Microreactor Systems (sub-20 MW)

ANMD-MRS23-226 · Nuclear & Fusion Technologies

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

Microreactor systems are the smallest class of nuclear power — factory-built, transportable units below 20 MWe that bring clean, firm, autonomous power to places the grid cannot reach. Heat-pipe, gas-cooled and molten-salt designs in <1MW, 1–5MW and 5–20MW classes target remote communities, defence bases, mines, data centres and disaster relief. This decision-grade study sizes the global market three ways — value, installed capacity (MWe) and unit count — across technology, capacity class 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 clean generation, microreactors deliver measurable diesel displacement, energy access and off-grid decarbonisation, while autonomous operation strengthens the resilience story.

Mapped Sustainable Development Goals:

SDG 7	SDG 13	SDG 9
Affordable & Clean Energy	Climate Action	Industry, Innovation & Infrastructure

Measurable sustainability outcomes assessed:

- Diesel displacement and energy access
- Off-grid decarbonisation and resilience
- Spent-fuel logistics and transport security as a material risk
- Siting and safeguards assessed

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

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

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. North America leads first deployment; Europe is accelerating; Asia Pacific is emerging; other regions assessed on their own merits.

- Factory-built, transportable clean power below 20 MWe
- Heat-pipe, gas-cooled and molten-salt designs
- Years of refuelling-free, rapidly deployable operation
- Spent-fuel logistics, transport security and siting as risks

MARKET OVERVIEW

From diesel dependence to autonomous clean power — where years of refuelling-free, dispatchable off-grid operation underpin value diesel and renewables-plus-storage cannot match.

Microreactors are moving from demonstration toward first deployment, pulled by defence, remote-power and data-centre demand for clean firm energy. Demand is driven by decarbonisation, off-grid resilience and diesel displacement across North America, Europe and Asia Pacific. The market is read three ways — value, installed capacity (MWe) and unit count — and forecast under four scenarios, each region reported separately.

- **North America leads first deployment** — the United States and Canada, where defence programmes (Project Pele), remote-community pilots and data-centre interest drive demonstration
- **Europe is accelerating** — the United Kingdom and Nordic countries, pursuing remote-power and industrial-heat microreactor concepts
- **Autonomous clean power is the differentiator** — years of refuelling-free, dispatchable operation off-grid underpin value diesel and renewables-plus-storage cannot match in remote settings
- **Technology and capacity class segment the value** — heat-pipe, gas-cooled and molten-salt designs across <1MW, 1–5MW and 5–20MW classes, each with distinct economics

REGIONAL OUTLOOK

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

Region	Stage	Lead Country Markets & Drivers
North America	Deployment leader	United States, Canada — defence, remote pilots, data centres
Europe	Accelerating	United Kingdom, Nordics — remote power, industrial heat
Asia Pacific	Emerging	Japan, South Korea — transportable, island and marine designs
Latin America	Emerging	Brazil, Chile — remote mining and community power
Africa	Frontier	South Africa, DRC — off-grid power, mining electrification
Middle East	Frontier	UAE, Saudi Arabia — remote and resilience applications

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Remote-power and diesel-displacement demand • Defence and resilience deployment programmes • Data-centre off-grid clean-power needs • Factory-build and transportability advantage • Long-life advanced-fuel technology gains	• First-of-a-kind cost and high $/MWe • Licensing and transport-regulation novelty • HALEU fuel-supply dependence • Public acceptance in remote and base siting • Security and safeguards for distributed units

SEGMENTATION SNAPSHOT

By Technology	Heat-pipe · gas-cooled · molten-salt · advanced microreactor
By Capacity Class	<1 MWe · 1–5 MWe · 5–20 MWe
By Application	Remote power · defence · mining · data centres · disaster relief
By End User	Remote communities · defence · mining · data centres · industry
By Business Model	Hardware sale · power-as-a-service · lease · managed operation
By Scale	Demonstration · first-of-a-kind · commercial fleet

TECHNOLOGY & APPLICATION FINDINGS

Where the category is differentiating fastest — the technology and application fronts that separate leaders from followers:

- **Remote power** — isolated communities and islands deploy microreactors to replace costly diesel with clean, reliable baseload
- **Defence & mining** — military bases and remote mines value autonomous, secure power independent of fuel-convoy logistics
- **Data centres & relief** — edge data centres and disaster-response operations gain rapidly deployable, dispatchable clean power

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COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans dedicated microreactor developers, established nuclear OEMs and fuel specialists. Deal activity — defence awards, demonstration funding and remote-power agreements — signals a market consolidating around licensable, transportable designs.

Representative players profiled in the full report:

Westinghouse Electric Company LLC · X Energy Reactor Company, LLC · BWX Technologies, Inc. · Oklo Inc. · Ultra Safe Nuclear Corporation · Radiant Industries, Inc. · and 20+ further profiled players.

Investment intelligence: venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a conditional investment view.

KEY QUESTIONS THIS REPORT ANSWERS

- How large is the global microreactor systems market, and how fast will it grow to 2032?
- Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- Which technologies and platforms reshape the addressable market and the cost curve?
- 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 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 and natural-capital intelligence and a decision-ready bankability view in a single architecture.

- **Triangulated sizing** — every market read three ways so value, volume and the physical-unit 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, conditional investment view.

WHO SHOULD BUY THIS REPORT

Remote communities, defence, mining, data centres, industry, investors and policymakers, and strategic corporate planners and decision-makers.

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** · 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**. The full detailed table of contents will be sent directly to your registered company email address.