

Corbin 39 – VPP with spi – as for 01 06 2020

Done with USVPP and SA-VPP , and for mk2 49' sailplan.

USVPP input data / Symmetrical spi :

SPL = J = 5,4 m (Spinnaker Pole Length)

SL = 13,5 m (Spinnaker Luff length)

SMW = 10 m (Spinnaker Maximum Width)

>>> Spi surface for the VPP = 0,6 . SL . SMW = 81 m² (« USVPP » formulation)

>>> Others sails with spi :

Main + Genoa unchanged (USVPP internally deals with the blanketing issue)

Without spi for the comparison : Main + Genoa

SA-VPP / Assymetrical spi, based Ultimate sails « Cruising Chute » definition

J = 5,404 m

SL = 15,54 m (= ISP data ? / Ultimate sails) (Spinnaker Leech length)

>>> Spi surface for the VPP = 1,15 . SL . J = 96,57 m² (« PYD » formulation)

>>> Others sails with spi :

Main + Inner staysail (SA-VPP : I have no blanketing function internally so far)

Without spi for the comparison : Main + Genoa

CL,CD for a symmetrical spi (Source : « PYD ») :

Ba (°)	50	80	100	180
CL Spi	1,50	1,00	0,85	0,00
CD Spi	0,25	0,90	1,20	0,66

>>> estimated for an assymetrical spi :

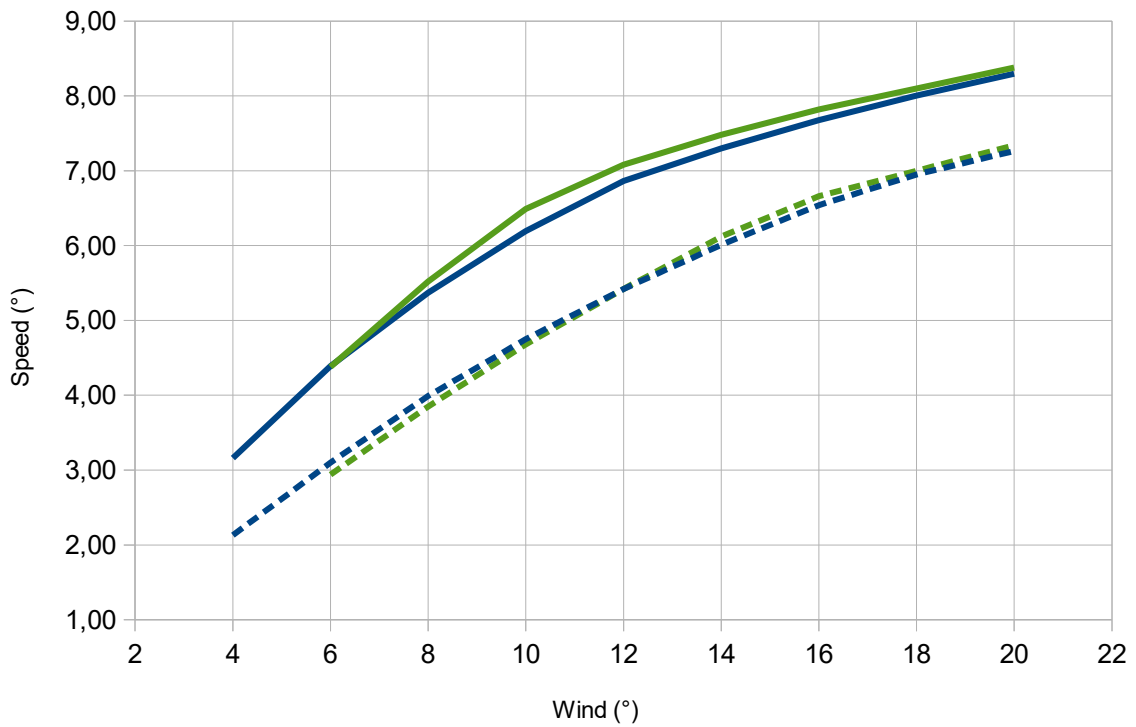
Ba (°)	50	80	100	180
CL Spi	2,03	1,35	1,15	0,00
CD Spi	0,16	0,59	0,78	0,43

Other info from Ultimate sails for the Cruising Chute :

Max AWS = 13 Knots ; AWA range = 70° to 150°

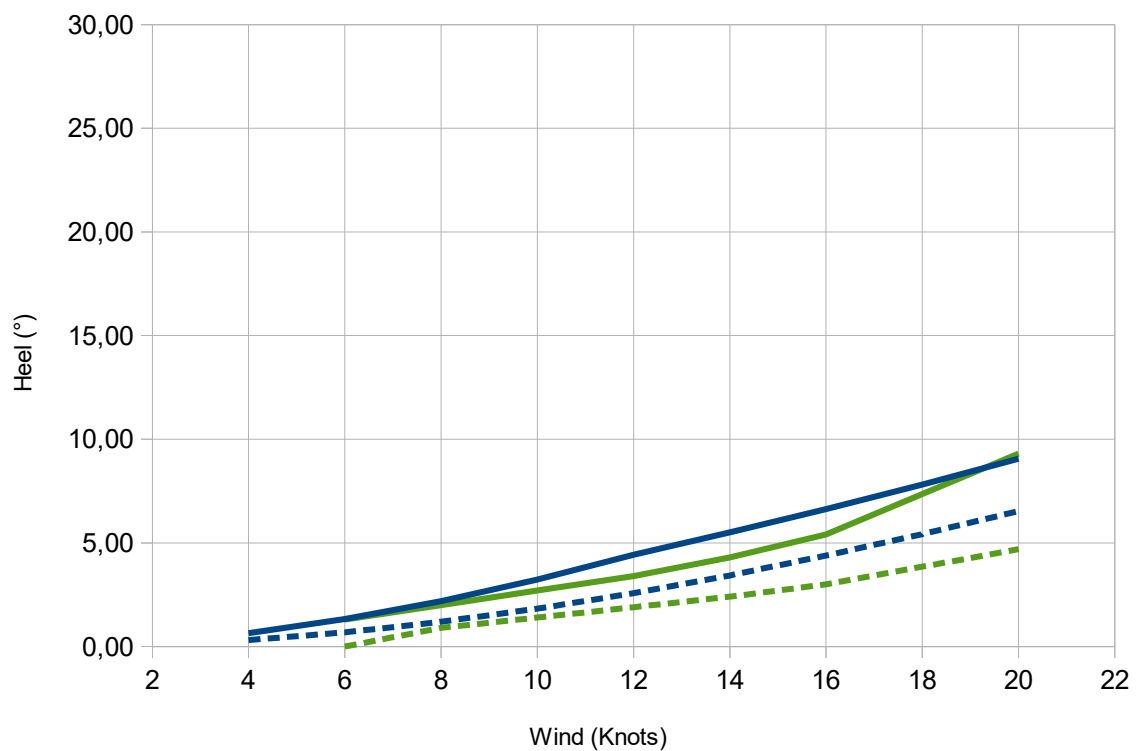
mk2 49' - Speed downwind twa 135° with spi

Blue : SA-VPP ; Green : USVPP ; (Dashed line : without spi)



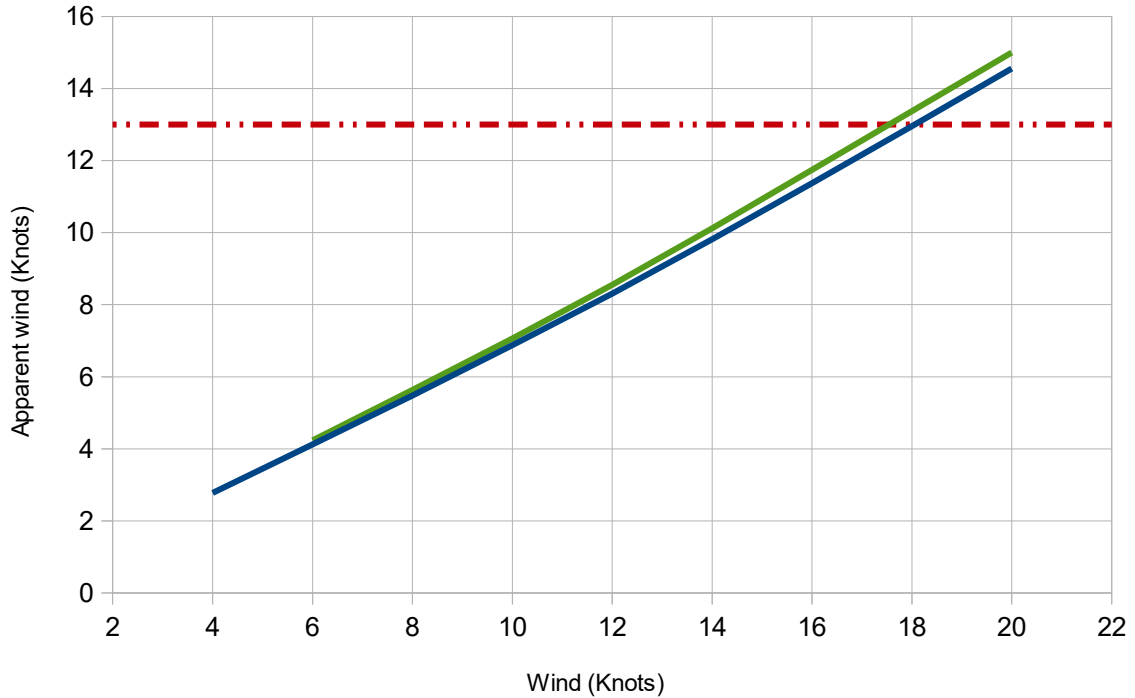
mk2 49' - Heel downwind twa 135° with spi

Blue : SA-VPP ; Green : USVPP ; (Dashed line : without spi)

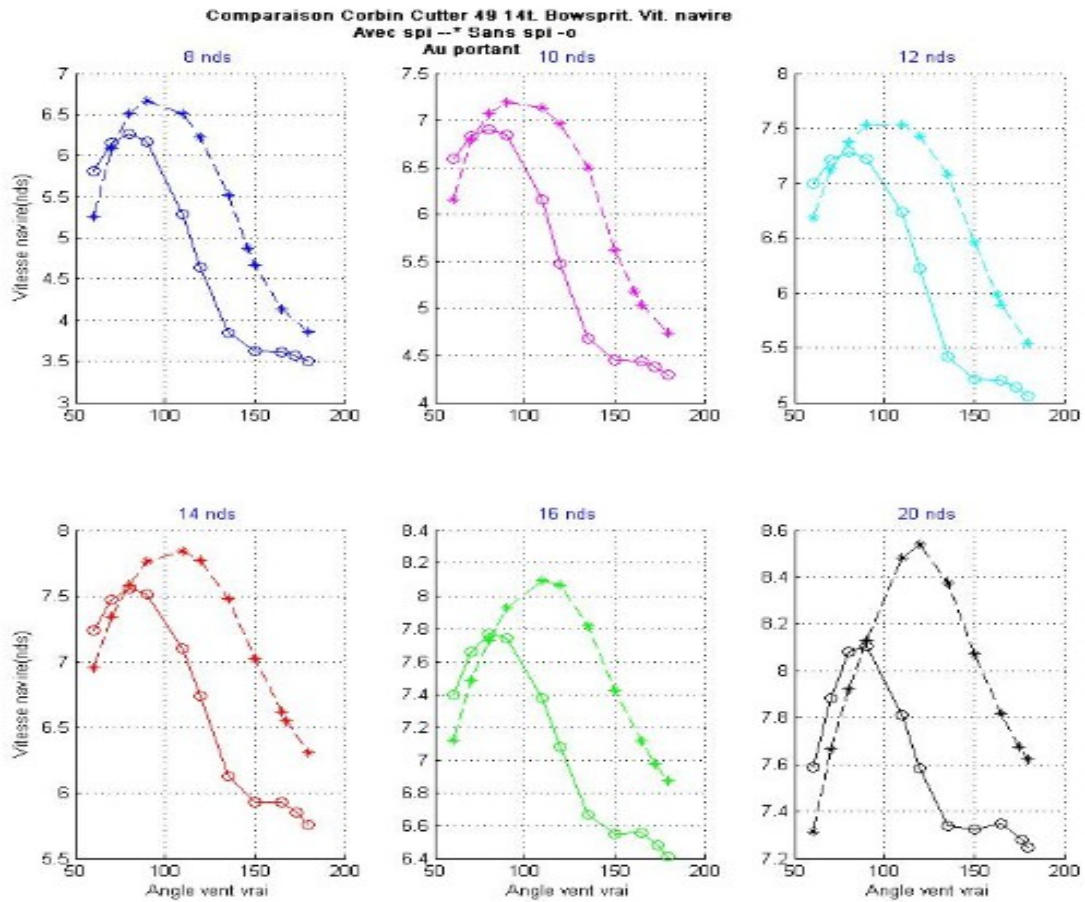


mk2 49' - Apparent wind - Downwind twa 135° with spi

Blue : AS-VPP ; Green : USVPP ; Dashed line = limit of use at 13 knots



USVPP results for the whole range of twa :



Conclusions in brief :

Speed :

a gain of speed of around + 0,5 Knots is noticeable from twa 100° , becoming + 1,0 to + 1,5 Knots with increasing twa on all the range of wind speed 6 to 20 Knots.

Heel (at twa 135°) :

remains $< 10^\circ$ with wind 20 Knots (Maxsurf Span gives 12°)

Use of the spi (when at 135°) :

up to wind ~ 18 Knots, beyond which the apparent wind can be too important (> 13 Knots) for the spi resistance.

A general rule could be to use the Spi up to reach a speed of $\sim 8,0 - 8,2$ Knots (wind and twa permitting) . As long as such speeds are reached, no need to increase the sails surface anymore, and for the spi use it is around 18 Knots of wind.