

## Sustainability in small scale dredging equipment



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# VERENIGING VAN WATERBOUWERS

Association of hydraulic engineers

## **independant branche organisation**

- Representation of all kinds of companies out of the hydraulic engineering business
- **88 members** : builders, consultants

## **Activities of the members:**

construction and maintenance of navigation channels, rivers, coastal defence, embankment strengthening, dredging, soil remediation, construction and maintenance of 'wet' infrastructure



# VERENIGING VAN WATERBOUWERS

Hydraulic engineering is, on one hand, part of **shipping (maritime industry)** and on the other hand part of **the building industry** .

Therefore the people working here have to deal with the differences in policy of clients like RWS, Waterboards, Harbour Authorities etc, differences in (inter)national sustainability targets versus inland legislation





### Introduction Royal Smals

- since 1885
- 3 departments; aggregates, rental, dredging
- 85 people
- turnover €25 mio
- 'Smals Naturally'; [www.smals.com](http://www.smals.com)
- Focus of Smals Dredging on inland small scale dredging in Western Europe





- big and all-round fleet of 20 cutter suction dredgers and deep win dredgers
- Projects in pits (aggregates) harbors, navigation channels, lakes (maintenance dredging)
- **7 dredgers full electric**
- Strategy and development of the vessels is of high importance!





## Electric Dredgers

### Advantages

- Proven technology
- Operations comparable to diesel driven dredgers (no extra education needed)
- No CO2 emissions, No noise (eco-friendly, environment friendly)





## Electric Dredgers

### Disadvantages

- Limitation in distance to power connection (cable max 700m')
- Because of the above reason only applicable for pits and lakes
- Limited availability of electricity network
- Solution: Generator set (with biodiesel..)







## Electric Dredgers, EZZ IJsselmeer

Existing diesel driven dredgers are converted to full electric dredgers  
Investment approximately €1,5 million !  
Required power





## Electric Dredgers

Operation not always more expensive.

Hardly maintenance needing

Depending on project site ; only 1 skipper needed (instead of 2)

Higher expenditures and divestments due to higher investments.





## Electric infrastructure

### Infrastructure

- Costs of installing cables(10kV) still very high (>> €100 000,-)
- Delivery time > 1 year
- Paperwork due to obligatory permits and licences.





## Diesel driven dredgers

- Provided with Blue Diesel B30
- 30% less CO2 emission
- Blue Diesel
- Blue diesel is very well applicable on land; - hardly on water
- Not yet applicable abroad.





## Search for alternative techniques

- Current batteries too weak for today's needed power
- According to Smals Dredging 2021 calculations: €2 million investment in batteries needed to provide one small CSD of energy fully autonomously
- Charging / changing batteries is a complicated and time-consuming activity





## Search for alternative techniques

- Fuel-efficient diesel motors with sufficient power (stage V) not yet available
- Combination motors, compatible to development of hydrogen



## Steps forward in sustainability by our government



Recent tenders by Dutch Authorities:

- Rijkswaterstaat, Spijk Harbour: demand zero emission but that is depending on private electricity connection.
- Drainage Board Rijnland: Langenaarse Plassen: demand zero emission  
Consequence: construction electricity cable 100% in contract price and delivery time of the project far too late
- Geertjesgolf: Initiative together with 5 companies  
Very long preparation time but because of the big amount of aggregates in the project scope: 100% electric dredging is done!





## Application of Sustainability in the short run

Yes, that is doable

- Preparation of the current infrastructure on deliverance of electricity
- Use of alternative fuels







## Application of Sustainability in the long run

- United common policy by authorities give some insurance to the market to do sustainable investments
- (Financial) appreciation of sustainable solutions
- The speed of sustainabilisation has to be in line with the technical developments
- Substitution of equipment can happen fast, taking into account the capacity of the suppliers and the depreciation periods.



thank you for your attention!



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