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# ECOSPEED

SHIP HULL PERFORMANCE TECHNOLOGY

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Osnabrück, March 11, 2011

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## Background



**Hydrex:**  
underwater repair and maintenance

**Subsea Industries:**  
cleaning equipment

**Ecospeed:**  
hull coating



## Who are we?

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We are Hydrex, a leading international diving company. We serve about 2000 vessels per year for hull cleaning and/or propeller polishing and underwater repairs.

### *BUT*

- Coatings are not developed for regular maintenance (damage)
- Once you start cleaning, you continue cleaning
- Toxic elements are leached in the water
- More and more ports don't allow underwater cleaning
- The drydock interval becomes longer, but coatings become less toxic

Why not using an extremely durable hull coating and maintain it under water, instead of repainting with toxic antifoulings every docking?

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## Our history in a nut shell

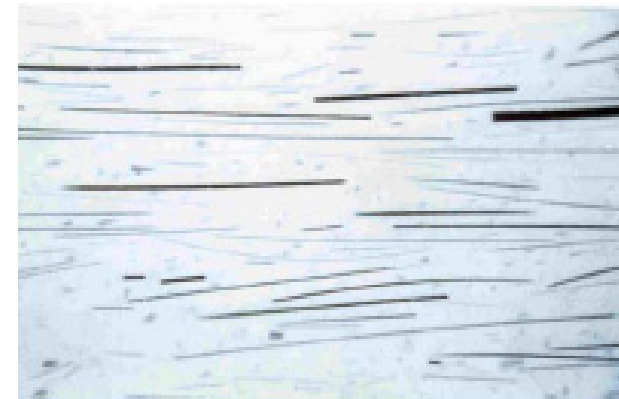
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- 1970's: - mainly hull cleanings
    - development of effective cleaning machines
    - small repairs
  
  - 1990's: - Port of Rotterdam finds enormous amounts of harmful tributyl tin (TBT) in harbour
    - Hydrex agrees with the need for less toxic solutions
    - research for non-toxic alternatives
    - development of non-toxic hard coating Ecospeed
  
  - 2004: - first vessel coated with Ecospeed
  
  - 2008: - TBT coatings are completely banned
    - Copper is less toxic, so higher amounts are used and ships lose performance
  
  - 2009: - Rotterdam allows underwater cleanings on Ecospeed
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## Ecospeed: a unique technology

Ecospeed is a combination of an extremely tough, non-toxic hull coating with underwater cleanings.

- Vinylester with 30% glass
- Hard and flexible → extremely tough
- No water penetration (Norsok M-501)
- No fouling penetration (no coating damage)
- 25 years without repaints
- 10 year warranty
  - Corrosion protection
  - Good condition of the coating (no cracks, no detachment, no peeling,...)





## No repaints needed in dock



Conventional paint system after 18 months



Ecospeed after 24 months

## No repaints needed in dock



## Application

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- Grit-blasted steel: SA 2,5 – 75  $\mu\text{m}$
- Dry Film Thickness (DFT): 2 x 500 $\mu\text{m}$  (1,6-1,8 l/sqm)
- Overcoat time: 3-6h min. (fast application)  
no max. (flexible paint schedule)
- Airless spray, standard pump
- Price: Max. 23 euro/liter (*37 euro/sqm*)

→ Easy application and easy repair.

Ecospeed is a workable product, developed with common sense.

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## From a technical point of view: only plusses

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- **Application:**
    - Easy
    - Once in a lifetime
    - Eventual higher cost easily regained by less maintenance in the future
    - Low VOC-content (volatile organic compounds)
  
  - **Winter storage:**
    - HP washing
    - Few touch-ups (average for commercial vessels: 1%)
    - No blasting/grinding
    - No repainting
    - Coating does not deteriorate on shore (due to dry environment or UV)
    - Extremely strong (no damage when handling boats)
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# Ice

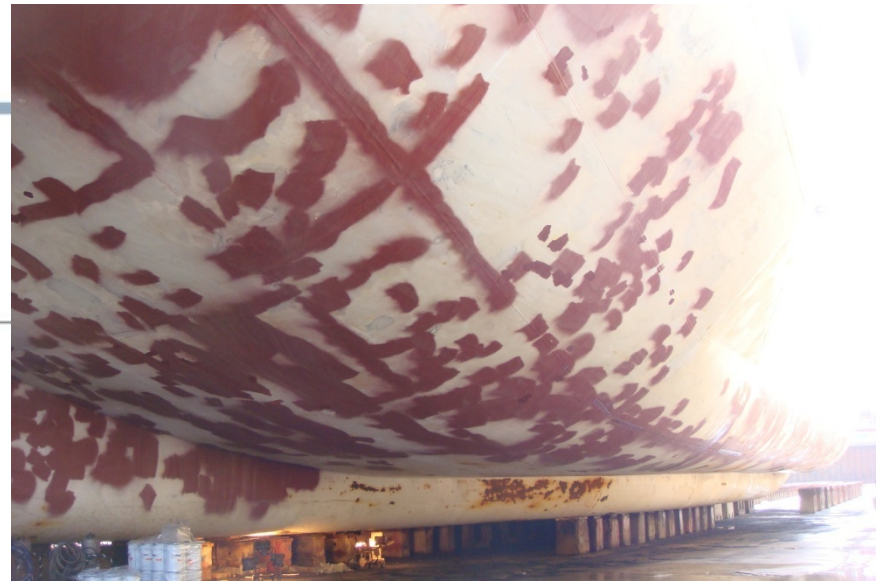


Icebreaker paint



Ecospeed





Icebreaker paint ↑  
Ecospeed ↓





## Damage remains local, easy repair



## Minuses of non-toxic coatings for yachts and sport boats

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Yachts require smooth mirror-like finish; Ecospeed is a tool and cannot be used on top of fillers.

Need of divers (once):

- To get Ecospeed's shiny, smooth orange peel finish, your hull needs to be 'conditioned' (polished). Conditioning cannot be done on the dry.
- Pros of conditioning:
  - Conditioned Ecospeed has 2% less drag than conventional AF
  - HP washing is easier on conditioned than on non-conditioned Ecospeed
- Cons of conditioning:
  - Cost: ab. 3000 euro/day, mobilization exclusive.

Because of the relatively high cost of diving works on small(er) vessels, you **need to have the facilities to maintain your hull regularly and cost-effectively** to enjoy Ecospeed.

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## Keeping speed up = keeping the hull clean

Interval depends on trading pattern:

- water temperature
- speed
- sailing hours
- port stays
- water salinity
- ...



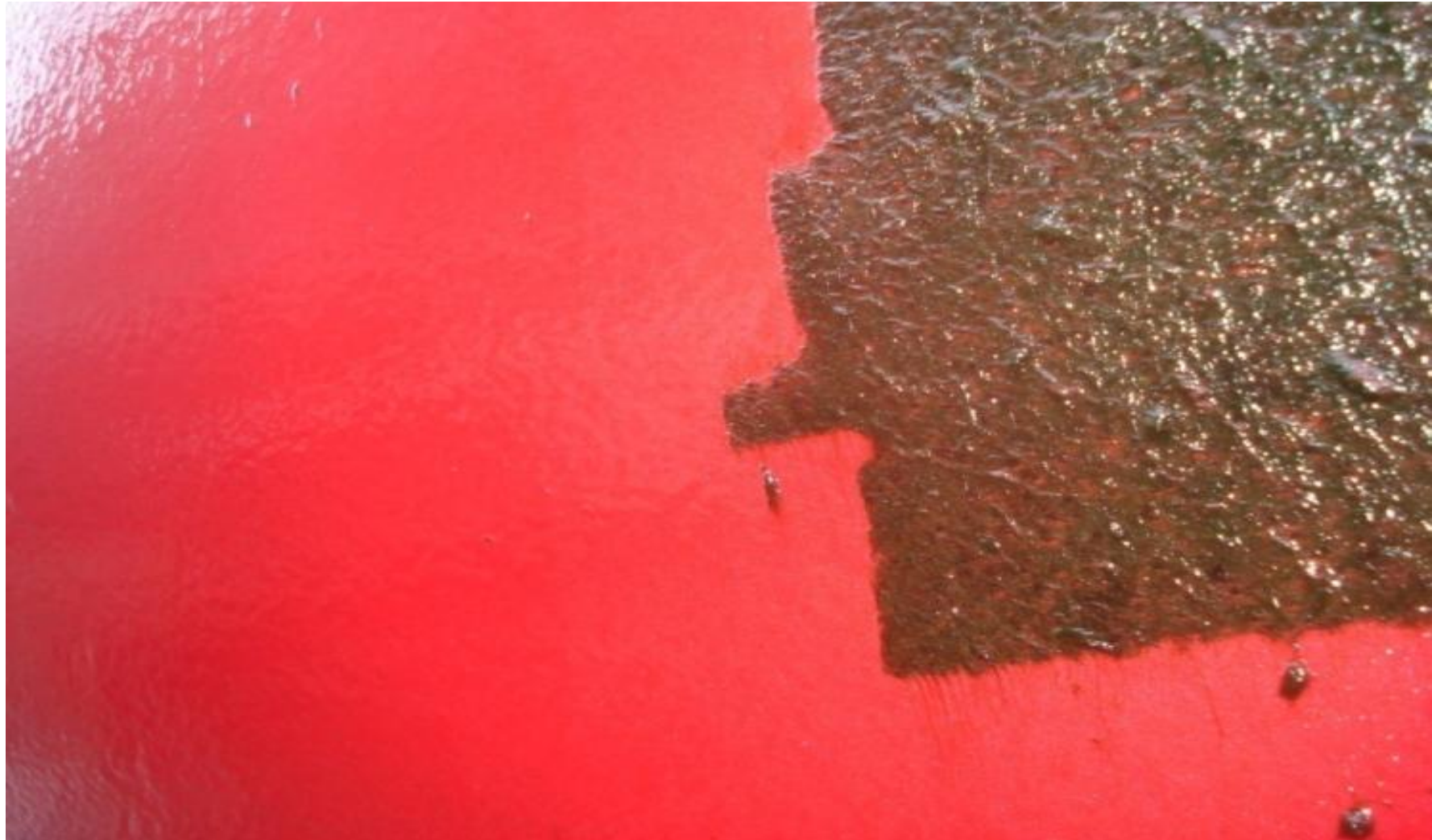
Commercial vessels: cleaning by divers with fast machines

Sport boats:

- small equipment is available, but high pressure washing on shore is a more economic alternative
- we advise HP equipment with rotating head and 240-320 bar.
- In Summer, several cleanings may be required. Make sure your hull is clean before any (long) trip or competition!

**Keeping speed up = keeping the hull clean**

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## Ecospeed: a green technology

100 % non-toxic

- TBT free
- Copper free
- Biocide free

Low VOC

Best Available Technology to minimize  
the risk of spreading NIS

- All in-water operations are environmentally safe
- ▶ Cleaning allowance for Ecospeed in more  
and more locations

Regular, preventive cleaning = lower consumption  
= less emissions



## Conclusion: is Ecospeed a workable alternative?

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From a technical point of view: sure.

Easy, one-time application, no repainting, excellent corrosion/osmosis protection, extreme strength,...

From an environment-focused point of view: absolutely.

From a user's point of view: yes, **if the hull is kept clean** in a cost-effective way for better speed and lower consumption.

Hard, non-toxic coatings are the coatings of the future for commercial shipping. If we want to keep our oceans, ports, marinas, lakes and rivers clean, they sure are a valuable alternative for *all* vessels on our planet.

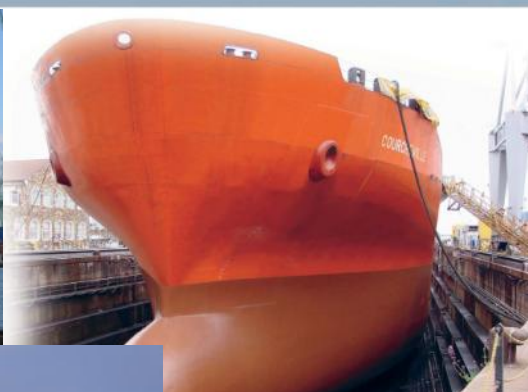
If *any* coating is developed for regular cleaning without being damaged, it is Ecospeed.

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# ECOSPEED®

SHIP HULL PERFORMANCE TECHNOLOGY





## Contact

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For more information or a tailor-made offer, please contact:

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For more information about our research for ship hull performance, please visit:

[www.shiphullperformance.org](http://www.shiphullperformance.org)

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