

Sector Snapshot

Cleanroom Technology

**Controls, Validation and
Certification**

ARGONAS

Sector Segmentation

Construction and Design

Customized Cleanrooms

Modular and Mobile
Cleanrooms

Equipment

HVAC-Systems, HEPA- and
ULPA-Filters, FFUs, Laminar
Airflow Systems, Furniture

Controls, Validation and Certification

Real-time monitoring systems, access control systems,
environmental sensors, measurement & certification

Consumables

Mainly protective clothing and cleaning supplies



Sector Definition

- **Purpose:** Ensures cleanroom compliance with industry standards through monitoring, testing, validation, and certification services
- **Key Customers & Applications:** Industries like biotech, pharma, medical devices, semiconductors, electronics and food production
- **Products/Services:** Particle counters, airflow monitoring, environmental monitoring, validation protocols, certification (ISO 14644, GMP)



Key Standards

- **Industry Requirements:** Standards vary by product, affecting airflow, filtration, and handling; focus on particles (semiconductors), micro-organisms (food), and germs (medicine)
- **Standards:** ISO 14644 (ISO 1-9), VDI 2083, GMP Guide (EU, classes A-D)
- **Compliance:** Independent audits by e.g. TÜV, Fraunhofer ensure standards, purity, and competitiveness



Market Size & Growth

- **Global Cleanroom Market***: Valued at USD 7.6 bn in 2023, projected to reach USD 14 bn by 2033 (CAGR 6.2%)
- **Main Growth Areas**: Pharma (largest, fastest-growing), biotechnology (rising in pharma production), and semiconductors & electronics (consumer electronics, defence)

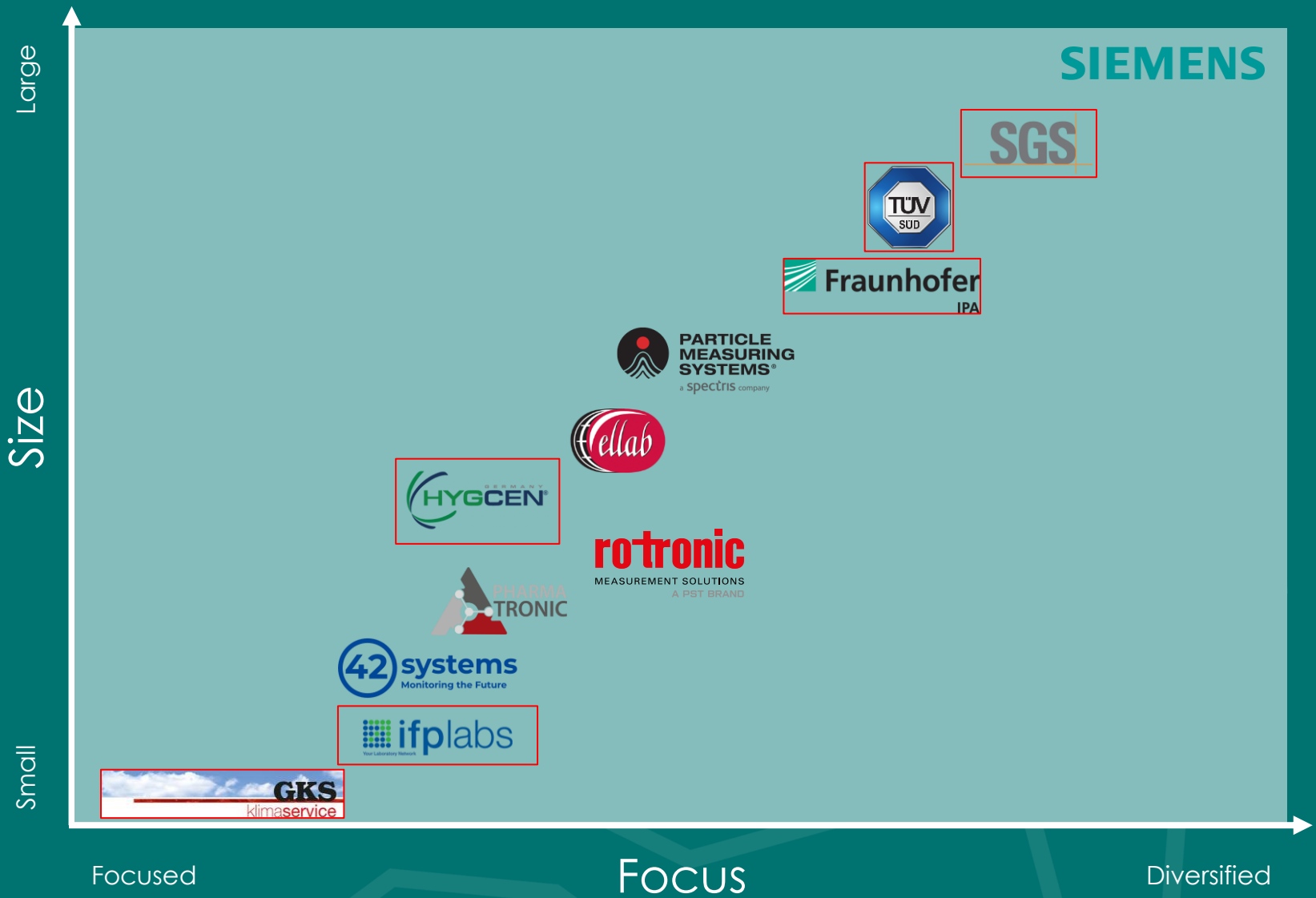


Market Structure

- **Dominated by DAkkS Accredited Certification Bodies:** Large, well-established organizations like TÜV SÜD and SGS provide certification, validation, and compliance services
- **Fragmented Market:** Smaller firms offer pre-certification services and controls, but only accredited bodies provide official certification
- **Driven by Regulatory Demand:** Strong need for compliance in pharma, biotech, and electronics.



Selected Key Players



ARGONAS

Certification only, DAkkS approved



Underlying Key Drivers

- **Industry Growth:** Driven by innovations in 5G, AI, personalized medicine, and advanced manufacturing, with rapid growth in Asian markets
- **Regulatory Compliance:** Strict government standards for contamination control in critical industries
- **Global Investments & Healthcare Growth:** Government initiatives like the U.S. CHIPS Act and expanding biopharma/healthcare sectors



Recent Key Trends

- **Technological Advancements:** Growing use of automation, real-time monitoring, modular designs, and energy-efficient systems for better efficiency and scalability
- **Critical Role in Manufacturing:** Clean environments are essential for producing semiconductors, photovoltaic modules, medical implants, and micro/nano-products



Transaction Market

Historical Activity:

- In the Controls, Validation & Certification subsegment, transaction volumes have been moderate but steadily increasing, reflecting growing regulatory demands and quality assurance needs
- The US has led M&A activity, driven by strong regulatory oversight (FDA, ISO) and advanced cleanroom adoption, while Europe, particularly Germany, lags behind but is seeing rising interest



Transaction Market

Key Drivers of Potential Deal Activity:

- Increasing regulatory complexity in Germany and Europe is driving demand for more validation & certification processes
- Growth in end-industries is expanding the need for compliance services, boosting potential deal activity
- Cost and innovation pressures are pushing the sector toward consolidation, enabling firms to offer more comprehensive and competitive service portfolios



Transaction Market

Outlook & Potential Opportunities:

- We generally expect a clear case for consolidation amongst the small and mid-sized (pre-)validation & certification providers
- Next to industry trends, succession issues will also play into deal rationales
- So far, there is limited activity of buy- & build platforms specifically focused on the space. Broader consolidation angles may also stretch into other TIC or related technology segments



Selected Deals



Sale to


06/03/24



Sale to


03/10/23



Sale to


18/08/23



Sale to


02/06/23




Sale to


19/01/23




Sale to


17/08/22



Sale to


09/06/22



Sale to


14/04/22

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