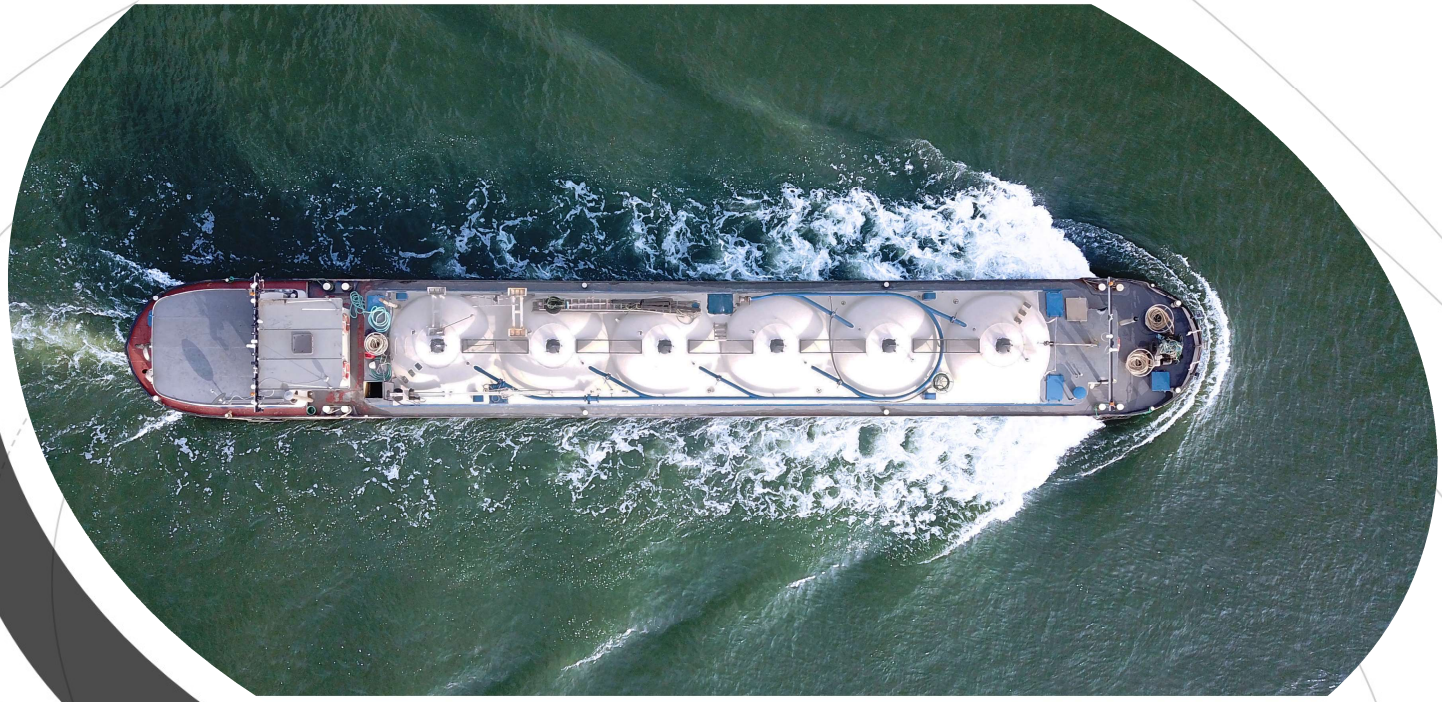

„Erik Pauwels, Gitra Shipping/De Grave-Antverpia: Semi-autonome Binnenschiffe – Erste Erfahrungen aus einem Piloten in Flandern“

Semi-autonomous inland vessels – why?

- De Grave-Antverpia and Gitra, both logistic service providers and barge owners/operators understand very well that their existence and future growth depends of the service level they can offer, now and in the future, to their different customers.
- As logistics in general becomes more prominent as a tool for our customers' sustainable development and differentiation into a competitive (global) market, we advise and assist our customers providing them win-win logistic solutions and helping in order to reduce their CO^2 impact.
- De Grave and Gitra are both convinced that on macro-economic level, demand for inland shipping, as eco friendly transport mode, will increase.
- As Stage V engines, (green) hydrogen, ammonia, LNG and electrification offer more options for propulsion of inland ships, the inland navigation mode can become the preferred transportation mode in order to achieve the targets of the EU commission to become climate-neutral in 2050 with an economy with net-zero greenhouse gas emissions. This objective is at the heart of the European Green Deal and in line with the EU's commitment to global climate action under the Paris Agreement.
- So far good news and positive challenges, only … building ships is the easy part, crewing these ships is a more difficult challenge.
- Statistics show us that shipowners and their crews are aging rapidly (In Belgium 60% is older than 50).
- The number of vessels, especially in the category of smaller vessels, able to operate on smaller canals and rivers, decreases year after year.
- This represents a real risk for the near future logistic needs of our clients.
- Given this reality, we see (semi-) autonome vessels as a solution, This trend also in road transportation however will require 5G, in inland water transport 4G is already sufficient and offers us a "prime mover" advantage.
- Reason why Geert van Overloop and I contacted Louis-Robert Cool of Seafar, as pioneer in this technology.

Who ?

- Searching for solutions, now and in the future, three Belgium based companies put their heads together;
  - De Grave Antverpia NV - https://degrave-antverpia.be/
  - Gitra bvba - https://gitrashipping.be/
  - Seafar NV - https://seafar.eu/

Gitra bvba

- Small family-owned inland shipping company, specialised in transport, conveying and storage of powdery materials such as cement, chalk, fly ashes, lime, quartz flour, … .
- Gitra is also seen as client-driven logistic solutions provider, especially in floating storage concepts.
- With a fleet of 35 inland navigation vessels, mostly silobarges, siloships, pushers and pumpboats with total capacity of +/- 15.000 tons, we give our best services to our clients such as LafargeHolcim, Heidelberg Zement, Etex Group, Sibelco, Omya and Carmeuse.
- Within this niche – oligopole-, Gitra tries to make the difference by O&O and innovation (Gitra holds several patents on the handling of powdery commodities) to give its clients the best possible service, now and in the future.

De Grave-Antverpia

- Belgian “legacy” company active in inland waterway transport of dry bulk goods for 70+ years, both as charterer and barge owner
- Formerly family-owned, under German shareholdership since 1997, current shareholders HGK Shipping Group (majority owner) and Rhenus Partnership GmbH.
- Every year the company transports about 10 million tons of goods (mainly dry bulk cargo). The clients are:
  - Belgian heavy industry
  - Industrial manufacturing
  - Large forwarding agencies
- De Grave-Antverpia has a **versatile fleet** of approximately 250.000 tons which consists of owned vessels and long term chartered vessels.

Seafar NV

- Seafar NV is an independent ship management company, offering services to operate unmanned and crew-reduced vessels for ship owners and shipping companies.
- Via their Control Center they manage and operate unmanned and crew-reduced vessels, with emphasis on effective and safe operations.
- Seafar is a front-runner in the development and operational integration of state of the art technologies for semi-autonomous and unmanned shipping.
- Seafar is a start-up with young enthousiast team of engineers, led by Louis-Robert Cool.

How ?

- Small barge (< 55m) only economically viable when crewed by 1 skipper/captain.
- EU-legislation makes this possible on several waterways, but limited in operational sailing time. (max. 10 hours/day – 50 hours/week)
- This is a partly solution for existing ships, for newbuild ships however this is insufficient while cost of newbuild in relation to rotation of the ship under geven conditions is not feasable. New small ships are no longer built since ’60’ies, initiatives like eg. Watertruck+ are promising but don’t offer practical solutions to given issues.
- Only a remote controlled ship, operated by a pool of captains working from a shore control center can make the ship rotate better through more operational hours.
- For maintenance and assistance on mooring, loading and unloading a qualification of sailor can do the job.
- This will motivate sailors to achieve title of captain and help the sector to increase the influx of new workers.
- In a following stage fully autonomously ships, will be final solution combined with a different logistic approach of inland shipping (combination of storagev facility as well as transportation mode). In this way the current solution is scalable with improving technology

The choosen ship

- Gamma – 280 tons self-unloading siloship – 38 x 5 x 2,5 (lxbxd) – CEMT class I
- https://nl.wikipedia.org/wiki/CEMT-klasse
- Gamma sails between Sibelco Dessel and Etex Kapelle op de Bos, using different kind of waterways;
  - Small canal CEMT class II
  - Albertcanal CEMT class VIb.
  - Port of Antwerp.
  - Maritime Scheldt (facing sea going vessels).
  - Maritime Canal to Brussels.
  - Tide bound (small) river like Nete and Rupel.

Siloship ‘Gamma’

Our experiences

- On ship level;
  - Very positive, captain on board has more time to do other tasks than navigating while captain in on shore control center handles navigation.
  - Technical challenge to modify existing older ships into remote controlled ship.
  - The Gamma does the “perfect” test-route, facing all kind of different waterways on a regular fixed route.
  - This is convenient while fully autonomous navigation will be done on technique of waypoints.
- From market;
  - Very positive reactions from authorities, however in the beginning careful and hesitant (except Vlaamse Waterweg as first initiator, thx and congratultions !)
  - Surprisingly positive reactions from market and especially from colleagues/owners of smaller barges!

  They consider this as promising evolution, gives them more time to do other things such as maintenance, book keeping, etc. improving work/life balance on board.

Challenges

- Authorities should adapt legislation to make autonomy economically viable so we can replace the qualification of captain by sailor while captain is no longer onboard.
- Extending possible sailing time when eg. two captains working 8 hours/day navigate the ship remote controlled from control center on shore.
- Financial help for this start-up, this is actually financed by private parties on R&D budget which is limited. Convinced of the large economical, environmental and social impact of this initiative, it deserves large(r) finacial aid from authorities.

Questions/remarks?

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