

SAIL is an Interreg IVB North Sea Region project with 17 partners from seven different countries around the North Sea.

Leading vision and aim: Alternative propulsion systems for (freight) sailing, defined her as "hybrid sailing concepts", have high potentials, due to rising oil prices and environmental aspects. Develop and testing hybrid sailing concepts that lead to new business opportunities and a more sustainable future.

Project duration: from July 2012 to June 2015.

Budget: € 3.4 million

- 50% European funding

- 50% partner cofinancing

SAIL's status update

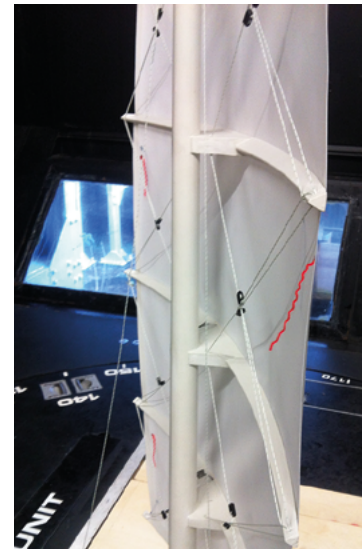
Flow in Wind Transported Cargo (WTC)

After almost two years of research and cooperation by all our SAIL partners, the SAIL project is now coming in a crucial phase of her development. This year activities in the different workstreams will merge and deliver concrete performance data about wind propulsion for cargo ships. Assumptions will be validated and the partnership will be ready for the next step: Involving freight owners in WTC.

Engineering

Towing test data are now available and wind tunnel tests are in progress. The model of the ship has been tested in the water. Right now the [University of Southampton, Wolfson Unit](#) is building model masts and riggings, first test are done and in June tests will be finished. Together with the towing test data we will have validated velocity prediction performance data for wind propelled cargo ships based on the dynarig, a very sophisticated version of the classic square rig. A nice example can be seen on the [Maltese Falcon](#).

Having performances of the cargo sailing ship ready the next step is to assess them with local weather conditions, wind potentials and current. Weather routing and route optimisation will be calculated by our partners, World Maritime University, Jade Hochschule and Marin, together with Dykstra Navel Architects. This will finally also give the necessary data about fuel savings and reduction of CO₂, SO_x and NO_x.



Leeuwarden, June 2014

DEAR READER

It has been a half year since I last addressed to you in the first newsletter of the SAIL project. I am quite proud to say that a lot has happened between then and now. You can read a detailed update on the whole project below. But all together you could conclude that SAIL has arrived at the crucial point in the project. In the upcoming months we will work towards involving freight owners and possibly interested investors.

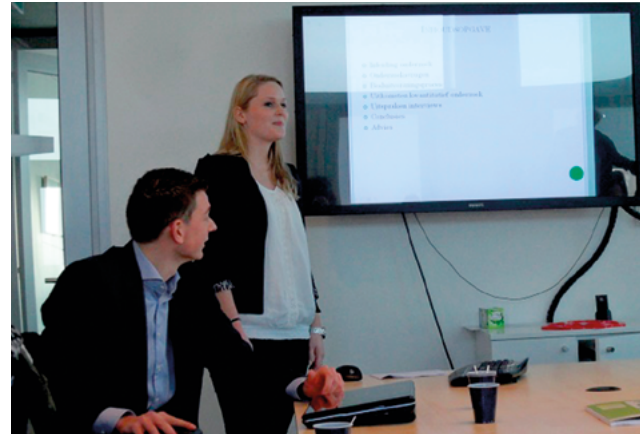
In the first weekend of July, SAIL will be present at the Tall Ship Races, which will be organized in Harlingen this year. This international event will be an outstanding platform for the project to present itself to a broad audience and in particular to all possible participants. Meanwhile, a group of students from the NHL in Leeuwarden is working on an animation of the Ecoliner, which will hopefully stimulate the imagination of lots of people. Together with the marketing concept of another group of students, we will shortly have a beautiful instrument to approach possible investors.

As you can read, the SAIL project is moving on strongly. I am happy to see that the project is making such good progress. I wish you and us, like I did in the previous newsletter, lots of ongoing tailwind, in order to keep the good progression going.

Deputy Hans Konst
Province of Fryslân



Ecoliner first to market



SAIL will be the first (EU Interreg) partnership having all relevant performance data for operating a modern wind assisted cargo ship, [in this case the Ecoliner](#). SAIL's aim is to commit the first mover to this market and to offer opportunities to the early adopters in the market of sustainable transport.

Therefor the NHL (Netherlands) and E&E consultants (France) FR are exploring different business models where all relevant variables can be changed, like performances, prices of cargo transport, fuel, labour and investments.

Analysing the whole chain of production SAIL concluded transport is just a very small part of the final price of an end consumer product.

Sea transport is also quite a neglected link in the chain of production where at the same time a high sustainability profit can be realised.



The completing link in sustainable production

Wind Transported Cargo

SAIL's Business Proposition

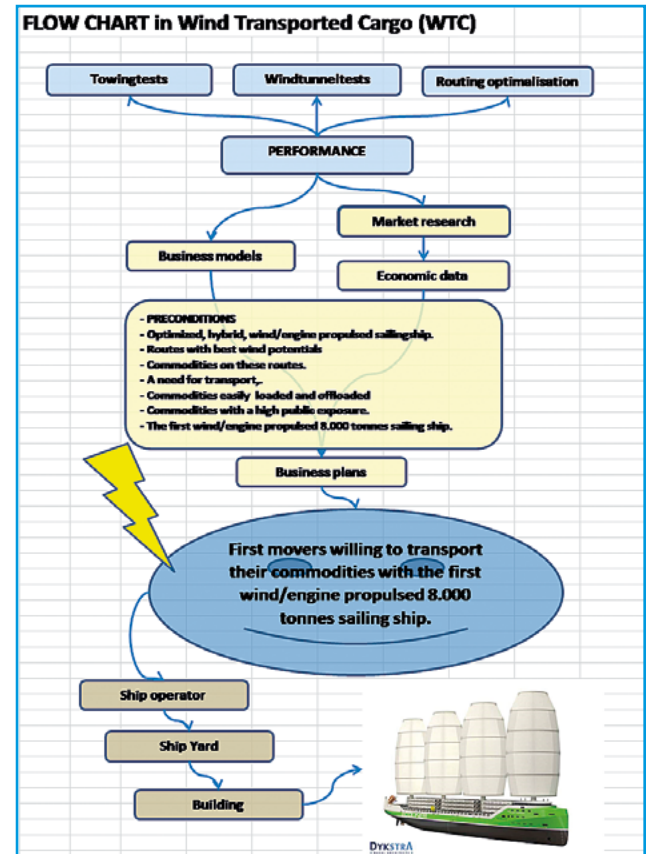
- About 50% reduction of fuel costs, SOx, Nox and CO2 emissions at present sailing speeds.
- Enable ship operators to meet present and new emission reduction rules.
- High sustainability profit for low costs: Sea transport is a neglected shackle in the whole production chain of a product and financially just a small part in the price of the final product.
- From the marketing perspective a high exposure; when for example UNILEVER contracts the first ship they will be first to market with a sailing flagship (130 meters long, square rigged, 60 meter high masts sailing ship) that triggers imagination of the end consumers.



Building alliances

Marketing process

SAIL analysed whom are the decision makers that can make a difference in WTC: Although investors and ship operators are important, without cargo there will be no business at all. We concluded that consumers are the most important decision makers in this perspective, but for them a choice for sustainable transported products is not possible yet. Therefore our first focus is now on producers and freight owners. The fourth of July in Harlingen during the Tall Ship Race we will invite CEO's, decision makers and explore with them wind transported cargo opportunities.



Partner projects in focus

E&E Consultants

A Roadmap for wind assisted transport to 2050

E&E Consultant develops a vision on the development of the SAIL transport until 2050, having in mind that its future will be driven by challenges of climate change adaptation and low carbon emissions. This vision will enrich the solutions to the main Transport and Accessibility challenges for the North Sea Region and help investment decisions on the pathways to a low carbon 2050 society. We gather elements of realistic economy and include them in an evolving vision: how is it working right now and how can various parameters (technical adaptations on ships, policies linked to climate change, infrastructure and territorial development influence this current scheme to allow the development of new models in the future?

Various activities have already been launched since the beginning of the project:

- Review of wind assisted propulsion techniques combined with a list of technological enablers that might make Wind Assisted Propulsion ships become competitive again under today's sector standards – published in Oct. 2013
- Research on the future of consumption in a carbon constrained world (summary available, 114 pages)
- Research activities on the sail transport niche models that currently exist (notably by establishing and keeping contact with the entrepreneurs that launched the projects) and on the parameters that would influence (positively or negatively) their development or the emergence of new models.
- The roadmap will lead to the elaboration of around 10 preliminary economic systems, among which a few ones will be selected, because of their actual economic viability, to be studied in more depth. The elaboration of the business model structure to evaluate the economic feasibility for these systems has already started and should be finished in 2014.



For more information please contact
[Katell Jaouannet](#)



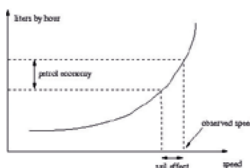
Wind propulsion in Fishing

Avel Vor Technologie

Development of the second generation of automated sails

For many reasons, classical sails (Bermudian sails) have a great potential in hybrid boats but only in the automatized sails. They don't need specialized additional crew and nobody has to manipulate any halyard nor sheet; they use cheap well-known knowledge and technology; they can be used on existing boats. It is now possible to add complementary sails and to manage them with the help of informatics, with a joystick and/or a computer program.

Moreover, when they are viewed as a complementary propulsive

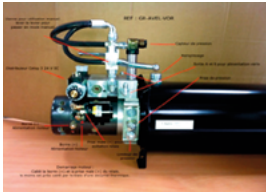


device, they can save energy and reduce pollution. As shown in the following figure, we can obtain the same boat speed with a lower effort of the motor

Our laboratory boat, the Grand Lague, has proven that an auxiliary automated sail system is possible. In its first version, the system was not very simple: it was working but not ergonomic



and needed some experience. Therefore a second version was necessary. In the first generation we have an unique hydraulic system for all the sails, with a certain complexity. Moreover, this system was not flexible nor optimal. We can see that the old hydraulic system was a plate of spaghetti!



We have removed it and defined a more simple system, one for each sail. The hydraulic devices and the electronic card are both new. A photo of the new group is given below, the right part is for the oil tank. This group controls a jack for the sheet of a self-tacking jib. Foto new group toevoegen

Now we have one joystick by sail, with one button for learning and two axes: hardening/easing off the sheet, winding/unwinding the sail. It is more simple and more ergonomic.

Two new sensors are added. With the first sensor, we know the winding degree of a sail and we can introduce it into the software (analogous of reefing). With the second, we can compute a correspondence between the sheet length and the real and desired angles for the sail. It is possible to

This system is to be installed on a fishing boat of Saint Malo (a gillnetter) and will be operational in Spring 2014. In parallel, AVT makes experiments with this system on its laboratory boat: three-dimensional polar diagram, optimal routing and better ergonomics. AVT is also working on soft wing sails and soft Flettner rotors for working boats

For more information please contact [Pierre Yves Glorennec](#).



Meetings in preparation

Conference in Harlingen

July 2014 - Fourth partner meeting During the Tall ship race in July 2014, a SAIL conference in Harlingen will be held. At present a number of people are busy preparing an interesting and attractive program. The conference focuses on three different target groups: students, cargo owners and partners of the SAIL project. The main goal of the students will be the work of students to the development of sustainable freight shipping. Sharing knowledge and information. For the cargo owners the goal is creating supply and demand sustainable sailing cargo trade. To inform about the possibilities of sustainable sailing freight. And for the partners of SAIL the conference is designed to exchange information of the project and discuss the state of affairs of the different workpackages. In the next few months will bring the project a step closer to its goal: 'Stimulating and facilitating toward a sustainable shipping sector with the focus on zero emission freight sailing'.

During the conference, the tall ship race will play a major role at the background. Bring the past back to the present. We are convinced each target group gets enough inspiration to make this meeting to a succes.





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| 1 - Province of Fryslân | 11 - Ameland Shipping |
| 3 - Plymouth University | 12 - NHL Northern University
of applied sciences |
| 4 - Jade Hochschule | 13 - MARIN |
| 5 - Helmholtz-Zentrum Geesthacht | 14 - E&E consultant |
| 6 - Aalborg University | 15 - Avel Vor Technology |
| 7 - North Sea Foundation | 16 - Port of Oostende |
| 8 - Fairtransport Trading and Shipping | 17 - ECO Council |
| 9 - Municipality of Harlingen | 18 - World Maritime University |
| 10 - C-Job | |

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European Union



The European Regional
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