

# IUMI 2010 ZURICH

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**The challenges and potential new risks resulting from the development of new technology in fishing vessels**

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## Eelsing Expertises & Taxaties

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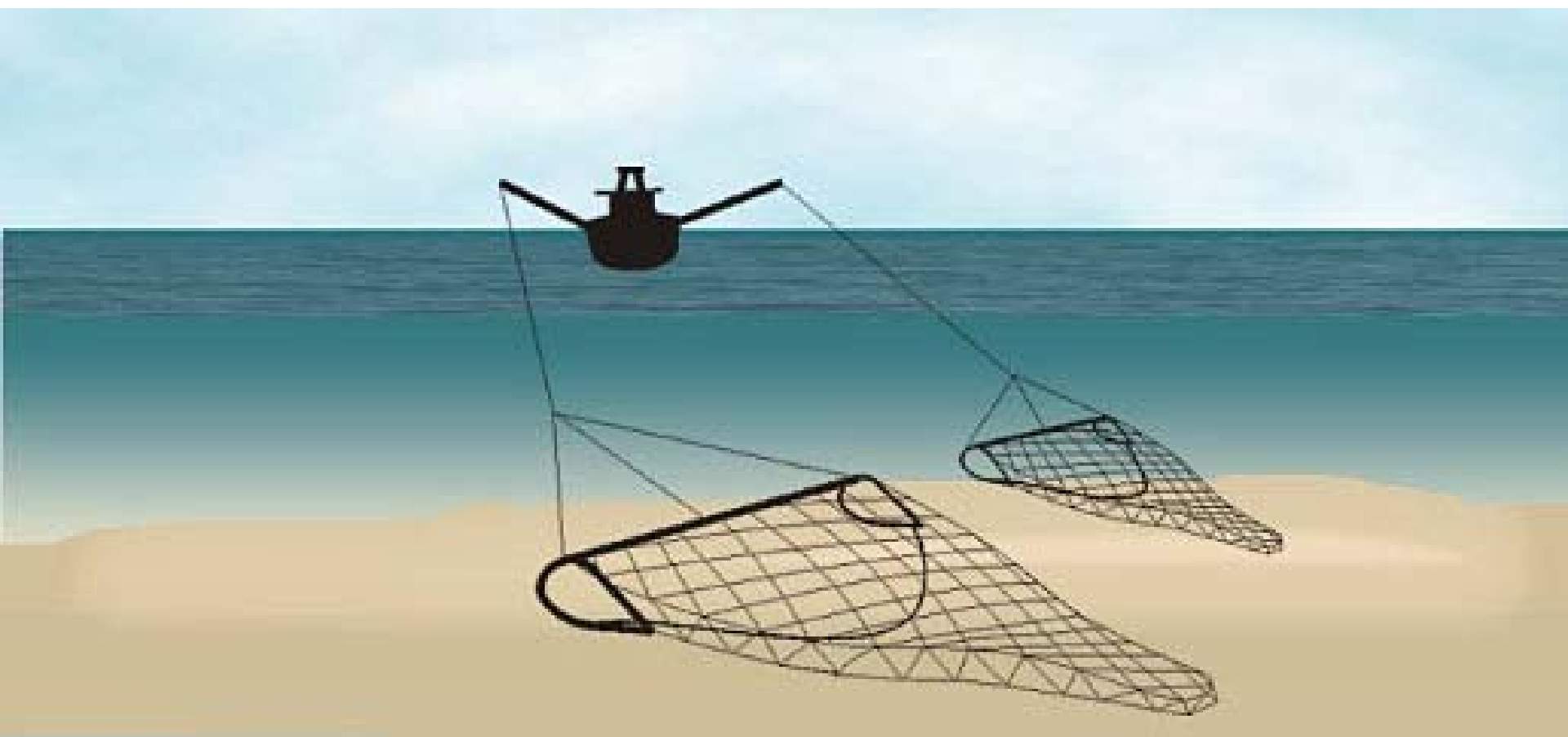
# Fuel reduction beamtrawlers

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Length : 45 meter  
Crew : 5-7 persons  
Fishing : Monday until Friday  
Days : approx 180 sea days per year  
Fuel expenditure : 9.000 litre per day  
2006 : total 189 million litre fuel which means per kg sold  
fish 4.8 litre

In comparison:

*A total of 8000 million litre of diesel was sold in 2006  
in The Netherlands for road traffic*



- radical alteration in the way of thinking with respect to the use of energy in the fishing sector.
- more efficient use of fuel
- development of energy economizing catch techniques
- alternative energy sources which supply more output in comparison with the current diesel engines.

Picture: Modern beamtrawler



Picture: Classical beam trawl





A classical beam trawl is a fishing net held open with the help of a steel beam. Two shoes are attached at the ends of the beam.

When fishing flatfish, the nets are provided with heavy chains (tickler chains) which scrape the sea bed.

Between the 60's and late 80's the engine power on board the large beamtrawlers increased from 150 hp up to 4000 hp.

The use of more powerful engines made it possible using heavier chains and fishing gears allowing a lucrative and increasing catch of sole.

## Fishing with less fuel

	<u>COSTS</u>	<u>SAVING</u>
<ul style="list-style-type: none"><li>• Use of high performance propeller / nozzle</li><li>• Reduction of engine output.</li><li>• Economizing of gears<ul style="list-style-type: none"><li>- pulse fishing</li><li>- sumwing</li></ul></li></ul>	€150.000,00	10 %

[The ambition of the Dutch Fishing Innovation Platform is to achieve a fuel reduction of 90 % between 2007 - 2025.]

# Pulse fishing



- With pulse fishing, the heavy tickler chains of the classical beam trawler are replaced by much lighter wires through which electric impulses are sent. Fuel consumption is 20 to 40% lower than with the classical beam trawl and there is less disturbance of the sea bed.
- To make a traditional beamtrawler suitable for pulse fishing a total investment is required of approx. € 300.000,00
- Expensive gears are being used which could easily damage when the gears run aground or at a wreck.



- Since 2007, trial runs were made with the sumwing, a suspended wing with nets.
- The fishing gear is much lighter than the beam trawl and is less resistant because no heavy beams and shoes are needed.





## Sumwing, principles

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.

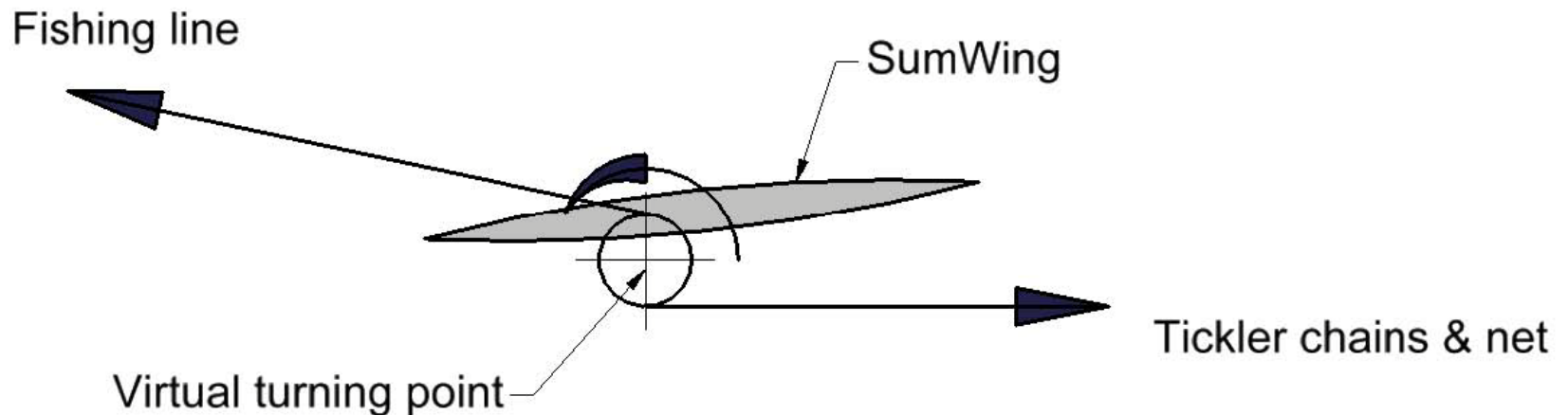
While starting the trawl, the wing will force the complete gear to go down to the sea bed.

The feeler in front of the wing will 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.

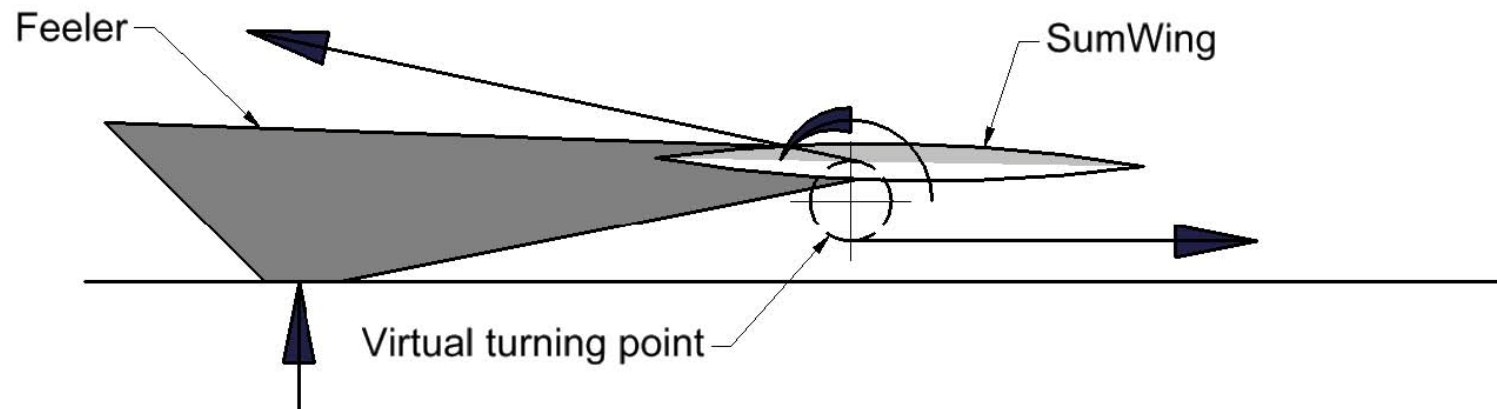


The fishing line is pulling forward as chains and net pulls aft. Result is a torque around the turning point and consequently in the wing tilting downwards



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 sea bed.

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



The average costs for 2 sumwings amount approx. € 50.000,00

In the end of 2009 tests were carried out when using a sumwing combined with pulse equipment.

Fuel savings:

Sumwing : approx. 15 %

Sumwing with pulse : approx. 45%

# Alternative energy sources

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By order of the Dutch Fishing Innovation Platform an exploration of alternative energy sources was carried out.

From their report issued in June 2009 appears that the following options could lead to significant fuel savings and thus help to achieve InnovationNetworks's objectives

- Sail (medium to long term)
- Kite (medium term)
- Flettner rotor (long term)



Expensive gears, high fuel  
consumption reduction but serious  
risks for damages on these gears