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Exyte Technology

Company presentation

Mai 2022

Agenda

Exyte

- Engineering & Construction of Technology Facilities

Exyte Technology

- Cleanroom Technologies & Controlled Environments

Products and Solutions

- Cleanroom Products

- Air Handling Units

- Critical Subsystems

- Trace Analysis

Customers and References

Safety is a Full Time Job
Committed to an Incident Free Workplace (IFW)

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IFW Vision at Exyte

"Exyte is committed to the everyday health, safety, and wellbeing of all. Our ambition is to create a culture of caring, both inside and outside of the workplace, upholding the right of everyone to go home safe."

At a Glance
Experts for high-tech facilities worldwide

exyte
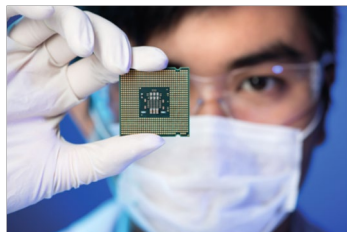
History of **100+** years

Sales of **€ 4.9 bn** (2021)

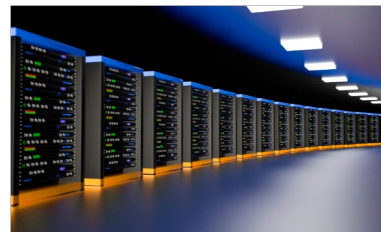Client-centric operation in **20+** countries

Around **7,400** employees (2021)

Advanced Technology Facilities

Biopharma & Life Sciences

Data Centers

Leader in Cleanroom Products & Controlled Environments
50+ years experience

exyte

Extraordinary engineering expertise in ultra clean air and ultra pure atmospheres ensures that today's and tomorrow's manufacturing processes are safe, clean, productive, cost effective, and environmentally friendly.

High-End Technologies

			Our Capabilities
Air Temperature	± 0,1 K	± 0,005 K	± 0,001 K
Magnetic Fields	500 nT	100 nT	10 nT
Water Temperature	± 0,05 K	± 0,001 K	± 0,0005 K
Noise Insulation	<30 dB	<35 dB	<50 dB
Humidity	± 5 % r.H.	± 1 % r.H.	± 0,1 % r.H.
AMC (Acids, Bases, Dopants)	2 ppb	0,5 ppb	0,1 ppb
VOC (Condensables)	20,0 ng	5,0 ng	1,0 ng

Cleanroom Products

Controlled Environments

Critical Subsystems

Installation & CQV services

Approval Documentation

cGMP EXPERTISE

Welcome to Exyte Technology

Cleanroom Technologies & Controlled Environments

Leader in Cleanroom Products & Controlled Environments
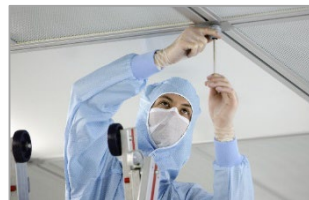## 50+ years experience

exyte

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Cleanroom Products

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Vision & Mission

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Vision

Exyte Cleanroom Technologies and Controlled Environments will be the solutions
of choice for high tech clean manufacturing facilities around the world.

Mission

We will live our philosophy of making customer's ideas and production demands the focus
of our daily work. We combine experience and know-how with entrepreneurial thinking to
engineer and manufacture high quality high performance and compliant products and solutions.

Exceptional customer focus will ensure reliable, clean, cost effective and safe equipment
which protects people and processes as well as being environmentally considerate exceed
our customers expectations.

Our Value Proposition

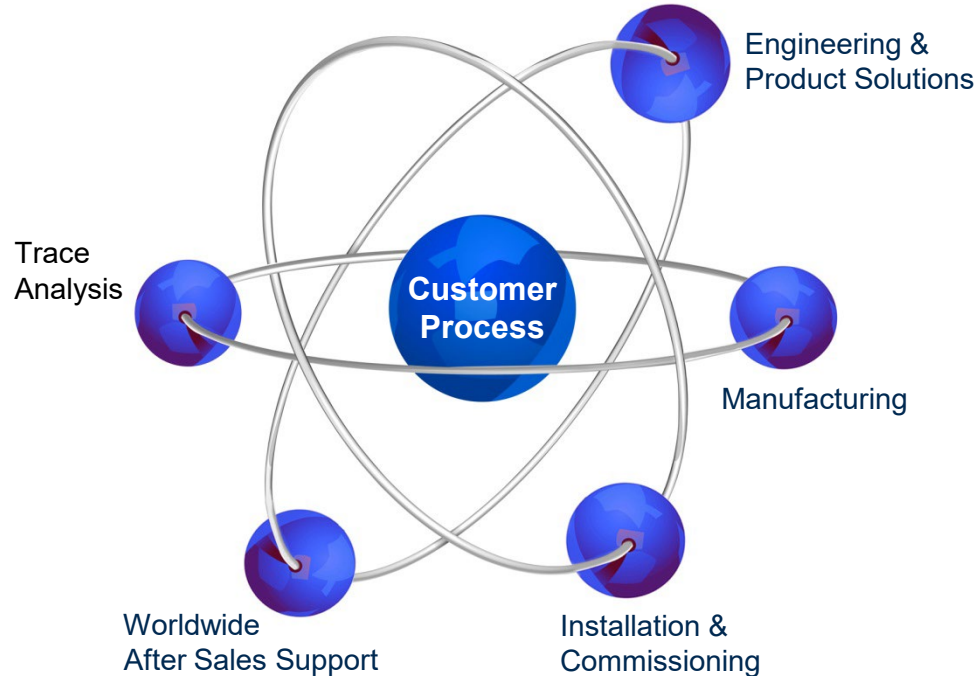**Extraordinary engineering expertise**

in ultra/clean air and ultra-pure atmospheres ensures that today and tomorrow's manufacturing processes are safe, clean, productive, cost effective – and environmentally friendly.

50+
Years in Clean-room Technology

100+
Years of Experience

300+
Trained People

More than just Products

Engineering & Product Solutions

Trace Analysis

Customer Process

Manufacturing

Worldwide After Sales Support

Installation & Commissioning

Customer demands for **highly reliable systems** are more than satisfied by our comprehensive and **worldwide after sales service.**

This is based on our **experienced and highly qualified specialists** in the areas of service, product management and development.

Manufacturing Strategy and Locations

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Renningen (DE)

Manufacturing
10,800 sqm

Cleanroom
3,700 sqm

- Highly qualified employees and advanced infrastructure
- Concentration on final assembly and testing within cleanroom

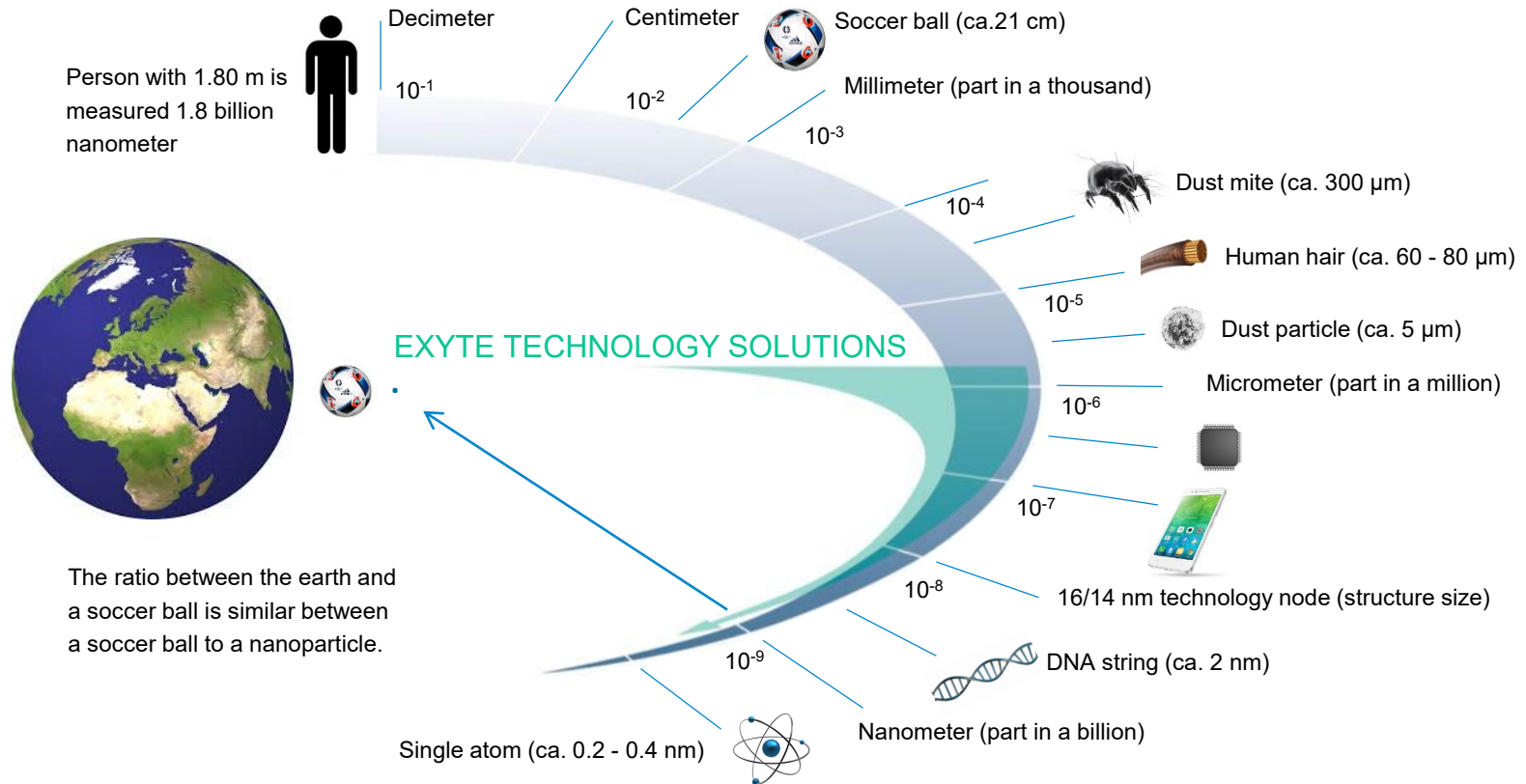## Teplice (CZ)

Manufacturing
7,000 sqm

- Concentration on manufacturing without cleanroom conditions

Shanghai (CN)

Manufacturing
9,000 sqm

Cleanroom
1,600 sqm

- Manufacturing for the asian market
- Concentration on manufacturing of cleanroom products and MAU

Unique Engineering Solutions

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Person with 1.80 m is measured 1.8 billion nanometer

Decimeter

10^{-1}

Centimeter

10^{-2}

Soccer ball (ca.21 cm)

Millimeter (part in a thousand)

10^{-3}

10^{-4}

Dust mite (ca. 300 μm)

Human hair (ca. 60 - 80 μm)

10^{-5}

Dust particle (ca. 5 μm)

EXYTE TECHNOLOGY SOLUTIONS

Micrometer (part in a million)

10^{-6}

10^{-7}

16/14 nm technology node (structure size)

10^{-8}

The ratio between the earth and a soccer ball is similar between a soccer ball to a nanoparticle.

10^{-9}

DNA string (ca. 2 nm)

Nanometer (part in a billion)

Single atom (ca. 0.2 - 0.4 nm)

Core Competences

High-End-Technologies

			Our Capabilities
01 | Air Temperature	± 0,1 K	± 0,005 K	± 0,001 K
02 | Magnetic Fields	500 nT	100 nT	10 nT
03 | Water Temperature	± 0,05 K	± 0,001 K	± 0,0005 K
04 | Noise Insulation	<30 dB	<35 dB	<50 dB
05 | Humidity	± 5 % r.H.	± 1 % r.H.	± 0,1 % r.H.
06 | Differential Pressure	± 1,0 Pa	± 0,8 Pa	± 0,5 Pa
07 | Humidity Reduction	-30°C	-40°C	-50°C
08 | Air Quality (Particles)	ISO 5	ISO 3	ISO 1
09 | Air Quality (Bacteria)	GMP C	GMP B	GMP A
10 | AMC (Acids, Bases, Dopants)	2 ppb	0,5 ppb	0,1 ppb
11 | VOC (Condensables)	20,0 ng	5,0 ng	1,0 ng

Products & Solutions

„More than half of the world's advanced technologies cleanrooms benefits from environments created by Exyte Technology."

Cleanroom Technologies & Controlled Environments

Cleanroom Products

Air Handling Units

Critical Subsystems

Trace Analysis

Our Markets

- Semiconductor
- Photovoltaic
- Flat Panel Displays
- Batteries

Advanced Technology Facilities

- Pharmaceutical & Health
- Food & Nutrition
- Consumer Care
- Chemicals

Life Sciences & Chemicals

The Atmosphere of Trust for ATF Advanced Technology Facilities

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Critical Subsystems

- Stable Temperature Control
- Ultra-Pure Water Supply
- Acoustic Enclosures
- Cooling Water Cabinets

Cleanroom Products

- Air Showers
- Control Systems
- Cleanroom Lighting
- Partition Walls / Mobile Trolleys

Filter Fan Unit

AMC Filter

Ceiling Grid Systems

Raised Floors

Air Handling Units

Modular Environmental Control Chambers

Precision Climate Systems
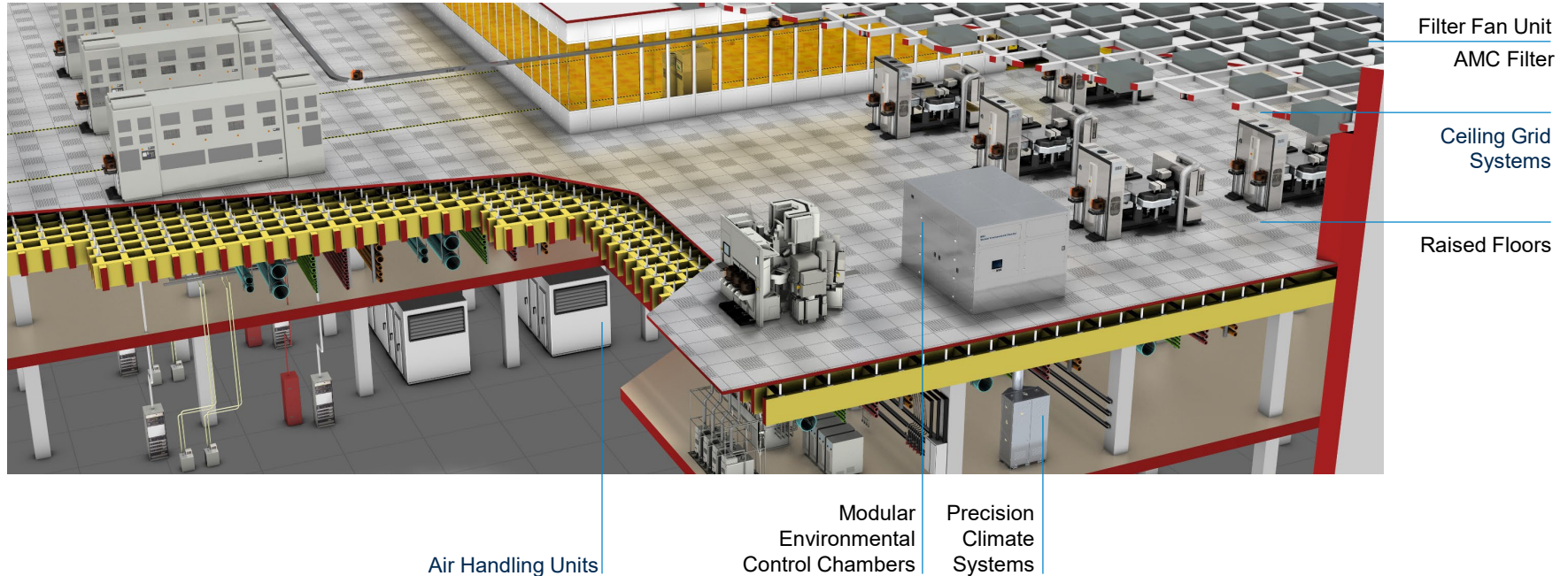
The Atmosphere of Trust for ATF Advanced Technology Facilities
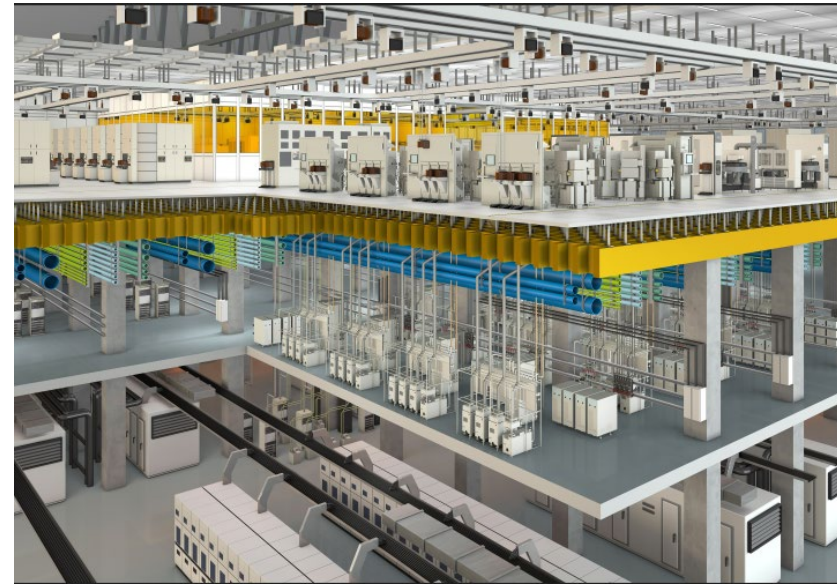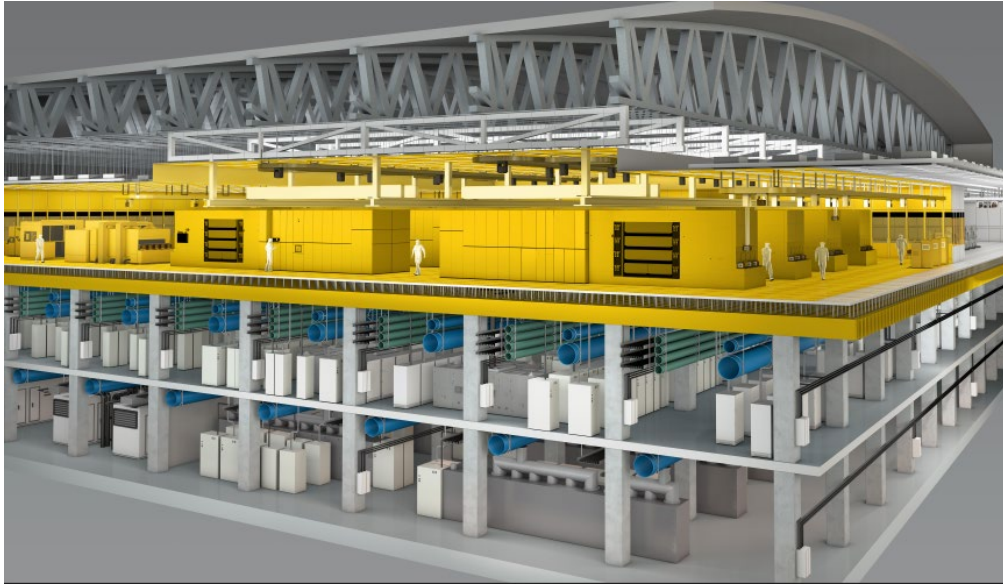
The Atmosphere of Trust for Life Science Industries

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Air Handling Units
Make-up Air
Exhaust
Supply & Return

Clean Work Areas
Mobile Trolleys
Modular Cabins
Laminar Air Flow Units

Control Systems

Lighting

Filter Fan Units
AMC Filter
PIFF

Wall Systems

Air Shower Systems

Ceiling Grid Systems

Cleanroom Technologies & Controlled Environments

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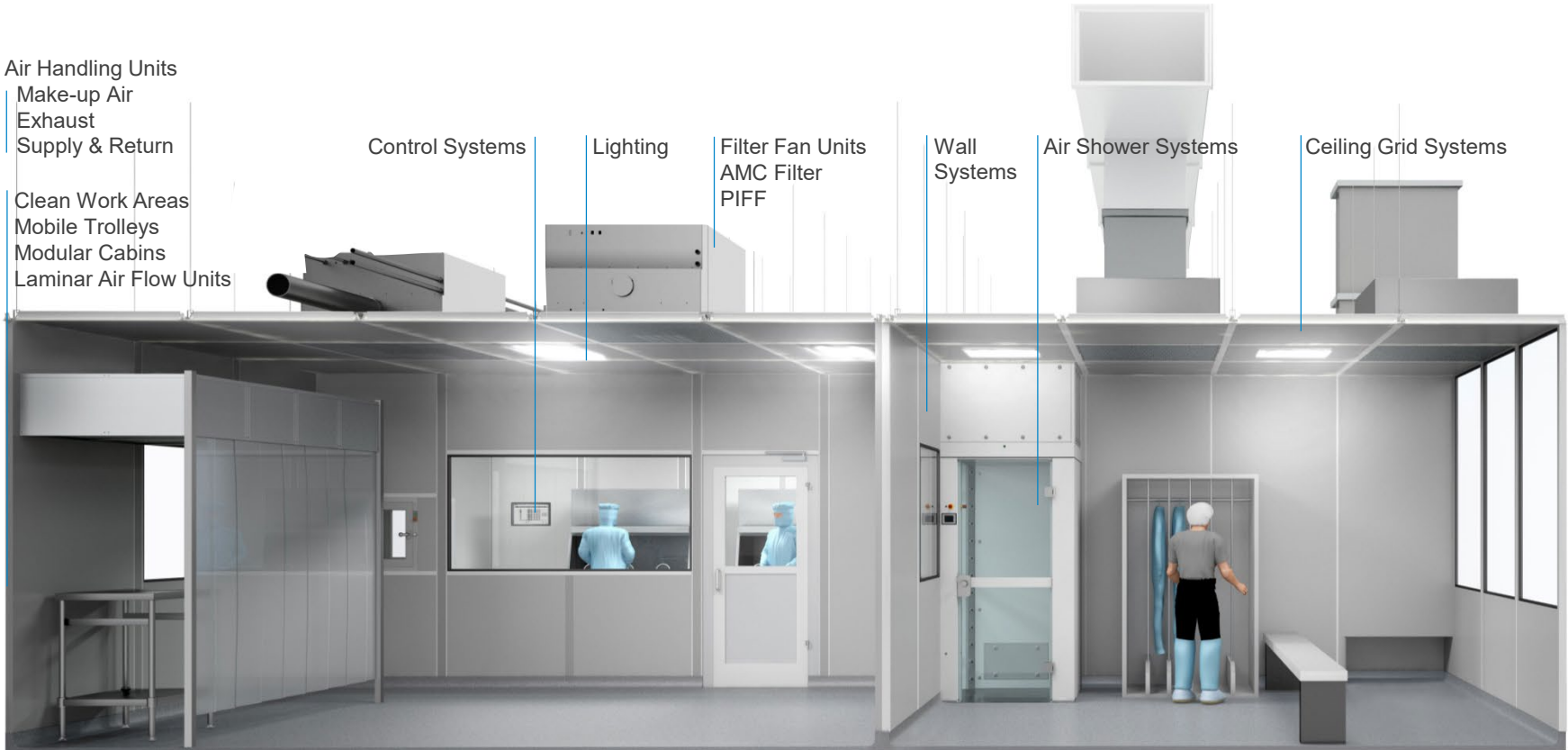
Cleanroom Products

Air Handling Units

Critical Subsystems

Trace Analysis

Cleanroom Products – Air Shower Systems

Rotation Air Shower

Tunnel Air Shower

- Rotation Air Showers
  Single use

- Tunnel Air Showers
  High personnel traffic

- Modular Systems

- Customized Solutions:
  material locks, hatches
  and conveying systems

- High cleaning effect

- Automatic functioning

Cleanroom Products – Filter Fan Units (FFU)

FFU's standard and special

- Standard Filter Fan Units and development of customized FFU designs

- Plenum Integrated Filter Fan (PIFF), FFU SILENT, FFU ECO, FFU LIGHT, FFU COMPACT, FFU Return Air

- Air-filtration with HEPA/ULPA filter, pre-filter, and AMC-filter
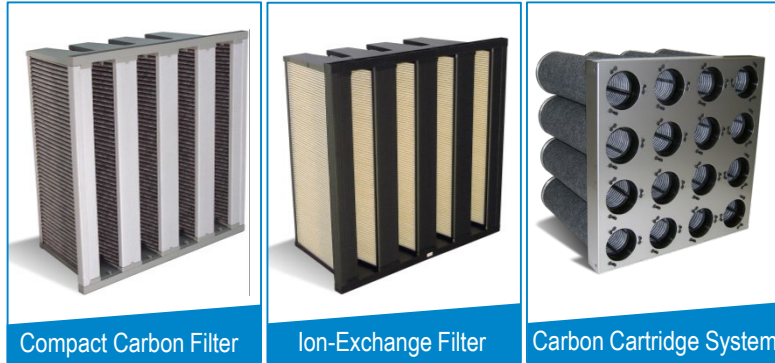
- More than 50 years of experience
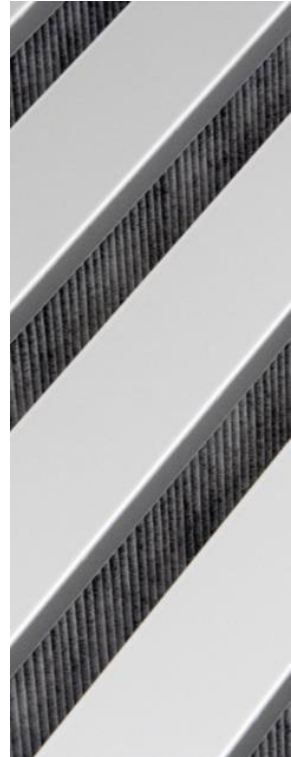
Cleanroom Products – Control Systems

CSD: Ultra Display

CSD: Control Terminal

CRiS xt
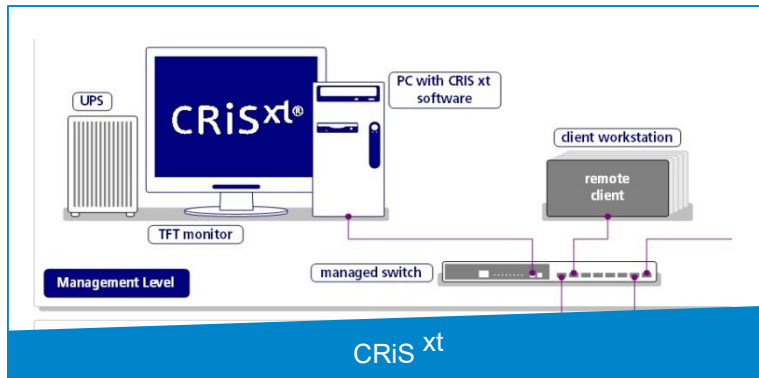
- Up to 30,000 FFU's / system

- Automatic installation

- Regulated systems
  (air velocity, pressure)

- FMCS / BMS connection via OPC

- Redundancy – distributed systems

- Field Bus technology
  (LON, Exyte Bus, Modbus/0-20V)

- Low overheads

- Low investment needs
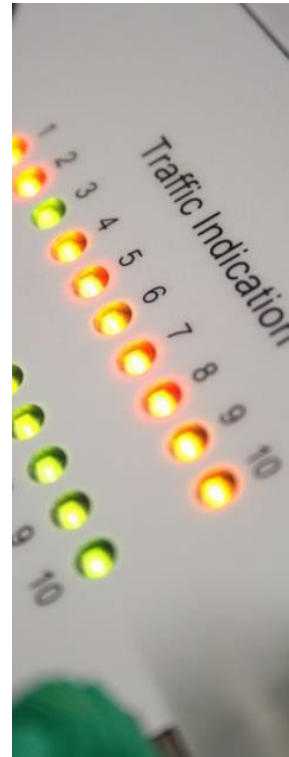
Cleanroom Products – AMC Chemical Filter

Compact Carbon Filter

Ion-Exchange Filter

Carbon Cartridge System

Ion-Exchange Filter

Impregnated CarbonFilter

Combination Filter
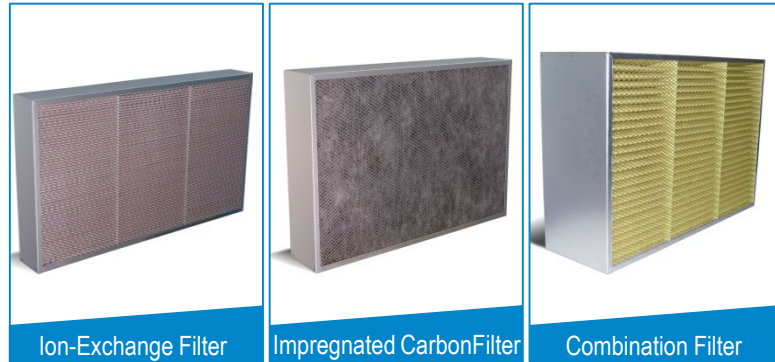
- Makeup/Return Air Filter

- Tool & Process Protection Filters

- Very high capacity
  → Long useful lifetime

- Very high removal efficiencies
  → Excellent process protection

- Very low pressure drop
  → Low energy consumption

Cleanroom Products – Ceiling Grid Systems

Cassette Ceiling

Sprinkler

Grid Ceiling

Line Ceiling Grid

- Walkable and non-walkable

- Heavy-duty ceiling (Transport systems)

- Ceiling systems for underpressure in the plenum

- Ceiling systems for overpressure in the plenum

- For electronic applications with a groove on the bottom for installation of other components

- For pharmaceutical applications, powdercoated with closed profile to the cleanroom

Cleanroom Products – Wall Systems

Pass Through Box

Opening Conveyor Belt

Air Returning

Glazing

Cleanroom walls including:

- Air Return

- Extensive, double glazing

- Opening for conveyor belts
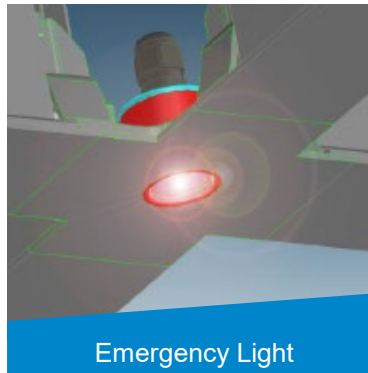
- Integrated Doors

- Plenum

- Pass Through Boxes

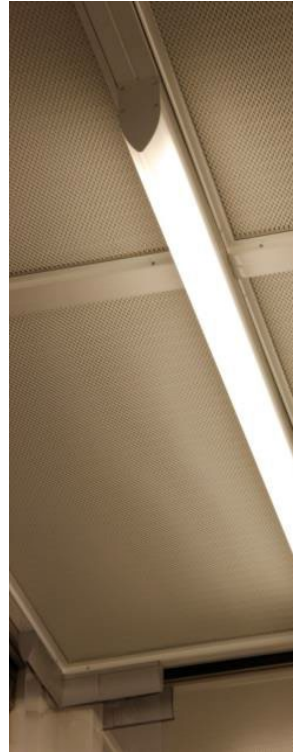# Cleanroom Products – Lighting

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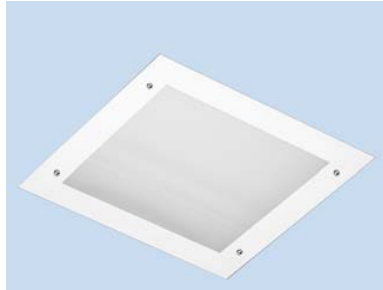
Recessed Luminaire

Strip Light

Teardrop Luminaire

Emergency Light

Standard and LED technology

- Suitable for all standards with crtification according to national law (UL, CCC, etc.)

- Yellow light for UV-Sensitive Applications with switchable light color (yellow / white)

- Customized solutions: Dimensions, connections, special requirements & emergency lighting
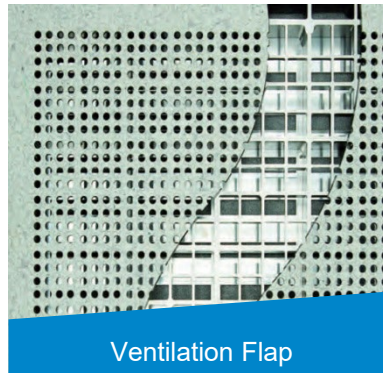
Cleanroom Products – Raised Floor Systems

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Solid Slab

Grid Slab

Ventilation Flap

Perforated Slab

- Raised Flooring Systems for electronics and semiconductor industry

- Heights up to 2,500 mm

- Pointload up to 2.5 t

- Surface load up to 6.0 t

- Individual Solutions

- Possibilities of diverse coatings

Cleanroom Products – Clean Work Areas

Cleanroom Cabin

Mobile Cleanroom Unit

Room-in-Room-System

Biotec Cabin

- Modular Cleanrooms
  Room-in-Room Systems

- Stationary or mobile, open or closed systems

- Cleanroom classes 1.0 to 8.0
  (DIN EN ISO 14644-1)

- Different wall and curtain systems

- Solutions with integrated makeup air and exhaust air supply, cooling systems and control engineering

Cleanroom Technologies & Controlled Environments

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Cleanroom Products

Air Handling Units

Critical Subsystems

Trace Analysis

Air Handling Units

Pharmaceutical AHU

Recirculation AHU

Test AHU

Make-Up AHU

- Conditioning of outdoor air

- Conditioning of supply and recirculation air

- Exhaust air treatment

- AMC compatible

- Design GMP compliant

- Air volume conveyance from 1.000 to 200.000 m^3/h

- Particle filtration

- Filtration of gaseous contaminations

- Thermic treatment of the air: Humidification & Dehumidification Heating & Cooling

Cleanroom Technologies & Controlled Environments

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Cleanroom Products

Air Handling Units

Critical Subsystems

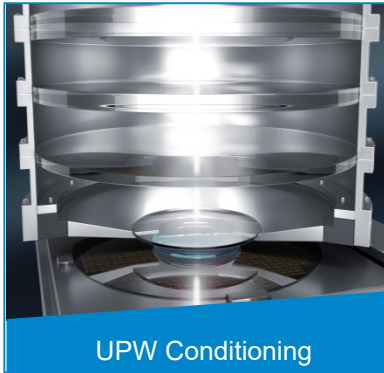**Trace Analysis**

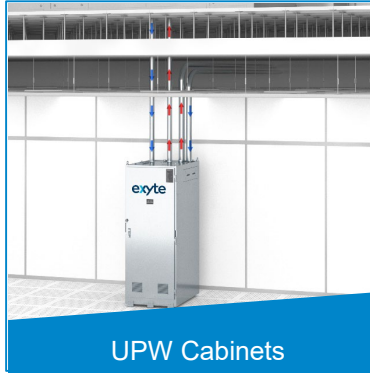# Controlled Environments – Critical Subsystems

Air-Temperature-Control

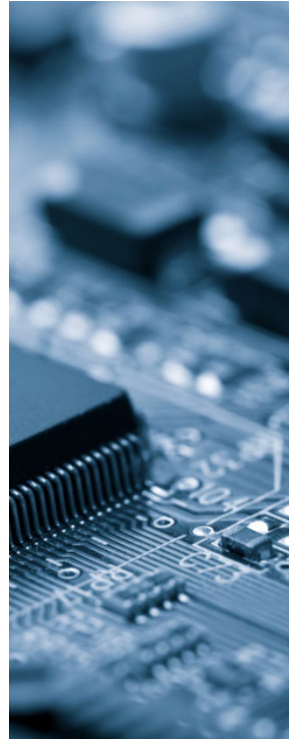Precision Climate Systems

UPW Conditioning

UPW Cabinets

Stand-Alone Systems

- Air Temperature Control Cabinets

- Precision Climate Systems

- Ultra-Pure Water Conditioning

- Ultra-Pure Cooling Water Cabinets

Controlled Environments – Critical Subsystems
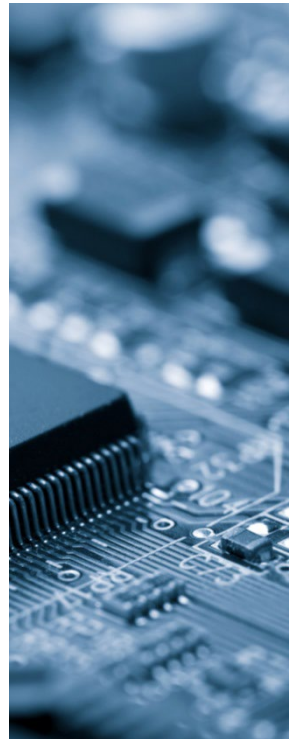

Environmental Chamber

Environmental Chamber

Modular Environmental Chambers
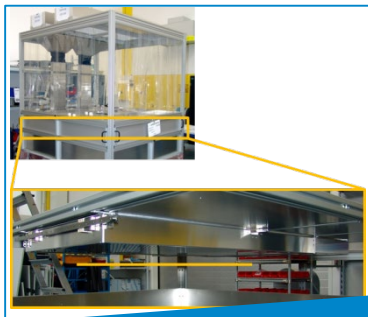
In variable combinations for:

- Clean Air Supply   ISO 1

- Temperature Stability $\pm$ 2 mK
  (With recycled air)

- Humidity Control $\pm$ 0.3 % rH
  (With recycled air)

- Acoustic Dampening   ≤ 20 dB
  (Depending on frequency)

- EMI Dampening   > 20 dB
  (Depending on frequency)

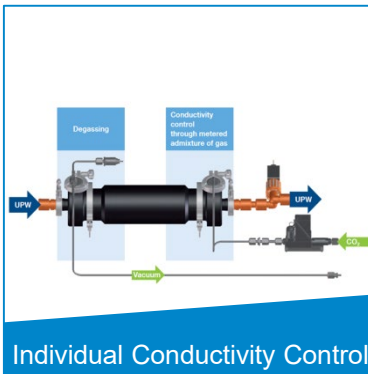# Controlled Environments – Critical Subsystems

Air Supplies on top of tool

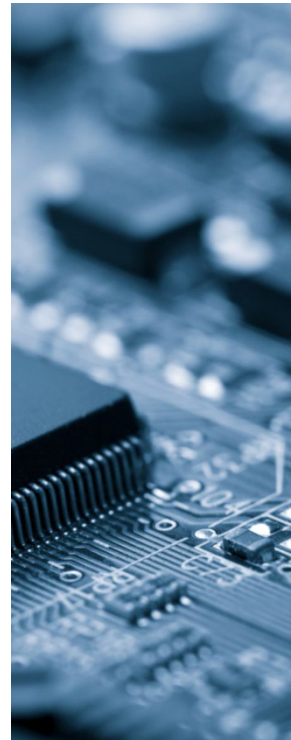Tool Integrated Air Supply

Inert Gas Chamber

Individual Conductivity Control

Customized Solutions

- Temperature & Sumidity Controlled Air Supplies

- Tool-Integrated Air Supply

- Inert Gas Chambers

- Ultra-Pure Water Conductivity Control

Cleanroom Technologies & Controlled Environments

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Cleanroom Products

Air Handling Units

Critical Subsystems

Trace Analysis

Technology Center & Trace Analysis

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Development & Engineering

- Feasibility Studies
- Conceptual Designs
- Cost of Ownership Investigations
- Risk Assessments
- System Integration On-Site

Trace Analysis

- Ultra Trace Analysis
- UPW Measurements
- AMC Measurements
- Outgassing Tests
- Leachout Tests
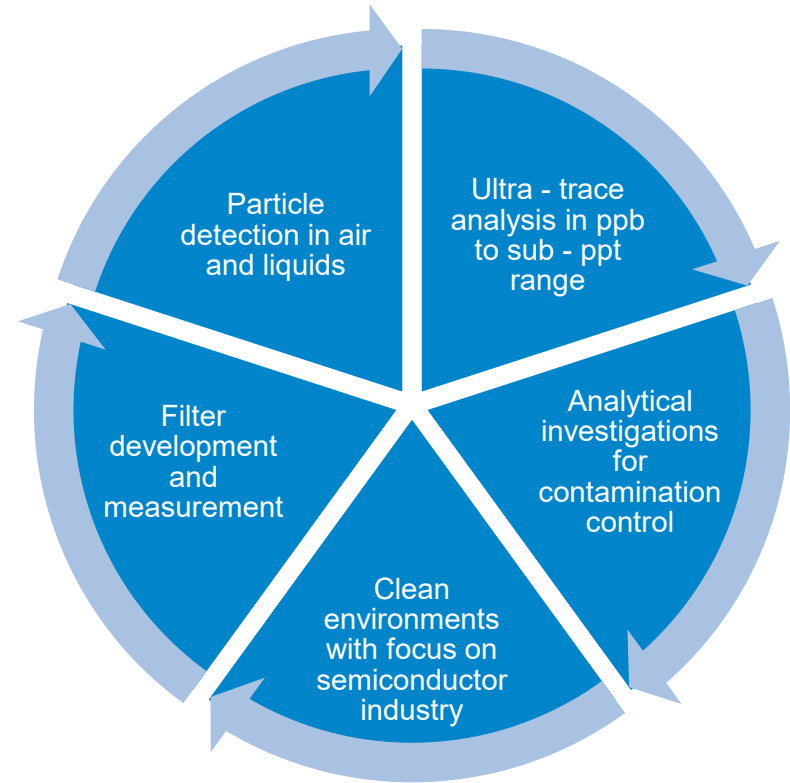- Contamination Control

Approval & Qualification

- Product Certification
- System Optimization
- Qualification Measurements
- Benchmark Tests

Test Facilities and Environments

- Cleanroom ISO Classes 1-7
- Filter Test Rigs
- Echoic Chamber
- Air Handling Units
- UPW Facilitiy

Trace Analysis

Particle detection in air and liquids

Ultra - trace analysis in ppb to sub - ppt range

Analytical investigations for contamination control

Clean environments with focus on semiconductor industry

Filter development and measurement

Thank you for your attention!

www.exyte-technology.net

Contact

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