GREEN STRADDLE CARRIERS

PSA ANTWERP

Scope

Development and testing of **world's first hydrogen-diesel dual fuel straddle carriers**, including retrofit technology and operational validation under real port conditions.

Goal

Validate technical feasibility of hydrogen integration in heavy-duty port equipment while providing performance data for future fleet deployment decisions.

Benefits

- **Environmental**: 26% diesel displacement achieved (first generation)
- **Innovation**: World's first dual fuel straddle carrier operation (March 2023)
- **Technical**: Successful integration into regular terminal operations
- **Strategic**: Advanced second generation targeting much higher hydrogen displacement

Results

- ✅ Historic achievement: World's first hydrogen-diesel dual fuel straddle carrier
- ✅ 6-month operational testing with 26% average hydrogen displacement
- ✅ Successful safety certification and stakeholder acceptance
- ✅ Second generation machine with hybrid system under development

DISCOVER MORE

Upscaling

- **Technical**: Technology validated and ready for broader deployment
- **Economic**: Requires market maturity, economies of scale, and supportive policy
- **Strategic**: Large-scale deployment needs greater market development
- **Transfer**: Demonstration provides valuable insights for fleet decarbonization

Lessons Learned

- Retrofitting without OEM support **requires extensive engineering effort**
- **OEM collaboration essential** for cost-effective deployment and scaling
- Hydrogen infrastructure permitting **requires extended timelines** (10 vs 6 months)
- **Current hydrogen costs** 20x higher than diesel in demonstration settings

PIONEERS

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