SUMWING®

FISHING WITH LESS FUEL

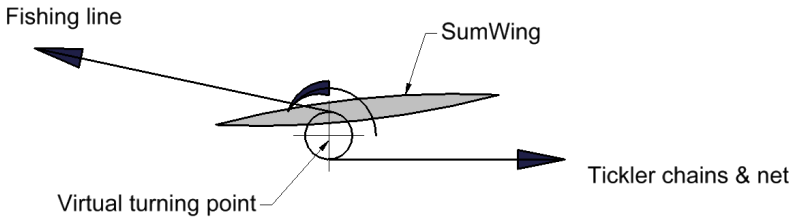
From fishing news (NL):

Van der Vis: ,,Monday after a storm, ground was open. The TX 38 was having trouble with the difficult seabed while we experienced no trouble at all.´´

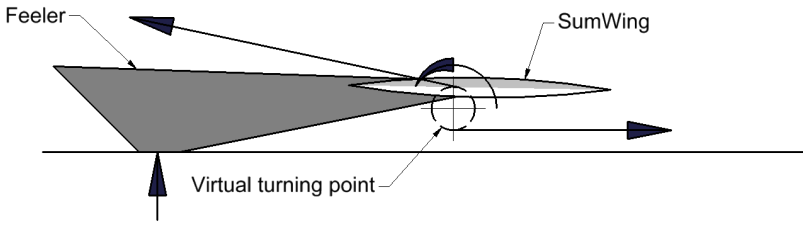
TX36 IN THE HARBOR OF OUDESCHILD, DUTCH BEAMER

ABOUT THE PRINCIPLE

De SumWing is working as a alternative for a beam with beam trawling. The fishing line is pulling the wing forward, the net is pulling aft. These two forces result in a turning force or simple torque on the wing. The torque twists the wing in a diving position. While starting the trawl, the wing will force the complete gear to go down to the seabed. The feeler in front of the wing while counter twist the wing to a neutral position as soon as the wing reaches the seabed. So in short, the wing is like a kite going up in the sky, as it goes down to the seabed.



See picture above. Fishing line is pulling forward as chains and net pulls aft. Result is a torque around the turning point. This results in the wing tilting downwards

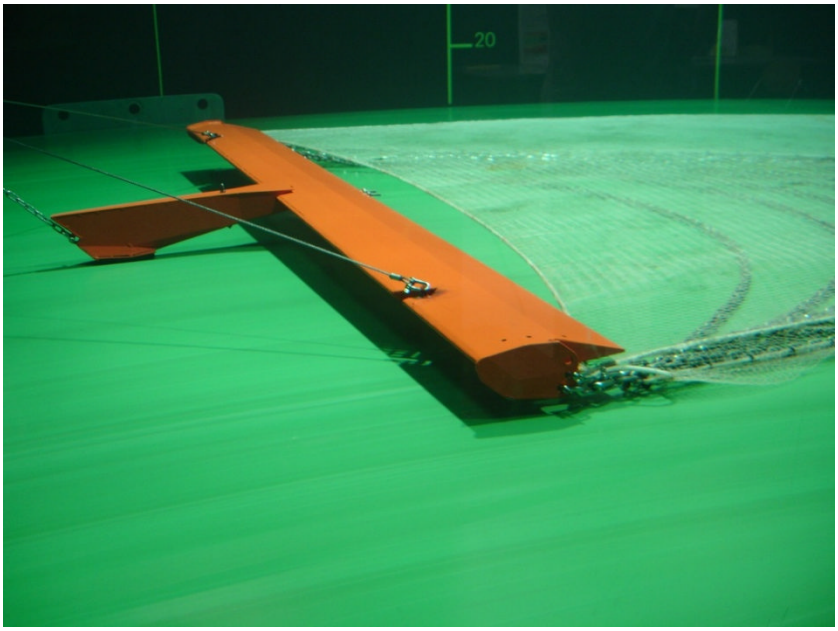


Picture above, the nose is foreseen to counter force the torque caused by the fishing line and net. As soon as the feeler touches the ground it will counter twist the wing in a natural position, so, that it will keep stable at a certain height above the seabed.

The wing is filled with air, so the weight under water is even less that above.

DEVELOPMENT OF THE SUMWING®

In the summer of 2007 it became clear that the principle of a self steering foil works. After a few modifications and Computer Fluid Dynamics calculations, the design is optimized. In the summer of 2008 this new design was tested on the 2000hp TX36 and it turned out to work very well.



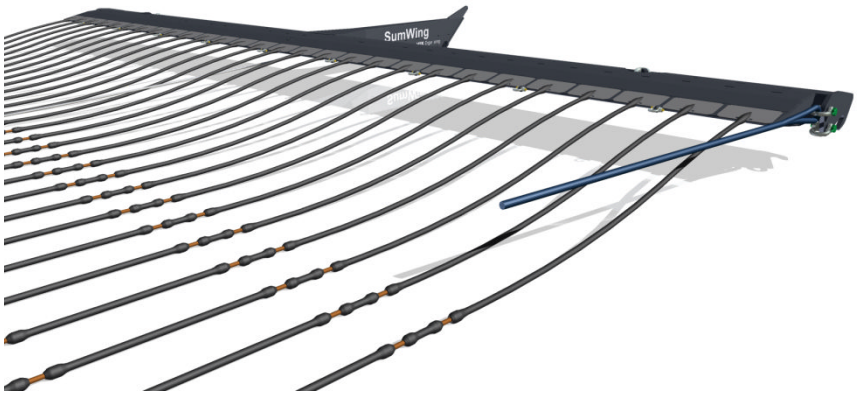
CHECKING THE SHAPE IN THE FLUME TANK OF BOULOGNE

During a period of 5 weeks intensive testing was done on various types of seabed. Also live video streaming was used to optimize the settings of the wing. Bottom pressure was brought to a minimum so the foot of the feeler in front of the wing could have minimal dimensions. Doing so a 84% decrease in bottom contact was realized.

PICTURE DURING FIRST TEST WEEK 2008

BOTTOM IMPACT

As the SumWing is not depending on weight to get to the seabed but is depending on the principle of a foil, bottom pressure is minimal. Due to this minimal bottom pressure only a small surface is needed to keep the wing in position above the seabed. The SumWing only replaces the beam gear, so tickler chains are still needed to catch the flatfish.



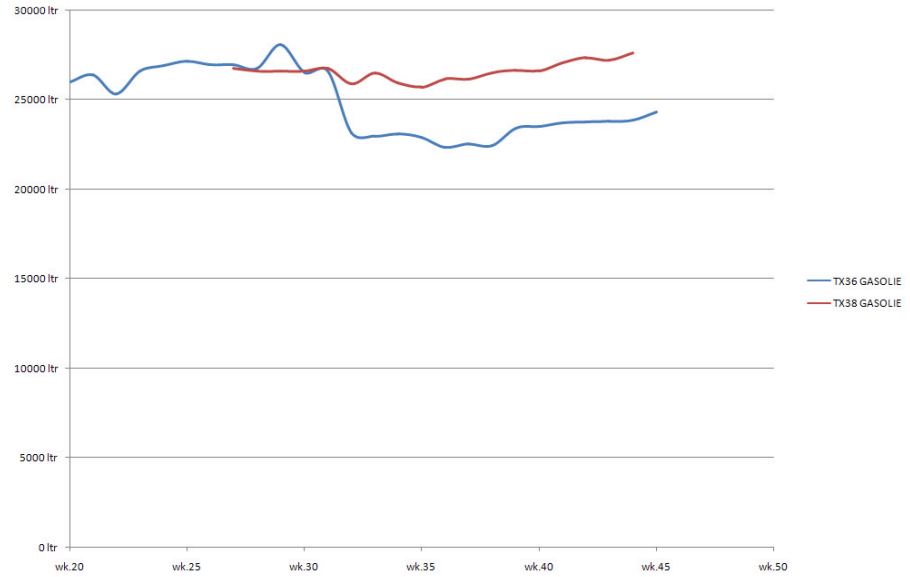
ARTIST IMPRESSION SUMWING WITH PULSE

Above a picture of the combination of a SumWing and a electronic tickler system. The people of the SumWing have been working on this since the beginning of the project. Not having tickler chains reduces the fuel usages ever more. The TX36 started using the SumWing with pulse in August 2009.

SUBSEA CAMERA IMAGE DURING TRIALS IN 2008

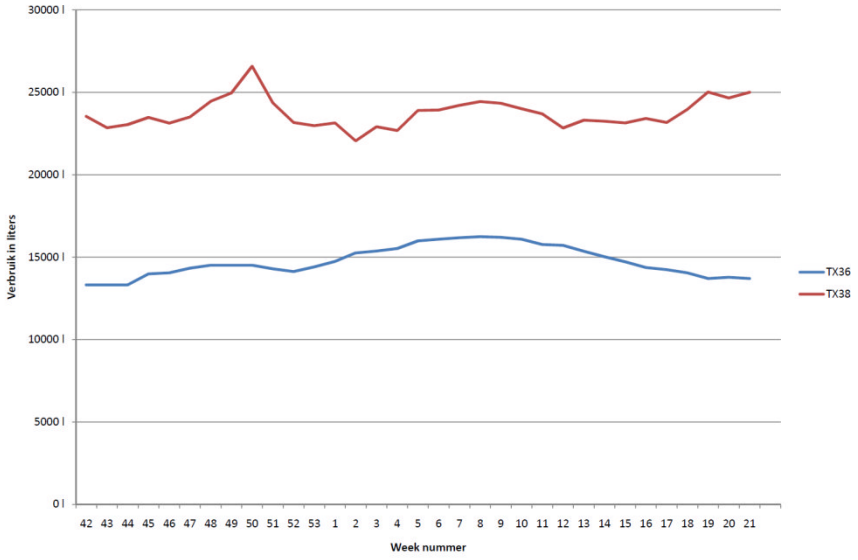
CO_2 DISCHARGE & FULL SAVING

Second half of 2008 the SumWing was installed on the TX36. Below you can clearly see the impact on full usage. The red line is from the TX38 which is the same type of ship with exactly the same engine.



Graph above is without taking in account the extra speed advantage you get from the SumWing.

In the end of 2009 TX36 changed to the SumWing with pulse system. This is mainly the combination of two systems, a wing, and a electronic tickler system. Flatfish like sole and plaice are stimulated by electronic pulses, while the net is being towed by the wing above the seabed. Bottom impact and drag are minimal using this technique. Below the fuel usage of the past 25 weeks in 2010. (SumWing pulse)



Again the red line is from the TX38 witch now uses the normal SumWing. Fuel saving for the TX36 in this period is 260.000ltr.

SumWing for 300hp vessels

The first SumWing were for 2000hp beam trawlers. Due to the demand of smaller vessels of 300hp, a 4,5m SumWing was developed. The TX33 was the first vessel to start with this and now a days, over 15 vessels are using the 4,5 m SumWing. For these vessels the speed advantage is the main reason to use the wing. Next to speed advantage, the winch, fishing lines and rollers will last longer.

In may, the YE138 started to test a 4,5 m wing with use of a chain mat. Result are very promising till now.

The pulse modules for use in the SumWing pulse, can also be used with the 4,5m wing. The 4,5mtr wing for pulse will have cassettes to fit the modules into.

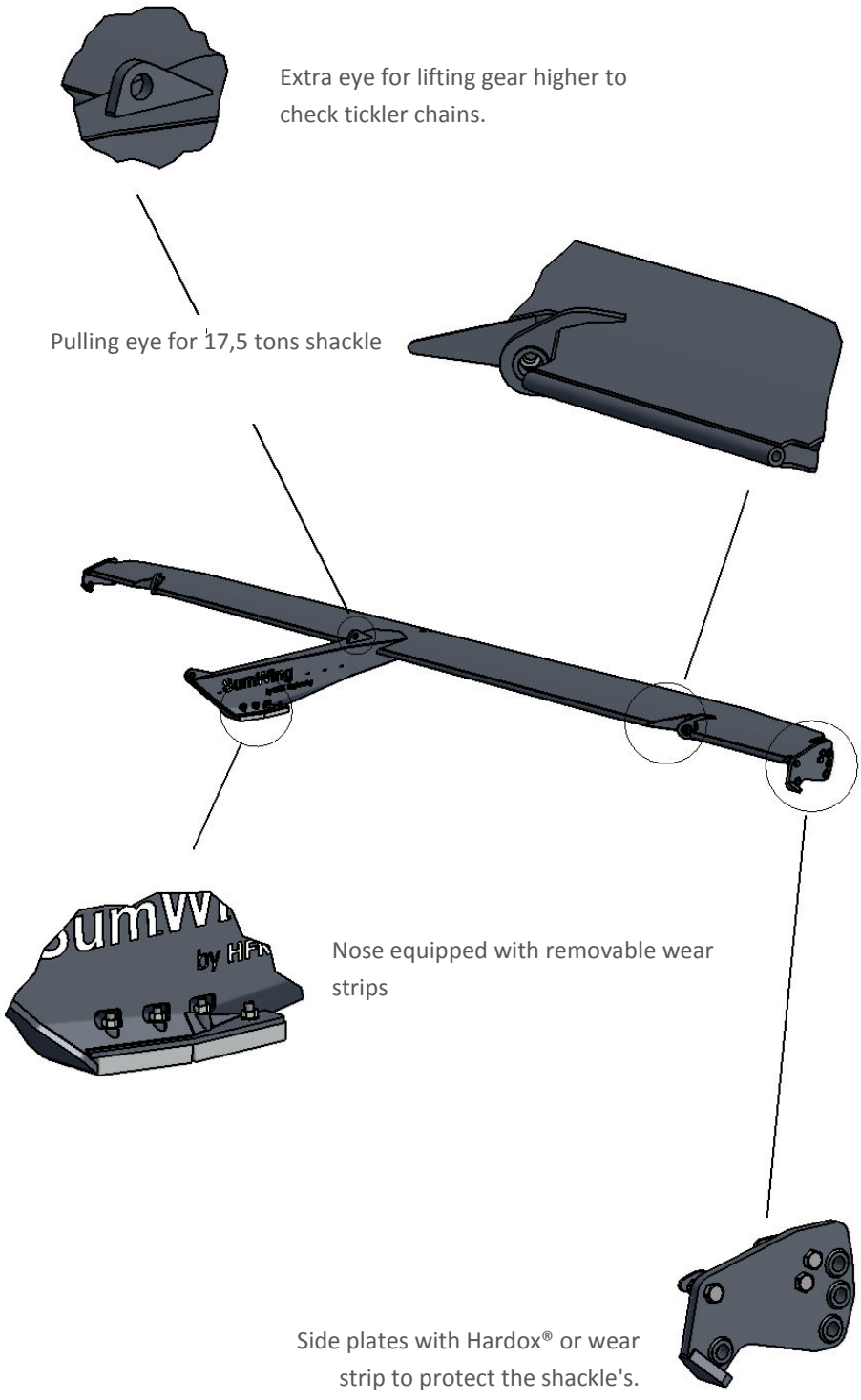
SumWing for prawns

For prawn or shrimp fishing a special wing is being developed. Big challenge is to get enough net height with very little speed. At the time of creating this brochure it all looks promising, but a lot of testing and development is still to come.

SumWing for prawn fishing, first prototype tested in June 2010.

On deck with the TX36

SUMWING (12MTR) PARTS[1]



Extra eye for lifting gear higher to check tickler chains.

Pulling eye for 17,5 tons shackle

Nose equipped with removable wear strips

Side plates with Hardox® or wear strip to protect the shackle's.

[1] Details subject to change without notice

SPECIFICATION 12 MTR[2]

Weight	
Weight above water	3094 kg
Weight submerged	1644 kg
Towing speed	
*Towing speed**	5,5 to 7 knots
Net height	450 mm
Dimensions	
Width*	11950 mm
Thickness	170 mm
Length	950 mm
Length including feeler	3011 mm
Depth and fishing line	
Minimal line to depth	1 to 3
Maximal line to depth	1 to 10
Wear strips (standard)	
Dimensions (LxWxH in mm)	300x120x60
Number	6 pieces
Material	
Wing	St52 or S355 (high strength steel)
Feeler	St52
Side plates	St52

*Other dimensions and towing speeds on request

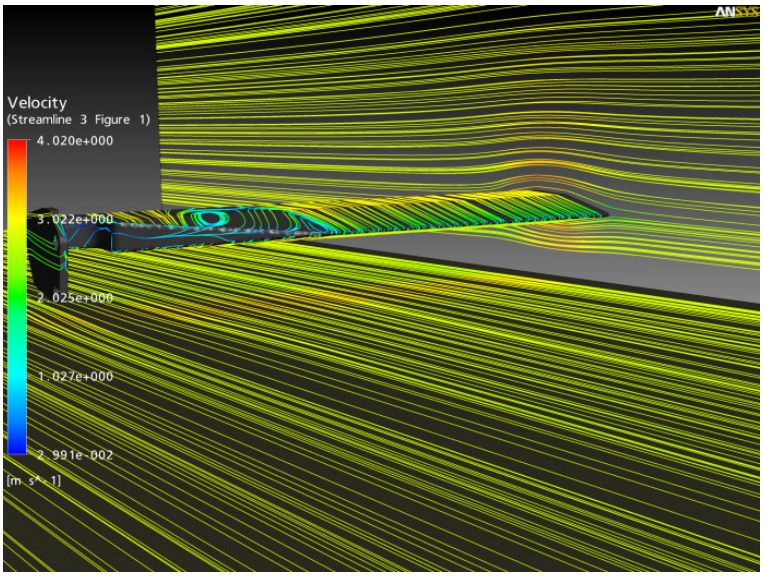
FIRST SET SUMWING READY AT BAL HETEREN BV (HOLLAND)

[2] Details subject to change without notice

SPECIFICATION 4,5 MTR (300HP VESSEL)[3]

Weight	
Weight above water	461 kg
Weight submerged	223 kg
Towing speed	
Towing speed*	4 to 6 knots
Net height	450 mm
Dimensions	
Width*	4495 mm
Thickness	76 mm
Length	518 mm
Length including feeler	2088 mm
Depth and fishing line	
Minimal line to depth	1 op 3
Maximal line to depth	1 op 10
Wear strips	
Dimensions (LxWxH in mm)	300x120x60
Number	1 piece
Material	
Wing	St52 of S355 (high strength steel)
Feeler	St52
Side plates	St52 in combination with Hardox®

*Other dimensions and towing speeds on request



COMPUTER FLUID CALCULATIONS ON THE 4,5 M SUMWING

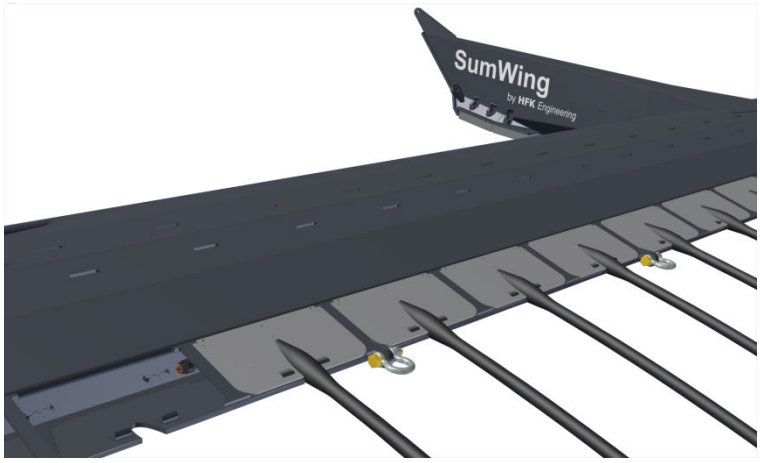
[3] Details subject to change without notice

Information brochure made by HFK Engineering BV. The project SumWing and SumWing pulse are made possible by the Taskforce Sustainable fisheries, Dutch ministry LNV and European fishery fund. Development is done by HFK Engineering BV in cooperation with the vessels TX36 (Jaap van der Vis) and TX38.

More information is also available on request, please send an e-mail to info@hfk.nl

Several Dutch websites:

- www.visserijnieuws.nl
- www.visserijnieuws.punt.nl
- www.sumwing.nl



PICTURE OF SUMWING PULSE WITH PULSE MODULES. ONE MODULE IS TAKEN OUT OF THE CASSETTE.

From fishing news (NL):

,,We are both convinced the catch is equal, using either SumWing or traditional beam gear´´ (skipper Jaap van der Vis, TX36 and skipper Guido Betsema, TX38)

Responsibility

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