

# Powering Compliance and Performance at Sea

Hug Engineering's advanced aftertreatment systems help U.S. workboat fleets stay compliant, reliable, and cost-efficient - ready for IMO Tier III, EPA Tier 4, and CARB At Berth requirements.

***hugengineering.***  
We clean emissions





# The Challenge

## Evolving Regulations, Mounting Pressure

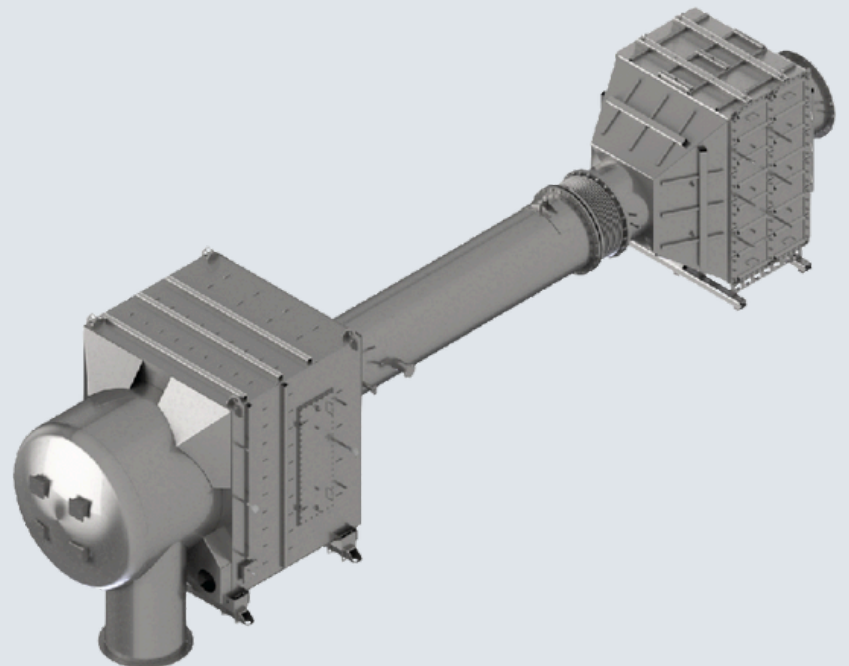
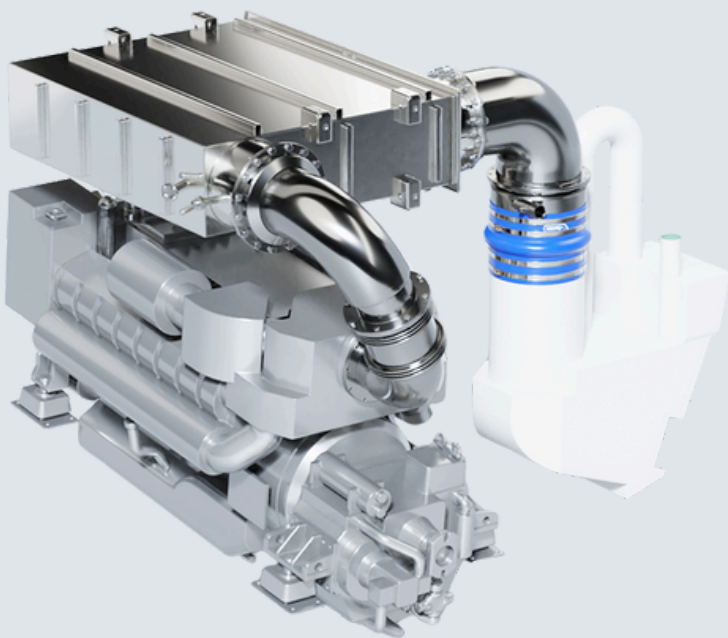
- **EPA Tier 4** requirements for new engines
- **IMO Tier III** for vessels entering ECA zones
- **CARB At Berth** driving deep NOx & PM reductions
- **Fuel penalties** caused by high backpressure
- **Tight engine rooms** complicate retrofits
- **Cost & downtime** impacting vessel profitability



# The Hug Solution

## Turning Compliance Into Operational Advantage

- **Compact modular design** - fits anywhere, installs fast.
- **IMO III, EPA 4, CARB At Berth capable** - certified with most engine brands.
- **Minimizes fuel consumption** due to low-backpressure.
- **Switchable SCR mode** - saves urea outside ECAs.
- **Future-fuel ready** - methanol, LNG, hydrogen, ammonia.
- **Certified NOx monitoring** - no yearly checks needed.







# Benefits for Shipyards

- **Classification approved** - ABS, DNV, BV, Lloyd's, RINA & more.
- **Cost-efficient** - use Tier II engines + Hug system instead of costly Tier III.
- **Easy installation** - compact, modular systems fit fast and clean.
- **Full flexibility** - keep existing engine-room designs, use engines in stock.
- **Custom layouts** - full documentation for seamless integration.
- **1.561 engines equipped** - different engine manufacturers.



# Benefits for Ship Owners

- **Proven reliability** - built for nonstop marine operation, reducing OPEX.
- **Low lifecycle cost** - catalysts last up to 20.000 h, minimal maintenance.
- **Retrofit-ready** - upgrade IMO I / II to IMO III possible by adding Hug SCR.
- **Modular system** - add DPF, silencer, or spark arrestor as needed.
- **Certified NOx monitoring** - no annual third-party checks or downtime.







# Built for Serviceability

## Fewer Stops. More Time at Sea.

- **Up to 20.000 h** catalyst lifespan ( $\approx$  4 years continuous operations).
- **Extended maintenance intervals** for dosing & air supply.
- **Hug Connect** - remote monitoring and performance guarantee.
- **Fast, accessible layout.**
- **Global service network** for rapid response.



# CARB & Future Fuels

## Ready for Tomorrow's Requirements

- **CARB At Berth-capable** - unprecedented NOx & PM reductions
- Hug already delivers SCRs for **methanol, LNG, hydrogen**.
- Active development for **ammonia-fueled engines**.
- **Trusted by OEMs** adapting to next-generation propulsion.
- **Recognized authority** – 5 technical papers featured at **CIMAC 2025**.







# Proven Worldwide Partnerships Built on Trust



- Certified by **DNV, Bureau Veritas, ABS, Lloyd's, RINA, and others.**
- **Decades of proven reliability** - continuous growth and loyal customers.
- **Partner, not supplier:** 70+ R&D experts creating custom-fit systems.