

Sector Snapshot

Cleanroom Technology

Construction and Design

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:** Create controlled environments to minimize contamination, crucial for high-precision manufacturing and research
- **Key Customers & Applications:** Industries like biotech, pharma, medical devices, semiconductors, electronics and food production
- **Products/Services:** Include customized, modular and mobile types, with modular cleanrooms further divided into soft- and hardwall



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)
- **Cleanroom Types**: Customized cleanrooms dominate; modular types grow due to flexibility, with hardwall cleanrooms leading over softwall



Market Structure

- **Fragmented Market:** Numerous specialized and global players, with no dominant entity; includes large firms and smaller regional providers
- **Regional Diversity:** Market structure varies by region, influenced by semiconductors, biotechnology, and pharmaceuticals
- **Diverse End-Users:** Cleanroom technologies serve various industries



Selected Key Players



ARGONAS



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 Construction and Design subsegment absolute transaction volumes have been moderate so far, however with a steady growth trend, reflecting growing general interest in the cleanroom sector
- In line with the growth dynamics of relevant end-industries, the US has clearly led activity with Europe and especially Germany lagging behind



Transaction Market

Key Drivers of Potential Deal Activity:

- Relevance and growth dynamics of key end-industries are increasing in Germany and broader Europe
- Regulatory frameworks drive the need for significantly more cleanroom solutions
- Cost as well as innovation pressures in the space should encourage consolidation into larger and more competitive organisational structures



Transaction Market

Outlook & Potential Opportunities:

- We generally expect a clear case for consolidation amongst the fragmented universe of smaller players
- 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. In this context, consolidation angles may also stretch into the technical building services or related technology segments



Selected Deals

Customized Cleanrooms


CMH
Sale to

MayAir®
01/11/24


BATIMPRO
SALLES PROPRES & ESPACES BUREAUX
Sale to

Alturia
Groupe
19/12/23


vêpres
Sale to

ceme
29/06/23


Clean Rooms West LLC
a HODESS Company
Sale to

HODESS
CLEANROOM CONSTRUCTION
Straight Answers. Solid Thinking. Strong Commitments
04/05/23

Modular and Mobile Cleanrooms


NICOMAC
MANGINI
Sale to

MANGINI
12/10/23


Modular Devices
Sale to

O2 O2 Investment Partners, LLC
20/02/22


G-CON
MANUFACTURING Inc.
Sale to

SUMMAEQUITY
20/07/21


Ångström Technology
Life Sciences Division
Sale to

ASGARD
PARTNERS & CO.
30/11/20

ARGONAS



Get in Touch



**Christian
Berkhoff**

Managing Partner /
Co-Founder

+49 (172) 99 05 977
c.berkhoff@argonas.de



**Sascha
Männel**

Managing Director /
Co-Founder

+49 (173) 39 38 216
s.maennel@argonas.de



**Maximilian
Bechtold**

Associate

+49 (173) 29 25 948
m.bechtold@argonas.de

ARGONAS