

# Chemical Recycling Reactors

ANMD-MRS6-054 · Recycling & Resource Recovery

A Global Sustainability Due Diligence & Market Research Study

History 2020–2024 · Base Year 2025 · Forecast 2025–2032 · Outlooks 2035 / 2040 / 2050 · Currency US\$

## WHY THIS REPORT

Chemical recycling reactors break plastics back to molecular building blocks, turning hard-to-recycle waste into virgin-quality feedstock for new plastics. This decision-grade study sizes the global market three ways — value, units and capacity — across reactor type, process and application, across seven regions and four scenarios to 2032, with outlooks to 2050.

## SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone, not an afterthought. Beyond throughput, chemical recycling reactors deliver measurable recycling of unrecyclable waste, virgin-equivalent output and closed-loop circularity, while closing the plastic loop strengthens the circular-economy story.

Mapped Sustainable Development Goals:

<b>SDG 9</b> Industry & Innovation	<b>SDG 12</b> Responsible Consumption	<b>SDG 13</b> Climate Action
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Measurable sustainability outcomes assessed:

- Recycling of otherwise-unrecyclable waste
- Virgin-equivalent feedstock output
- Closed-loop plastic circularity
- Process energy, residual streams, offtake quality and worker safety as material risks

**Framework alignment:** Double materiality mapped to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, with greenwashing and SDG-washing screens applied throughout.

## WHAT'S INSIDE AT A GLANCE

<b>53</b> Chapters	<b>9</b> Report Parts	<b>7</b> Regions Covered	<b>40+</b> Country Markets
<b>2025–32</b> Forecast Horizon	<b>4</b> Forward Scenarios	<b>25+</b> Companies Profiled	<b>3</b> SDGs Mapped

## REPORT COVERAGE

**Geographic scope:** North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. Europe is the policy leader (Germany, France, United Kingdom) on recycling targets and EPR; North America is the value leader (United States, Canada) on recycling-capacity build-out; Asia Pacific is the scale engine; other regions assessed on their own merits.

## MARKET OVERVIEW

### From pilot to commercial scale — where recycling goes molecular, virgin-equivalent and closed-loop.

The chemical recycling reactors market is moving from early adoption to mainstream commercial scale. Demand is driven by circular-economy and recycling pressure converging with regulation and material-security needs, supported by strong momentum across Europe, North America and Asia Pacific. The market is read three ways — value, units and capacity — and forecast under four scenarios, each region reported separately.

- **Europe is the policy leader** — Germany, France and United Kingdom, on recycled-content mandates
- **North America is the value leader** — United States and Canada, on petrochemical-integrated capacity
- **Asia Pacific is the scale engine** — China, Japan and India, on plastics-conversion volume
- **Virgin-equivalent output is the differentiator** — molecular recycling plus closed-loop feedstock

## REGIONAL OUTLOOK

Across seven reporting regions, the report separates early commercialisation leaders from high-growth and emerging markets — each profiled in full rather than aggregated into Rest of World.

Region	Stage	Lead Markets & Drivers
Europe	Policy leader	Germany, France, United Kingdom — recycling targets, EPR
North America	Value leader	United States, Canada — recycling-capacity build-out
Asia Pacific	Scale engine	China, Japan, India — waste-infrastructure, volume
Middle East	High-growth	Saudi Arabia, UAE — circular-economy investment
Latin America	Emerging	Brazil, Mexico — waste-management expansion
Africa	Emerging	South Africa, Nigeria — recycling, resource recovery

## KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
<ul style="list-style-type: none"> <li>• Recycled-content mandate + circularity convergence</li> <li>• Virgin-equivalent-output value</li> <li>• Policy support (recycled-content rules, mass-balance)</li> <li>• Brand &amp; petrochemical offtake demand</li> <li>• Pyrolysis, depolymerisation &amp; catalysis technology gains</li> </ul>	<ul style="list-style-type: none"> <li>• Capital cost &amp; first-of-a-kind financing risk</li> <li>• Process energy, yield &amp; emissions scrutiny</li> <li>• Feedstock-quality &amp; contamination sensitivity</li> <li>• Offtake-price &amp; mass-balance-accounting uncertainty</li> <li>• Permitting, siting &amp; scale-up readiness gaps</li> </ul>

## SEGMENTATION SNAPSHOT

<b>By Reactor Type</b>	Pyrolysis · depolymerization · gasification · hydrothermal · catalytic conversion
<b>By Process</b>	Thermal · catalytic · solvent / hydrothermal
<b>By Application</b>	Mixed & multi-layer plastics · PET / polyester depoly · hard-to-recycle waste
<b>By End User</b>	Recyclers & MRF operators · waste processors · municipalities · OEMs · circular-economy ventures
<b>By Business Model</b>	Capital purchase · turnkey EPC · processing-as-a-service · lease / BOO
<b>By Scale</b>	Pilot · commercial · world-scale

## TABLE OF CONTENTS — PARTS & CHAPTERS

The full report is organised into nine parts across 53 chapters, listed below. Detailed sub-headings, country tables and directories are provided in the full report.

### Part I — Report Foundation, Discovery and Strategic Intelligence

- › Chapter 1. Scope, Methodology and Report Architecture
- › Chapter 2. Industry Discovery Summary — Chemical Recycling Reactors
- › Chapter 3. Executive Intelligence and Decision Dashboard
- › Chapter 4. Strategic Findings, Materiality and Investment Verdict Preview

### Part II — Market Intelligence, Sizing, Forecasting and Segmentation

- › Chapter 5. Industry Overview and Market Evolution
- › Chapter 6. Market Dynamics
- › Chapter 7. Global Market Size and Forecast, 2020–2032
- › Chapter 8. Market Segmentation Analysis
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### Part III — Regional and Country Intelligence

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### Part IV — Technology, Innovation and Category-Specific Intelligence

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## Part VIII — Scenario, Future Intelligence and Final Due Diligence Verdict

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## Part IX — Annexes, Directories and Reference Material

- › Chapter 47. Methodology Annex
- › Chapter 48. Corporate Directory and Company Intelligence Annex
- › Chapter 49. Patent Directory and Patent Intelligence Annex
- › Chapter 50. Project Intelligence Annex
- › Chapter 51. Forecast Annex
- › Chapter 52. Sustainability KPI Annex
- › Chapter 53. Reference Annexes

## COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans global recycling-equipment majors, specialist chemical recycling reactors makers, and emerging innovators. Deal activity — M&A, technology acquisition and platform expansion — signals a market consolidating around scalable, bankable recycling infrastructure.

### Representative players profiled in the full report:

BASF SE (ChemCycling™) · Saudi Basic Industries Corporation (SABIC) · Dow Inc. · LyondellBasell Industries N.V. · Eastman Chemical Company · and 20+ further profiled players across equipment OEMs, technology licensors and emerging innovators.

**Investment intelligence:** venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a Go / No-Go / Conditional-Go investment verdict.

## KEY QUESTIONS THIS REPORT ANSWERS

- ? How large is the global chemical recycling reactors market, and how fast will it grow to 2032?
- ? Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- ? How do recovery rates and offtake quality change project economics versus legacy processing?
- ? Who leads, and where is the competitive and patent white space?
- ? Is the investment case bankable — and under what conditions?
- ? How does the category align with the SDGs, circular-economy and resource-security and disclosure regulation?

## WHY ANMD — THE DIFFERENCE

*Most market studies stop at units and revenue. This report is built as a sustainability due diligence instrument — fusing market sizing with ESG, SDG, climate, water and natural-capital intelligence and a decision-ready bankability verdict in a single architecture.*

- **Triangulated sizing** — every market read three ways so value, volume and throughput views reconcile rather than conflict.
- **Region-honest forecasting** — Latin America, Africa and the Middle East reported in full, never hidden inside Rest of World, every forecast resolved to the 2025 base year.
- **Integrated evidence base** — company, patent and project databases linked to the analysis, with published-filing patents and FTO treated as an indicator, not a legal conclusion.
- **No-fabrication discipline** — every estimate carries a data-confidence rating and disclosed sources; gaps are flagged for further diligence, never filled with invented numbers.
- **Anti-greenwashing rigour** — SDG-washing and greenwashing screens plus claim-substantiation checks built into the ESG and project analysis.
- **Decision-first structure** — 9 Parts and 53 Chapters culminating in stakeholder playbooks and a clear Go / No-Go / Conditional-Go investment verdict.

## WHO SHOULD BUY THIS REPORT

Investors and infrastructure / PE funds, recycling and waste-management operators, equipment OEMs and EPC contractors, municipalities and waste authorities, brand owners and producer-responsibility organisations, regulators and lenders, and corporate strategy and ESG teams.

### Access the Full Report

The complete report delivers all 53 chapters in full, with every sub-heading, country table, company and patent directory, forecast model and due diligence checklist.

Purchase at [www.anewmarketdynamics.com](http://www.anewmarketdynamics.com) · Standard & Premium licences · Single-Site (SSL) and Global-Site (GSL) options at checkout.

### Want the Complete Detailed Table of Contents?

This prospectus lists the nine parts and 53 chapters. The complete detailed table of contents — every sub-heading, country table, exhibit, company and patent directory and annex — is available on request to registered users. To receive it, register with your official company email at [www.anewmarketdynamics.com](http://www.anewmarketdynamics.com). The full detailed table of contents will be sent directly to your registered company email address.