

Marine Catalysts

Marine Emissions Under Control



Marine SCR Catalyst

Product Overview

Product Name	Marine SCR Catalyst (IMO Tier III Compliant)
Application	Converts NOx into nitrogen (N ₂) and water (H ₂ O) using ammonia (NH ₃) as a reducing agent
Active Composition	V ₂ O ₅ -WO ₃ /TiO ₂ -based
Key Reactions	$4NO + 4NH_3 + O_2 \rightarrow 4N_2 + 6H_2O$ $NO + NO_2 + 2NH_3 \rightarrow 2N_2 + 3H_2O$



Product Line-up

Model	KE-5590M/4690M/4700M	KE-6180M	KE-5610M	HE-1600
Dimension	150 × 150 × H (H=50~500mm)	150 × 150 × H (H=50~500mm)	150 × 150 × H (H=50~500mm)	460 × 460 × H (H=200~500mm)
Active Material	V ₂ O ₅ /TiO ₂	Fe-Zeolite	Cu-Zeolite	V ₂ O ₅ , Cu-zeolite
Operating Temp.	250~500°C	300~600°C	250~500°C	250~500°C
CPSI	26~200	26~200	26~200	26~200
SV	~ 30,000(hr ⁻¹)	~ 30,000(hr ⁻¹)	~ 30,000(hr ⁻¹)	~ 30,000(hr ⁻¹)
Surface Area(m ² /m ³)	660~1,823	660~1,823	660~1,823	660~1,823

Key Features



Selective Catalytic Reduction

Efficient conversion of NOx to N₂ and H₂O



Modular Catalyst Design

Optimized design for efficient space utilization



Nano-Structured TiO₂

Excellent resistance to sulfur poisoning



Minimized NH₃ Slip

Reduced secondary emissions (e.g., N₂O)



16,000+ Hours Durability

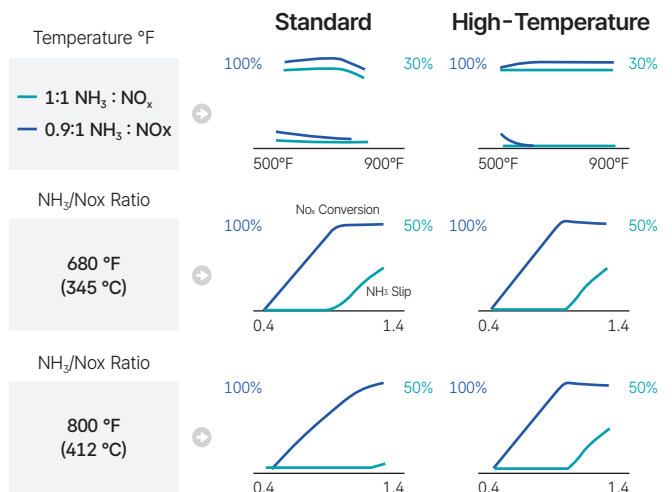
Ensures long-term operational stability



Over 90% NOx Removal

Adaptable to various operating conditions

Performance Data



Applications



SCR Systems
for LNG-Fueled Vessels



DeNOx Systems
for Large Diesel Engines



Shipbuilding
& Retrofit Market

Marine MOC Catalyst

Product Overview

Product Name	Methane Oxidation Catalyst (MOC)
Application	Converts methane (CH ₄) in LNG exhaust into CO ₂ and H ₂ O to reduce greenhouse gas emissions
Main Reaction	CH ₄ + 2O ₂ → CO ₂ + 2H ₂ O ΔH = -803 kJ/mol (exothermic)
Operating Temperature	Low temperature: 400-600°C High temperature: 450-800°C
Conversion Efficiency	Over 90% (under standard conditions)



Product Line-up

Category	Low-Temperature Type	High-Temperature Type
Dimension	150 × 150 × H (H=50-500mm)	150 × 150 × H (H=50-500mm)
Active Material	Pt/Pd	Pt/Pd
Operating Temperature	400°C ~ 600°C	550°C ~ 800°C
CPSI	46 ~ 400	46 ~ 400
SV	~ 40,000(hr ⁻¹)	~ 60,000(hr ⁻¹)
Recommended Applications	LNG-fueled vessels, hydrogen engines	High-temperature exhaust, large engines

Key Features



Nano-Dispersed Precious Metals

Enhanced low-temperature activity and durability with Pt/Pd nano dispersion



Over 90% Methane Removal Efficiency

Achieves over 90% methane (CH₄) conversion



Corrosion & Poison Resistance

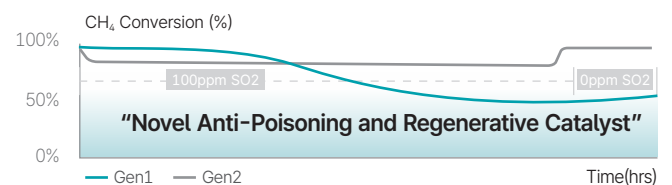
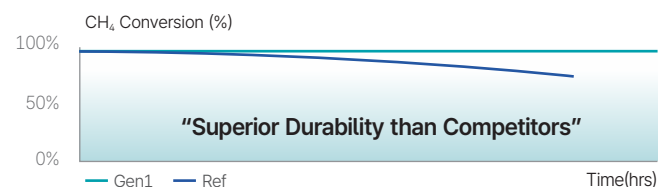
Resistant to harsh conditions and catalyst poisoning



High Thermal Stability & Low-Temp. Activity

Maintains performance across a wide temperature range

Performance Data



Applications



LNG-Fueled Vessels & Power Generation Systems



Methane Abatement for Newbuild & Retrofit Vessels

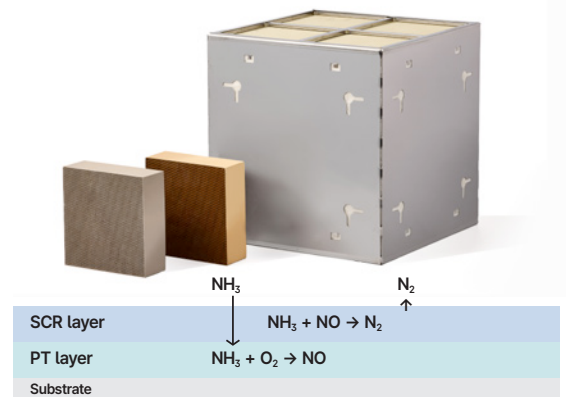


RCO Systems for Methane Removal

AOC Catalyst

Product Overview


Product Name	AOC Catalyst (Marine De-NH ₃ Oxidation Catalyst)
Application	Removal of NH ₃ slip downstream of marine SCR systems
Features	Enables complete DeNOx performance of SCR systems, suppresses catalyst deactivation and corrosion, and minimizes secondary emissions such as N ₂ O
Operating Temperature	Single layer: 250–400°C / Dual layer: 280–450°C
NH ₃ Removal Efficiency	≥ 99%




Product Line-up

Model	HE-1030	HE-1370	HE-
Dimensions	150 × 150 × H (H=50~500mm)	150 × 150 × H (H=50~500mm)	150 × 150 × H (H=50~500mm)
Active Material	Pt-Zeolite	V ₂ O ₅ /TiO ₂ + Pt-Zeolite	Pt-V ₂ O ₅ /TiO ₂
Operating Temp.	350°C ~ 500°C	300°C ~ 500°C	300°C ~ 500°C
CPSI	26 ~ 200	26 ~ 200	26 ~ 200
Surface Area	660 ~ 1,823	660 ~ 1,823	660 ~ 1,823
Recommended Application	Downstream of high-temp. SCR	Integrated with standard SCR	Wide operating temp. range


Key Features




Up to 99% NH₃ Slip Removal
Industry-leading performance



Minimized NO₂/N₂O Formation
Designed to suppress secondary emissions during NH₃ oxidation

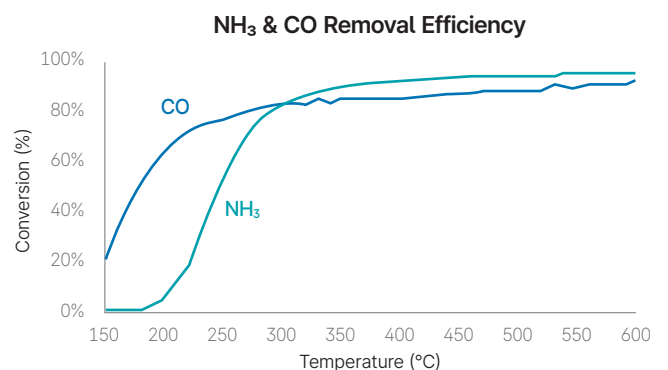


Integrated SCR Module Design
Ensures easy installation and reduced maintenance requirements

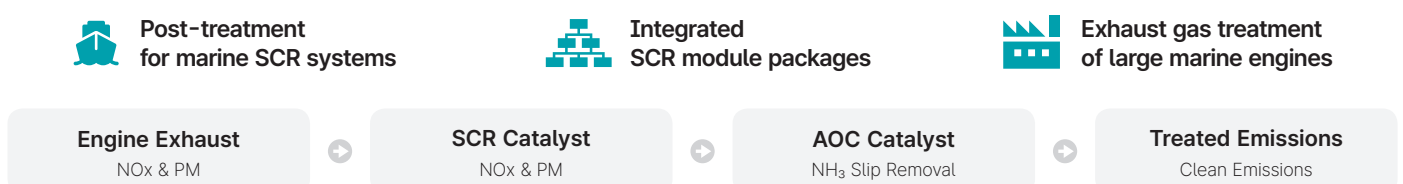


Long-Term Durability
Less than 5% performance degradation after 16,000+ hours of operation

Performance Data



Applications



Company Overview

We possess advanced SCR catalyst technology for compliance with IMO Tier III NOx emission regulations. Our product portfolio supports marine diesel engines and eco-friendly engines, offering a wide range of solutions. Our proprietary SCR catalyst technology is custom-designed based on operating temperature and process conditions, delivering highly efficient DeNOx solutions tailored to each application.

Core Capabilities



**ISO 9001 /
ISO 14001**

International quality certification



**40+ Years of
Catalyst Technology**

Extensive experience



**Annual
Production Capacity**

100,000 Blocks



**500+ Supply
References**

Proven track record

Resource Circularity Services



Fresh Catalyst



Spent Catalyst



Precious Metal Recovery



Regenerated Catalyst



Spent catalyst management services provided



Dedicated logistics system for marine catalysts

Customer Services

01 | **Catalyst
Replacement**

02 | **Catalyst
Regeneration**

03 | **Customized
Catalyst Design**

04 | **Process & Equipment
Consulting**

05 | **Catalyst Analysis
& Evaluation**

06 | **T/S & A/S**

Engine Maker Collaboration & Vessel-Specific Solutions

Engine Makers

MAN

Wärtsilä

HIMSEN



IMO Tier II certified partner



Extensive engine matching references

Vessel-Specific Solutions

LNG Carriers

Container Ships

Cruise Ships



Optimized catalyst configurations considering space, output, and fuel constraints

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