



IGAWARA CORPORATION PTE LTD

井河原私人有限公司

CATALYST MATERIALS DIVISION



QUALITY POLICY

We deliver bias-free customer satisfaction
through the effective implementation of
ISO 9001 and **AS9120**
Compliant quality systems

We shall:



Never compromise and put profit above the quality management system.



Conduct stringent checks on the reliability of customers and vendors.



Only engage in businesses where long term relations with customers and vendors are sustainable for the mutual benefit of all parties.



Adhere to customer requirements and specifications to achieve total customer satisfaction.

Service with a Difference

- Delivering service that consistently exceeds expectations
- Providing comprehensive, end-to-end integrated solutions
- Ensuring reliable performance for critical operations
- Driven by expert engineering and strict quality control
- Manufactured in compliance with global ISO standards
- One trusted partner from concept to completion
- Proven track record across international projects
- Extensive experience in global trade and logistics
- Delivering value through cost efficiency and reliability
- Rapid response with solutions tailored to your needs

Quality Control

- Chemical Composition
- XRD Crystallinity
- BET Surface Area
- Pore Volume & Size
- Particle Size Distribution
- Moisture Content Analysis
- Bulk Density Testing
- Si/Al Ratio Control
- Crystal Size Consistency
- Batch-to-Batch Consistency

THE MATERIAL BEHIND THE CATALYST

CATALYST PERFORMANCE STARTS WITH THE RIGHT MATERIAL

Catalysts enable chemical reactions to occur faster, more selectively and with lower energy consumption, supporting critical applications across refining, petrochemicals, environmental protection and specialty chemicals.

But the performance of a finished catalyst does not start with the catalyst itself.

It starts with the quality, structure and consistency of its key ingredients.

From zeolites and molecular sieves to catalyst carriers, functional additives and specialty materials, the properties of these building blocks directly influence catalyst activity, selectivity, stability and operating life.

A DIFFERENT APPROACH

Many countries already have established catalyst manufacturers with their own formulations, technologies and production capabilities.

We do not compete with them.

Instead, we help catalyst manufacturers and industrial customers access advanced zeolites, catalyst ingredients and functional materials that can be incorporated into their existing catalyst systems.

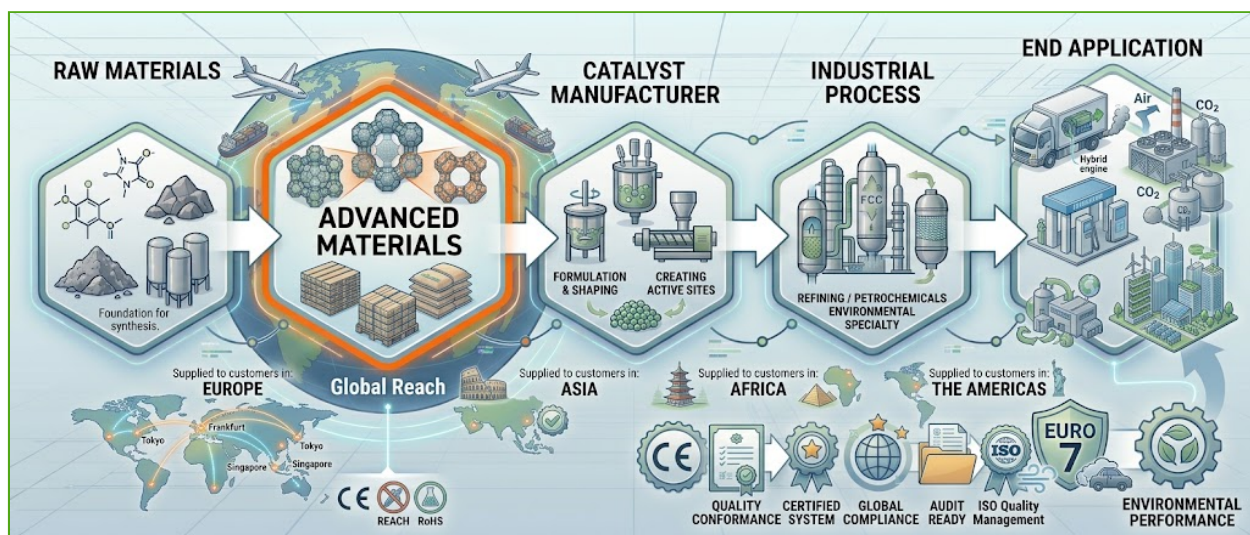
Our role is to connect material technology with catalyst performance — helping customers identify the right material, quality and supply source for their specific application.

OUR POSITION

WE DON'T COMPETE WITH CATALYST MANUFACTURERS.

WE SUPPLY THE MATERIALS BEHIND THEIR PERFORMANCE.

From material sourcing and technical matching to international supply, we support customers with a reliable bridge between advanced material technologies and industrial catalyst applications.



GLOBAL QUALITY

PROVEN IN GLOBAL SUPPLY CHAINS

QUALITY THAT MEETS GLOBAL REQUIREMENTS

Advanced materials within our sourcing network have been qualified for demanding catalyst and chemical applications, with supply experience connected to leading global chemical companies.

These materials have reached customers and markets across:

EUROPE · ASIA · AFRICA · THE AMERICAS

Our focus is not simply on sourcing materials, but on identifying qualified technologies, verifying supply capabilities and connecting reliable materials with international application requirements.

VERIFIED BY GLOBAL LEADERS

Technology within our sourcing network has been qualified for demanding international catalyst applications, including supply relationships associated with BASF, one of the world's leading chemical companies.

Selected materials are supplied into European, Asian and African markets, supporting applications such as:

Mobile Source DeNOx · SCR Systems · Power Generation · Industrial Exhaust Treatment

These applications require high levels of material consistency, performance and supply reliability.

BEYOND QUALIFICATION

PERFORMANCE

Materials aligned with stringent international emission and environmental requirements.

CONSISTENCY

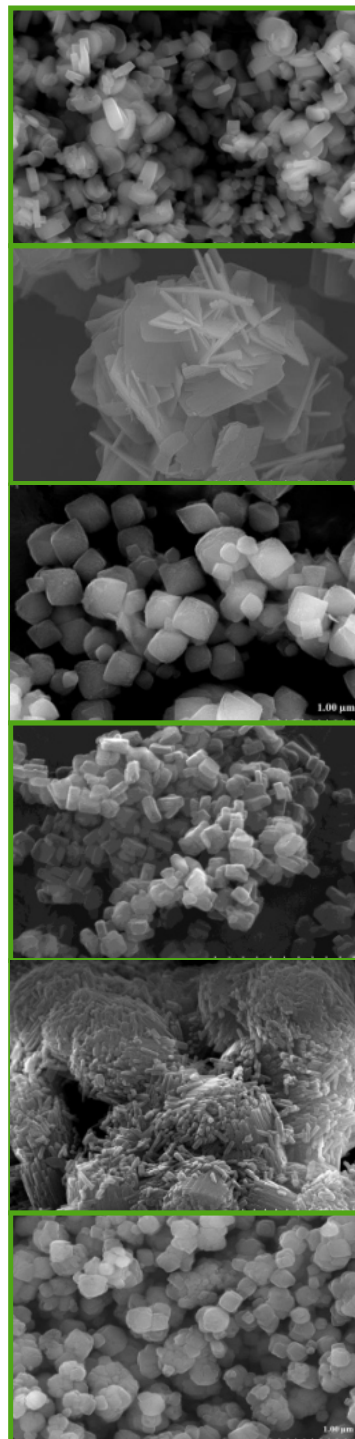
Materials produced with controlled processes and consistent quality management systems.

COMPLIANCE

Materials supported by key international regulatory and environmental requirements.

INNOVATION

Materials developed for demanding applications and evolving industrial requirements.



TECHNOLOGY STRENGTH

WHERE CHINESE TECHNOLOGY COMPETES GLOBALLY

China's catalyst and chemical technology base has evolved significantly — from large-scale manufacturing toward advanced materials, process technologies and integrated industrial know-how.

In selected catalyst and chemical segments, Chinese technologies are now increasingly competitive in performance, manufacturing scale and project economics.

- REFINING

FCC · HYDROPROCESSING · ISOMERIZATION · AROMATIZATION · HYDROGEN PRODUCTION

Advanced catalyst materials and process technologies supporting increasingly complex feedstocks and higher-value products.

KEY AREAS: FCC Catalysts · Refining Additives · Hydrocracking · Isomerization (Butene/Xylene) · Aromatization (BTX) · Hydrodewaxing · Hydrogen Production

- ENVIRONMENTAL

DeNO_x · SCR · VOC CONTROL · EMISSION REDUCTION

Strong Chinese capabilities in emission-control materials and environmental catalyst technologies for mobile and stationary applications.

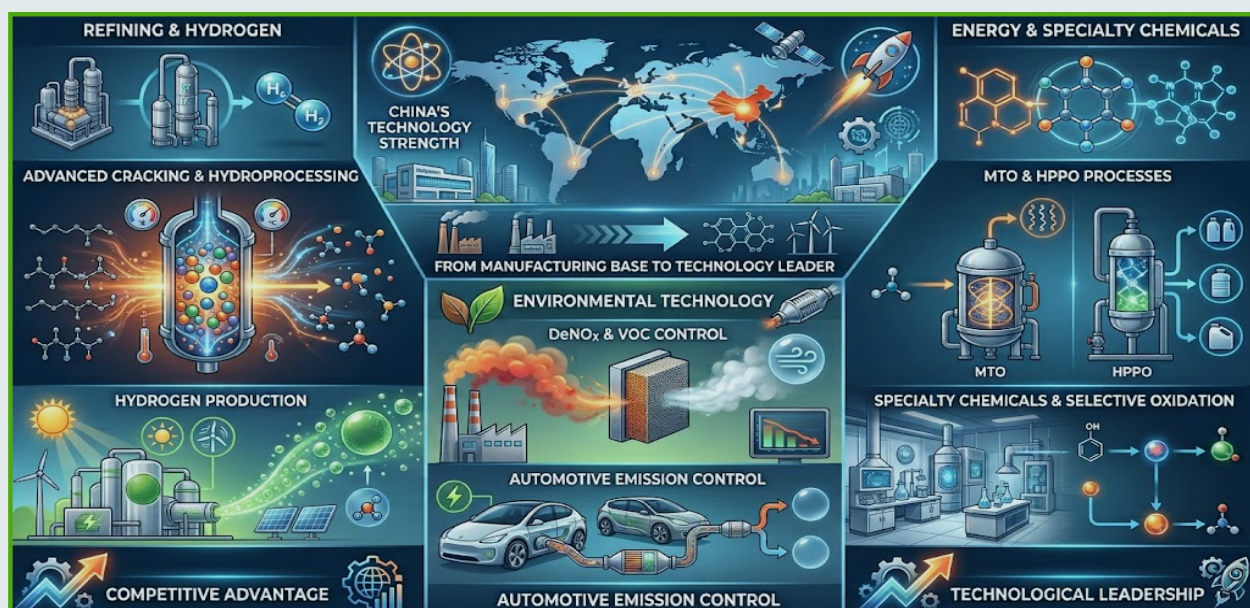
KEY AREAS: SCR Materials · DeNO_x Catalysts · Automotive Emission Control · VOC Treatment · Adsorption & Separation

- ENERGY, CHEMICALS & SPECIALTY PROCESSES

MTO · HPPO · OXIDATION · OXIME · PYRIDINE · FINE CHEMICALS · CATALYST ENABLERS

Growing technology capabilities across catalytic conversion, selective oxidation, specialty chemical synthesis, and catalyst support & raw material solutions.

KEY AREAS: MTO · HPPO · Formaldehyde · Hydrogen Peroxide · Oximation (Cyclohexanone/Butanone Oxime) · Pyridine & Derivatives (2,2'-Bipyridine, 2-Chloropyridine N-oxide) · Epichlorohydrin · Glyphosate Intermediate · Dehydrogenation/Hydration · Aromatization · Catalyst Supports (Alumina/Silica) · Zeolite Synthesis Templates & Silicon Sources



ADVANCED ZEOLITE MATERIALS

ENGINEERED AT THE MOLECULAR LEVEL

Zeolites are fundamental materials in modern catalysis, adsorption and molecular separation.

Performance depends not only on chemical composition, but also on crystal structure, pore architecture, Si/Al ratio, particle size, acidity and surface properties.

MATERIAL ENGINEERING CAPABILITIES

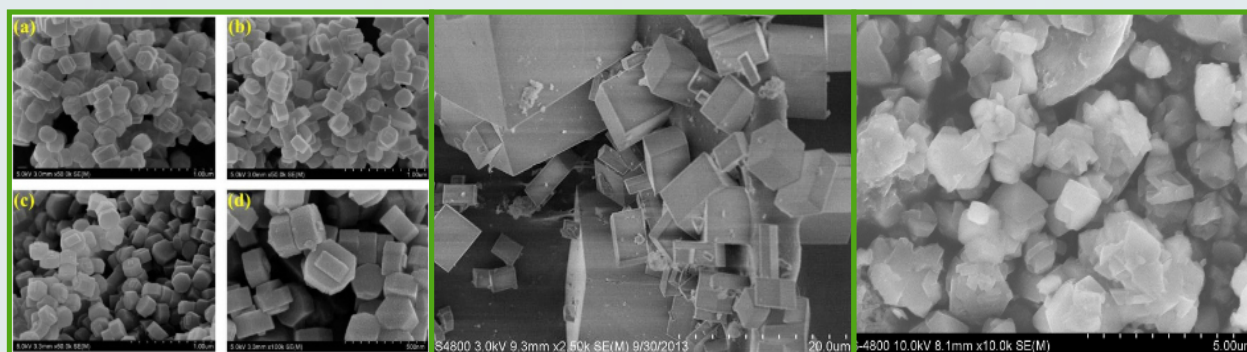
Capability	Value
Pore Structure	Controlled molecular channels and accessibility
Si/Al Ratio	Tailored acidity and hydrothermal stability
Crystal Size	Controlled morphology for catalytic performance
Surface Modification	Functional properties for specific applications
Custom Formulation	Materials adapted to defined application requirements

COMPREHENSIVE ZEOLITE PORTFOLIO

Material	Structure	Si/Al ₂ Ratio	Surface Area	Key Applications
USY	FAU	12–100	>500 m ² /g	FCC, Residue cracking, Desulfurization
Beta	BEA	11–300	>400 m ² /g	Hydrocracking, Alkylation
ZSM-5	MFI	20–1000	>200 m ² /g	Aromatization, Isomerization, MTG, DME
SAPO-34	CHA	Si:P:Al = 0.2:1:1	>500 m ² /g	MTO (High selectivity)
TS-1	MFI	25–55 (Si/Ti)	>350 m ² /g	HPPO, Ammoximation
ZSM-35	FER	10–100	>200 m ² /g	Butene isomerization, DME carbonylation, SCR
Silicalite-1	MFI	>2000 (SiO ₂ only)	>500 m ² /g	Hydrophobic membranes, Inert support
ZSM-22	TON	60–100	>200 m ² /g	Hydroisomerization, Hydrodewaxing, Catalytic cracking
ZSM-23	MTT	40–80	>550 m ² /g	Hydroisomerization, Hydrodewaxing

TAILORED PROPERTIES:

- Cation forms: Na⁺ / NH₄⁺ / H⁺ available.
- Crystal size control down to 200nm.
- High hydrothermal stability with tailored acidity.



Molecular Precision. Engineered Materials. Controlled Structure. Proven Industrial Performance.

MATERIAL PLATFORMS

ADVANCED MATERIALS FOR CRITICAL INDUSTRIAL PROCESSES

From zeolite chemistry and catalyst formulations to engineered catalyst supports and process materials, CCH provides advanced material solutions for demanding industrial applications.

- 01 — DeNO_x / SCR MATERIALS
NO_x reduction and emission-control applications.
- 02 — MTO CATALYST MATERIALS
Catalytic materials for methanol-to-olefins processes.
- 03 — FCC ADDITIVE COMPONENTS
Materials for cracking performance, selectivity and yield.
- 04 — HPPO CATALYST MATERIALS
Catalysts for hydrogen-peroxide-based propylene oxide production.
- 05 — OXIME PROCESS MATERIALS
Catalysts for cyclohexanone oxime and related processes.
- 06 — HYDROGEN PEROXIDE PROCESS MATERIALS
Catalysts and supports for hydrogen peroxide processes.
- 07 — FORMALDEHYDE CATALYST MATERIALS
Catalysts for methanol oxidation and formaldehyde production.
- 08 — ISOMERIZATION MATERIALS
Materials for butene, xylene and hydrocarbon conversion.
- 09 — PYRIDINE CATALYST MATERIALS
Catalysts for pyridine and related chemical production.
- 10 — FINE CHEMICAL CATALYST MATERIALS
Specialty catalysts for fine chemical production.
- 11 — AROMATIZATION & SPECIALTY SEPARATION MATERIALS
Materials for aromatization and specialty separation processes.
- 12 — CATALYST SUPPORT MATERIALS
High-purity oxide supports for diverse catalytic processes.
- 13 — ZEOLITE SYNTHESIS RAW MATERIALS
Templates and silicon sources for advanced zeolite synthesis.



PROCESS TECHNOLOGIES

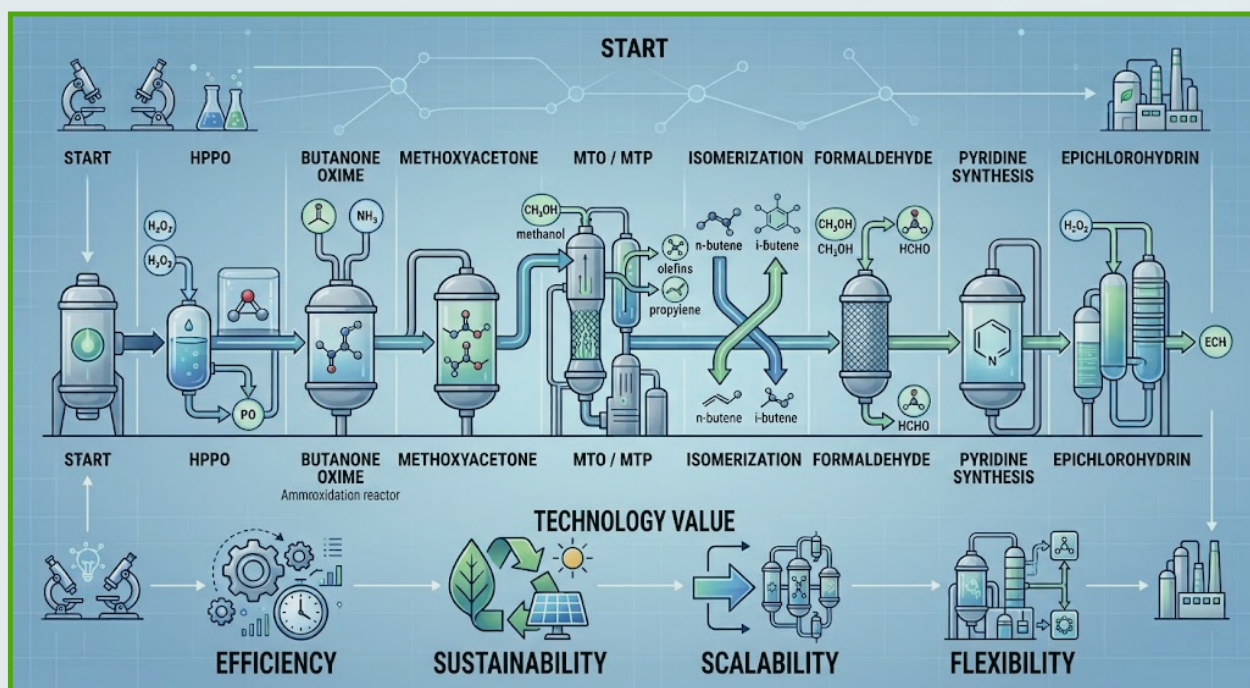
FROM MATERIAL SCIENCE TO INDUSTRIAL PROCESS

Advanced materials create greater value when combined with proven process technology and industrial know-how.

We provide process technology licensing and technical services across catalytic conversion and specialty chemical production routes, supporting industrial partners from process development and scale-up to commercial production.

SELECTED PROCESS TECHNOLOGY PORTFOLIO

- **HPPO ($\text{H}_2\text{O}_2 \rightarrow \text{PO}$)**
Conversion $\geq 99\%$ · Selectivity $\geq 98\%$ · Up to 400,000 TPA · 2 Authorized Units
- **BUTANONE OXIME**
Catalytic process technology for efficient oxime production for fine chemicals..
- **METHOXYACETONE**
Process technology for producing specialty chemical intermediates at industrial scale.
- **MTO / MTP**
Catalytic conversion of methanol into light olefins and propylene for petrochemical applications.
- **ISOMERIZATION**
Catalytic hydrocarbon conversion for upgrading butene, xylene and valuable feedstocks.
- **FORMALDEHYDE**
Controlled catalytic oxidation of methanol for efficient formaldehyde production.
- **PYRIDINE SYNTHESIS**
Specialized catalytic routes for producing pyridine and selected chemical derivatives.
- **EPICHLOROHYDRIN**
 H_2O_2 -based selective oxidation technology supporting cleaner epichlorohydrin production



APPLICATION MARKETS

REGION	TECHNOLOGY	PROJECT
Korea	Hydrocracking	Korean Refining Group
Korea	Marine SCR	Samsung Heavy Industries · 16,500 TEU Vessel
Korea	DeNOx / SCR	POSCO
India	DeNOx / SCR	2 × 660 MW Power Plant
India	Low-Temperature SCR	Industrial Project
Indonesia	DeNOx / SCR	Guangqing Nickel · 350 MW Unit
Indonesia	H ₂ O ₂ Catalyst	RAPP Kerinci · 180 TPD
Indonesia	H ₂ O ₂ Catalyst	PRI · 192 TPD
Thailand	Low-Temperature SCR	Delta Daiki Metal
Thailand	DeNOx / SCR	DDMT Aluminum
Thailand	Reforming Catalyst	PTT Aromatics
Kazakhstan	Sulfuric Acid Catalyst	800,000 TPA Project
Kazakhstan	Reforming Catalyst	PKOP Refinery
Uzbekistan	MTO Technology	Jizzakh · 1.27 MTPA
USA	FCC Catalyst	Chevron Richmond Refinery
USA	FCC Catalyst	Chevron Salt Lake Refinery
USA	FCC Catalyst	ExxonMobil Altona Refinery
Singapore	FCC Catalyst	SRC Refinery
Saudi Arabia	EO Catalyst	SABIC
Vietnam	DeNOx / SCR	Vinh Tan Power Plant
Belarus	Hydrocracking	Naftan Refinery
Germany	Zeolite / DeNOx	BASF
Germany	Zeolite	CWK
France	Zeolite	Arkema
Germany	Specialty Catalysts	Evonik
USA	Zeolite / Adsorbent	M.Chemical
Global	Zeolite	Linde
Global	Zeolite	Air Liquide
UAE	Zeolite	ADNOC
Canada	FCC Catalyst	Burnaby Refinery
Cuba	FCC Catalyst	Cuban Petroleum Company
Australia	FCC Catalyst	Altona Refinery
Brunei	Hydroprocessing / FCC	Hengyi Phase II
Kyrgyzstan	FCC / Hydroprocessing	Zhongda Petroleum Phase II
Europe	H ₂ O ₂ Technology	European Engineering Partner
Thailand	Zeolite	JLONG Thailand Base
Global	Aromatics Technology	16 Industrial Units

GLOBAL CATALYST MARKET

CHINA'S GROWING GLOBAL COMPETITIVENESS

China is rapidly moving from manufacturing scale toward global technology and supply leadership in catalyst materials. Advanced zeolites, SCR, refining and coal-chemical technologies are increasingly serving international markets, supported by proven performance, competitive manufacturing and reliable supply.

2025 MARKET FACTS

In 2025, the global catalyst market reached approximately US\$41.3 billion, while China's catalyst exports reached US\$2.84 billion, growing 18% year on year. China accounted for more than 32% of global catalyst demand, with SCR catalyst exports reaching approximately 96,000 tons and Chinese zeolite and zeolite-based catalyst technologies contributing an estimated 35–38% of the global market.

2026 MARKET OUTLOOK

The global catalyst market is expected to reach approximately US\$42.9 billion in 2026, with growth of around 4.3%. Asia-Pacific is expected to remain the leading market, while China continues to expand its international presence through advanced materials, technology development and increasingly competitive global supply.

CHINA'S GLOBAL MOMENTUM

TECHNOLOGY UPGRADE

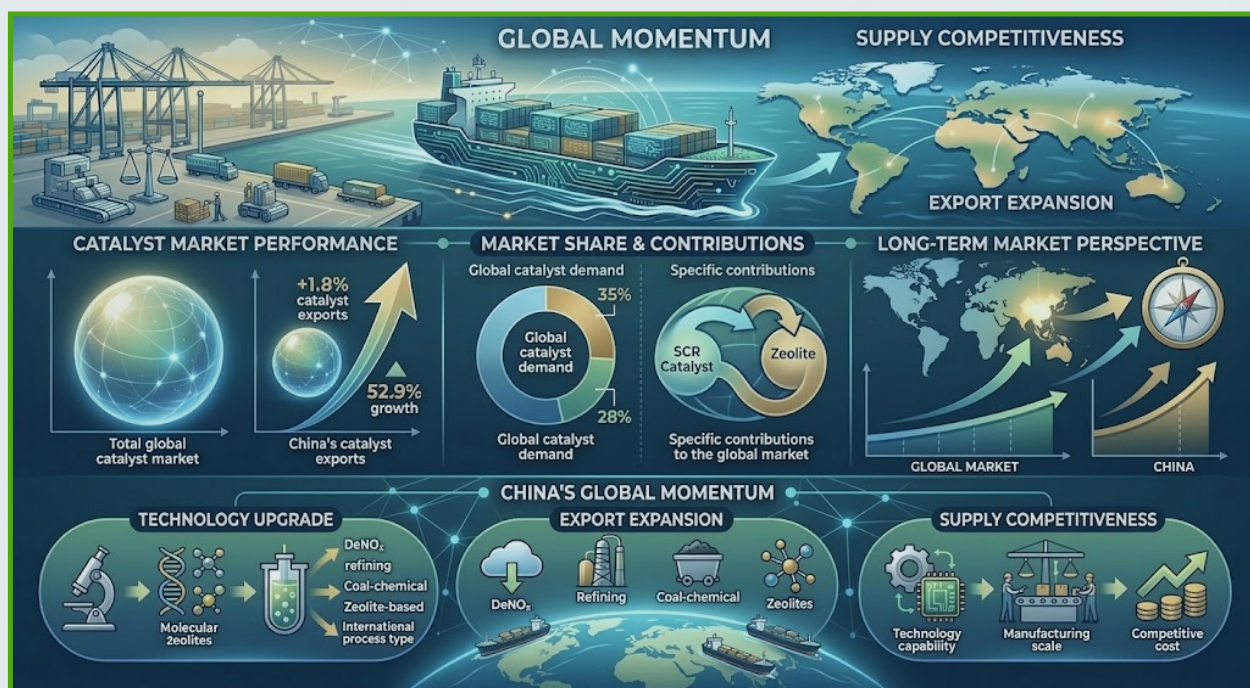
Advanced catalyst technologies are moving into international markets.

EXPORT EXPANSION

DeNOx, refining, coal-chemical and zeolite products are gaining overseas traction.

SUPPLY COMPETITIVENESS

China combines technology capability, manufacturing scale and competitive cost.



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OUR BUSINESS COVERAGE 我们的业务范围



Oil & Gas E&P



Petrochemical / Refineries



Aerospace



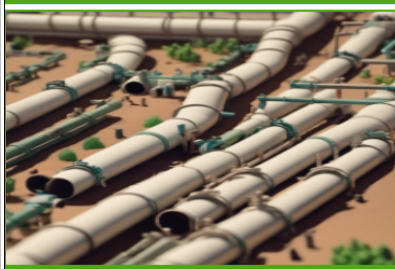
Energy Generation



Nuclear



Marine & Offshore



Cross Country Pipeline Projects



Automobile



Water Treatment & Desalination Plants



Infrastructure



Renewable Energy



Smelting Plant



Precision Engineering Equipment



Data Center



Pulp & Paper



LNG



Construction Industry



Industry Plants



Chemical / Pharmaceutical Plant



Laser Cutting, Robot

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