Profile & Innovation Outlook

Complex Tech. Clear Results.

Vol 4, 2026

AZIATECH nexION

Research & Industrial

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1. Overview

1.1 History

The idea of Azidtech began in 2010 when a group of polytechnic students were inspired by Silicon Valley's myth that a company could start in a parent's garage. This sparked their interest in creating a technology-solution organization. Although the concept did not materialize at that time—each engineer graduated and went their separate ways to Canada, the USA, Norway, and Spain to work for tech firms—the dream never died.

During the pandemic of 2019 we realized the world was changing forever, and we wanted to be part of it. In 2020 we began developing not just an organization focused on technology, but one that is oriented toward the technology market. We maintain a technological perspective that aligns with where the world invests most heavily. We firmly believe in the quote: "It is not the strongest or the most intelligent species that survives, but the ones most adaptable to change." That adaptability is what we deliver every day.

Azidtech is a Spanglish blend of words that stands for "A-to-Z research and development in tech" (covering both technical skill and technology solutions). It clearly conveys who we are, what we offer, and what we stand for as an organization. Research without product development is often deemed meaningless—like running a marathon only to give up before reaching the finish line. Fortune favors the bold, and that is our goal.

1.2 Mission

"To be the most trusted, self-sustained research engine in Europe—empowering every size of company to innovate risk-free and accelerate market impact."

1.3 Vision

"We empower people and businesses worldwide by delivering end-to-end research, development, and market-ready tech solutions. Guided by curiosity, agility, and a commitment to sustainability, we turn bold concepts into products that shape the future."

1.4 Business Model

Azidtech is a fully autonomous research organization. We finance our own skill sets and manage a self-funded portfolio of research projects, giving us expertise on topics that align with the interests of our clients. This advantage keeps us ahead of most other research organizations and allows us to provide leverage for strategic partners in the industry.

To clarify, research and development can be performed privately by companies that have the necessary infrastructure and in-house talent. However, this approach is often expensive and prone to mismanagement, leading to investment losses. Large tech firms typically maintain in-house R&D departments because they can absorb those risks more robustly. Smaller players, however, must adopt a different strategy.

In Europe there are fewer industry giants than in North America or China, so European companies prioritize risk avoidance. The EU supports the innovation ecosystem by funding most research projects within its borders and offering many open-source patents that companies can use as foundations for new developments. Many European firms also contract external research organizations to conduct industrial R&D, creating a cohesive relationship between industry and research entities that balances intellectual property and industrial property rights.

Azidtech serves as both a research and industrial partner. We manage your private innovation pipeline and act as a research collaborator—whether the project is self-funded, co-funded, privately funded, or publicly funded.

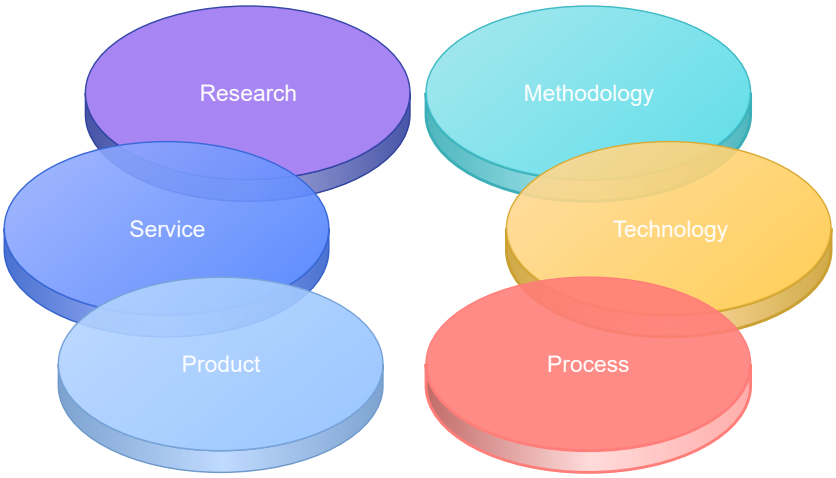

Figure 1.1: Business Model

1.5 Private Research by Azidtech

1.5.1 Research Portfolio

Knowledge isn't just power—it's our biggest asset. That's why every dollar we invest goes straight into expanding the expertise that fuels innovation for both us and our partners.

Why start from zero when you can launch from a peak? By sharing our deep-cut research with industrial allies, we give them a head-start that cuts development time, slashes risk, and boosts ROI. We already know which projects will thrive in our focus areas—so you don't have to guess.

The secret sauce of an autonomous research organization? Continuous curiosity. While others wait for the next project to spark R&D, we are always learning, always testing, always ready to turn insight into market-winning solutions. Join us and let your innovation leap forward from a place of proven expertise, not speculation.

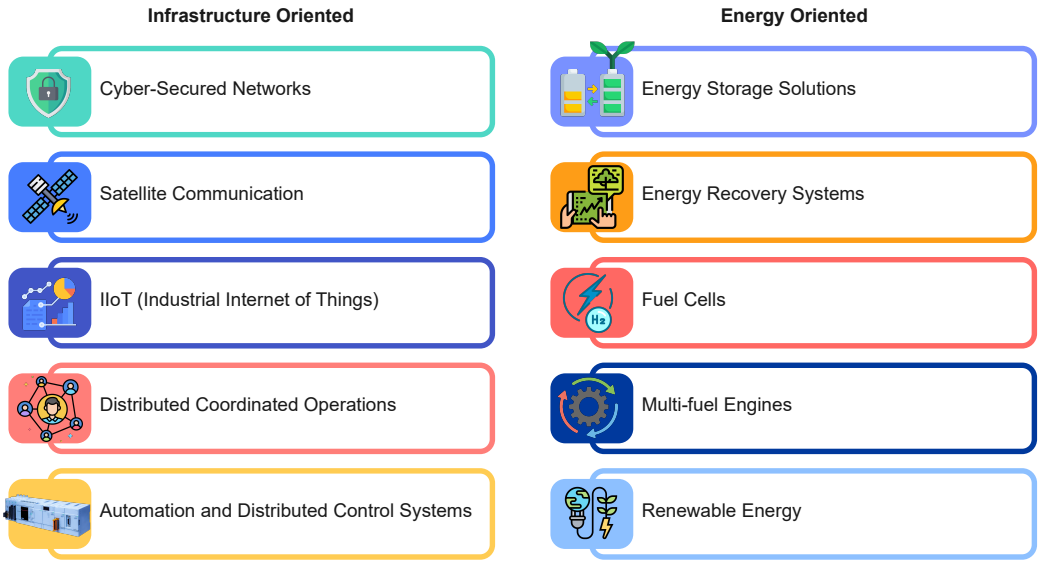

Figure 1.2: Research Topic of Interest

1.6 Market-oriented Research

This is one of the most distinctive features of Azidtech: we're a true nexus between research and industry. We don't just chase curiosity—we drive profitability and

feasibility, ensuring every project aligns with real-world market demands.

Do you know where the market's capital is flowing? That knowledge separates public from private funding—and it's why we design clear, product-ready pathways for every collaboration. Because we're also investors, our diversified portfolio spans multiple sectors, giving us a front-row seat to industry trends, global trade shifts, and breakthrough technologies that shape tomorrow's supply chains.

That dual perspective is what makes us exceptional as both strategic innovators and trusted business partners.

2. Highlights

2.1 Technology development: Workframe

In every Azidtech project we weave ESG considerations directly into the design workflow, ensuring that each solution not only meets rigorous quality standards and market feasibility but also delivers tangible social and environmental value—an essential factor in driving lasting profitability.

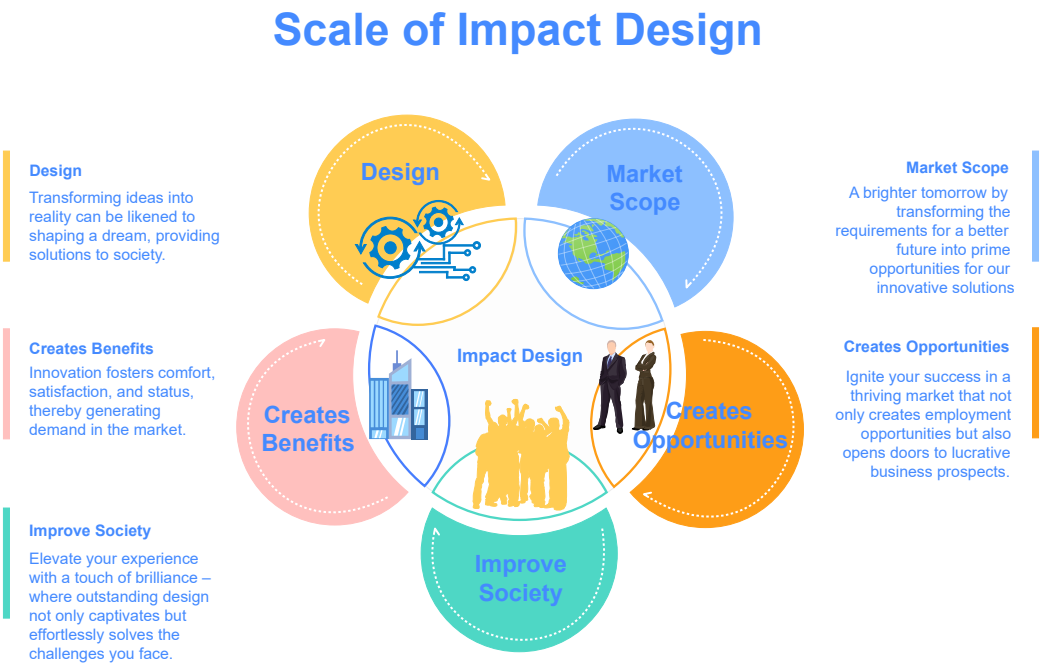

Figure 2.1: Research of Impact

2.1.1 From A to Z in R&D Process

The research and development (R&D) process typically involves several key stages, including ideation, validation, development, testing, and launch, which collectively drive innovation and product improvement.

1. **Ideation & Opportunity Scoping**
    - Scan industry trends and customer pain points
    - Generate high-impact concepts that align with science & profitability
2. **Feasibility & Proof-of-Concept**
    - Conduct rapid experiments to validate core technology
    - Quantify ROI and identify technical/market risks early
3. **Prototype Development & Iteration**
    - Build a working model (hardware, software, or hybrid)
    - Test in real conditions; refine based on feedback
4. **Validation & Market Fit**
    - Perform rigorous performance tests
    - Gather user insights and adjust to meet industry standards
5. **Commercialization & Scale-Up**
    - Develop supply-chain integration and go-to-market strategy
    - Guide licensing, partnership formation, or full product launch

2.2 Our Technology Readiness Levels (TRLs)

We're your end-to-end partner for technology development. Whether you're just sparking a concept (TRL 1) or polishing a prototype ready for production (TRL 6), our seasoned R&D team delivers the expertise and resources you need to accelerate every stage of the journey. With a proven track record in delivering rapid progress, we help you validate ideas, reduce risk, and unlock commercial value faster than your competitors—so you can focus on growth while we turn science into sales. Let's build tomorrow's solutions together.

- **TRL 1:** Basic principles observed and reported. This is the initial stage where scientific research begins to be translated into applied research and development.
- **TRL 2:** Technology concept and/or application formulated. At this stage, practical applications are identified, but they remain speculative without experimental proof.

- **TRL 3:** Analytical and experimental critical function and/or characteristic proof of concept. Active research and development are initiated, including laboratory studies to validate predictions.
- **TRL 4:** Component and/or breadboard validation in a laboratory environment. Basic technological components are integrated to establish that they will work together.
- **TRL 5:** Component validation in a relevant environment. This involves more rigorous testing than TRL 4, often in environments that simulate real-world conditions.
- **TRL 6:** System/subsystem model or prototype demonstration in a relevant environment. A fully functional prototype is developed and tested.

2.3 Project Engineering

In engineering projects, there are typically several stages of design and development that take place before construction or implementation can begin. These stages may vary depending on the type and complexity of the project, but they generally follow a similar sequence of steps.

1. **Conceptual design**
2. **Front-end engineering design (FEED)**
3. **Detailed engineering design**
4. **Procurement**
5. **Construction and installation**
6. **Commissioning and startup**

2.3.1 Unlock Peak Performance with Azidtech

In today's fast-evolving tech landscape, the right expertise can make or break your project. At Azidtech, we bring world-class engineering support—tuning, performance testing, and tailored technology deployment—to every initiative. Whether you're tackling a complex application or navigating uncharted technical terrain, our specialists deliver precision solutions that keep projects on schedule, under budget, and ahead of the curve. Let us handle the heavy lifting so you can focus on what matters most: turning innovation into impact.

3. Tech-Outlook 2026

Grid-forming power, smart grids, marine electrification and the AI-driven "energy crunch"

3.1 The stage is set – why 2026 matters

1. Global decarbonisation: By 2025 the EU, US and China had already committed to net-zero by 2050. That commitment translates into a need for clean, flexible power that can be dispatched on demand.
2. Artificial Intelligence boom: Large language models, generative AI, autonomous driving and edge analytics are now mainstream. The data centers powering them consume roughly 10 % of global electricity – a figure projected to double by 2028.
3. Geopolitical shifts: Russia's war in Ukraine has accelerated European energy security concerns; meanwhile, the United States' decision to build its own ice-breakers—rather than relying on Finnish shipyards—underscores a broader move toward autonomous maritime power systems that can operate without fossil-fuel dependence..

With these forces converging, 2026 will be a watershed year for the convergence of grid-forming power electronics, smart-grid software and marine electrification. The following sections break down what's happening today, where we're headed, and why it matters to businesses and policy makers alike.

3.2 Grid-forming inverters – the new "grid"

What is it?
Grid-forming (GF) inverters can stand-alone produce voltage and frequency, essentially acting as a virtual power plant that can be islanded from the main grid. They are the foundation of microgrids and are increasingly being integrated into large wind and solar farms. **2026 State of Play**

- Industry Momentum: Major inverter makers (ABB, Siemens Energy, Huawei) have released "GF-Pro" lines that support up to 5 MW per unit. Combined

with the proliferation of solid-state transformers, grid-forming technology is now capable of handling both bulk power and distributed energy resources (DERs).

Implications

- **Resilience:** With GF, islands or remote communities can stay online during grid outages—critical for Finland's Arctic regions.
- **Flexibility:** Power plants can adjust output on a sub-second basis, smoothing the intermittency of renewables.

3.3 Smart grids – data-driven power distribution

The core promise
Smart grids marry advanced metering infrastructure (AMI), AI-based load forecasting and automated fault detection to create a self-optimising network that reduces losses and improves reliability. **2026 Highlights**

- AI-powered demand response: In the EU, 70 % of distribution networks use machine-learning models for real-time pricing signals.
- Blockchain & micro-transactions: Pilot projects in Singapore and Germany allow prosumers to sell surplus solar power directly to neighbours.
- Edge computing nodes: Deployed at substations to process sensor data locally, cutting latency to <10 ms – essential for grid-forming devices.

Market Size
The global smart-grid market is projected to hit 112 bn by 2026, up from 112 bn by 2026, up from 78 bn in 2023. The fastest growth is in Asia-Pacific and the Middle East, where governments are aggressively modernising aging infrastructure.

3.4 Marine power systems – electrifying the seas

Finland's icebreaker program
Finland's Ministry of Defence announced a new class of hybrid-electric icebreakers in 2025, slated to be operational by 2030. The design philosophy is:

- **Zero-emission core:** A lithium-ion battery bank (400 kWh) combined with an electric propulsion motor.

- **High-efficiency power electronics:** New grid-forming inverters will allow the ship's onboard power system to function as a microgrid, powering all critical systems even when the main engine is shut down.

Broader context

- Global maritime electrification: The IMO 2023 "Green Shipping" agenda now mandates that new ships (> 10,000 GT) must be capable of 70 % electric propulsion by 2030.
- Marine renewable integration: Offshore wind farms are exploring floating platforms powered by integrated power electronics that can feed energy back into the grid or to nearby islands.

3.5 AI-driven data centers – the "energy crunch"

Energy demand > 12 - 13 %

- **Why the jump?** AI workloads (large transformer models, generative art) require massive floating-point operations. Even with cooling efficiencies improving from 70 % to 80 %, power draw is still significant.
- **Geographic shift:** The US remains the leader (25 % of global data-center electricity), but Asia-Pacific and Europe are rapidly catching up due to stricter carbon regulations.

Energy capacity response

Table 3.1: Energy capacity response

Region	New renewable capacity added in 2024–2025 (GW)	Planned grid upgrades for AI data centers
EU	120 GW (wind & solar)	Upgraded interconnects, dedicated microgrids
US	80 GW (solar + battery storage)	"Data-center islands" with GF inverters
China	70 GW (hydro + solar)	National "AI-energy corridor" project

- **Smart-grid integration:** AI data centers are becoming grid assets themselves. By offering demand response services, they can shave peak loads and sell excess capacity back to the grid.

3.6 The ripple effect – how tech is being reshaped

Table 3.2: how technology development is being reshaped

Impact Area	What's Changing
Power electronics	Rapid miniaturisation of power modules (GaN, SiC) enabling higher-power GF inverters.
Battery technology	Shift from Li-ion to solid-state batteries with $>$ 300 Wh/kg energy density.
Software platforms	Open-source control frameworks (OpenADR, IEC 61850) enabling interoperability across grid.
Policy & regulation	New standards for grid-forming devices (IEC 62443-7-1).

3.7 Strategic take-aways

1. **Invest in grid-forming infrastructure** Whether you're a utility, an offshore wind developer or a data-center operator, GF inverters are the backbone of future resilience.

2. **Leverage smart-grid analytics** AI-driven forecasting and automated fault detection will reduce operational costs by up to 15 % in mature markets.

3. **Embrace marine electrification early** Finland's icebreaker initiative is a blueprint for Arctic shipping corridors; similar projects are emerging in Norway, Canada, and the US.

4. **Plan for data-center energy demand** Build dedicated microgrids with GF capability to turn your facility into an active grid asset rather than a passive load.

3.8 Bottom line

By 2026 the energy landscape will be defined by flexibility (grid-forming), intelligence (smart grids) and sustainability (marine electrification). These technologies are not just complementary—they are interdependent: AI data centers drive demand, which forces grid upgrades; those upgrades enable marine power systems that reduce shipping emissions; and the resulting resilience feeds back into more robust smart-grid operations.
For companies willing to invest in these converging fields, 2026 will be a pivotal year of opportunity—and for those who ignore it, an irreversible gap.