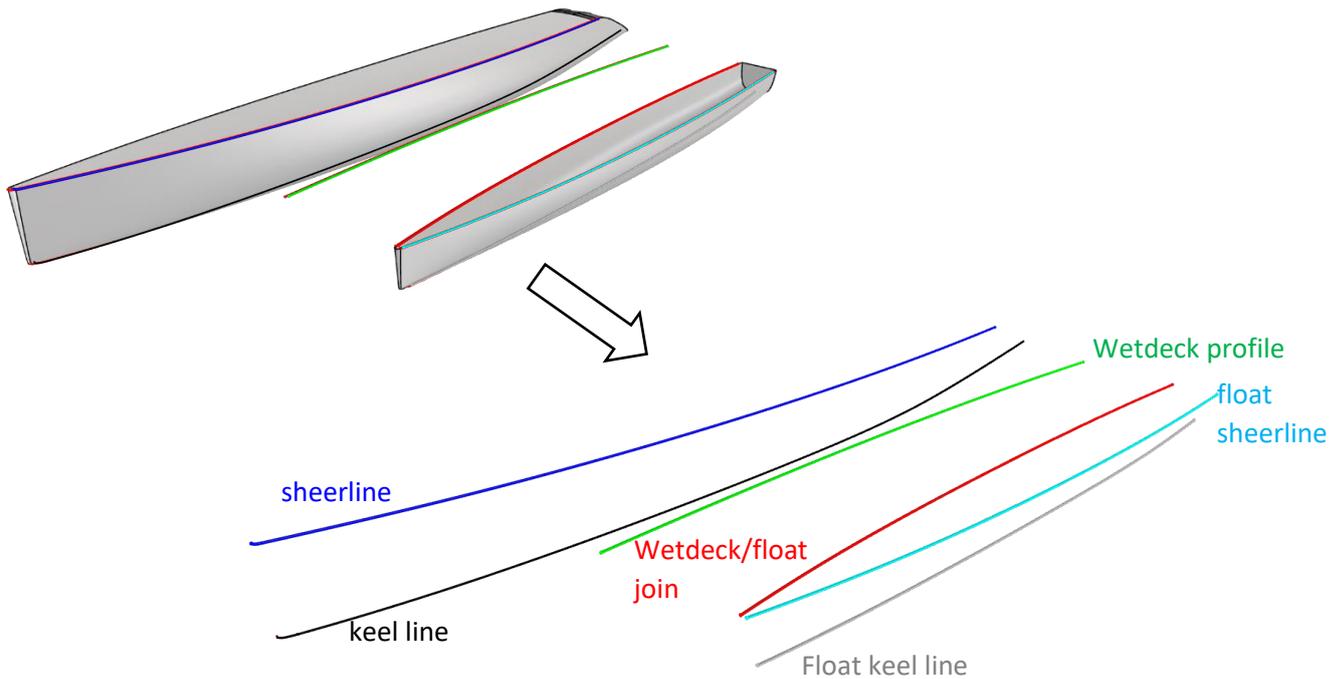
Therefore in the case of a trimaran, the wetdeck width (and between hull distance) is the distance between the main hull sheerline curve and the wetdeck/hull join curve. The wetdeck profile curve is still used to determine the extents and height of the wetdeck.

In summary, for multihull there are up to 2 other underlying surface definitions (wetdeck and float/ama station curves) from which four other defining hull line curves, used to determine critical heights at a given longitudinal location for the ISO standard calculations, are extracted.

Recommended order of working

It is recommended that the following order of importing hullforms is used

1. Main hull form : demi hull (or main hull for a trimaran) alone, no wet deck definition
    a. Allow extraction of keel line, chineline (if appropriate) and sheerline if the geometry is suitable
2. Float hull form if modelling a trimaran
    a. Allow extraction of float keel line and sheerline if the geometry is suitable
3. Wetdeck definition
    a. Allow extraction of wetdeck profile and wetdeck/hull join if the geometry is suitable